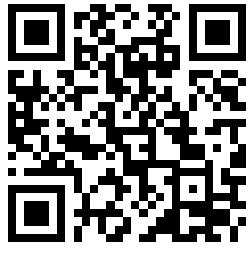

The School World

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AN INQUIRY INTO THE VALUE OF THE STUDY OF LATIN AND GREEK.

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I.

MUCH of what has been written during the last year or so in this country on educational reform might have been headed by the title "Classics *versus* Science." The title is a very narrow one, if it be intended to cover a general discussion of educational reform. In particular there is implied the suggestion that science must be the only, or at any rate the chief, substitute if classics are to occupy a much reduced place in the curriculum of school or college; though modern foreign languages and their literatures, and especially literature, history, and other studies in the mother-tongue, are alternatives for the increased study of which much may be said, and which should at least have the advantage of lessening the opposition to reform on the part of the conservatives; for they would provide the "human" element in education which, the classicists maintain, is the chief value of the study of Latin and Greek.

Another unfortunate aspect of some recent discussion seems to be this, that the attack on the classics has been so prominently (though not exclusively) associated with specialists in science, while the defence of classics has largely fallen to men who are, so far as the public can tell, innocent of any thorough training in the physical sciences. This is unfortunate in its effect on that wide public which is only too ready to scoff at the education which leads to such contradiction; for it suggests that the divisions on such questions are largely a matter of prejudice, or at least of individual experiences and tastes. Further, there is occasionally an unhappy narrowness of thought and sympathy shown by both types of specialists. Some of the classicists show this in failing to recognise fully the essentially humanistic education that may be given without one word of Latin or Greek, or even of any foreign language; and this failure is the more astonishing in view of the fact that the Greeks themselves achieved their masterpieces of literature, philosophy, and history on the basis of an education which included no study of a foreign language. The Socratic method itself was a method in the mother-tongue.

On the other hand, the scientific critics of classical education sometimes speak as though such an education was entirely linguistic, forgetting that, if pursued far enough, the study of classics will bring the student into contact with a great variety of ideas on all aspects of human life, including discussions of fundamental problems in philosophy, politics, history, and æsthetics.

I have commented upon the disadvantages of the fact that so much recent educational controversy has been between specialists in science and classics. Nevertheless, it does seem that the focussing of the recent discussion round the topic "Classics *versus* Science" has been sound at least in this respect, that if any considerable time is to be gained in school or college for further scientific or other studies it will have to be by reducing the time allotted to classics. Hence the question of the value of classical studies becomes urgent, and it is the main purpose of these articles to discuss it. Incidentally I hope to suggest a scheme which may go far to satisfy the keen upholders of classical studies, while at the same time giving ample opportunity for reformed curricula in the case of the majority of pupils in secondary schools.

It should be made clear at once that this essay is concerned merely with the question of the value of a classical education for the *average* pupil and student. It does not

question the great value of a thorough course in classics, carried to an advanced stage, for selected students of special linguistic ability.

ARGUMENT BASED ON EXTERNAL EVIDENCE.

In the first place, it may be well to consider the evidence, so often urged in favour of classics as a means of general mental training, which is offered by the fact that such a large proportion of our prominent and capable men are men of classical training. This may be largely explained by the fact that, until quite recently, all the best boys at our principal schools studied classics, and that the pick of the university students also specialised in classics or mathematics. The scholarships offered by the universities and public schools have encouraged this tendency. Even when "modern sides" began to appear in our leading schools, only dullards were drafted on to the modern side. Thus we have only the right to say that classics, with mathematics perhaps, have served as eliminators of the weak. No doubt the fact under consideration shows that an excellent preparation for life *may* be given, at least in the cases of the ablest pupils, by an education in which a thorough course in classics is the main factor, but it affords no proof that these picked boys would not have done equally well in after life if their curriculum had not included classics, provided, of course, that other studies had been pursued with equal thoroughness.

A striking example of the use of this fallacious argument is afforded in the first chapter of the most recent, and perhaps the ablest, plea for classical education, Mr. Robert Livingstone's "Defence of Classical Education."[1] It runs somewhat as follows: In 1870 the German universities became open to students who did not know Latin or Greek, so that pupils of the Realschule, and not merely from the Gymnasia, were able to enter. After ten years' experience all the members of the Philosophical Faculty of Berlin University agreed that these non-classical students were inferior to the classical. Even the professor of chemistry observes

> that the students from Realschulen, in consequence of their being conversant with a large number of facts, outrank, as a rule, those from the Gymnasia during the experimental exercises of the first half-year, but that the situation is soon reversed, and, given equal abilities, the latter almost invariably carry off the honours in the end; that the latter are mentally better trained, and have acquired in a higher degree the ability to understand and solve scientific problems.

This statement, of course, ignores the fact that a principle of selection was at work. The boys who came from the classical Gymnasia were the most gifted by nature, coming from better-class homes, and they had also enjoyed more favourable early environmental influences. The best comment that can be made on the argument is the following story related to me by one who was a lecturer at a German university early in the present century. A certain German professor at the university sent his two sons to the Ober-Realschule. It was the first case in which a professor had been known to send his sons to such a school, and people were asking, "Are the professor's sons, then, really so stupid (*dumm*) that they have to be sent to the Ober-Realschule?" And this, be it noted, was not merely ten, but thirty, years after there had been removed from the Realschule the stigma of its affording no entrance to the university.

Let us now turn to what we may call the internal arguments in favour of the classics. We shall deal in turn with the following: (i) The "general culture" argument; (ii) classics as a means of æsthetic training; (iii) the "mental gymnastic" argument; (iv) classics as a means of selecting the intelligent; and (v) Latin and Greek as bases for the study of other languages.

1. THE "GENERAL CULTURE" ARGUMENT.

This argument takes several forms, the chief of which is that the ideas—philosophical, political, scientific, legal, and æsthetic—of the Greeks and Romans form the chief basis of the whole culture of modern civilisation. The truth of this may be at once admitted. It may be that some extreme opponents of the classics would reply as follows: "Yes, but the fact that these ideas have been absorbed into our modern thought and civilisation makes it possible for us to study them in modern literature and modern institutions." We may, however, admit against this the great value to be gained by studying ideas and institutions in their origin.

A more cogent reply to the first argument for classical studies is the following. Anything like full apprehension of classical culture is gained only by those who pursue the languages to an advanced stage. The average boy while at school must necessarily spend far the greater part of his time in mastering the language itself, and has comparatively little time and energy for the ideas themselves of

[1] Mr. H. G. Wells's highly diverting criticism in the *Fortnightly Review* April, 1917), which I have read since writing this article, scarcely does justice to Mr. Livingstone's book. Also it fails to recognise the importance of converting the classicists themselves to the idea of considerable reforms. They are likely only to be irritated by, or amused at, Mr. Wells's article.

Greek and Roman thought. The specialist is constantly in danger of forgetting this and of estimating the value of his particular study on the basis of what it has done for *him*; and the honours university course in classics is bound to provide a wide education, at least in humanities, touching as it must upon so many departments of human life and thought.

Now, if it is really desired to give the *average* boy some knowledge of ancient thought and institutions, a far greater knowledge could be imparted if even only half the time at present devoted to the study of Latin and Greek languages were given to the study of classical thought through the medium of English translations and to the history of Greece and Rome. Let us admit at once that no translation can give the exact thought or form of the original. Still, who can dispute that the great majority of boys would know far more about Greek and Roman history and thought if one-half, or even one-quarter, of the twelve or fifteen hours per week spent upon the languages for perhaps six or seven years of their school life were devoted to the study of the classical works through the medium of translations? Many know from bitter experience, the writer amongst them, that it is possible for a boy to go through the usual course of a grammar school and to possess at the end of it less knowledge of classical thought and institutions than could be obtained through English translations and histories in two or three months—nay, weeks. Even after taking a degree in classics I confess that I found my knowledge of classical allusions considerably inferior to that of a friend whose classical training was comprised, so far as the languages were concerned, in a two years' course of matriculation, but whose real knowledge of classical lore was gained through the medium of English.

In this matter of translations I think that the specialists concentrate their attention too much on the advanced student, for whom, no doubt, the originals are irreplaceable. But how far are such refinements appreciated by the average pupil?

The testimony of some of the greatest classical scholars can be called in support of the present contention as to the value of good translations.

"Even the scholar," says Sir Samuel Dill, "may sometimes feel that the spirit of the 'Phædo' and the 'Republic' has passed into the English of the great Master of Balliol."[2]

Mr. Livingstone in his "Defence of Classical Education" admits that

> with certain authors little would be lost, with others something would be gained [by translation]. North's translation of Plutarch is far more delightful than the late Greek of the "Lives"; Orrery has exactly caught the manner of Pliny the Younger; Thucydides of all the great writers probably suffers least from translation, which disguises his eccentricities but not his genius.

The present Master of an Oxford college, himself one of the finest classics in the land, recently said to me that no men he had known had seemed to catch so completely the spirit of Greek thought as a group of young men who had studied it enthusiastically, but only through translations. Henry Sidgwick in his essay on "The Theory of Classical Education" (in "Essays on a Liberal Education") says:

> It would be absurd to say that an Englishman (particularly if he can read French and German) has any difficulty in accurately and thoroughly informing himself what sort of people the Greeks and Romans were. And it might, I think, be truly asserted, however paradoxically, that, even under our classical system, the greater part of the vivid impressions that most boys receive of the ancient world are derived from English works; from Pope's "Homer," Macaulay's "Lays," the "English Plutarch" (if they have the good fortune to get hold of that delightful book), and afterwards from Arnold, Grote, and Merivale.

Sidgwick, indeed, though himself a product of classical education, would go further, and contends that all study of ancient thought and history may be abandoned without loss.

> I cannot but think that if we were debarred from Latin and Greek, a careful teaching of modern history and a careful selection of modern literature would supply our youth with all the stimulus, example, and warning that they require.

This is, I think, an extreme view, and one, in any case, unnecessary to press. At the same time some classicists are not very successful in combating it, at least when it is taken to refer to the average school pupil.

Finally, one of the main objects of the study of classical thought and institutions, as stated at the head of this section, is the better comprehension and appreciation of our own and of those of other nations of to-day. Yet when one thinks of the paucity of direct knowledge of these among schoolboys—especially as regards other nations—there becomes evident the absurdity of spending so much time over ancient foundations which, in most cases, are never to be built upon. Certainly it is possible to draw, with Mr. Livingstone, a sad picture of what would have been the fate of Western Europe if we had "never heard of Greece or Rome"; but, as a critic has suggested, we might as well ask, What would have been the fate of religion if we had never heard of

2 See "Secondary Education after the War," inaugural address before the Education Society of the Queen's University of Belfast.

Palestine? Yet who suggests that the English translation of the Bible is inadequate for the average schoolboy?

2. CLASSICS AS A MEANS OF ÆSTHETIC TRAINING.

The second argument with which we have to deal refers to the æsthetic training given by a study of the classics.

It is not denied (says Mr. W. H. S. Jones, of the Perse School) that much can be done by the intelligent study of English literature. But the classics are strong where English is weak. Their beauty is simple, statuesque, severe, and easily appreciated by the young. Their merits are obvious and closely compacted. More style could be learnt from a book of Homer than from a book of equal size in any other language. ("The Teaching of Latin." p. 17.)

The replies to this argument may follow the same lines as those already used. It may be admitted that æsthetic form suffers much more in translations than does the substance of thought. But, even here, something of the beauty of Homer and of Euripides may be conveyed by means of the translations of Andrew Lang and Gilbert Murray. Further, the usual teacher of classics in school gives little attention to the beauty of the works read; and this is scarcely his fault, as the difficulty his pupils find in mastering the technique of the language demands their full attention for the language as such. For the sake of clearness and sound grammar the conscientious teacher will also generally sacrifice the style of English translation to literal accuracy, which may probably partly account for the bad effect which, it has been urged, the study of classics has on the English style of some students. And in so far as the beauty of the works is pointed out to the pupils, it is largely, as Sidgwick says, "the beauty of the parts, and even of minute parts, that they are taught to feel." Equally important, however, is the beauty of a work of imagination *as a whole*, and it is precisely this aspect of the beauty of such works that suffers least in translation.

But it is scarcely necessary to labour this point as to what æsthetic training can be got from the classics, when English literature itself is so incompletely studied at school. Too frequently a boy leaves school with only two or three of Shakespeare's plays read (often "disintegrated" rather), and with only snippets of the works of other great English writers studied. This is scarcely surprising when English has often to be content with one or two hours in the school week. What a thorough course of reading in English literature could be enjoyed if only one-half of the hours given to classics could be devoted to English!

Even admitting that there are certain aspects of the beauty of our own literature which cannot be fully appreciated without a previous study of the classical languages—a very doubtful point—surely this refinement of appreciation is only a thing for the few. What is the æsthetic effect of Latin and Greek on the average pupil? How little is our own literature appreciated by the average classical-trained youth, largely because only such an inadequate amount of time has been available for the study of the literature of his own tongue.

Furthermore, the argument for the use of classics as a means of æsthetic training lays undue emphasis on the part which the beauty of *form* plays in the appreciation of good literature. Our main object in this part of æsthetic education is, I take it, to encourage the youth to spend some of his leisure hours in the company of the great minds of the past and of the present. Now we can secure this end more certainly by leading the youth to take a keen interest in some particular subject-matter. The youth who leaves school with a keen interest in history, or the drama, or biography is likely to read great books. Though I am aware that rhythm may appeal forcibly to young people, interest in style and form as such is, on the whole, a relatively late development. Interest in subject-matter is a much surer foundation for the habit of good reading.

As regards æsthetic education proper in the widest sense, instead of the prolonged training in Latin or Greek necessary for any appreciable æsthetic development, far better results might be gained in one year if part of the time were spent in acquiring further interest in pictorial art and the history of art, of which the average Britisher is so lamentably ignorant, and by a brief course in the appreciation of good music and in its historical development. (I do not, of course, mean the "learning of the piano," for which comparatively few are fitted.) With some such scheme, who would doubt that, as regards wide æsthetic education, our youth would be far better equipped than he is when expected to pick up his æsthetic training mainly through the classics during those moments when he and his teacher can turn their minds from the difficulty of construing to the beauty of the original?

There is one further argument of Mr. Livingstone's which calls for comment in this connection. It is that English literature is "more enjoyed and better appreciated if it is not associated with classrooms, text-books, and

examinations." I think there is much weight in this argument, especially if one considers the usual way of teaching English literature in schools, when only an hour or two a week can be spared for English, and that, too, for the sake of preparing for an examination. But if it be true that the beauty of literature is spoiled by its association with class work, then surely Mr. Livingstone's argument recoils upon himself—and with double force; for the difficulty and labour so inimical to the æsthetic attitude are still more prominent in studying a foreign language. It is only when they are read with ease that works in a foreign tongue can be æsthetically appreciated. Thus on Mr. Livingstone's own showing the æsthetic training provided by the classics must be almost entirely confined to the advanced stages. For the average schoolboy, and probably for the pass university student, the difficulty of construing and the effort of memory involved in reading Latin or Greek text surely leave little opportunity for a truly æsthetic attitude to arise, for which easy comprehension is so essential.

It is, no doubt, a different matter when we consider the stage reached by a student pursuing an honours course in classics at the university. This is the second case, then, in which we find that an argument for the learning of Latin and Greek holds *only for those who pursue the study to an advanced stage.* We have already argued that, as regards the penetration of the thought of classical writers and the understanding of their institutions and history, an adequate knowledge can be gained by translations, and that the refinements of thought which cannot be expressed by the best translations and commentators can be appreciated only by an expert reader of the language. A similar argument seems to hold in reference to the æsthetic appreciation of the classics. These two lines of thought, then, both suggest that the classics should be studied thoroughly, if studied at all; but we seem so far to have no convincing proof of the value of only a few years' study of the languages at school, or even of a short pass course at the university for the average student. As, however, it is difficult to disprove (as to prove) the argument that a *full* æsthetic appreciation, or better understanding, of the beauty of parts of our English or other modern languages requires some training in classical languages, there remains some possible justification for a fairly thorough study of Latin or Greek, or both, in the case of students who desire to specialise in the literature of English or other modern languages.

The weakness, however, of this contention lies here, that the better æsthetic training is admittedly derived from Greek rather than from Latin, while, on the other hand, it is agreed that Latin is the more valuable as a basis for the study of English, French, German, Italian, and Spanish. Thus the temptation is to include both Latin and Greek in the preparatory course for students who wish to specialise in other languages, and time will scarcely permit of such a thorough study of both these languages as we have seen to be necessary (if either of the two main reasons for classical education so far considered is to hold) without a very serious diminution of attention to the student's main subjects.

It should be clearly kept in mind that our whole argument is concerned with the *average* pupil and student, or perhaps we should say with all except those of most marked literary or linguistic ability. I am not concerned to argue that for this small minority it is not possible to reach, even when at school, a standard in classical languages which will justify their study, even if the youth proceeds afterwards to specialise in other languages. But those of special linguistic ability constitute, after all, only a small minority of all the students in our secondary schools; and even in the case of this small minority, except for those who are definitely proceeding to an honours course in classics, the benefit derived from the study of two classical languages at school must have set against it the very serious encroachment upon the time which might otherwise have been spent in the more direct preparation at school for their subsequent university studies, and particularly in a great range of English studies.

I have throughout this discussion of the æsthetic value of a classical training taken classics at their best; but it may be worth while concluding this section with a criticism from Henry Sidgwick.

> The pupils (he says in the article before mentioned) are told, dogmatically, that these authors "are perfect standards of criticism in everything that belongs to mere perfect form," that "the laws that regulate external beauty can only be thoroughly known through them," that "they utterly condemn all false ornament, all tinsel, all ungraceful and unshapely work"; and the more docile of them are apt to believe these dogmas to a degree that warps and oppresses the natural development of their critical faculties.
>
> There is great danger in the predominance that classics are made to gain over their minds by the indiscriminate eulogy and unreserved exaltation of the ancient authors *en masse* which they frequently hear. . . .
>
> The truth is that the best classical models only exemplify certain kinds of perfection of form, that several writers that boys read exemplify no particular

perfection at all, and that some illustrate excellently well the precise imperfections that the enthusiast I have quoted [Mr. Thring] enumerates. How can it be said, for instance, that there is no false ornament in Æschylus, no "tinsel" in Ovid, no "ungracefulness" in Thucydides, no "unshapely work" in Lucretius? In what sense can we speak of finding "perfect form" and "perfect standards of criticism" in such inartificial writers as Herodotus (charming as he is) or Xenophon? There is perhaps no modern thinker, with equal sensitiveness to beauty of expression, who (in those works of his which have been preserved to us) has so neglected and despised form as Aristotle. Any artist in words may learn much from Cicero, and much from Tacitus; but the profuse verbosity of the one, and the perpetual mannerism of the other, have left the marks of their misdirection on English literature.

(To be continued.)

SOCIAL SCIENCE FOR SCHOOLS.

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TO have been teaching social science in a public school in this country for nearly thirty years must be an unusual experience, and something said about it may not be without interest.

In the first place, it has been obvious how, since the experience began in 1889, on acceptance of a trust imposed by a far-seeing founder, the position of the science has been advanced and the ground it has gained strengthened and consolidated. It was possible in 1906 for Sir Ray Lankester in his presidential address to the British Association to say:

> The most important general advance [in psychology] seems to be the recognition that the mind of the adult human being is a *social product*: that it can be understood only in relation with the special environment in which it develops and with which it is in perpetual interaction.

This advance, coupled with others that had been made, was destined, he added, to provide the basis for social science and an assistance in furnishing the necessary scientific basis of the art of education. Many enthusiastic workers in different countries have since extended and made solid the foundations of the science, and built upon them a substantial superstructure. Thanks to their labours, more is known to-day as to how much of what we understand by mind is inborn, and of the means by which additions to, and modifications of, Nature's bequest are made in after-years for the purposes of social life.

In the universities of America a professorial chair for the teaching of sociology is taken for granted, and little by little the science has made its way into the universities of this country, beginning with those of more recent foundation, and eventually gaining recognition in those of older growth. For instance, the author of "The Golden Bough" is described on its title-page as fellow of Trinity College, Cambridge, and professor of social anthropology in the University of Liverpool.

Outside the universities, social activities of public importance have been studied with the view of gaining more exact knowledge concerning them, and hence of directing them with increased confidence. This has resulted in the publication of many books on the social sciences, which secure wide circulation. To-day, in London alone, there are numerous classes of university standing on social science specially arranged for the benefit of war-workers in different lines of social work. It has come to be felt that social life in general will benefit by all exact knowledge that can be gained about it. Huxley said that life without knowledge of it was like card-playing in ignorance of the rules of the game.

The position of a teacher of a science improves side by side with the progress of his subject: he can teach with more confidence, and vagueness is dispelled from his scheme of instruction. As regards this particular science he may, if in a school, still feel singular and isolated, but outside his classroom he will find himself neither remarkable nor solitary. Here and there he may even perceive himself envied at having the good fortune to be in charge of work which has gained for itself widespread interest. For additional comfort, if he feels the need for it, he knows how vitalising is the influence of his work upon himself and all in the school he is called on to control and inspire.

In the second place, the approach of social science towards school work has also been obvious, and the immediate present supplies instances. "Education Reform," just issued as the fruit of the volunteered labours of a council composed of many well-known workers in education, includes among much that is noteworthy the Report of a Committee on Character Training (chairman, Canon Masterman), which training common consent seems light-heartedly to consider the whole and sole duty of schools. This committee apparently shared the widely felt need for a more exact knowledge of character than is supplied by Smiles and other equally earnest and equally vague writers. They therefore secured the help of the psychologist of the Education Committee of the London County Council, and his memorandum is separately printed, being the only one of more than a hundred submitted to the various committees to receive this special treatment. The psychology of character presented in it is based

chiefly on McDougall's "Social Psychology" (1908) and Shand's "Foundations of Character" (1914), both standard works for the school social science library. If the knowledge of character placed at the service of a committee, composed largely of teachers, was considered worthy of being printed for the use of teachers generally, it should surely be given also to the young, who stand in need of all possible guidance to assist efforts in self-training which they can be persuaded to take in hand. Such efforts are certain to prove far more effectual than those of teachers and others who try to serve them.

Now this is where school social science lessons come in. Instruction on the lines of the psychologist's memorandum can be given to boys of about fifteen years of age, with a certainty of its being listened to with evident interest, since it tells them facts they can understand it is well for them to know. The distinction between the character, or equipment, of the individual's mind built up for him in the remote past by Nature, and the additional equipment, with its modification of Nature's contribution, which he must acquire for, and through the medium of, the associated life of men, shows a boy that for a full participation in the duties and privileges of social life he must further educate himself until he has accomplished his individual transformation from what he was at birth into a rational and responsible human being. He sees that the serviceable foundations of his daily behaviour are laid for him not merely by kindly and beneficent efforts coming from outside, but also by himself through the exercise of his power of will. He learns, too, that man's task, since he entered upon a life in association with his fellows, has been to strengthen and extend that association until it includes all members of the human family inspired with mutual goodwill; while the initial equipment Nature has provided him with for the task is, unless a vague gregarious instinct or consciousness of kind is included, limited to the parental instinct, which makes for binding ties only between kith and kin. Whatever further equipment he needs must issue from the social life he builds up.

A boy who realises all this reads with admiration of, and pride and hope in, the race he belongs to, the story he finds in history of how man the world over has striven with many stumbles to lead his fellows to live together in larger communities, with a corresponding increase of co-operative strength, until one, in which the British boy is specially interested, has been formed which amounts to an aggregation of five hundred million human units. He is also full of sympathy with failures that have had tragic issues, and with the welcome that man has given to the coming of every influence tending to promote goodwill among men.

In parenthesis it may be said that character teaching affords a natural opportunity for saying all that a sense of duty dictates on the sex instinct, with such discrimination as experience shows to be necessary.

It was, of course, inevitable that in a report on character training reference should be made to home influence. Parents can plead, in extenuation of the mistakes they are sadly conscious of making in their efforts to train their children, that they have only empirical knowledge to guide them, and that neither at school nor at university was any attempt made to place them in possession of helpful knowledge of character. The spread of such knowledge among prospective parents will do something to put an end to the reproach levelled at fathers and mothers of making unnecessarily difficult the work of school teachers.

It was good to find in "Education Reform" the need insisted on for research by teachers. So far as concerns character, the social science teacher of the future should be ideally equipped for making it. He will have in the school an ideal field for his work, and pupils to benefit by, and pass on, the further knowledge he gains.

Another assistance to the teaching of the science in schools is seen in the recent publication of numerous social histories. All aim at treating the life of the people of a nation as a whole. They show the contribution that each age makes to the social life of the ages that follow, and they do not neglect the notable contribution of man in the Stone ages. Generally speaking, they provide suitable material for social science lessons, and especially so when they point out the advance of man from the Old to the New Stone age, when *association* was beginning its work. Such histories are found to be of more living interest than those which were supposed to give them all knowledge of the past worth knowing.

In vol. i. of "The People of England: a Social History for Schools," by Stanley Leathes (1915), will be found the following (p. 40): "The rise of man from the ranks of the other animals began very slowly: slowly and slowly it has gathered speed." This, though a commonplace in a science text-book, is an arresting truth for a boy to find in a volume of history. The statement of it clearly invites the reader to find in the book before him the story of how it was that man rose, while other animals remained as they were; of the extent to

and direction in which he has risen, and of the expectation there may be of his further rise. The young reader will also naturally ask whether this rise has significance for him individually. Without doubt the history tells the looked-for story and answers the natural question if the reader fortunately possesses the clue; but it is not going too far to say that only his social science lessons will satisfy the boy in these respects. The significance of the truth such lessons will tell him lies in the fact that his mere possession of acquirements of mind which enable him to read the words in which the truth is stated, with such understanding as is his at the moment and his possible further comprehension, shows that he has himself risen, thanks to the labours of men in the past, to a wondrous height and with lightning speed, from the ranks of the other animals; and that a further rise is necessary, and also possible, if he will take all the advantage his natural gifts permit of the education provided by the social life of his environment. It is much to be feared that without further and special teaching he will pass over with but slight appreciation these and similar words, though they may, when fully understood, be of great service to him in gaining knowledge of himself and the world he lives in.

Geography, even more than history, has been bringing social science more in touch with schools. It began work in this direction at an earlier date, and has continued it more thoroughly and directly. In 1889 the Herbertsons wrote for school use "Man and his Work," which they described as the first attempt to present in a popular form the principles of human geography: "The importance of this branch of geography is so self-evident as to need no demonstration. Without it, neither the history of the past nor of our own times can be understood." Beginning with the simplest societies in which the effect of physical surroundings is "writ large," the book shows the increasing complexity introduced by new conditions and occupations by concrete examples of existing societies. In "Modern Geography," by Dr. Marion Newbigin (Home University Library), we find: "The world is considered as the home of man, its physical peculiarities being regarded as interesting chiefly in their relation to man and his activities." Further illustrations could be given from many text-books written by men attracted to the teaching of the human aspect of geography both because of its intrinsic interest and value and because of the close links it makes with social science.

Indeed, each subject taught in schools has links with such lessons, for each represents past achievements of man; and the attitude of pupils is wonderfully altered if a little time is devoted to telling them by whose labours all they are asked to learn has been devised for the purposes of social life and is not an invention of the evil one for the infinite harassing of boys and girls.

The writer of "The Living Past" (1913), F. S. Marvin, has provided an acceptable text-book for use towards the close of a course of school social science lessons. The following extract will show its usefulness for this purpose:

> The past has made the present, and we, who are alive, have the future in our keeping; not that we can form it at will, but that it already exists in germ in us, and that we shall put upon it some impress, great or small, which will be traced back to us by the retrospect of the future. To those who realise this, history becomes a matter of high practical import as well as of theoretical import.

The romance of much of the achievement of man in Western civilisation is at the service of the reader of this book.

Of the extent to which social science has not merely approached, but also directly penetrated into, schools through civics teaching it is not easy to speak. Books on citizenship probably afford no real clue to it. They concern themselves for the most part with the machinery of government, national and local, as at present carried on. Now, parents even take little interest in this, however much it concerns them, and they seem content to learn their duties as citizens from the daily paper of their choice. But, treated from the point of view of social science, the story of the struggle by which representative and self-government has been gained for a nation is full of interest. So also is the story of the steps which have led to our having to-day, through local effort, roads and bridges, police, well-lit streets, schools, etc., though we still lack the many amenities of life which localities can provide when those that dwell in them will it.

A narrative based on Mr. Sidney Webb's "The King's Highway", has been found to keep a class of budding ratepayers in high good-humour with gallant efforts to make the utmost possible use of public conveniences, while putting on others the cost of paying for them. An ingrained attitude of mind even in boys is strikingly revealed while a narrative of this kind is being told to them. They will laugh heartily and derisively at the mere mention of a "City Beautiful."

Very few of the schemes of instruction in civics used by individual schools have been published; but it may not be generally known that there exists in North London a "Schools

Personal Service Association,"[1] which aims at encouraging the best form of social science teaching. It desires also to promote classroom instruction, and welcomes syllabuses of civics with the view of formulating one which may meet with general approval.

Those teachers who are shy of social science, but welcome civics, can put into the latter as much of the former as they approve.

In support of the contention that all who work in and for schools will be the better for knowledge of this subject, I may quote from Prof. Lloyd Morgan's "Psychology for Teachers":[2]

> The school is a miniature community. Rights and obligations within the school life, duties arising out of these, the due balance of justice, take form in a practical field of intercourse demanding many forms of conduct. For the boy the school does in large degree represent the State. . . . Happy is he if his school possesses a high ideal of what, as a community, it should be and do.

Not communities only does America think schools should be, but "community centres" in which is carried on educational and social work for boys and girls, young men and women, and fathers and mothers; and the prospect of schools as centres of this kind looms large in this country at the present time. Is it not a fact that the influence of a school rests, and has always rested, upon the degree to which it has looked on itself as a community, ever on the alert to serve the interests of all who work and live in it for certain hours in the year, whether the interest considered is one of subjects, mode of teaching them, mutual relations, or social activities? If more knowledge is available for the direction and inspiration of communities, why not use it? Now community life is *the* study of social science, and all that it has learnt and teaches can with advantage be carried into practice in any community, however small or large, whether a village school or the United States of America, the present President of which has been a social science student and writer, and is now a practical worker in a wide sphere.

Prolonged interest in a cause is apt to bias judgment, but it is claimed that the study of this science can lend further illumination to those who must tread the ways of life, and they need all the light they can get from any source. If the heart of it is entered into, it may even serve for additional inspiration. The enthusiast expects shocks and can be much disturbed by them. Very upsetting for the moment was it to light upon a fine-sounding utterance by Shelley in his introduction to "Prometheus Unbound" (made at a time when apparently he was contemplating a treatise on conduct):

> Until the mind has learnt to love and admire and hope and trust and endure, the reasoned principles of human conduct are as seed cast on the highway of life, which the unconscious traveller treads into dust, although it would bear the harvest of his happiness.

But are not love, admiration, hope, and trust (endurance may be taken for granted) special gifts of the young? And is not youth, therefore, the fitting time in which to sow, with hope of fruition, seed which, sown in after-years, might be trodden consciously into dust?

The science has made good its claim to be part of the education of all who desire to see life a little more clearly and a little more as a whole. The time is ripe for its inclusion in the curriculum of schools. That one public school has included it for many years opens the way to others. There is a combing-out process now going on, likely to be still busier in the future, which will make room for it. He who teaches it may even, unless he has very bad luck, some day find his work criticised sympathetically and with knowledge, although he may have to wait twenty-five years for this happy experience in his labours.

1 Hon. Sec., Mr. W. E. Gibbard, 41 Warner Road, Hornsey, N.
2 "Animal Behaviour," by the same author, will be found valuable by all who wish to know more about conduct.

TWO REPORTS ON THE TEACHING OF FRENCH.

I.

DURING the spring and summer terms of last year inquiries were held on the teaching of French in London secondary schools by six inspectors of the Board of Education and by Mr. Cloudesley Brereton, inspector in modern languages to the London County Council. The former visited twenty-seven schools; the latter was able to draw on his intimate knowledge of all the secondary schools in London that he inspects—more than twice the number visited by the inspectors of the Board of Education.

The two reports have been in print for some time, but the London County Council has only recently sanctioned their publication. Both are of very great interest and value; Mr. Brereton, as being single-handed, is especially to be congratulated on the result of his efforts, which is in most respects equal to, and in some respects more comprehensive than, the Board of Education report. But, comparisons being odious, we do not intend to make any further comparison between the two reports; nor do we propose to consider how far the London secondary schools appear to be superior or inferior to the schools of

some other counties as regards the teaching of French. It will be more profitable to condense statements and suggestions of general interest; and of these there are so many that the task is no easy one. The time is particularly opportune, as we may doubtless expect very shortly to receive the report of the Government Committee on the Teaching of Modern Languages.

It is gratifying to find that both reports refer to progress made in recent years:

> Our conviction of the possibility of substantial advance in the near future has its surest foundation in the progress which has been effected in the recent past. (Bd. Educ., § 8.)
>
> From a comparison of the teaching of French some ten years ago with that of to-day, it is clear that a great advance has been made. (L.C.C., p. 2.)

This is all the more satisfactory as the war has affected the modern language staffs unfavourably (Bd. Educ., § 5; L.C.C., p. 1). Among special conditions that have arisen are mentioned: reduction of the staff for reasons of economy [surely the stupidest form of economy imaginable];[1] masters who have joined the Army, their substitutes being less efficient [sometimes, to be sure, they are more efficient]; depletion of the upper Forms; premature promotions due to mechanical pressure from below; excessively large Forms; war-time worry and restlessness; additional domestic duties falling to girls owing to the dearth of servants.

Apart from these temporary causes, there are others which have for some time affected the teaching generally, and the teaching of modern languages more particularly.

> In some schools, where the home influences are unfavourable, literary English itself is almost a foreign language to the children. (L.C.C., p. 1.)

The teacher of modern languages is often hampered by his pupils' poor command of the mother-tongue. As Mr. Brereton has judiciously said (L.C.C., pp. 8, 9):

> The pupil who has had a good preliminary training in English has acquired thereby a *fund* of *facts, ideas,* and *emotions,* which supply immediate *meaning* and significance to the French words as he comes across them, while the familiarity he possesses with the more ordinary forms of the English sentence-construction and grammar helps him to understand in French those *phrases-types,* as M. Bréal calls them, which are common to the two languages. Thus, through the mother-tongue we get the *raw material* of idea, thought, and feeling without which the French words would be unintelligible, as well as the *skeleton* and *generalised* forms of those ways of expressing them into which some of the French sentences naturally fit. As time goes on, the grammatical assistance derived from English no doubt decreases, but the importance of a rich and unbroken stream of facts and impressions from that source continues unabated until the end. The mother-tongue is not only the basis, but also the buttress of a foreign language.

Later in his report (p. 13) Mr. Brereton rightly demands closer co-operation between English and French teachers in teaching the common element in grammar (cp. also Bd. Educ., § 74). [There are a certain limited number of terms the meaning of which should be known to pupils before they begin French. The reaction against formal grammar has gone absurdly far, especially in elementary schools. The co-operation of teachers should also extend to the phonetic aspects of language: it is not uncommon to find that, in one and the same school, varying and often contradictory views as to the sounds of speech are expressed by the teachers of English, French, Latin, singing, and elocution.]

A further complication arises from the short school-life of many pupils, and the introduction of late-comers. The problems that arise from this state of things have been met in various ways (Bd. Educ., §§ 9–15; L.C.C., pp. 5, 6). [The solution appears to be:

An undertaking on the part of the parent not to withdraw his child from the secondary school before he has had at least three years' teaching subsequent to the twelfth birthday; with, perhaps, a graduated scale of fees, diminishing in each additional year.

The refusal to admit pupils (*a*) above the age of twelve, and (*b*) at other times than the beginning of the school year, unless they have been educated in an efficient school.

Assignment of the pupils to Forms on the basis of a graduated entrance examination.

The postponing of the first foreign language until the age of twelve (or, at any rate, eleven *plus*), which is desirable from other points of view.]

Homogeneity of the classes is essential to good progress, and the introduction of late-comers is a disturbing factor. But even when these are left out of account, so long as French is regarded as a Form subject, the material is bound to be mixed. French does not count for much in promotion from Form to Form. It is consequently desirable to redistribute pupils, at any rate in the lower and middle Forms; and for this purpose the block-system is the most convenient. In carrying out this reclassification, it is necessary to bear in mind that only a certain proportion of the pupils stay at the school until they are sixteen (Bd. Educ., §§ 19, 27).

As regards the time to be allotted to French, the requirements as stated by the Education

[1] We make use of s uare brackets for adding comments of our own.

Reform Council (see THE SCHOOL WORLD for December, 1917, p. 402) and by the Modern Language Association (*ibid.*) are endorsed:

If regard be had to the short school-life of a large proportion of the pupils, no less provision than five lessons a week at the elementary stage, and four during the rest of the course, can be considered as adequate in the case of any school in which normal conditions obtain. (Bd. Educ., § 29; cf. L.C.C., p. 7.)

The periods should be of forty to forty-five minutes; hour periods would not be too long in the upper Forms, but complicate the time-table. Longer periods are rarely satisfactory.

We have more than once found, in schools where temporary time-table difficulties had resulted in the allotment of two successive school periods to the French work of the same class, a teacher who had hit upon no other device for dealing with the abnormal situation than that of painfully spreading over two periods the amount of work which he would have dealt with in one if only one had been available. (Bd. Educ., § 33.)

The need for thorough organisation of the French teaching is emphasised.

The departmental system . . . has certainly come to stay, but it requires in several cases to be rendered more real and effective. It is not enough to appoint a teacher head of the department. The post should involve both formal and informal conferences with the colleague or colleagues concerned, whether in the drawing up of the curriculum or in questions of method, as well as interchange of classes between the head of the department and his colleagues, for ordinary lessons, dictation, or examination purposes. There are still schools where the unity of method is by no means so complete as it ought to be, and in one or two the position of head of department is little better than titular. This is due to various causes, of which one is the failure to give the teacher in question definite time to see his colleagues at work. (L.C.C., p. 5; cp. Bd. Educ., §§ 39, 40.)

In consultation with his colleagues, the head of the department should draw up the working syllabus for the guidance of the staff, which should be set out in much greater detail than is now customary (Bd. Educ., §§ 36, 37). [This may well be supplemented by a log-book in which each teacher enters week by week the ground he has actually covered; this book should be accessible to all the teachers.]

Important sections are devoted in both reports (Bd. Educ., §§ 51–55; L.C.C., p. 26) to the means of securing efficient modern language teachers. Due weight is attached to the necessity of training. Not only is a period (at least one year) of probation advocated before an appointment is made permanent, but

the candidate for a teaching post in French should be required to spend a prescribed period of training in a school where the subject is thoroughly well taught, there to familiarise himself with the organisation of the work and the practice of class teaching, and, where suitable arrangements can be made, to gain under the close guidance of a responsible teacher some actual experience in the conduct of classes. . . . [There is a] lamentable loss of potential efficiency involved in the continued appointment of teachers destined to gain their whole practical experience at the expense of their pupils. (Bd. Educ., § 55.)

It is not enough that teachers should have adequate preparation in the way of academic teaching, a stay abroad, and professional training; they must also have opportunities of maintaining their efficiency. To this end they should receive grants enabling them to attend suitable lectures and to go abroad in the holidays; and occasionally they should be allowed a term's absence with full pay for the same purpose. Much benefit is to be derived from "observational visits" to selected schools (Bd. Educ., § 59). [This was a recommendation in the 1904 report of the University of London on modern language teaching in London secondary schools, but it does not seem to have been adopted. More recently the Board of Education made a beginning by arranging for certain young teachers of promise to visit other schools for a fortnight.]

In addition to specialists, useful work can be done by teachers of other subjects who have an adequate knowledge of French for taking junior or middle Forms. The Board of Education report does not seem to take any account of these. Mr. Brereton says (L.C.C., p. 28):

In the larger schools by far the greater bulk of the teaching should also be in expert hands. But one does not believe even in the interests of French itself, and still less so of the curriculum as a whole, that the French teacher, where it is practicable, should teach absolutely nothing but French. It follows, therefore, that, in the larger schools at least, some intermediate Forms may be entrusted to the care of a teacher whose main subject is not French, *provided that* he possesses an adequate accent and a sufficient knowledge of the spoken and written language, and that his work and methods are carefully dovetailed into the general scheme. . . . The subsidiary teacher in French, whose main subject may be history or classics, would serve, as it were, as connective tissue between the subjects he teaches, and would thereby be instrumental in maintaining the balance and organic unity of the curriculum. Incidentally he would help to pave the way for the *interpenetration of subjects* that is so earnestly to be desired.

The "visiting teacher" of French has practically disappeared (L.C.C., p. 5). For the time being there are no *assistants* in the London schools; but it is hoped that after the war this system may be extended (Bd. Educ., § 58),

especially if some slight modifications of the duties they are at present called upon to undertake were

granted by the Board of Education—a thing which constantly takes place in Scotland. They might help very well in the beginners' sets in the way of teaching accent, if care were taken to see that their methods were duly co-ordinated with those of the class teacher. (L.C.C., p. 5.)

[They might, perhaps, be allowed to take a set of beginners entirely; but to let them have a class for one or two periods a week only, for the teaching of "accent," would be an experiment of doubtful value. It might lead the teacher who takes the remaining lessons to consider himself not responsible for "accent" at all; and it would probably lead to overlapping and wasted effort.]

Turning now to questions of method, we find that, as might be expected, the attitude is one of "moderate reform." So far as the teaching in the early stages (the first two years) is concerned, the demands of the new, or direct, or reform method are, indeed, entirely conceded.

Pronunciation:

Where the pronunciation is best, it is skilfully taught on a phonetic basis at the earliest stage, confirmed by systematic sound-drill at every stage, and checked throughout, as occasion arises, by reference to the phonetic symbols with the aid of which it was acquired. (Bd. Educ., § 60.)

The L.C.C. report (p. 9) supplements this by dwelling on the value of a training in English phonetics:

The great majority of the schools make use of phonetics. In several schools the pupils receive, either beforehand in their French lessons or simultaneously in their English lessons, a training in the phonetics of English. This preliminary training in English phonetics is of great use in acquiring French sounds. In one or two schools at least the French teacher begins with a short course of English phonetics, which is most successful.

Mr. Brereton also has a note on the use of talking-machines (L.C.C., p. 10). [At present, there are, unfortunately, very few good records of normal conversational French. The value of the talking-machine is mainly as a record of intonation.]

Much stress is laid on recitation (Bd. Educ., § 63; L.C.C., p. 11) of prose and verse. [In the early stages the memorising and acting of simple dialogues are of great help in impressing intonation, as well as in teaching vocabulary and grammar. Most of the current text-books contain far too little dialogue suitable for this purpose.]

There are some excellent hints on reading aloud in class (Bd. Educ., § 64). As for chorus-work,

the practice of reading in unison, though sometimes utilised to very good purpose by a skilled teacher of sensitive ear, is not to be recommended for indiscriminate adoption. Its obvious dangers, *e.g.* unnoticed abstention of the indolent and the perpetuation and confirmation of the undetected errors of individuals, were strikingly exemplified in some of the schools visited. (*Ibid.*)

[It may be added that pattern reading by the teacher in breath groups, each of these being repeated in chorus by the class, is an excellent means of imparting intonation.]

(To be continued.)

SCIENCE AND INVENTION.[1]

By ALAN A. CAMPBELL SWINTON, F.R.S.

WITH the appearance in history of that wonderful people the Greeks, we come for the first time in personal contact with the scientific thoughts and the scientific theories of individual philosophers. Prior to that period there must have been scientific thinkers, but we have no distinct record of what were their scientific ideas. All that remains are portions of some of their material constructions, and some accounts of others that time and decay have destroyed. Thales of Miletus, one of the seven wise men of the Grecian golden age, though he lived some 600 years before our era, is no mere name. He was the first to observe electrical action, and was the founder of the physical school of Greek philosophy, which first began to consider the nature of things. To Democritus, a Greek of the fourth century B.C., we owe the earliest ideas about matter; while to Hippocrates, another early Greek, are due the beginnings of medicine and biology. To him is ascribed the immortal and pregnant phrase that while "Life is short, Art is long, Opportunity fleeting, Experiment uncertain, Judgment difficult"—an aphorism in which is summed up for all time the difficulties with which the scientific investigator has to contend. And so we pass on to that most famous of classical philosophers, Aristotle, whose writings have done more than those of any other man to influence the progress of science, and whose authority was so great that it bound the scientific world in iron fetters for centuries.

In the great library and museum which was founded in the third century B.C. by Ptolemy at Alexandria, then the intellectual and commercial capital of the Grecian world, we find the apotheosis of Greek scientific activity. Here were preserved all the scientific writings and records that a world-wide search had enabled the founder to collect. Here were taught the philosophy of Aristotle and the geometry of Euclid. Here Claudius Ptolemy experimented

[1] From an address entitled "Science and its Functions" delivered before the Royal Society of Arts at the opening meeting of the one hundred and sixty-fourth session, on November 21st, 1917.

in optics, and wrote his great work on the construction of the heavens. Here Eratosthenes measured the earth. Here Ctesibius invented the fire-engine, and Hero the first steam-engine, which it is interesting to note was a simple form of steam turbine. Here worked Archimedes, the most famous mathematician and physicist of the ancient world, who laid the foundation of hydrostatics, elucidated the theory of the lever, and invented the burning-glass and the screw-pump which still bears his name. As a man of science the world produced no equal to him for nearly two thousand years. But the days of the great library were numbered, and within those marble halls the drip of the water-clocks of Apollonius were counting drop by drop, and second by second, the approach of the catastrophe. During the siege of Alexandria by Julius Cæsar, the library and all its contents were burned—a fitting funeral pyre to the glory that was Greece.

The Romans made no contributions to pure science at all to be compared with those of the Greeks. They were a practical rather than a speculative people, and were great builders, engineers, and road-makers. Size, solidity, and quantity rather than novelty were the outstanding features of their scientific work. They were not like the Greeks, ever seeking after some new thing.

When Rome fell into decay, and the gloom of the Dark Ages settled upon Europe, there was for a time an almost complete halt in the progress of science. True, some vestige of learning still struggled to maintain itself in what was left of the Alexandrian Library, but this was finally extinguished by the latter's second destruction by order of the Arabian Khalif, Omar. After this, it is somewhat surprising that the next revival in scientific investigation took place amongst the Arabians themselves, now become a highly cultured people. To this revival we owe the invention of algebra, the beginning of systematic chemistry, and much new work in astronomy, medicine, mechanics, and metallurgy. One of the most famous of the Arabian experimental philosophers was Alhazan, who lived shortly before the Norman Conquest of England.

Of all scientific inventions perhaps the one, and a very simple one, too, that has most influenced the history of the world is that of printing. When all literature had to be laboriously copied by hand, it is obvious that books must have been scarce and expensive, and could not be widely circulated. Printing changed all that, and rendered for ever impossible the recurrence of such a disaster to civilisation as the burning of the Alexandrian Library, where, owing to there being no duplicates, much of the world's knowledge was totally lost. Printing has, no doubt, recorded much more trash than wisdom, but it is difficult to appreciate what the world would be like to-day without our libraries, our books, and our newspapers. Life would certainly be very different from what it is. More important than that, however, is the enormous impetus that printing gave and still gives to the diffusion of knowledge, and the effect of this on scientific and industrial progress. When, therefore, there began in Europe that great revival of learning known as the Renaissance, it was the printing press that became its principal coadjutor, and caused things to move at a rate much faster and on a scale much larger than ever before. It was with fundamental concepts that the New Learning had first of all to contend, particularly with the geocentric theory of the universe, which gave to the earth and to human affairs quite an undue importance, and also with the authority of Aristotle, which had become an article of faith and defied all new ideas.

By the end of the sixteenth century experimental science, as opposed to the barren speculations of the schoolmen, was again being practised in Europe with noteworthy results, while, a little later, Francis Bacon published his famous "Novum Organon," and thus became the apostle of the revival of this experimental method of attacking scientific problems. On this method, which had been practically abandoned for some hundreds of years, all modern science is based, and as soon as its practice recommenced results of the highest importance began rapidly to accumulate. How a dread of the tentacles of "authority" still lingered in scientific circles is, however, to be seen in the fact that when the Royal Society was founded in 1662 the fellows took for their motto the words "Nullius in Verba," an excerpt from a line in Horace which signifies: "Not pledged to swear by the words of any master." To-day it is difficult to realise what a hold authority had come to have on even scientific ideas, and how, even so late as the seventeenth century, antiquated and frequently unsound scientific principles, as enunciated in the writings of Aristotle, were still regarded as something that had to be faced when dealing with new problems.

And now we have arrived at a period when there commenced those organised efforts in scientific investigation, and those widespread and continuous endeavours to apply the results thus obtained to practical ends, that have produced during the last two centuries such marked effects on civilisation. We have now, in fact, a better opportunity than ever before of seeing what are the functions of science.

To arrive at some measure of the vast

changes that have been brought about, let us consider how matters stood about a hundred and sixty years ago, say in 1754, the year in which our Society of Arts was founded. At that date the steam-engine had not yet assumed a practical form, and apart from some small use of water and wind power, when mechanical work had to be done this was accomplished by the aid of the muscular effort of men and animals. The question of power supply was, in fact, in the same condition that had existed for thousands of years, and, in consequence, the employment of machinery of all descriptions that required power to drive it was extremely limited. Nor as regards travel for persons, or transit for goods, were things very different. The steamship was unthought of, and ocean journeying was no faster, and but little more certain, than in the days of Columbus. Railways in the modern sense were non-existent, and even the coaching era had scarcely begun. Travelling of all sorts was no more rapid or more convenient than in the days of the Romans. Indeed, emperors such as Hadrian and Severus, who visited this country in late classical times, probably made the journey to and from Rome quite as expeditiously as, and very likely even much more comfortably than, did any traveller of the eighteenth century. Furthermore, at the time of which I speak, the communication of intelligence was limited to the speed at which postmen could travel, for, of course, there were no electric telegraphs, such as have shortened the time of communication with the ends of the earth to a few seconds, and have reduced even ambassadors to the status of clerks at the hourly beck and call of the Home Government.

In the eighteenth century, moreover, illuminating gas and electric light had still to be invented, public lighting was practically non-existent, and even in London and other large cities linkmen with torches were required to light the passenger to his home after dark. If printing was in use it was slow and expensive, without any of the modern mechanical, photographic, and other adjuncts that have rendered possible our numerous newspapers and the other derivatives of the press. Nor were there any proper systems either for water-supply or for the disposal of sewage. Disease, born of filth and neglect, stalked through the land practically unchecked. Medicine was still almost entirely empiric. Little or nothing was known of the causes and nature of illness, of infection by bacilli, or of treatment by inoculation. Anæsthetics had not yet been applied, and the marvels of modern surgery were undreamt of. It would be easy to multiply instances, but in the aggregate it is not inaccurate to state that at the time this society was founded the general mode of life had not much improved on what obtained in civilised Europe in the days of the Antonines, while, in some respects, it fell much short of this.

To-day we live altogether in a different world, in an age of travel accelerated by steam, petrol, and electricity; of railways on the level, overhead, and in tubes; of trams and motor omnibuses, of bicycles and motor-cars; of steel ships and steel bridges; of mills and factories, with their products of every possible description; of telegraphs by wire and wireless; of telephones; of hourly newspaper editions and tape machines; of electric light indoors and outside; of electric power for every purpose, from carrying us upstairs to brushing our hair and our boots; of gas fires and gas cookers; of electric bells and electroplate; of automatic machines and thermos flasks; of pianos, pianolas, concertinas, and gramophones; of kodaks, snapshots, and kinematographs; of fountain-pens, sewing-machines, typewriters, lawn-mowers, knife-grinders, vacuum cleaners, and barographs; of cigarettes and lucifer matches, which are much newer than many people think; of innumerable new and cheap textile fabrics; of plate glass, aluminium, indiarubber, celluloid, vulcanite, and all manner of new artificial materials; of laughing-gas for having a tooth out, of chloroform and ether for more serious operations; of X-rays for inspecting our internal organs; of dozens of new medicines for every ailment, and ailments with new names discovered every day; of balloons and aeroplanes, in which we may all soon be travelling; besides all the masses of diverse machinery used in manufacture, in agriculture, and in the arts. All these things, as well as many more, are younger than our Royal Society of Arts.

It has been the fashion to divide what we understand by science into two portions, pure science and applied science; but these are only halves of one great whole. Pure science, which is the domain of the research worker and the discoverer, supplies the data, physical, chemical, and mechanical, which it is the function of applied science to turn to account for practical utilitarian purposes. For this latter operation are required the services of the inventor and the engineer, and other experts of a similar character.

Even great scientific discoveries have in some cases been made by chance, but generally only by men of marked intuition and acutely developed powers of observation. More often they have been the result of prolonged thought and of laborious and patient investigation, with delicate experiments. Many have been the issue of elaborate mathematical reasoning. As subjects become more complex, complete knowledge of what has been done before in the same

field is more and more necessary. One of the most fruitful sources of new discovery in all branches of science in modern times has been the greater attention paid to quantitative as against merely qualitative research, very accurate measurements of every kind being one of the special features of present-day research methods. A noteworthy point is that the results of research are cumulative, one discovery almost invariably leading to others in course of time.

An interesting question is what manner of men they were who made our great scientific discoveries, and what were their vocations or professions in ordinary life. To go into this fully is beyond the time at my disposal, but the following information with regard to the authors of a few of our most famous discoveries is instructive, especially in view of present-day educational controversies. An outstanding feature is that many of them had no professional connection with science at all, but were amateurs pure and simple. Among these may be mentioned Robert Boyle, the famous discoverer of the law of the expansion of gases, who was a landed proprietor educated at Eton, and has been described as "the father of chemistry and brother of the Earl of Cork." Henry Cavendish, also, who discovered hydrogen and the composition of water, and did much original work in electricity, besides devising the celebrated Cavendish experiment for ascertaining the weight of the earth, was a pure amateur, being the grandson of the second Duke of Devonshire. He was very eccentric and very rich. Sir William Herschel, the famous astronomer, was by profession an organist and a teacher of music. Priestley, who discovered oxygen, was a Presbyterian minister. Dalton, the distinguished chemist who elaborated the atomic theory, was an assistant schoolmaster. Benjamin Franklin, who with a kite drew electricity from the clouds and thus established the identity between electricity and lightning, was a self-educated printer. Benjamin Thomson, afterwards Count Rumford, who contributed considerably to the theory of heat, began life as an assistant in a store. Franklin became United States ambassador to England, while Rumford reorganised the kingdom of Bavaria, and the pair are, perhaps, the only politicians—or, in their case, one ought rather to say statesmen—who ever contributed anything of value to science. James Prescott Joule, who was the experimental founder of the great theory of the conservation of energy, and the first to determine the mechanical equivalent of heat, was likewise an amateur, being by profession a brewer.

Others were of the medical profession, as the famous Dr. Gilbert, of Colchester, physician to Queen Elizabeth, whose works on electricity and whose book, "De Magnete," are a monument to his industry and discernment. Thomas Young, the great protagonist of the luminiferous æther and of the undulatory theory of light, also was a doctor. Sir Isaac Newton, on the other hand, was a student, and afterwards a professor, of Cambridge University, and finally Master of the Mint. Sir Humphry Davy and Faraday both made their great names at the Royal Institution, where they enjoyed facilities for experiment which one would like to see greatly multiplied elsewhere. Both were of humble origin, Davy being the son of a wood-carver, who became assistant to a surgeon, and Faraday the son of a blacksmith, and a bookbinder's apprentice, who had the good fortune to attract Davy's attention and to become his assistant, and afterwards his successor. It is noteworthy that but few of these great men had the advantage of early scientific training.

The case of some of the world's greatest inventors is also interesting. James Watt began life as a mathematical instrument maker. George Stephenson was a colliery fireman who learnt reading, writing, and arithmetic only after he was grown up. Arkwright, the great inventor of cotton-spinning machinery, was a barber; Daguerre, one of the principal inventors of photography, a scene painter. Sturgeon, the inventor of the electro-magnet, was a private soldier, and carried out his earlier experiments within barrack walls. Morse, of telegraphic instrument and code fame, was a painter and sculptor; Alexander Graham Bell, the inventor of the telephone, a teacher of the deaf and dumb; David Hughes, the inventor of the type-printing telegraph and of the microphone, a professor of music; Edison, a railway newsboy, practically self-taught; William (afterwards Lord) Armstrong, the inventor of hydraulic-power distribution, and celebrated for his gun, a practising solicitor until he was thirty-five years of age.

All this goes to show that inventors are born and not made; and that, at any rate in numerous cases, genius can dispense with teaching from outside. In fact, it is not for men such as these that more education in science is wanted to-day, but rather for our masters, the politicians, the directors of public affairs, and the Government officials. It is impossible to study the history of civilisation without recognising that scientific research and invention, with their innumerable and incalculable actions and reactions, constitute the soul of industrial progress. Consequently, if this progress is to

be maintained, every inducement must be provided to encourage those who are capable of carrying on the work.

To a society such as this, whose object is the encouragement of the arts, science is mainly interesting from its pre-eminent value for purely materialistic ends, and it is, therefore, from this point of view that I have endeavoured to give some account of its functions. It must not, however, be supposed that science has not also a very high value from the ethical point of view. As Adam Smith wrote in his "Wealth of Nations" nearly a century and a half ago, "Science is the great antidote to the poison of superstition"; moreover, science is, so far as the limitations of the human intellect will permit, a search for absolute truth. Accuracy is its foundation-stone, acute observation and strict logic are its most powerful agents. These have all an educational value of the highest importance. The study of Nature and the pursuit of knowledge have, in addition, an elevating influence, and produce a breadth and a strength of mind that rise superior to material environment. This is well seen in the blameless lives of the great masters of science, and in the way that many of them sacrificed everything to their work. Some encountered persecution and even martyrdom for their ideas, and met their misfortunes with a fortitude quite equal to that shown by other men for their faith. Among the functions of science we must not, therefore, forget its moral power.

HOW TO WRITE WITH THE LEFT HAND.

By P. B. BALLARD, M.A., D.Lit.

III.—YOUNG LEARNERS.

TO teach children how to write with the left hand is one thing; to teach adults, another. We will deal with the former problem first.

As about 3 per cent. of children are left-handed, a class-teacher is liable to have one or two sinistrals under his charge. He may, of course, have none; on the other hand, he may have half a dozen. But the number is never large. Is it worth while to take these odd cases into consideration while devising a writing scheme for the class? It is. The claim of the individual child cannot be ignored: he should be given the best chance the school can afford. The first thing to do is to make sure the child is really left-handed. If there is any doubt about it a few simple tests may be applied. Give him a piece of paper and get him to make dots on it by tapping as fast as he can with a lead pencil for, say, twenty seconds, first with the right hand and then with the left. Test also the comparative rates at which he can use his hands for placing dots inside consecutive squares on a sheet of squared paper. Note which hand produces the better results. Confirm your conclusions by watching him draw and play. When all doubts have been removed, train him as a left-handed child.

If the general system of writing in use at the school is not suitable for the left-handed children, there should be a special modification of it for their benefit. The style of writing is ill-adapted for the left-handed if it has a definite forward slope, if it involves a marked distinction between thick and thin strokes, if it includes many up-strokes and loops, if it takes up much space, and if the joinings of the letters constitute a prominent feature. The most difficult type of writing for the left-handed is given in Fig. 7, *a*, and the easiest in Fig. 7, *b* and *c*.

In determining the merit of any scheme of handwriting it is generally agreed that there are three cardinal qualities which must always

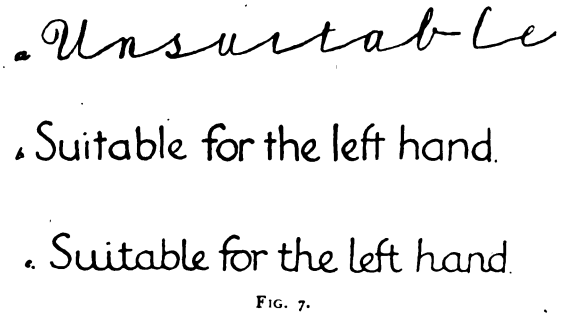

FIG. 7.

be taken into account—the facility with which it can be produced, the facility with which it can be read, and its æsthetic qualities; or, more briefly, speed, legibility, and beauty. People differ considerably in the relative importance they attach to these three qualities, the more practically minded ascribing the greater importance to the first two, and the more artistically minded to the last two. Legibility is included in both categories. All people agree that it is essential that what is written should be read; and the more easily it can be read the better. While only one can be concerned in writing a given script, many may be concerned in reading it. It is suggested by casual observation and proved by careful experiment that the nearer handwriting approaches print the more readable it becomes. And the reason is obvious. The printed form of the word is the one with which the eye is most familiar; for most people read a hundred times as much printed matter as written matter. Again, the characteristic features of a word upon which its recognisability

rests are contained in the bare skeleton—the simple essential shapes of the letters and their spatial relation to one another. Everything beyond that cumbers the page and confuses the eye. All joins and loops, all introductory strokes and final flourishes, are, from the point of view of legibility, an intrusion and an impertinence. It may be, of course, that from the point of view of producibility these lines are desirable, or even necessary. Indeed, it was at one time thought that they were absolutely necessary, and the type of writing in Fig. 7, *a*, generally known as Civil Service writing, was supposed to be writable at maximum speed. As a matter of fact it has now been demonstrated that the type *b* can be written with equal, if not greater, speed. As for the comparative beauty of the two styles, that is a point upon which argument is idle. I can only record a strong personal preference for *b* and *c*.

The left-handed child will find in *b* a style of writing (here given in its extreme form) which will place him at the least possible disadvantage as compared with his right-handed class-mates. The awkward strokes are omitted; the letters being closely compacted, there is no racing of the hand across the page, as in the Civil Service style; the characters being based almost entirely on the circle and the upright straight line, they are just as well adapted to the anatomy of the left hand as to that of the right.

There is yet another reason why print-writing is best suited to the left-handed. It has been found experimentally that continuous writing with even pressure on the paper involves a great strain on nerve and muscle—a strain that is relieved in two ways. One way is to vary the pressure by making a thick stroke occasionally (say, once per word—a rhythmic variation of pressure which is often observable in the script of rapid writers); but the better way is to lift the pen frequently from the paper—more frequently, in fact, than at the end of every word. The left-handed cannot easily adopt the former expedient: they would be well advised to adopt the latter.

The only fear which the pupil may reasonably entertain is that his writing would appear peculiar. But even this objection will probably disappear in time, for print-writing as a general scheme is being adopted in a large and increasing number of primary and secondary schools, and it is not unlikely that it will gradually supplant, or at least modify, the cursive forms now in common use. It is, of course, not necessary to leave all the letters detached. The pupil should, in fact, be encouraged to join up the letters whenever he finds it convenient. Fig. 7, *c*, illustrates my meaning. Starting from this fundamental type, he will, as he gets older, develop a characteristic hand of his own which will tend towards a cursive type more legible and more beautiful than any he could have reached if he had started by imitating the ordinary cursive script.

In Fig. 8 I give two scripts, both written with the left hand by a left-handed girl of thirteen. She learnt print-writing less than a year ago; yet she can write it just as fast as the ordinary script, which she has practised ever since she was five. The two specimens reproduced were, in fact, written at precisely the same rate—forty-six letters per minute.

It is quite conceivable that either the teacher or the learner may not like print-writing, and would prefer taking up from the beginning the conventional cursive style, even though it be more difficult to acquire and to practise. In that case a round, upright hand, something

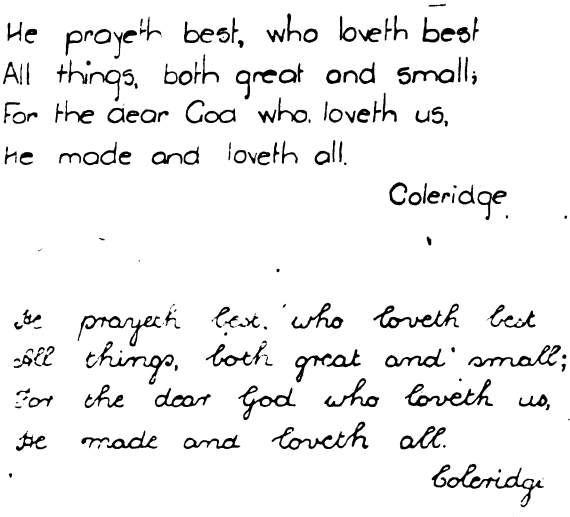

FIG. 8.—The left-handed writing of a left-handed schoolgirl.

like the second specimen in Fig. 8, would be found not unsuitable. The main things to avoid are the forward slant and the long, oblique coupling-lines.

In teaching writing to beginners in the infant school or kindergarten the nature and amount of individual attention that should be paid to the left-handed child will depend upon the general method of instruction. If that is based on sound principles little or no modification will be necessary. If it is not based on sound principles the ninety and seven right-handed will suffer as well as the three left-handed. Let us briefly, therefore, expound those principles.

In the first place, the posture of the writer should be hygienic: it should involve neither a compressing of the chest by leaning over the desk nor a twisting of the spine by sitting sideways. Chronic curvature of the spine is

a common complaint among school children, and medical officers attribute it almost entirely to faulty position in writing. If the shoulders are not level the spine is curved laterally, and if both fore-arms do not rest upon the desk almost, if not quite, as far as the elbow, one shoulder will probably be higher than the other. The left-handed child is peculiarly liable to this fault, for he often tries to overcome some of the difficulties inherent in the task of doing with the left hand what was originally designed for the right by tilting the pen towards the right shoulder. This contorts not merely his hand, but his body as well. If he sits erect, with his chest square to the desk and his arms resting on it, it is so difficult to hold the pen at the wrong angle that only a very strong desire to imitate his right-handed companions will induce him to try.

If the hand is to be free from all strain there is only one angle at which the pen can be held. It is roughly indicated at *c* (Fig. 9) for the right hand, and at *a* for the left. It is possible for either hand to hold the pen as at *b*—indeed, it must do so if "copper-

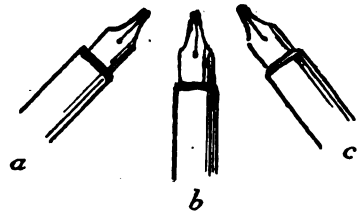

FIG. 9.

plate" writing is to be produced—but the position is not quite natural, and is not to be recommended for ordinary penmanship.

Some hygienists maintain that the only way to render impossible the acquisition of baneful habits of posture during writing is to insist upon the paper being kept square in front of the sitter. But this is a device for escaping an evil that is uncertain by running into another that is certain. For the effort to write with the paper quite straight is greater than when the paper is tilted. We have already seen that the larger movement in writing consists in the gradual change in the position of the hand from the first word in the written line to the last; the other movements are small in comparison. And this larger movement is most comfortably made by using the fore-arm as a lever revolving from the elbow, the elbow itself being moved as little as possible. Some amount of shifting of the elbow is inevitable, especially if the line is long and the arm short, for finger adjustment is in this case insufficient to convert a curvilinear movement into one that is rectilinear. As a labour-saving device, therefore, no less than as a means of preventing manual contortion, it is best to tilt the paper towards the elbow of the arm that writes.

There is, it should be mentioned, one drawback in tilting the paper: it tends to increase the slope of the writing. And the natural slope of left-handed writing is backwards. A backward slope can, however, be remedied by adjusting the angle at which the paper is tilted to suit the individual case. Not that a back-hand is necessarily bad. Its unpopularity is based on prejudice, not on principle. It has been experimentally shown that a back-hand comes next to vertical writing in its degree of legibility, and that it can be produced, even by the right-handed, with great speed.[1]

The second important principle to be observed in writing is that the coarser muscles should be trained before the finer—the fundamental muscles that we have in common with the brute creation before the accessory muscles that represent the later acquirements of the human race. In other words, the beginner should learn arm-writing before finger-writing. There are two reasons for this. The first is that the coarser muscles are ready for training earlier than the finer—a reason that applies to young children only. The second is that only by this order of training can we ensure that the various systems of muscles involved in the act of writing work harmoniously together instead of in comparative independence—a reason that applies equally to adults. Consider what a complicated piece of mechanism the arm is. Simply and largely regarded, it is a long lever with the fulcrum at the shoulder. But not a rigid lever; it is broken in five places—at the elbow, the wrist, and the three knuckles. And each part from the joint downwards can act more or less as an independent lever. But independent action is to be avoided. Writing should, as soon as possible, become a unified automatic process which is carried out almost unconsciously in obedience to a simple impulse.

This principle is almost universally observed in the modern infant school. Young children will use their fingers in writing if they have the chance; for they can use them, although they cannot control them. It is, therefore, not sufficient to tell them to use the whole arm; it must be made impossible for them to do anything else. When they write in large text on a blackboard, or a big piece of brown paper, with a thick piece of chalk, their hands are so small and the movements so large that they cannot to any appreciable extent bring their fingers into play. When Montessori methods are used the same prin-

[1] See the *Journal of Educational Psychology*, vol. vii., No. 8, p. 493.

ciple is observed. In tracing the outline of insets or moving the finger along a large sand-paper letter the child is training the larger muscles of his arm. In this large kind of work the young left-handed beginner feels his disadvantage much less than when he comes to deal with smaller script. His difficulties are met gradually. After the chalk the pencil; after the pencil the pen.

The pen introduces new difficulties. It is a tool which can be variously used. The fifteenth-century writers, who represent the final perfection of penmanship before it was imitated and taken over by the printing press, used the pen as a wedge-shaped instrument held at a natural angle (Fig. 9, *c*). And it produced writing of the style given in Fig. 10, i. In the sixteenth century writing ceased to be a vocation, and in the centuries that followed the professional penman was no longer a craftsman, but a pedagogue. He taught

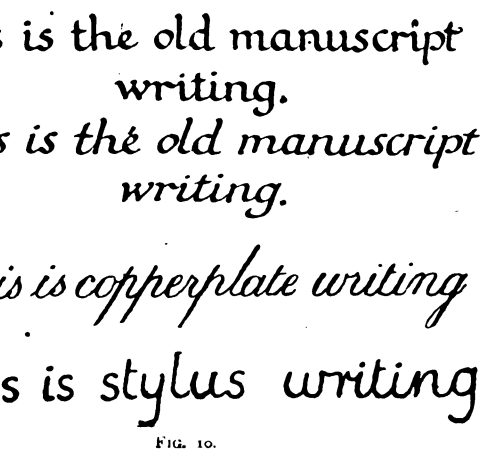

FIG. 10.

people how to write a cursive hand, and the less like print it was the better he was pleased. The pen came to be used in a new way—not merely as a tool with a rigid end, but as a tool with a fine flexible point. The thick lines were no longer made—or at least no longer exclusively made—by the angle at which the pen was held, but by pressure upon the nib. As a rule the pen was held as in Fig. 9, *b*, and the script appeared as in Fig. 10, ii. Neither of these styles is quite suitable for the left hand. The first is almost impossible unless some special device be used such as will be described in the next article; the second is difficult, but possible. The only kind that makes no unnatural demand upon the resources of the left hand is the third, which may be called stylus writing. The skeletal form here given may be modified in a variety of simple ways. In practice it would mean that the teacher who taught his class either of the first two styles of writing should refrain from exacting a similar script from his left-handed pupils. The ambitious among them may be able to achieve the second style; but the teacher should be contented if they achieve the third, which, as a matter of fact, is quite as good.

(To be continued.)

PERSONAL PARAGRAPHS.

DR. J. B. MULLINGER, the historian of the University of Cambridge, died at Cambridge on November 22nd. Dr. Mullinger was educated at University College, London, and St. John's College, Cambridge, from which he graduated in double honours, having taken both the Classical and Moral Science Triposes. For a time he was lecturer at Bedford College, London. He then returned to Cambridge as Birkbeck lecturer on ecclesiastical history at Trinity College, and was lecturer also to the Teachers' Training Syndicate on the history of education. For many years he was librarian at St. John's College. One of the most important of his numerous books, and that for which he will probably be remembered longest, is the history of the University of Cambridge down to the decline of the Platonists. In conjunction with the late Dr. S. R. Gardiner, Dr. Mullinger published an introduction to English history, and with Canon Masterman a treatise on the age of Milton. Dr. Mullinger travelled abroad a great deal and had made a fine collection of photographs of the architectural features of the countries he visited. His manner was precise and marked by an old-world courtesy. His death has made a gap in the Historical School at Cambridge which it will be difficult to fill.

* * *

THE death is announced of Mr. Frank Ritchie, since 1904 secretary to the Common Entrance Examinations for public schools. Mr. Ritchie was a prominent member of the Preparatory Schools Association and of the College of Preceptors, to both of which bodies he gave his whole-hearted support. In recent years he served on the Selection Committee of the Admiralty dealing with the selection of candidates for Osborne. Among his many other educational activities was that of examiner in Latin for the College of Preceptors.

* * *

THE death is announced of the Rev. H. L. Brereton, Rector of Little Massingham, Norfolk. He was the son of the late Prebendary Brereton, himself one of the pioneers in the development of secondary education. Mr. Brereton was educated at the Norfolk County School and Cavendish College, Cambridge, both of which were founded by his father.

From 1887 to 1891 he was headmaster of the Gloucester County School, and in 1896 he became senior master of the North-Eastern County School at Barnard Castle. Upon his father's death in 1901 he succeeded him as Rector of Little Massingham, where he continued to interest himself in education.

* * *

Mr. W. W. Hewett, at one time of Field House, Rottingdean, Brighton, a preparatory school at which Admiral Jellicoe was once a pupil, died in September last at the age of seventy-seven and left estate to the net value of £65,000. Subject to legacies of £500 each to the executors, he left all his property in trust for his sister for life, and on her death, among other bequests, £2,000 to Corpus Christi College, Cambridge.

* * *

The Holt School has suffered a great loss by the death in action on November 5th of Mr. Percy J. Auger, the senior French master. Mr. Auger had been in charge of the Modern Language Department of the school since its opening. He volunteered for active service on the outbreak of the war, and joined the Liverpool Scottish as a private. He acted for some time as a dispatch rider, and was killed in the recent advance on Passchendaele. The headmaster of Holt School, Mr. C. W. Bailey, in communicating the sad news to the school said that Mr. Auger had given many years of his life to the promotion of a good understanding between his country and France. He was more than a teacher of French, he was a leader in the Entente Cordiale between the two peoples. He had been a lecturer at Lille University, and was a master of arts in French of Liverpool University. He was a teacher of rare sympathy, a simple, knight-like man, full of courtesy and kindness. In a recent letter home he had said: "I feel quite prepared to make the supreme sacrifice, should it be God's will. Never have I been more convinced of the righteousness of our cause, and I shall count myself honoured to die for England's sake."

* * *

The Governors of the Kingsbridge Grammar School have appointed Mr. P. H. Wykes as headmaster in the place of the Rev. W. Watson, who recently resigned the position upon accepting a vicarage near Exeter. Mr. Wykes was educated at the Wrexham County School and at Balliol College, Oxford. Upon leaving Oxford, Mr. Wykes was appointed senior mathematics master at Loughborough Grammar School. After four years he was appointed to the staff of the Bradford Grammar School, where he has remained until appointed to Kingsbridge. Mr. Wykes was a member of the Executive of the Assistant-masters' Association and a member of its Education Sub-committee.

* * *

The Assistant-masters' Association is again suffering from the loss of its honorary secretary. Mr. Blades has had to give up his work for the association on account of ill-health. When at Watford as a colleague of Mr. G. D. Dunkerley he began to work energetically on behalf of the association, and interested himself particularly in the question of salaries. He is the last of a list, now becoming long, of men whose health has broken down in the service of the association.

* * *

The Senate of Cambridge University has decided to mark the second visit of the N.U.T. to Cambridge at Easter next by bestowing three honorary degrees of M.A. on prominent members of the union. The members chosen are Mr. G. E. Hamilton, Mr. Underdown, and Mr. Flavell. Mr. Hamilton has been prominent in the councils of the union almost since its inception in 1870. He was treasurer by annual election from 1884 to 1916. Hamilton House is named after him, and a medallion bust of him has recently been placed in the council chamber of the union. He is one of the honorary members of the union. Mr. Underdown is the president of the union until Easter next. He began his year of office as an assistant-teacher, but has now been appointed headmaster of a large school in Bristol. He represented the assistant-teachers on the Teachers Registration Council until he was disqualified by his recent appointment. He is also a member of the Departmental Committee on Salaries. Mr. Flavell is headmaster of a large primary school in Birmingham. He has the longest record of service on the Executive of the union of any man who has not already received an honorary degree.

* * *

Miss C. F. Stock, M.A. in Honours of St. Andrews, senior history and English mistress at Princess Helena School, Ealing, has been appointed headmistress of the Guildford High School for Girls in succession to Miss Millicent Simmons. Miss Simmons was educated in Germany, at University College, Aberystwyth, and at the Cambridge Training College. For nearly two years before going to Guildford she was a mistress at St. James's, West Malvern.

* * *

Mr. W. M. Carey, second master of the Rutlish School, Merton, has been awarded the Distinguished Service Medal of the Royal Life-

saving Society in recognition of the valuable work he has done in encouraging proficiency in swimming among schoolboys. This much-coveted honour has been given only twice in the whole British Empire since 1914, and Mr. Carey's many friends will join with me in congratulating him on a well-deserved honour. During the fourteen years in which Mr. Carey has directed the swimming activities of Rutlish School his aim has been to produce a large number of good all-round swimmers rather than a few racing experts, and to encourage the older boys to become instructors and inspectors of swimming and life-saving classes. Since 1910 the life-saving classes at the school, with one exception, have all been drilled and instructed by boy teachers; and since 1913 fifteen boys have won the Amateur Teachers' Certificate of the Southern Counties Amateur Swimming Association. The Rutlish School swimming records show that during the last ten years the school has gained 384 awards of the Royal Life-saving Society, including nine Awards of Merit (silver medals). During the past season Rutlish School received honourable mention in the competition for the 100-guinea "Darnell" Excellence Trophy of the Royal Life-saving Society, open to all schools and colleges in the British Isles; and the school now holds the championship shield, the senior team cup, the diving shield, and the life-saving shield of the Surrey Secondary Schools' Swimming Association.

ONLOOKER.

CONSIDERED SUGGESTIONS FOR EDUCATIONAL REFORM.

PROS AND CONS.

II.

THE memoranda put forth by bodies concerned with education summarising their policy are so numerous that most of us can scarcely keep count of them, much less digest them. Excerpts from some seventeen recent expressions of opinion, arranged under heads and presented with notes from Mr. Fisher's Bill and other sources, may interest readers of THE SCHOOL WORLD.

In the hope of promoting peace, points have been selected showing our unhappy divisions rather than those on which all of us are agreed. *Du choc des opinions jaillit la lumière.* There is no hope for education until political quarrels yield to the benefit of the children.

The reports fall naturally into three groups:—

(1) Those of purely professional bodies, whose members see more of the results of the present educational system than outsiders, and whose suggested remedies vary as much as theirs.

(2) Those of officials, whose one idea is organisation. "Uniformity must tire at last, though it is a uniformity of excellence," said Johnson.

(3) Those of educationists and associations such as the W.E.A., whose views must be respected, even if they are contrary to logic.

It is not necessary to say anything here about the Bill. Every excerpt is a direct or indirect comment on it. The success of the Bill depends upon the supply of teachers required to carry out its provisions. On this point criticism will be found under the heading "Teachers" (xviii). Finally, nothing will put our educational machinery in order until someone arises who will break down Nehushtan and rear a structure from the tower of preparatory education to the fenced cities of the universities. Now is the appointed time. Where is the prophet?

Our extracts, as a rule copied verbatim, in two or three cases condensed, have been taken from the following sources:—

(1) Assistant-masters' Association. "Educational Policy." (I.A.A.M.)
(2) Board of Education Report. (Brd. of Ed.)
(3) Civil Service Examinations Report. (C.S.Exx.)
(4) Directors and Secretaries for Education. "Towards an Education Policy." (Assoc. of D. and S.)
(5) Domestic Subjects, Memorandum of Teachers of. (Mem. T. of D. Sub.)
(6) Education Committees. Report of Executive. (Ed. C. Assoc.)
(7) Education Officers' Association Policy. (Assoc. Ed. Offs.)
(8) Education Reform Council Report. (Ed. R.C.R.)
(9) Mr. Fisher's Bill. (F.'s Bill.)
(10) Headmasters' Association. "Educational Policy." (I.A.H.M.)
(11) Headmistresses' Conference. (Hd. Mistr.)
(12) British Science Guild. "National Education." (B.S.G.)
(13) Teachers' Registration Council. "Resolutions." (T.R.C.)
(14) Technical Institutions Association. (Assoc. T.I.)
(15) The *Round Table* (June). "Education of the Citizen." (*R.T.*)
(16) University of London. "Memorandum." (Univ. of Lond.)
(17) Workers' Educational Association. (W.E.A.)

The memoranda are referred to in brackets under the abbreviated titles, and have been analysed under the headings given below:—

(i) Administration; (ii) character training; (iii) children under school age; (iv) Civil Service examinations; (v) continuation schools; (vi) curriculum; (vii) education in schools; (viii) examinations; (ix) finance; (x) general; (xi) governing bodies; (xii) health, care of;

(xiii) inspection; (xiv) L.E.A.s; (xv) organisation of schools; (xvi) scholarships; (xvii) secondary schools; (xviii) teachers: training, salary; (xix) teaching; (xx) university education.

(xi) GOVERNING BODIES.[1]

(1) Greater emphasis should be laid on the value of governing bodies even in the case of schools directly under the L.E.A. . . . The number of schools the governing bodies of which contain *bona-fide* representatives of universities might be increased with advantage. (I.A.H.M.)

(2) That the governing body shall include a substantial number of representatives of the learned and scientific societies, and that members of the governing body shall not hold office for life. (Univ. of Lond.)

A good governing body is a treasure to a school. Such bodies must not be browbeaten by the L.E.A. or neglected by the Board of Education, which is too apt to pander to the more powerful authority. On the other hand, governing bodies must learn to look on the head of the school as a person worthy of as much consideration as they expect for themselves.

(xii) CARE OF HEALTH.

(1) Increased attention should be given by L.E.A.s to medical treatment and physical training, and the supervision of this work should remain with the Board of Education. (Assoc. of D. and S.)

(2) That L.E.A.s should have power to conduct medical inspection and to give medical treatment in secondary schools maintained by the L.E.A.s, and in all aided schools in which satisfactory provision in this respect is not made. (Assoc. Ed. Offs.)

(3) All schools should be medically inspected at least once a year by a school medical officer, who should be in close touch with the head of the school, and through him with the parents. (I.A.H.M.)

(4) (We desire) the provision of conveyances to and from school in outlying districts where children have more than one mile to walk. (W.E.A.)

(5) All schools (including public and private secondary and preparatory schools) should be medically inspected by a public authority. (Ed. R.C.R.)

(6) Part ii. authorities shall have power to make provision for the medical inspection and treatment of pupils in their secondary, continuation, and other schools. (F.'s Bill.)

(7) That we regret the permissive character of most of the clauses dealing with the promotion of physical well-being. (W.E.A., N.W. Branch. Resolutions on the Bill.)

The W.E.A. deplores the permissive character of the Bill in this and other cases. Permission will be of no avail when an authority is unwilling to improve.

(xiii) INSPECTION.

(1) Inspectors should have had at least ten years' experience of secondary teaching. (I.A.A.M.)

(2) Of the seven great public schools, with 3800 pupils between them, two—Harrow and Rugby—had been inspected and pronounced efficient by the Board. Of 110 conference schools, with about 35,000 pupils, thirty-six, with 11,000 pupils, had been inspected and approved by the Board; thirty-four schools, with upwards of 10,000, received grants; of the balance, twenty-seven schools, with 13,000 pupils, were neither inspected nor in receipt of grants. (Earl of Crawford in the House of Lords.)

(3) Schools which are recognised as efficient by the Board, and the efficiency of which is assured by the Board's inspection, should not be required for any purpose to submit to inspection by any other body or authority. (I.A.H.M.)

The worst of it is that one set of inspectors might pronounce a school efficient, another set condemn it as inefficient, while a third set might disagree with large parts of the reports of the other two bodies. Dislike of inspectors is, no doubt, inimical to recruiting for the schoolmaster's profession. An idea is abroad that a master's reputation is too much at the mercy of a man really unqualified to judge work done in a school. Quite naturally, a sensible man will not plunge into a profession the difficulties of which are evident to any inquirer and the rewards inadequate.

(xiv) LOCAL EDUCATION AUTHORITIES.

(1) The teaching profession should be adequately represented on all bodies which control or administer education. (I.A.A.M.)

(2) Schemes of L.E.A.s should deal only with the local provision of education. Public schools and other non-local institutions receiving no assistance from the authority should remain outside their scheme. (Assoc. of D. and S.)

(3) L.E.A.s are too chary of applying the principle of devolution. (I.A.H.M.)

(4) In all educational administration and in the conduct of public examinations fuller use should be made of the services of teachers actually engaged in school work. (T.R.C.)

Until the nation sends better men to serve on councils and supports them, the L.E.A.s will remain what they are, and the blame will rest on the apathetic citizen who will not take his share in public affairs. At present the doctrinaire, the official craving for uniformity, and the indolence of parents are robbing children of their inheritance. No national scheme of education can be complete that does not deal with all schools, private and public alike.

(xv) ORGANISATION OF SCHOOLS.

(1) The teaching of domestic subjects should be made compulsory for all girls in elementary, secondary, and continuation schools. (Mem. T. of D. Sub.)

(2) Manual training and domestic science should become at once a considerable part of the ordinary curriculum of every school and not be considered extras. . . . In secondary schools there should be an increase of science teaching. . . . (Ed. C. Assoc.)

[1] Sections (i) to (x) were published in our December, 1917, issue (vol. xix., p. 414).

(3) The time for transference from elementary to secondary or technical education should be determined by standard rather than by age. Some pupils will reach the necessary standard at ten and a half to eleven, others at eleven and a half to twelve. In general transfer should not be postponed beyond the end of the twelfth year. (I.A.A.M.)

(4) The transference from elementary to secondary schools should take place between the ages of eleven and twelve. . . . In secondary schools, including endowed and public schools, pupils should remain as a rule until the end of the term in which the seventeenth birthday occurs. Financial provision should be made to enable suitable pupils to remain at school until they enter the university.

Encouragement should be given to the formation of "intermediate" or "practical" classes (or schools) for children whose intelligence is not successfully developed by the ordinary school curricula and methods. (Ed. R.C.R.)

(5) No class in an elementary school should consist of more than forty children; each class should ordinarily have its own room and should be in charge of a qualified teacher. (Assoc. of D. and S.)

(6) Every secondary school should be so equipped as to be able to provide for the education of pupils up to the age of eighteen in all branches of the curriculum. (I.A.A.M.)

(7) The head of every school should have the general control of the internal organisation, including the choice of books, the methods of teaching, and the arrangement of school hours. (I.A.H.M.)

(8) Literary, linguistic, mathematical, and scientific studies should be regarded as fundamental branches of knowledge, and each pupil should receive some instruction in all these branches. These subjects should, as a rule, be continued (beyond sixteen), and public and secondary schools should not undertake specialised training in professional subjects. Opportunities for learning Greek and Latin should be given in one or more schools in every educational area. While it is not desirable that it should be compulsory on all pupils, some form of artistic and manual training is to be regarded as of very high importance. (Univ. of Lond.)

(9) That the decimal system should be adopted universally for money, weights, and measures. (Assoc. Ed. Offs.)

Much depends on the age of entry into a secondary school. France has two "preparatory years," and in the "elementary division" two classes, before we reach the lowest class of the "premier cycle" of four years, followed by the "second cycle" of three years, leading to the "baccalauréat" at eighteen to nineteen years. So we may put the age of entry at about eight. In Germany the age of admission into a secondary school is eight to nine. Switzerland allows boys of nine to ten to enter a secondary school.

To keep pace with Europe, England must not delay secondary education beyond the age fixed on the Continent.

(xvi) SCHOLARSHIPS.

(1) An increase in the amount of contribution made from public funds is needed for scholarships (boarding and otherwise), free places, and maintenance grants. . . . There should be made a more equable distribution of these throughout the country. . . . Transference to other schools should be arranged for. . . . There should be scholarships open to all, without restriction as to the original place of education. No scholarship tenable at a day-school should cover more than the expenses of education, books, and travelling. (I.A.H.M.)

(2) The 25 per cent. free-place system is illogical in principle and unsatisfactory in practice. (Ed. R.C.R.)

(3) It is desirable that there should be a large increase in scholarships and maintenance grants tenable at technical schools and colleges by pupils from primary and other schools. (Assoc. T.I.)

(4) University scholarships should be less specialised than at present. (I.A.A.M.)

(5) Power is given to an L.E.A. to make arrangements for the provision of board and lodging to enable children to receive the benefit of efficient elementary education—with the approval of the Board. (F.'s Bill.)

It is unfortunate that the present system of confining free places to candidates from elementary schools is continued. The system is good neither for education nor for economy. It encourages parents to batten on the State, and snubs people who are willing to pay their way and to be independent. A little more of the *Liberté, Egalité, Fraternité* spirit in English politicians would teach them that the only fair claim on the State for free education must rest on the amount of the parents' income. The conditions under which free places are now offered lend themselves to great abuse.

(xvii) SECONDARY SCHOOLS.

(1) The council supports the principle of abolishing fees in secondary schools for the maintenance of which an L.E.A. is responsible, and also the principle of a due number of free places in secondary schools which are partly maintained by State grants. (T.R.C.)

(2) That the number of full-time day-schools of varied types providing education higher than elementary should be largely increased. (Assoc. Ed. Offs.)

(3) Adequate provision should be made for secondary education of a technical character for boys and girls between twelve and sixteen, in addition to secondary education which is mainly "literary" or "classical."

Where the provision is at present inadequate, L.E.A.s should establish secondary schools of a high educational type, preparing for the universities and the professions. (B.S.G.)

(4) Continued secondary education from age sixteen to eighteen should be preparatory to (*a*) university education, or (*b*) business or professions.

No institution should be permitted to receive pupils below the age of sixteen years, unless it has been recognised as efficient for the purpose by the Ministry of Education. (I.A.A.M.)

(5) We wish to bring private educational institutions into closer and more convenient relation to the national system. . . . I fear that not a few private-venture schools are frauds on the public. The teaching is deplorable; the buildings are inappropriate; there is no adequate security for the health and progress of the pupils. (Mr. Fisher in the House of Commons.)

Secondary education will always be hampered by the influx from elementary schools of children living in uncultured homes, unless they are transferred at an early age—earlier than children from preparatory schools. A free democracy cannot afford to deprive its little ones of even a year of higher education. The numbers in elementary schools must be lessened by direct encouragement to parents, as regards fees, to send their children early to secondary schools. For the benefit of poorer children, too, Parliament must insist on "advanced courses" being established. As appears at present, the Board allows advanced courses only in a few schools, and is far from encouraging as many schools as are willing to help boys to gain "those treasures of the mind, that source of pure enjoyment," of which Mr. Fisher so eloquently speaks, and so to travel on the broad highway to the university.

(xviii) TEACHERS: TRAINING, SALARY.

(1) A complete revision and substantial improvement of the scale of salaries should be made at an early date in order to attract to the schools suitable men and women. Pensions should be provided on the Civil Service scale. Half-measures, such as verbal persuasion and doles towards the training of those who do not feel any bent towards the work, are ineffective. (Ed. R.C.R.)

(2) The minimum-salary scale for teachers in boys' schools should include a commencing salary of not less than £150, rising automatically by annual increments of £15 to at least £450. The minimum scale should be uniform throughout the country, with allowances for teachers living where the cost of living is relatively high. (I.A.A.M.)

(3) In order to secure an adequate supply of trained elementary-school teachers, it will be necessary substantially to raise salaries. (Assoc. of D. and S.)

(4) The present grave crisis in the supply of teachers is not to be met by a system of doles to parents in the shape of maintenance grants to children during school life conditional on a pledge to enter the teaching profession, but by making the teaching profession desirable in respect of salaries, prospects of advancement, and pensions. (I.A.H.M.)

(5) No system of training teachers can, however, be of any avail, unless the conditions of subsequent service are such as to attract students of the right type. (Mem. T. of D. Sub.)

(6) Reforms outlined in Mr. Fisher's Bill require some 4,000 men teachers to restore merely the old normal conditions. The extension of school age until fourteen means 5,000 more; if extension to fifteen is encouraged, an additional 2,500 may be needed; day continuation schools may eventually demand 25,000 teachers; nursery schools may have to be staffed with 25,000 teachers. (Mr. Crook, *Times Educ. Supp.*, August, 1916.)

(7) Sir James Yoxall, M.P., general secretary of the National Union of Teachers, speaking at Beverley, announced that it had been decided that in districts where the local county and education authorities were not paying adequate salaries to teachers the union would give financial assistance in removing the teachers to better-paid districts.

He predicted that in fifteen years there would be a famine in teachers. To maintain the number of teachers required for the existing classes, 30,000 recruits to the profession would be needed annually, whereas he did not believe there were 12,000.

(8) That, in view of the heavily increased demand for teachers which will follow upon the raising of the school-leaving age and establishment of continuation schools, we strongly urge that immediate steps be taken to increase the supply of competent teachers. . . . That we deplore the omission from the Bill of any limitation upon the size of classes. (W.E.A., N.W. Branch. Resolutions on the Bill.)

There is only one solution to this difficulty: schoolmasters and schoolmistresses must be given attractive salaries paid by the State. It is quite useless for highly paid officials to talk about the nobility of the teaching profession in the hope of catching more innocents.

The supply of masters in secondary schools has not been equal to the demand for some years. Nor will the recent action of the Board create confidence among hesitating aspirants. The Board regards teachers' salaries as the primary object to which the new grant should be applied, and leaves the application of it to the authorities. As a result of this weak policy, some schools spend the whole grant on salaries, and began doing so last July; in other schools the whole staff may fare well in the future; in yet other schools a part of the staff will benefit to a small extent sooner or later. The uncertainty of prospects thus demonstrated deters many a man from "taking to teaching."

(xix) TEACHING.

(1) In schools of all types it is necessary to provide against the classes being too large to permit of that individual care which is indispensable to physical, moral, and mental development. (T.R.C.)

(2) A greater number of teachers in proportion to the number of pupils is required. (Hd. Mistr.)

(3) In trade schools, technical schools, and continuation schools there would seem to be a distinct advantage in adapting the teaching to local needs. (Ed. C. Assoc.)

(4) The imparting of the technical elements of a trade is not in itself an education. (I.A.H.M.)

(5) That all teachers should possess some certificate of general education, together with a teaching certificate; such education, as well as the training leading to a certificate, should vary to suit varying types of schools. (Assoc. Ed. Offs.)

(6) Much has yet to be learnt, however, before the factors of mental development are fully understood, and methods of instruction based upon them can be formulated. (B.S.G.)

One sometimes wonders whether what we call education is really anything better than the acquisition of information, and whether intellect is actually trained or merely grows naturally. An educated genius is only superior (if superior) to the uneducated genius by his store of information, so far as brains are concerned.

(7) The maximum teaching hours should in no case exceed twenty a week, other duties two—or five in boarding-schools. The performance of extra duties should carry extra pay. (I.A.A.M.)

And yet unfortunate secondary-school masters who may labour in school twenty-eight hours weekly and spend an hour or more daily in correcting home-work are encouraged by education authorities to devote several hours each week to teaching in evening classes. Worst of all, they are often obliged to undertake this work to support their wives and families. Thus the nation rewards those who undertake pastoral duties.

(xx) UNIVERSITY EDUCATION.

(1) That the conditions for admission to universities should be reconsidered and rendered more uniform as between different universities, and less uniform as between different faculties and honour schools in the same university, and that, in the interest of candidates of mature age and non-school candidates, university entrance tests should be distinguished from secondary-school examinations. (Assoc. T.I.)

(2) There should be more intimate connection between universities and schools, considerable increase in facilities enabling students of ability to proceed to universities who cannot afford to do so at their own expense, greater provision for research work of all kinds, fuller recognition of the relation of universities to the vital industries of the country. The fact of having passed a suitable certificate examination should be sufficient proof of fitness for admission to a university, irrespective of the particular subjects endorsed on the certificate. (I.A.H.M.)

(3) The selection of students for scholarships to the universities and institutions for higher education should be based upon an expert review of the relevant qualifications rather than upon a central competitive examination. Such relevant qualifications are: the school record, examination record, probable career, general personal fitness. (Ed. R.C.R.)

(4) Further encouragement should be given (by more liberal grants) to the development of higher technological training and research. Tutorial classes involving regular attendance for a period of at least three years should be supported. Provision should be made for highly qualified students from these classes to proceed as full-time students to the universities or to attend special university courses in the evenings or in the summer. (B.S.G.)

(5) No boy should be admitted to a university under the age of eighteen. (Assoc. T.I.)

(6) Any scholarship to be held at a university awarded to a girl candidate under the age of eighteen should be held over until the candidate reaches that age. (Hd. Mistr.)

(7) Oxford and Cambridge should confer degrees on women "graduates." (Hd. Mistr.)

Amid the cries for giving scholarships on "general attainments" (whatever that may mean), there are voices calling for greater knowledge of subjects and more research. There is, in fact, a conflict between those striving for higher education and those striving for broader education. Both parties have good intentions, but neither party must be allowed to triumph over the other. The difficulty is complicated by the fact that boys go to Oxford and Cambridge, in some cases, quite up to degree standard, in others up to no standard at all.

The general standard of admission to the older Universities sorely needs to be raised.

THE MOST NOTABLE SCHOOL BOOKS OF 1917.

THE compilation of the following short list of books published during 1917 has been entrusted to experienced teachers familiar with the needs of schools.

The compilers have had a free hand, and attention has not been confined to books reviewed in these columns.

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

In some subjects the number of notable books is too small to justify separate lists, but we shall include the few books which deserve mention in our lists of next year.

Classics.

"The Fragments of Sophocles." Edited, with additional notes from the papers of Sir R. C. Jebb and W. E. Headlam, by A. C. Pearson. Three vols. (Cambridge University Press.) 45*s.* net.

"M. Annæi Lucani De Bello Civili. Liber viii." Edited by J. P. Postgate. (Cambridge University Press.) 3*s.* net.

"Homer: Odyssey i.–xii." Second edition. (Oxford Classical Texts.) (Oxford University Press.) 2*s.* 6*d.*, 3*s.*, 5*s.* 6*d.*

"Æneas at the Site of Rome." Observations on "Æneid," Book viii. By W. Warde Fowler. (Blackwell.) 4*s.* 6*d.* net.

"The Original Element in Plautus." By K. M. Westaway. (Cambridge University Press.) 2s. 6d. net.

"Cicero: Pro Lege Manilia." Edited by A. C. Clark and C. E. Freeman. (Clarendon Press.) 2s. 6d.

"A Greek Reader for Schools." Edited by C. E. Freeman and W. D. Lowe. (Clarendon Press.) 2s. 6d.

"Perse Latin Plays." Second edition. By R. B. Appleton. (Cambridge: Heffer.) 1s. 6d.

"Selected Letters of Cicero." By H. M. Poteat. (Harrap.) 2s. 6d. net.

"Secundus Annus." By C. L. Mainwaring and W. L. Paine. (Clarendon Press.) 2s. 6d.

English Language: Grammar and Composition.

"English Grammar: Descriptive and Historical." By T. G. Tucker and R. S. Wallace. (Cambridge University Press.) 3s.

Scholarly, sensible, and of reasonable length.

"English Prose Extracts for Repetition." By E. H. Blakeney. (Blackie.) 8d.

"A First Book of English Prose for Repetition." By J. H. Fowler. (Macmillan.) 9d.

Two excellent selections, which would supplement each other. They should help the pupil in learning how to write.

"First Course of English Phonetics." By H. E. Palmer. (Heffer.) 2s. 6d. net.

A very useful elementary book, with valuable exercises.

"An English Pronouncing Dictionary on Strictly Phonetic Principles." By Daniel Jones. (Dent.) 6s. net.

An important work: valuable on both the scientific side and the practical.

"The Rudiments of Criticism." By E. A. G. Lamborn. (Clarendon Press.) 2s. 6d. net.

A simple introduction to the study of poetry, which the English teacher should find worth reading.

History.

"An Analytical Outline of English History." By W. E. Haigh. (Oxford University Press.) 3s. 6d. net.

"Pages of Britain's Story." (Selections from sources A.D. 597–1898.) By J. Turral. (Clarendon Press.) 2s. 6d. net.

"British Foreign Policy in Europe to the End of the Nineteenth Century." By H. E. Egerton. (Macmillan.) 6s. net.

"The Old Empire and the New." By A. P. Newton. (Dent.) 2s. 6d. net.

"Outlines of Medieval History." By C. W. P. Orton. (Cambridge University Press.) 10s. 6d. net.

"Notebook of Mediæval History." By C. R. Beazley. (Clarendon Press.) 3s. net.

"The Later Middle Ages: 1254–1494 A.D." By R. B. Mowat. (Clarendon Press.) 4s. 6d.

"Political and Social History of Modern Europe." Vol. i., 1500–1815. 8s. 6d. net. Vol. ii., 1815–1915. 10s. net. By C. J. H. Hayes. (New York: The Macmillan Co.)

"The Expansion of Europe." By Ramsay Muir. (Constable.) 6s. net.

"History of Commerce and Industry." By C. A. Herrick. (New York: The Macmillan Co.) 7s. net.

"France." By W. H. Hudson. (Harrap.) 10s. 6d. net.

"Spain." By David Hannay. (Jack.) 3s. 6d. net.

"Portugal." By G. Young. (Clarendon Press.) 5s. net.

"Italy." By E. M. Jamison and others. (Clarendon Press.) 6s. 6d. net.

"The Teaching of History." By C. H. Jarvis. (Clarendon Press.) 4s. 6d. net.

Chemistry.

"Chemists' Year Book." By F. W. Atack. (Manchester: Sherratt and Hughes.) Two vols. 10s. 6d.

An invaluable annual, much enlarged; indispensable in the laboratory.

"Synthetic Dyestuffs." By J. C. Cain and T. E. Thorpe. Third edition. (Griffin.) 16s. net.

A standard work, embracing many practical laboratory preparations.

"A Text-book of Inorganic Chemistry." Edited by J. N. Friend. Vol. iv. (Griffin.) 15s.

Deals with aluminium and its congeners in a comprehensive manner.

"Manufacturing and Industrial Chemistry." By G. Martin. (Crosby Lockwood.) 25s.

Deals with the inorganic side of manufacturing chemistry, and gives a broad survey of all the diverse operations met with in this great industry. Will be found useful in correcting erroneous impressions obtained from the text-books.

"The Theory and Use of Indicators." By E. B. R. Prideaux. (Constable.) 12s. 6d. net.

Up-to-date exposition of current theories.

"A Text-book of Thermo-Chemistry and Thermo-Dynamics." By Otto Sackur. (Macmillan.) 12s.

For the teacher who desires to keep in touch with his subject.

"Chemical Discovery and Invention in the Twentieth Century." By W. A. Tilden. (Routledge.) 7s. 6d. net.

"A Class-book of Organic Chemistry." By J. B. Cohen. (Macmillan.) 4s. 6d.

The best text-book on this subject for upper forms and scholarship classes.

"Standard Methods of Chemical Analysis." By W. W. Scott. (Crosby Lockwood.) 30s.

Useful for reference.

"Text-Book of Inorganic Chemistry." By A. F. Holleman. (Chapman and Hall.) 12s. 6d.

A manual with a strong leaning to the physical side of the science.

Physics.

"A Text-book of Physics." Edited by A. W. Duff. Fourth edition. (Churchill.) 10s. 6d. net.

"Atoms." By Prof. Jean Perrin. Translated by D. Ll. Hammick. (Constable.) 6s. net.

"Electric and Magnetic Measurements." By C. M. Smith. (Macmillan.) 10s. 6d. net.

"Advanced Text-book of Magnetism and Electricity." By R. W. Hutchinson. (Clive.) Two vols. 8s. 6d. net.

"Electrical Laboratory Course, for Junior Students." By M. Maclean. (Blackie.) 2s. net.

"The Electron: its Isolation and Measurement, and the Determination of some of its Properties." By Prof. R. A. Millikan. (Cambridge University Press.) 1.5 dollars net.

"The Elementary Principles of Wireless Telegraphy." By R. D. Bangay. Part ii., second edition. (The Wireless Press.) 2s.

Botany and Nature-Study.

"Name This Flower." By Gaston Bonnier. (Dent.) 6s. net.

A simple illustrated key for the identification of common flowering plants and ferns. Invaluable to students of botany.

"Nature-study Lessons Seasonally Arranged." By J. B. Philip. (Cambridge University Press.) 2s. 6d. net.

Studies of well-selected plant types.

"A Handbook of Nature-study for the Primary Schools of Burma." By E. Thompstone. (Longmans.) 4s. 6d. net.

Contains accounts of tropical plants and animals.

"British Grasses and their Employment in Agriculture." By S. F. Armstrong. (Cambridge University Press.) 6s. net.

A desirable book for the botanical reference library. Has good illustrations and keys for identification.

"The Vegetable Garden." By Ed. J. S. Lay. (Pupils' Class Book Series.) (Macmillan.) 1s. 6d.

"The Cultivation of Allotments." By Percy Elford and Samuel Heaton. (Clarendon Press.) 8d. net.

"Food Gardening for Beginners and Experts." By H. Valentine Davis. (Bell.) 6d. net.

Three useful Guides to the patriotic utilisation of school gardens.

"How to Collect and Dry Flowering Plants and Ferns." By H. S. Thompson. (Routledge.) 7d. net.

Full of practical hints.

"The Study of Animal Life." By J. Arthur Thomson. (Murray.) 6s. net.

A revised edition of a deservedly popular book.

ITEMS OF INTEREST.

GENERAL.

THE Chancellor of the Exchequer informed the House of Commons on December 13th that the Education Bill would not be proceeded with before the Christmas vacation. He announced also that a new Education Bill, containing amendments to meet criticisms on the former Bill, now allowed to lapse, would be introduced by Mr. Fisher under the ten minutes' rule. The new Bill will be brought in on January 14th, and it is hoped it will be passed into law without delay.

THE sixth annual conference of Educational Associations is being held this year from January 2nd to 12th at University College, Gower Street, London. Sir John D. McClure will open the proceedings at 3 p.m. on January 2nd with an address. More than twenty associations are holding meetings, full particulars of which can be obtained from Mr. F. Fairman at 9 Brunswick Square, London W.C.1.

THE annual general meeting of the Historical Association will be held on January 11th and 12th at University College, Gower Street, London. The annual address will be delivered at 5.30 p.m. on the first day by Sir Paul Vinogradoff on "Troubled Times in Russian History." At 10.30 a.m. on the second day papers will be read on "The Effect of the War on the Teaching of History," by Prof. Paul Mantoux, Miss Noakes, and Mr. S. M. Toyne.

THE annual meetings of the Geographical Association will be held on January 5th and 7th at the London Day Training College and King's College, London. The presidential address will be delivered by Sir W. M. Ramsay on "The Great Goddess, Mother Earth," on the second day at 5 p.m. at King's College.

THE Army Council has made some alterations in the regulations for admission to Sandhurst, Woolwich, and Quetta. The elementary mathematics paper is to be increased by an additional arithmetic paper, in which all candidates must make 75 per cent. of the marks. In like manner a trigonometry paper is to be added to the intermediate mathematics, and in this 50 per cent. must be gained by all candidates. The 2,000 marks for English history and geography were formerly divided as to 1,400 for history and 600 for geography; they are now to be 1,200 for history and 800 for geography. An oral examination is to be restored to French, but a note says that, "in the event of an oral examination being impossible, the whole of the marks will be allotted to the written paper." Considering that a majority of our officers are fighting in France, and that there is no deficiency of French examiners, it might have been thought that more importance would have been given to French. It would have made for greater smoothness of working between the two Allied Armies. A practical examination is to be restored to science, with the same proviso as for the French oral. We think that both candidates and their teachers have a grievance against the War Office for springing these alterations upon them just three months before an examination. Candidates take twelve to eighteen months over their special preparation for Army tests, and to have the syllabus altered just before they are going up must make a difference, although to the layman it might appear as if it were fair for all. A year ought to be the least notice allowed. Another point that should be altered is the difference between the War Office and the Admiralty as to reckoning the ages of candidates. For the March examination, candidates for the Army have to be seventeen and a half on March 1st, but for the special entry to the Navy they have to be seventeen and a half on December 1st previous. If there is a reason for the naval officer to be three months older we should be very glad to know it.

ON December 1st Mr. Cloudesley Brereton gave a lecture on "The French Child at School" to the Anglo-French Society. Mr. Brereton said that the child has been less studied in France than in England and America. In spite of Rousseau, the child

is a late discovery in France. There is a lack of juvenile literature in France. The absence of nurseries is one cause. The French child grows up with grown-ups. The French child is a town mouse, the English a country mouse. Each is a typical product of Latin and Northern culture respectively; one rather naive and spontaneous, the other self-conscious in the good sense. The family has, in France, an extreme importance; the Frenchman espouses, not a wife, but a clan. The French child receives a social education; hence most of it is given outside the school, and hence it is a common mistake to look in the French school for certain things that are naturally given inside the English school. The English parent desires a foster-parent in the schoolmaster The French parent prefers doing his own fostering. The French teacher, therefore, lays stress on instruction rather than on education. The French stress the æsthetic and intellectual side of education, the English stress the moral. French education is not without its faults—it tends to be too grown up. The moral for us is that English parents must learn to grow up with their children. Full particulars of the Anglo-French Society can be obtained from the honorary secretary, at 8 St. Martin's Place, London, W.C.2.

LADY BARRETT opened the London Garden School at Hampstead on November 30th. The new school is a branch of Leinster House School, Hyde Park. Hampstead is the pioneer of the play-garden methods of education for young children, but this new school takes children above as well as below twelve years of age. For the younger children there is a Montessori class. The principals' ideals include the development of the individual along the line of least resistance. Cultivation of whatever powers are latent in the whole body is to be fostered by every expedient. On the subject of the open-air life Lady Barrett said that all children should spend as many hours as possible in the open air. It is as important to their well-being as food and warm clothes. Little children should have their daily rest in the open air, and all children should take exercise out of doors. Miss de Normann also spoke, and traced the progress in educational methods from the board school, where facts were "injected" into the young child, to the new era introduced by Mme. Montessori, Prof. Dewey, and Mr. Edmond Holmes. Among the "peculiarities" of the school are natural, instead of arbitrary, rewards and punishments—there are no marks and no examinations, hence no harmful competition. There is no home-work, but any original work done by the children on their own initiative is accepted; there is complete rest and silence for a period after the midday dinner, followed by quiet handwork, accompanied by reading aloud. Work done by the pupils was on view at the opening, and consisted of interesting specimens of regional survey, stitchery, Boole curves as applied to mathematics, drawings, and so on.

THE annual report of the City of Bradford Education Committee for the year ended July 31st, 1917, is a very good example of what such reports should be, especially in respect of completeness and breadth of view. A report which is a mere routine collection of statistics is no doubt important enough in its way, but a report which also shows, by means of brief descriptions and explanations, how our national provision for education "works out" in a definite concrete instance is more important, and vastly more interesting. And this is what the Bradford report essays to do. Among the many points which would be worthy of mention, did space permit, we note a reference to some thoughtful schemes, prepared by the head-teachers of elementary schools, for the training of student teachers, along with some reasonable criticism of those schemes. We note, too, with regret, though not with surprise, that the number of entrants to the teaching profession, notwithstanding a substantial increase in the remuneration of student teachers and bursars, shows a considerable falling off. A human touch is added to the Bradford report in more places than one—for example, in recording honours gained by teachers and by old pupils, whether in war or in the arts of peace.

WE have received a copy of the official report of the proceedings relating to the dismissal from their posts of Prof. Cattell and Asst.-Prof. Dana, of Columbia University. The former, in spite of formal warning, had sent a letter, written on the official notepaper of the University, asking certain members of the House of Representatives "to support a measure against sending conscripts to fight in Europe against their will," and the latter had used his influence and his reputation as a university teacher, in connection with an organisation called the People's Council, in a way calculated to weaken the Government in the prosecution of the war. President Butler put the matter well when he said:—"So long as national policies were in debate we gave complete freedom, as is our wont and as becomes a university—freedom of assembly, freedom of speech, and freedom of publication—to all members of the University who in lawful and decent ways might wish to inform and to guide public policy. Wrongheadedness and folly we might deplore, but we were bound to tolerate. So soon, however, as the nation spoke by the Congress and by the President, declaring that it would volunteer as one man for the protection and defence of civil liberty and self-government, conditions sharply changed. What had been tolerable before became intolerable now. What had been wrongheadedness was now sedition. What had been folly was now treason."

THE Indian Bureau of Education has just issued, as one of a series of occasional reports, a report on the methods of school inspection in England, by Mr. H. G. Wyatt, an inspector of schools in India. We can well imagine that, though the analogy between the Indian school system and our own is by no means close, this report will be of great value to Indian teachers and administrators. But we think it will also prove most interesting from the English point of view as well, for though there are many scattered references to the subject in different reports, we do not remember seeing it comprehensively treated before. Mr. Wyatt begins with an "historical note," in which he traces the growth of the inspectorate from its tentative beginnings

in 1840 down to the present time. In subsequent chapters he deals with qualifications and training for school inspection, inspecting procedure in elementary schools, the co-ordination of different branches of the inspectorate, reports and inquiries, and the inspection of secondary schools. The condition of education is to a considerable extent reflected in the spirit and method of inspection—a fact which makes Mr. Wyatt's useful monograph one of general interest to teachers and officials.

FROM a review of the official publication, "Indian Population in the United States and Alaska, 1910," in the *Eugenics Review* for October, we learn that the United States Government has made considerable progress in the education of the children of full-blooded Indians and half-breeds. From 1877 to 1910 the expenditure on education was multiplied 187 times, while the total amount appropriated for all Indian affairs was only increased threefold. More than a quarter of the whole grant is now devoted to the schools. During the same period the number of schools has risen from 150 to 389, and the enrolment has increased from 3,500 to more than 30,000. The proportion of attendance to enrolment has steadily increased. Indian children between the ages of ten and fourteen go more frequently to school than negro children of the same ages, and between fifteen and nineteen 48 per cent. of the Indians attend school, a higher proportion than among the white or negro elements of the population. This educational enterprise extends to inhospitable Alaska, with its scattered nomad population.

WOMEN teachers from the United Kingdom are invited to volunteer for service as teachers for country schools in Western Canada. This invitation is urged as a means of bringing great influence to bear upon the large numbers of foreign emigrants who need to be assimilated into the rapidly growing population. Trained certificated teachers may begin teaching at once. Girls whose education has reached the standard of the Senior Locals may enter a normal school for a ten or twelve weeks' course of instruction for a third-class certificate, with which they may obtain a permit to teach for one year. The permit is renewable on the recommendation of the Government school inspector. Salaries commence at £120 per annum, and living arrangements are very satisfactory. Full particulars as to the cost of the journey, bursaries, and travelling arrangements can be obtained from the offices of the British Women's Emigration Association, the Imperial Institute, London, S.W.7.

SCALES of salaries for teachers are undergoing improvements in various localities. In Queensland, for example, a new scale of salaries for teachers in public schools has been adopted as a result of arbitration. A friendly conference of the departmental heads and representatives of the executive of the Queensland Teachers' Union was presided over by the Minister for Public Instruction. After much discussion an agreement was reached. The Queensland Cabinet and the Teachers' Executive concurred in the agreement. As a consequence of the intervention of other bodies of public servants an Order in Council was promulgated to disqualify any public servant in receipt of £300 per annum or more from the operations of the Arbitration Act. The net result, says the *Queensland Educational Journal*, of the whole process, which has occupied attention from May to August, is that an approximate increase of 25 per cent. has been obtained on the teachers' salaries, and that a male classified teacher may reach the salary of £300 per annum at the age of thirty-four. Other matters, such as allowances for the increased cost of living in remote districts, are still under consideration.

MUSEUMS are usually regarded as places to be visited by the individual. Only on rare occasions can a schoolmaster take his class to a museum for a special visit to meet a special need. Curators habitually regard the objects of their care as too precious to leave the museum. An article, "The American Museum and Education in Science," by Provost W. H. Carpenter, of Columbia University, in the September issue of the *Columbia University Quarterly*, says that the American Museum in New York has broken with this tradition. Many years ago cabinets containing teaching collections of insects, etc., were deposited in the public schools, and for some years now the museum has adopted the plan of circulating Nature-study collections, which are put up in portable boxes, with handles, delivered to schools, and called for by museum messengers. For the benefit of teachers and classes studying in the museum the services of trained demonstrators are provided. Lantern-slides in thousands are available for loan to teachers. Folios illustrating the source, means of transmission, and prevention of contagious diseases are also circulated.

MESSRS. WORKMAN AND CRACKNELL, of Kingswood School, Bath, direct our attention to the proofs of Euclid III., 21 and 22, which they published in 1904 in their "Geometry, Theoretical and Practical." These proofs are substantially the same as those suggested by Mr. Cecil Hawkins in our issue of last month to avoid the unsoundness of the usual proofs. Mr. Hawkins tells us that he had not seen Messrs. Workman and Cracknell's proofs, or he would not have desired the publication of those he had arrived at independently.

SCOTTISH.

MR. MUNRO introduced the Education (Scotland) Bill in the House of Commons on December 17th, and it was read a first time. The main object of the measure is to effect a further improvement in the provisions of education for all classes of the population and to make that provision available to residents in remote and isolated districts. It is proposed to raise the age for full-time school attendance from fourteen to fifteen, and to make attendance at continuation classes obligatory upon pupils between the ages of fifteen and eighteen who are not in full-time attendance in school; to restrict employment both before and after school hours of children attending school, and to regulate still further the employment of children or young persons under the age of fifteen in factories and in mines. Provision is further made to ensure that so far as is practicable no child or young person who has promise or ability shall be debarred by reason of difficulty of access or want of means from full opportunity for the

development of his faculties by attendance at secondary schools or universities. It is proposed that the unit of educational organisation shall be wider, corresponding generally with the county, or in certain cases a combination of counties. It is provided that the local education authority in the county shall be an enlarged committee nominated by the county council. State-aid will be proportionate to the expenditure incurred, a higher proportion being given to those districts where the expense of making a reasonable provision for education imposes a disproportionately heavy burden upon the locality. Denominational schools providing elementary education will be compulsorily transferred to the local education authority, and will be managed in all respects as public schools, but provision will be made for religious instruction according to the views of the former managers, given by qualified teachers acceptable to representatives of those managers, both as regards faith and character. As there is a large volume of opinion in Scotland which favours the setting up of a body representative of universities, local authorities, teachers, and others interested in education, as a forum for the discussion of educational questions, provision is made for the constitution of an Advisory Council, designed to assist the Minister and the Department in framing educational proposals.

THE report of the Departmental Committee on the Salaries of Scottish Teachers is one of the most important documents that have been issued in recent years. Though appointed several months later than the corresponding English Committee, the Scottish Committee has presented a unanimous report, while the other is still deliberating. It will be exceedingly interesting to compare, when available, the findings of the two Committees. The report explains the principles that guided the Committee in framing its scale of minimum salaries. The former are well worth further study, as they mark a remarkable advance in the appreciation of the teacher's value to the community. The limits of salary for men assistants range from £100 to £220 for non-graduate men, and from £120 to £250 for graduate men. For non-graduate women the range is from £80 to £160, and for graduates from £90 to £200. First assistants may rise £50 higher. For headmasters the salaries laid down range, in the case of schools with more than 250 in attendance, from £300 to £550. In smaller schools the upper limit is £250, *plus* a house. In secondary schools ordinary graduates range from £120 to £270 for men, and £90 to £220 for women, while honours graduates go from £140 to £300 for men, and from £120 to £250 for women. Principal teachers in such schools have a maximum higher than the ordinary assistants by from £50 to £150. Headmasters of secondary schools will go from £450 to £550 in the smaller schools, and may rise to £1,000 in the highest grade of secondary schools. The heartiest thanks of the teachers of Scotland are due to Sir Henry Craik and the members of his Committee for their enlightened appreciation of the teachers' position. The Committee was representative of every shade of opinion and of every educational interest, and it is a triumph of good sense to have arrived at a unanimous finding. No doubt the unrivalled authority and experience of Sir Henry Craik were important factors in the result.

SIR EDWARD PARROTT, M.P., in addressing the Edinburgh Branch of the Educational Institute, said that every shade of educational opinion was agreed on questions such as larger areas, co-ordination of all grades of education from the primary school to the university, improved conditions of service for teachers, and the establishment of a National Education Council. He advocated the holding of conferences between teachers and school authorities in order to thrash out details in these and other questions, and to give a lead to the nation in regard to them. Sir Edward had no solution to offer in regard to the vexed question of voluntary schools. These are at present a black spot on the national system, but everyone is afraid to tackle a question which has raised such feeling across the Border.

THE annual meeting of the Historical Association of Scotland was held in the University, Glasgow, when Prof. Medley, the president, delivered an address on the movement for furthering the study of Colonial and Imperial history in Scotland. He suggested that in the meantime the best way to secure this was to establish lectureships in the subject in the Scottish universities for a limited number of years. The lecturer in each case should be a man with first-hand knowledge of some particular part of our great Dominions. It should be part of his duty to give popular lectures all over the district in which the university was situated, and put his knowledge at the disposal of all who were interested. In this way, in the course of years, they would get into touch with the conditions and needs of all our possessions across the seas. The secretary's report showed that a great deal of useful work bearing upon the causes, issues, and aims of the present great struggle had been accomplished by the association during the past year.

THE Educational Institute of Scotland, consequent upon its union with the Association of Secondary-school and Class Teachers, resolved at its annual meeting in September that two new full-time officials should be appointed, one as organising secretary, the other as editor of the professional journal, and remitted it to the council to make the appointments. The council of the institute at its December meeting elected Mr. George C. Pringle, rector of Peebles High School, organising secretary, and Mr. Thomas Henderson editor of the *Journal*. Mr. Pringle, in connection with the Secondary Education Association, has had precisely the experience necessary for the new post. Twenty years ago he found the Secondary-school Teachers' Association dying of inanition. He revived it, and made it a strong and effective body. He then brought about a union between this association and that of the Higher Grade Teachers, and finally led the united body into the greater union of to-day. In all this progress Mr. Pringle has been the master spirit, and his new appointment may be regarded as a guarantee for the harmonious and effective working of the many diverse elements in the new institute. Mr. Henderson is a younger man, but he has already won his spurs as a

writer. He has a trenchant pen, a lively wit, and an instinct for "good copy." He has a hard task before him, but he will arrive.

IRISH.

REDISTRIBUTION for Ireland has given rise to a demand for the representation in Parliament of the new universities—that is, of the National University and of Queen's University, Belfast. The claim is based upon two grounds: first, representation is being given to the newer English universities, and, secondly, Dublin University has already two members. Under the scheme which was introduced into Parliament no change was made, no instructions having been given to the Redistribution Commissioners; but as this scheme has been dropped and the two Irish Parliamentary parties have agreed to work out a new scheme with the Speaker as chairman, the question will be raised again, and the Committee will have power to deal with it. Queen's University has 3,800 graduates on its roll. The National University has a much larger number. One thing is laid down in regard to Irish representation. The number of representatives must not be more than 103, and any increase in university members must come within this total.

INCREASED grants for technical instruction have been loudly demanded during the past month. The situation is a serious one. Large opportunities are opened up for Ireland for industrial and commercial development by the extension of tillage, but, on the other hand, there is, in the present circumstances, no possibility of wider facilities, and there is the greatest difficulty in maintaining the existing schemes. They are severely hampered by want of funds. Even before the war the salaries possible with the limited sums at the disposal of the technical committees were not high enough to attract efficient instructors. Since the war these teachers have reasonably been granted bonuses, to be paid out of economies in other directions. Schemes have therefore had to be cut down instead of being expanded to meet new technical needs. Mr. Duke has made it plain that no money can be forthcoming for technical instruction from the equivalent grant, which is already earmarked for primary and secondary education. The scheme for secondary education is not yet published, but is expected very shortly.

ANOTHER direction in which money is required is for evening continuation schools. In the city of Dublin such schools are absolutely necessary to bring pupils up to the required level for entrance into the technical schools, and owing to the failure to secure the small grants available under the Board of National Education some of the classes have been suspended, and a public appeal is being made for funds to pay the fees of teachers. Mr. Ryan, the hon. secretary, has issued a pamphlet containing some very remarkable figures concerning the existing evening elementary schools in Ireland. In 1905 there were 631 such schools, in 1915 only 301. The Parliamentary vote in 1905–6 for such schools was £23,000 (of which only £11,928 was used); in 1914–15 it was only £8,000 (of which £7,900 was used). There is a Compulsory Attendance Act (1892) for Ireland, under which 232 school attendance committees existed in 1914—ninety-two in county boroughs, urban districts, and municipal towns, and 140 in rural districts—and of these 229 enforced the provisions of the Act, but there are forty-one urban districts or towns and 112 rural districts which have no school attendance committees. Further, in the city of Dublin at the end of 1914 there were 17,281 boys on the rolls of the national schools, distributed as follows: 12,771 in Standards I. and II., and 4,510 in Standards III. to VIII. Presumably 8,000 boys leave every year without advancing beyond the second standard, while more than 10,000 did not make 150 days' attendance. From this it is clear that compulsory attendance, both at school and at continuation classes, is absolutely essential in the interest of the country.

THE Department of Agriculture and Technical Instruction announces that a limited number of scholarships and teacherships in training will be offered for competition in 1918. The examinations will be held from June 25th to 28th, and all applications for admission to the examinations must be made before May 11th. The Department also proposes to hold a special examination for teachers' qualifications in manual training (woodwork), if a sufficient number of candidates come forward. Candidates must be above twenty-one, and must apply not later than June 1st. It is proposed to hold the examination on June 11th and 12th.

WELSH.

MR. JOHN BALLINGER, lecturing before the Cardiff Naturalists' Society, urged that the National Library should collect all the works of Welsh men and women in all ages, works in all the languages allied to Welsh, and books on all subjects in all languages both for purposes of study and to give Welsh people all the advantages provided by national libraries in other countries. The plans provided accommodation for about two million books. Handsome contributions have been made by local authorities and by means of a miners' levy.

MISS TALBOT, of Margam Abbey, has given £30,000 to found a chair of preventive medicine in Cardiff University College.

MR. J. W. ROBERTS, of Hale, Cheshire, who died on October 12th, has left £2,500 to Aberystwyth College to found a scholarship in memory of his father, Alderman J. F. Roberts, Lord Mayor of Manchester in 1897.

A CONFERENCE was held in October to consider proposals for developing and co-ordinating technological education and research in South Wales and Monmouthshire. It was proposed that the education authorities and business men should be represented in equal numbers, with an independent chairman. Exception was taken to the proposal that the chairman should be appointed by the University, and it was decided that this should not be pressed.

THE scheme for a National Council of Education still hangs fire. The proposals of the Executive Committee of the Llandrindod Conference were sent to the local authorities with a request for a reply during

October, but they are still under discussion. If anything wrecks the project it will be the difficulty of adjusting the proportions of the representation to be granted to the rural districts on one side and to the industrial districts and large towns on the other. The representatives of the latter are experiencing considerable difficulty in securing the consent of their constituents to the concessions to the sparsely peopled areas that were proposed at the conference. Added to this is the strongly expressed feeling that it would be a loss to Wales to be cut off from England in educational matters, and that there is little more to be said in favour of a National Council for Wales than there is for any of the other proposed provincial councils—to which considerable exception has been taken in many parts of the country. This view, again, is denounced as "anti-Welsh," and the educational question is merged in the political one—as usual.

THE establishment of advanced courses in secondary schools, with special grants to support them, is arousing adverse comment, not from any hostility to the scheme in itself, but because the eight schools selected have no monopoly of the good work that has already been done without special equipment or reward. The remedy lies in the extension of the system at the earliest opportunity. There are many schools where one or two pupils have, with much labour and under great disadvantages, been trained for careers in which they have distinguished themselves; but at present the Board of Education confines its help to schools which can provide classes of a reasonable size.

TEACHERS' salaries are going up appreciably, in spite of the delays and the unsatisfactory method in the allocation of the Fisher grants. The Rhondda elementary-school teachers are allying themselves with the trade-unions, and pointing out in the Press that many of their number are paid worse than scavengers. Secondary-school teachers also are preparing action on an increasing scale in case conciliatory measures fail; in one borough the secondary-school teachers have sent in their notices, and been asked to withdraw them in view of a conference with the Education Committee; and indications clearly point to the possibility of extensions of this policy.

BOOKS FOR TEACHERS OF HISTORY.

(1) *History: the Quarterly Journal of the Historical Association.* No. 7. (Macmillan.) 1*s.* net.

(2) *The Teaching of History.* By C. H. Jarvis. 240 pp. (Oxford: Clarendon Press.) 4*s.* 6*d.* net.

(3) *France: the Nation and its Development.* By W. H. Hudson. xxiv+631 pp. (Harrap.) 10*s.* 6*d.* net.

(4) *The History of Napoleon Buonaparte.* By J. G. Lockhart. xx+539 pp. (Oxford University Press.) 2*s.* net.

(5) *An Analytical Outline of English History.* By W. E. Haigh. xvi+332 pp. (Oxford University Press.) 3*s.* 6*d.* net.

(6) *Bolingbroke's Letters on the Spirit of Patriotism and on the Idea of a Patriot King.* Edited, with an Introduction, by A. Hassall. xxiv+141 pp. (Clarendon Press.) 2*s.* 6*d.* net.

(7) *Bibliography of Mediaeval History,* A.D. 400–1500. By Miss B. A. Lees. 48 pp. (Historical Association, 22 Russell Square, W.C.1.) Free to members; to others 1*s.* 6*d.* net.

(8) *Wall Atlas of European History.* A series of twenty-four large-scale maps. (W. and A. K. Johnston.) 5*s.* net each.

(9) *History of Commerce and Industry.* By C. A. Herrick. xxvi+552 pp. (New York: The Macmillan Co.) 7*s.* net.

(1) THIS number of *History* is unusually interesting. It begins with a long and important article by Prof. C. H. Firth on "The Expulsion of the Long Parliament." Not only does this article throw new light on the confused and critical events of 1653, it also provides a model of what historical research should be. Another striking feature of this issue is the opening of a series of notes—under the title "Historical Revisions"—which are sure to be much appreciated by busy teachers. The notes are intended to summarise the results of recent research in cases where such research has materially modified old-established theories. The first of the notes is by Prof. A. F. Pollard; it treats of Magna Carta, and exposes the falsity of such legends as that which attributed the jury system to the Charter. The second of the notes is by Mr. G. Callendar, of Osborne, and its subject is "The Real Significance of the Armada."

(2) Dr. Jarvis, of the Leeds Training College, in writing this handbook for teachers, has endeavoured "to deal simply and clearly with the problems which often perplex those who have had no definite historical training and do not specialise in history teaching." He tries to answer such questions as: Why should we teach history in schools? What parts should we select for our scheme? What method of instruction should we adopt? His replies to these and similar inquiries are based on wide experience, extensive reading, and individual thought. A careful examination of various views concerning the purpose of history teaching results in the general conclusion that the main aim is "to help the child towards understanding the world of human activity in which he lives." In order to achieve this purpose Dr. Jarvis considers that the content of the history scheme should be:—(1) The history of England; (2) with special stress in late school years on recent periods; (3) not forgetting the development of the Empire; and (4) not neglecting aids which local history may afford. The history of Europe and of the world at large, he holds, can be brought into the scheme only incidentally. As to the form of the scheme, he advocates a judicious combination of the concentric and the periodic method of presentation. On this basis he gives a detailed statement of the subject-matter of historical courses for each of the eight normal years of school life. He concludes by discussing the place to be accorded to oral teaching, illustrations, and practical work. The book as a whole deserves the careful consideration of teachers. It is illuminating and helpful.

(3) It is impossible to desire a more attractive introduction to the history of France than that here provided by Prof. Hudson. It is written with that admirable lucidity and masterly arrangement for which the author is justly noted; it is adorned by over eighty delightful and really illuminative illustrations; it contains necessary maps and genealogical tables; it is printed on good paper and well bound. The story begins with Gaul before the coming of the Franks, and it ends with the founding of the Third Republic in 1871. The whole of the narrative is informed by one leading motive, viz. the development of that democratic idea which became dominant at the Revolution and triumphant on the fall of Napoleon III. This motive gives unity to the long and varied story, but (if one

criticism may be ventured) it tends to throw the Middle Ages into a false perspective; it tends to present medieval priests and kings as mere obstructions. They were something better than that, even if they were not all that Messrs. Belloc and Chesterton make them out to have been. For modern times, however, the democratic motive is the true key.

(4) We have here a reprint of a famous book originally published in 1829. Its author was editor of the *Quarterly Review* at the time, and the son-in-law of Sir Walter Scott, who himself had recently issued a "Life of Napoleon." Lockhart's comparatively short work professed to be a compendium of Scott's, and it laid claim to but little research. It was, however, marked by sound judgment, and it was written in an excellent literary style. Of course, since 1829 masses of new sources of Napoleonic information have come to light, especially in the form of memoirs and State papers. Hence in countless details Lockhart's narrative needs correction. Some corrections are made in the present edition by Dr. Holland Rose, who contributes a valuable introduction. But it would have been an advantage to have a full apparatus of historical notes, such as Dr. Rose could so easily have furnished. Even in the absence of these, however, Lockhart's "Napoleon" retains a real value, for it depicts and impresses the characters of the main actors in the European tragedy of a hundred years ago in such a way as to make them living and vivid. This excellently printed and well-bound reprint is a marvel of cheapness.

(5) This is an extremely careful and very suggestive analysis of English history for the use of students and teachers. It is intended to be employed in conjunction with text-books, in order to give coherence and meaning to their information. Mr. Haigh sees five main evolutionary movements in English history, and he has tried to display all the events in the successive periods of the history so as to illustrate and interpret them. These five movements are: first, racial; secondly, social and economic; thirdly, religious; fourthly, political; fifthly, constitutional. The tracing of these five lines of development gives a continuity to our national story which makes it more satisfying to the reason than is the usual straggling narrative. Within the successive periods (ten in number) into which Mr. Haigh divides English history, he gives a clear and accurate summary of important events. This alone suffices to make the book valuable both to students who have to prepare for examinations and to lecturers who have to arrange their materials for history lessons.

(6) Bolingbroke was one of the most brilliant and enigmatic characters of the eighteenth century. His influence long outlasted his life. It was strongly felt by Burke; it did much to mould Disraeli. Bolingbroke in his day was one of the most pungent critics of party government and one of its most strenuous opponents in the world of practical politics. Hence his writings have a more than common interest to-day, when once again the party system is discredited and the substitution of a national form of government advocated. The two short works which Mr. Hassall has edited and introduced contain Bolingbroke's reasoned reflections on party and patriotism. They are full of wise considerations as relevant to the affairs of to-day as they were to the affairs of the reign of George II. Mr. Hassall's preface is useful and enlightening. Not many people, however, will agree that Bolingbroke "had as much political wisdom" as Burke, even if they admit that he had "twice as much political daring."

(7) This bibliography, No. 44 of the Historical Association's leaflets, is one of the fullest and most exhaustive of the series to which it belongs. It gives under classified headings remarkably complete information respecting original sources and secondary authorities for every period of the Middle Ages. For the medieval specialist it will be an invaluable companion and guide. A few omissions of recent works suggest, however, that Miss Lees has not consulted the lately issued second edition of Gross's great book on the source of early English history. If she had done so she could scarcely have failed, as she has done, to make some mention of Mr. Kingsford's editions of the London Chronicles and the Croyland Chronicle.

(8) These maps are "designed to show at a glance the chief political changes and national movements from the formation of the Roman Empire to the beginning of the Great War, 1914." Their size is 40 in. by 30 in. The leading territorial arrangements at the respective dates to which they refer are marked by bold and attractive colouring. Physical features are indicated unobtrusively but effectively. Place-names are printed in clear and legible type. The series will be a valuable adjunct to the teaching resources of every lecturer on European history. Full details concerning the maps, and particulars respecting their presentation in the form of wall atlases (at a slight reduction of cost), can be obtained from the publishers at St. Andrew Square, Edinburgh.

(9) This scholarly and important work is much more than a history of commerce and industry. It is a survey of human evolution from the economic point of view, and as such it deserves the serious consideration of many who would have but little interest in the study of so materialistic a subject as mercantile development. It begins with a careful definition of the economic point of view. Then it proceeds chronologically to treat of the commercial and industrial phenomena of the early civilisations of the Nile and Tigris-Euphrates valleys, and so on to the present day. The narrative is well illustrated with maps, plans, and pictures. Each section, moreover, gives copious references for supplementary reading. Students whose attention has hitherto been concentrated on political history will find their horizon considerably enlarged by this able survey of the old facts from the new position.

REFORMED CLASSICAL WORK.

Our Renaissance: Essays on the Reform and Revival of Classical Studies. By Henry Browne. xvi+281 pp. (Longmans.) 7*s.* 6*d.* net.

WE confess to some disappointment in this book, due, no doubt, to wrong anticipations aroused by the sub-title. Those who take it up in the expectation of finding a comprehensive survey and appreciation of all sides of reformed classical work are bound to be disappointed on finding that Prof. Browne is concerned primarily, if not entirely, with the increasing use which classical teachers are making—and, in our opinion, rightly making—of archæological aids to the study of Latin and Greek. Its deficiencies as a general survey may be gauged, for example, by the allocation of only one page (in which we are told nothing) to the reform in the methods of teaching which we are all now coming to understand by the direct method. Nor is this all; Prof. Browne's interests, even within the limited sphere of archæology, are almost entirely confined to numismatics, and although we feel strongly that archæological aids should be used more in schools, we think that Prof. Browne falls into the enthusiast's error of allotting too much significance to them—in this Sir Frederic Kenyon, who contributes a preface, would seem to countenance our view—and maybe he is wrong,

in spite of the strong practical advantages for teaching purposes which spring from the convenient size and comparative wealth of coins which we possess, in allotting primary significance to numismatics within that sphere. We must, however, be fair to him—over and over again he tells us that he is not advocating the replacing of a sound education in the literature by a smattering of archæological knowledge; he wants teachers to use coins (and other archæological aids) simply to help the pupil to realise that the Greeks and Romans were human beings, who once lived on this earth just as we are living on it to-day. But the fact remains that, in this book, we find little else (beyond this use of "archæological aids") to characterise the "reform and revival of classical studies."

The book consists of two parts—"The Voice of Hellas" and "The Classical Revival"—of which we think the first the more valuable. Prof. Browne writes pleasantly and fluently, with occasional descents, it is true, to the popular, but this is due to the fact that the book is largely made up of addresses delivered on different occasions to different societies. His most valuable point—in his first part—seems to us to be the insistence upon the wrongness of the idea that the Greeks were an "æsthetic" people—in the derogatory sense of the word. He reminds us of Plato's objections to æstheticism, finds "patriotism" to be the thought-impulse of Homer, and, in fact, describes æstheticism as, not the strength, but the ruin, of Greece.

The book ends with the suggestion that our great public museums should combine more with classical teachers in the work of education, and there is an appendix dealing with the replies received from a variety of sources upon definite questions put in this connection.

RECENT SCHOOL BOOKS AND APPARATUS.

English.

The Australasian Shakespeare. Merchant of Venice, 114 pp. *King Lear,* 182 pp. *Macbeth,* 104 pp. *As You Like It,* 172 pp. Various editors. (Melbourne: Lothian Book Co.)—The outstanding features of this well-printed, well-edited set of plays are the careful expurgation (extending occasionally to the alteration of a line or a phrase) and the fresh and breezy introductions and notes. No English edition excels this for its type and clearness of set-out. We hope the battle over expurgation has been won; you cannot read an untouched Shakespeare in the schools; but there remains, and always will remain, a good deal for the editor to do in the way of introduction. And if we disagree with the editor's view of Jaques, we are unfeignedly glad to see some sort of explanation—though still inadequate—given of Lady Macbeth. As to "Lear," we shall never know the inner bitterness that prompted it and "Timon," but it is at least useful that prefaces should cease to portray the Still Lion as one apart from all human passion and despair. Probably Tolstoi's comparison of man with a river, now foul, now clear, now deep, now shallow, will one day be attended to by our psychologists. It is a commonplace to say that Shakespeare was Lear and Jaques and Lady Macbeth and Touchstone; but it is quite another thing to hammer it in and to try to explain him and ourselves by understanding it. This edition deserves a welcome.

Australia in Peace and War. By W. M. Fleming. 154 pp. (Melbourne: Lothian Book Co.)—These lays of the Bush and the rolling plains make admirable reading. Perhaps they are not always inspired by the Parnassian spirit, but the human and virile spirit runs through all, and the romance of the open air, of the wool sales, of the stockman and the thief, of drought and blazing suns alternate with the love of country and the love of woman. It is a clean and fine collection of stirring verses.

Word-Book of the English Tongue. By C. L. D. 216 pp. (Routledge.) 1s. 6d.—Glossaries and synonym books require to be constantly rewritten, and this list is but a hint of what might be done. The compiler is jealous for our English words, and he takes a foreign word and sets over against it its equivalents. An instance will show the reader the plan. Under "Entire" we read, "Hale, healthy, sound, whole(hearted), unbroken, utter, thorough(going), unhampered." Now, if "C. L. D." would, in a later edition, add the English metaphors that may be said to go with the word "entire," the value of the book would be increased. As it stands, however, the book is a most useful attempt.

Geography.

The Pupils' Class-Book of Geography. By E. J. S. Lay. Maps and diagrams. *Scotland.* 96 pp. 7d. *Asia.* 128 pp. 8d. (Macmillan.)—These are interesting and useful books. Noteworthy features are the wealth of maps and diagrams, the lists of searching questions, and the sets of "things to do." A minor criticism lies in the mention of place-names to which no fact is attached; such names are useless lumber. Mr. Lay's treatment of the westerly winds and drift of the Atlantic is sound, but that of the monsoon might be improved; why not call the north-east wind a trade-wind and not a monsoon? The pupil will scarcely understand from the text the reason why Assam is rainy and Sind is arid.

Mathematics.

A First Course in Higher Algebra. By H. A. Merrill and C. E. Smith. xiv+247 pp. (The Macmillan Co.) 6s. 6d. net.—The scope of this work is wider than the title suggests, for it includes chapters which form an introduction to the differential and integral calculus. At the same time, it is strictly a first course in the sense that in treating the various topics only fundamental principles are discussed and no attempt is made to enter upon more specialised and difficult developments. The work thus differs considerably from the usual text-books, which assume all their readers to be specialists, and it should appeal to a considerable number of persons who desire to obtain a general view of the principles involved in higher algebraical analysis. At the same time it will be found useful for those students who are looking forward to supplementing this first course by more detailed study. Within the limits which the writers have imposed upon themselves the treatment may be regarded as adequate. The first example given in illustration of the definition of a limit is not very happily selected. There is no obvious reason why the limit of 1·414213... should be $\sqrt{2}$, in the absence of any rule for determining the succession of digits in the decimal. This criticism does not apply to the second example, although in this case it would have been better to state explicitly the rule of succession. In the chapter on theory of equations considerable space is given to Horner's method for calculating irrational roots. Although the value and beauty of this method cannot be disputed, after considerable experience we have come to the conclusion that it is, on the whole, inferior to Newton's method, and we regret that the latter has not been mentioned.

Science and Technology.

Agricultural Geology. By R. H. Rastall. x+331 pp. (Cambridge University Press.) 10s. 6d. net.—The parts of geology likely to be of direct use and interest

to agriculturists are here set out in a very attractive manner. They are naturally concerned, in the first place, with the formation and special characters of various kinds of soil. To this aspect of the subject the first half of the book is devoted. After chapters dealing with the geology of water supply and drainage, and the use of geological maps and sections, the author goes on to consider the geographical distribution of the different kinds of rocks and their relations to crops and stock, the geological systems of the British Isles being surveyed in order from this point of view. The predominating influence of the geological structure and characters of the rocks in determining the suitability or otherwise of a district for various types of agriculture is well brought out, although the importance of other factors is by no means belittled. The last chapter, by Dr. F. H. A. Marshall, deals with the origin and geological history of the horse, the ox, the sheep, the pig, and the dog. The book may be confidently recommended to all students of agriculture as eminently worth reading.

Tommy Smith at the Zoo. By Edmund Selous. viii+183 pp. (Methuen.) 1*s.* 9*d.* net.—Tommy Smith visits the Zoological Gardens at Regent's Park from time to time, and has imaginary talks with various animals, thus learning much about their habits and environment in a wild state. We are not enamoured of this plan of endowing beasts with the power of speech and consecutive thought, yet we are glad to find Mr. Selous has succeeded in writing an interesting narrative, which will appeal to the budding naturalist. Eight excellent photographs, which are beautifully reproduced, add greatly to the attractiveness of the book.

Art.

The Art of Painting in Pastel. By L. Richmond and J. Littlejohns. 189 pp. (Pitman.) 12*s.* 6*d.*—In their first chapter the writers say that "every medium should be used in the way for which it is most naturally adapted"—a truism exemplified by the admirable pastel-drawing of Mr. Brangwyn which serves as a frontispiece. The qualities of that drawing could not be rendered by any other medium than pastel. If the principle which the writers emphasise at the outset had been adhered to throughout the work, the book might have been quite admirable. As it is, to take but one instance, do the writers seriously maintain that the effect of plate xxvi. could not have been rendered equally well by either oil or water-colour? If a book of this kind were put into the hands of the beginners to whom it is addressed, the only result would be to impress the technical manner in which the illustrations are rendered upon those beginners. Because they were beginners, they would see nothing else, and it would prevent and hinder their own study of Nature.

Miscellaneous.

A World in Ferment. Interpretations of the War for a New World. By Prof. Nicholas Murray Butler. 254+viii pp. (New York: Scribner.)—Educational leaders are rightly concerned with the interpretation of the war, and President Butler, of Columbia University, has issued in collected form various addresses which he has delivered over the period September, 1914, to June, 1917. Apart from the transcendant interest of this American interpretation of the war as the inevitable clash of two ideals, the democratic and the autocratic, equally apart from the clarion call to the American to range himself actively among those who fight for the future of democracy in the world as a whole, there is manifest in these addresses so passionate a patriotism, so avid an ambition for the world's well-being, so trenchant a treatment of the true ideals of national existence, that there must have been few who could resist the appeal to give themselves wholly to the prosecution of the good cause. For the teacher who teaches the ideals which are now summarised under the term "Civics," whether by right of a special appointment or *en passant*, because he is merely a good citizen, these addresses have a special appeal as a statement of the case for the American contribution to civilisation. The American Constitution presents to the whole world a lesson in federation, a volume of experience in the rule of law among the States of the American Union, the rule of law in a realm which is, or has been, almost international. The final address suggests the hypothesis that the issue of this war may be to determine whether man is still in progress or has begun his decline. If the strength of the men and the nations that love liberty is inadequate to the severe task of establishing freedom on a secure basis, then man has crossed the Great Divide of his political history, and is to begin a descent into those dark places where force and cruelty and despotism wreak their will. The issue will, in the last resort, be decided, not by Governments, not even by armies and navies, but by men and women whose convictions and stern action are the foundation upon which Governments and armies and navies rest. There can be no faltering by those who love their fellow-men.

EDUCATIONAL BOOKS PUBLISHED DURING NOVEMBER, 1917.

(Compiled from information provided by the publishers.)

Modern Languages.

Labiche, "Le Voyage de Monsieur Perrichon." Edited by H. L. Hutton. (Oxford French Plain Texts.) 48 pp. (Clarendon Press.) 6*d.* net.

"A Foundation Course in Spanish." Part ii. By L. Sinagnan. x+90 pp. (Macmillan.) 3*s.* net.

"Spanish Business Conversations and Interviews." 114 pp. (Pitman.) 2*s.* net.

English: Grammar, Composition, Literature.

Hazlitt, "Selected Essays." Edited by George Sampson. xxxviii+252 pp. (Cambridge University Press.) 3*s.* 6*d.* net.

"Antony and Cleopatra." Edited by J. H. Lobban. (The Granta Shakespeare.) xxx+216 pp. (Cambridge University Press.) 1*s.* 3*d.* net.

"Poems of Keats: Endymion, the Volume of 1820, and other Poems." Edited by W. T. Young. xxxvi+332 pp. (Cambridge University Press.) 3*s.* net.

Longfellow, "Selections." Edited by E. A. Greening Lamborn. 80 pp. (Clarendon Press.) 1*s.* net.

"Holinshed's Chronicles." Edited by R. S. Wallace and Alma Hansen. 216 pp. (Clarendon Press.) 1*s.* net.

"English Composition." By Dr. C. W. Greenough and F. W. C. Hersey. (Macmillan.) 7*s.* net.

"Manual of Good English." By H. N. MacCracken and Helen E. Sandison. xxvi+336 pp. (Macmillan.) 4*s.* 6*d.* net.

Geography.

"Introductory Geography." By H. Clive Barnard. 154 pp. (Black.) 1*s.* 8*d.*

"Peeps at Poland." By Monica Gardner. 88 pp. (Black.) 2*s.*

"The Elementary Geography." By F. D. Herbertson. New edition, revised by O. J. R. Howarth. Vol. iii., "Europe." 112 pp. 1*s.* 6*d.* Vol. iv., "Asia." 128 pp. 1*s.* 6*d.* Vol. vi., "The Three Southern Continents." 186 pp. 2*s.* (Clarendon Press.)

Mathematics.

"A Treatise on Statics." Vol. i. By G. M. Minchin. 464 pp. (Clarendon Press.) 10*s.* 6*d.*

Science and Technology.

"Agriculture and the Land: with Some Account of Building Societies, Garden Cities, our Water Supply, and Internal Communication." By G. F. Bosworth. (Cambridge Industrial and Commercial Series.) x+94 pp. (Cambridge University Press.) 1s. 6d.

"Quantitative Chemical Analysis." By Dr. Clowes and F. Coleman. 604 pp. (Churchill.) 12s. 6d. net.

Villavecchia, "Treatise on Applied Analytical Chemistry." Vol. i. 492 pp. (Churchill.) 21s. net.

Tognoli, "Reagents and Reactions." 236 pp. (Churchill.) 6s. net.

Miscellaneous.

"The Cambridge University Calendar for the Year 1917–18." xxviii+1066 pp. (Cambridge University Press.) 8s. net.

"Cambridge University Examination Papers. Michaelmas Term, 1916, to Easter Term, 1917." Vol. xlvi. iv+570 pp. (Cambridge University Press.) 31s. 6d. net.

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 Study of History in Day Continuation Schools.

THE objects of the study of history in day continuation schools should be to arouse the interest of the pupils in the past, and through the past to explain the many-sided life of the present; to widen their horizon and to stimulate their imagination; and to fit them to discharge their responsibilities by taking an active and intelligent part in the world in which they live. The history taught should not only deal with matters of government, but also illuminate the whole life and human surroundings of the student. Treated in a broad and generous spirit, it should form, in close connection with literature and geography, the best humanistic course for these schools.

With a view to the accomplishment of these objects we make the following suggestions:—

1.—Care should be taken to select, so far as possible, such teachers as are also students of history and have a real interest in the subject.

2.—An ample supply of books, maps, and illustrations should be provided for each school, these being as indispensable to the study of history as laboratory apparatus is to that of science.

3.—Local history should be kept in continuous and vital connection with the whole history work.

4.—Social and economic conditions which affect and explain the development of the community should be given their due place in the teaching.

5.—In the later stages some attempt should be made to explain the machinery of modern government by tracing in outline its historic development.

6.—At some stage, if not in all, attempts should be made to show the pupils the effect of general history upon the development of their own community and of the British Commonwealth as a whole.

7.—Throughout the work the training afforded by history as a means of self-expression, both spoken and written, should be fully utilised.

8.—Since the outlook and interests of the pupils vary at different ages, the selection and treatment of the subject-matter should be adapted accordingly.

Finally, it must always be borne in mind that even the best teachers, in the short time at their disposal, can convey only a few facts to the minds of their pupils; the best they can do is to interest their students in the past and make them want to read about it, and then to put the right books into the hands of the right pupils—for it is the much these young workers acquire from their own reading which is so essentially important.

ALICE STOPFORD GREEN,
President of the Historical Association.

22 Russell Square, London, W.C.1.

Decimal Coinage.

ALLOW me to express my pleasure at seeing in the December SCHOOL WORLD an article on a labour-saving device so important as decimal coinage. People that have given real attention to the matter are all agreed on its labour-saving value. It remains to settle the best system and its method of introduction, and then to convert the nation to it. It is important to have a good workable system to place before the nation, and I venture to question whether the "mil" system of the Decimal Association satisfies this condition. As things are I have difficulty in distinguishing between pennies and halfpennies on the top of a 'bus in the dark. With a pocketful of coins of denominations 5 mils, 4 mils, 2½ mils, 2 mils, 1 mil, how could I possibly make up my 'bus fare? Even by daylight it is a job for an accountant. No! if we are to persuade the nation to accept our scheme our small coins must be few in number and not very different from the present ones. Then, again, the keeping of accounts on the mil system, as stated in the Decimal Association's circular, shows little, if any, saving of labour over the present system.

The farthing is little used, even among the poorest; its chief use is the bad one of inducing the bargain-hunting lady to buy for 4s. 11¾d. ("four-eleven-three," as the shopman says) an article which she would refuse at 5s. The smallest coin in serious use is the halfpenny, and *if we are to carry the nation with us* this must be our unit. We thus arrive at the dollar-cent system already in use throughout the continent of North America.

During the transition period the bronze coins will be doubly named, one as cent and halfpenny, the other as 2 cents and penny. The chief denominations have excellent names in "dollar," "dime," "cent," in addition to a good supply of popular names for the minor denominations.

The international goodwill of the sovereign depends on the stability of the credit of the country, and a new British gold coin will enjoy equal popularity so long as the credit of the country holds.

Being a native of the United Kingdom, although not of England, I subscribe myself with a useful and even necessary addition to our vocabulary which also hails from across the Atlantic

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EGOISTIC AND ALTRUISTIC STANDARDS IN EDUCATION.[1]

By Sir JOHN D. MCCLURE, LL.D., M.A.

IN the classroom there is a very real—albeit implicit—appeal to the selfish side of a pupil's character and to the spirit of emulation. Of course he may occasionally be exhorted to work for the sake of the honour and good of the school and in order that he may be a worthier citizen; but these motives are far from being cogent even when present, and, as a rule, they are conspicuously absent. On the football field a boy learns to play for his side—be it house or school—to forget himself and think only of the society of which he is a unit; and popular schoolboy opinion rightly condemns any player, however brilliant, who is markedly or constantly selfish. As a consequence, too, the standard of fair play is high; and many, perhaps most, of the players would rather lose the game than win it by a doubtful or unfair act. It is their pride that they "play the game." It is notorious that in the classroom a much lower ethical standard is adopted; it could scarcely be otherwise under existing conditions. Yet who can be satisfied with things as they are?

Our difficulty is enormously increased, too, by the prevalence of the low ideal which leads us to worship success. From his earliest years a boy learns from his surroundings, if not from actual precept, that the great object of his life is not to be *something*, but *somebody*. Herein lies the justification of the criticism of a friendly alien: "You pride yourself on your incorruptibility, and quite rightly; for in England there is probably less actual bribery by means of money than in any other country. *But you can all be bribed by power.*" Will it ever be possible, then, in a boy's school life to make him equally eager in the classroom, in his study, and on the playing field to develop to the utmost his body, mind, and soul, not alone for his own sake, but for the sake of the school and for the sake of the nation? If so, how is it to be achieved? How begun?

Again, one cannot be blind to the fact that the interest which many have shown in educational reform is due to their belief that improved methods will lead to greater efficiency in the workman, and thus will help to secure to this country a position of advantage in the coming struggle for commercial supremacy. Unrestricted competition, ruthless, inexorable, is to be the order of the day. Hence we shall be urged—nay, we are being urged—to direct all our energies to the production of a body of clever workmen, "to commercialise our education, to make it a paying proposition, to make it subservient to the God of Wealth, and thus convert us into a money-making mob." Ruskin has said that "no nation can last that has made a mob of itself. Above all, a nation cannot last as a money-making mob. It cannot with impunity—it cannot with existence—go on despising literature, despising science, despising art, despising Nature, despising compassion, and concentrating its soul on pence."

But how are we to defeat this project of national suicide, this foul conspiracy against the peace of the world and the welfare of mankind? By insisting that a man needs education first to enable him to make a living, but chiefly to enable him to live a life; by realising that it is but a short-sighted and selfish patriotism that ends with love of country and service for her; by fixing the aims of education above money and beyond the nation. "Education," to quote Mr. Paton, "like finance, must be planned on international lines by international consensus with a view to world peace." But the application of such principles is one of the hardest as well as one of the most important tasks by which we are confronted; nor is there any meeting to be held by this conference of greater moment than that of Monday morn-

[1] From the Inaugural address to the sixth annual Conference of Educational Associations at University College, London, on January 2nd, 1918.

ing, when we are to discuss the educational basis of internationalism.

May I touch on one more topic? The charge brought by Matthew Arnold against the upper and middle classes of England that they care little for "the things of the mind" has been repeated and amplified by later writers. "In our schools the athlete is the hero, not the scholar." The writers of popular novels seem to have entered into a conspiracy not to adopt for a hero any man who manifests any serious intellectual interest. Here is a description taken from a fine work by one of the best of recent novelists: "He was the product of an English public school and university. He was, moreover, a modern product of those seats of athletic exercise. He had little education and highly developed muscles—that is to say, he was no scholar, but essentially a gentleman—a good enough education in its way, and long may Britons seek it!"

And the same doctrine is being openly taught and insidiously instilled on all hands. "Beware of him," said a Yorkshire manufacturer to the parent of one of my boys about myself; "he's a well-meaning man, but he is sure to try to induce you to let your boy go to Oxford or Cambridge, and then he'll be ruined." "I don't care much about my boy's brains," said a parent to an Eton housemaster. "I can always buy brains. I want him to get into the eleven or the boats." Even our greatest writers win our sympathy for the wickedness of amiable characters by pleading the excellence of intention.

"No nation, I imagine," says Mr. Temple, "has ever gone so far as England in its neglect of and contempt for the intellect." But even this is not the worst. Our children are taught to fear cleverness because, forsooth, it is inconsistent with, if not actively hostile to, goodness. "Be good, sweet maid, and let who will be clever." "If goodness of character," to quote Mr. Temple once more, "means more than control of the grosser passions, if it means the capacity to serve our nation as useful citizens, it is unattainable by anyone who is content to let his mind slumber."

From such consideration of our problems three great truths leap to the eyes. First, that no legislative enactment or series of enactments can do much towards the solution of these problems; at most they can improve the conditions of, and provide opportunities for, those people upon whom the burden of solution lies. Secondly, that to deal with these difficulties effectively requires years, nay generations, of wise effort on the part of carefully trained enthusiasts. Thirdly, that now, as always, the improvement of education depends upon the improvement of the teacher; for on the character, the skill, and, above all, the ideals of the men and women who are engaged in teaching the youth of the nation the welfare of the country ultimately depends. May my concluding remarks be on this, the greatest topic of all?

I believe in conferences. There are no people who need them more than teachers do. The constant contact with immature minds, the inevitable drudgery of some of our work, the necessary isolation—or comparative isolation—in which we are called upon to live, which prevents us from any save occasional and, as it were, spasmodic visits to the world outside, the mental and spiritual exhaustion which the faithful discharge of our duties never fails to produce, and which makes us sometimes incapable of utilising the precious leisure moments in profitable reading or thinking—all these tend to limit one's horizon, to narrow one's interests, to make a man the victim of his own virtues, and his vocation the prison of his soul. Here, at least, we can exchange ideas and thoughts, gain light upon our way from the brighter lamps of our fellows, realise that our conflict is but part of a great whole, renew our courage, strengthen our faith, and clear away the mists which distort and sometimes hide the glorious ideals after which we have pledged ourselves to strive. And then there is the human contact, the joy of social intercourse. In pre-war days I have known this side of a conference overemphasised, with the result that our meetings were less fruitful than they might and ought to have been, because we were insufficiently fortified against the prospective ravages of infectious hilarity. But *now* we are all in earnest—some of us so much so that it is difficult to take us seriously. Someone has said that most teachers go through life supremely unconscious of their own insignificance. Why the remark should be confined to teachers is not obvious, but the remark itself is profoundly true; for there is nothing so calculated to make a man feel his own insignificance as the realisation of the grandeur of the work he is called upon to do, and this, we must confess with shame, we have neither achieved, nor, perhaps, even attempted to achieve.

Unconscious of our own insignificance? Think far too much of ourselves? In one sense true, in another profoundly false! The fundamental danger of our life is that we shall not think enough of ourselves, or, rather, that we shall not believe enough in the greatness, the dignity, the importance of the work we are privileged to do. We have fallen into the common error that one of the secrets of greatness is to blame others for our own shortcomings. We have railed against others for slighting our work when the fault was

our own, because we never showed by our words or actions that we held in high honour the work we were doing and that we held it to be sacred. We have been prone to sink into the drudgery of routine, to lose sight of our great responsibilities, to be peevish and spiteful when others failed to appreciate us. The true teacher is an invincible optimist, for his work will not permit him to be otherwise. We are called upon to do the greatest work in the world; let us do it in the greatest way, with a stout heart and great soul.

A young second-lieutenant in one of our infantry regiments was much disgusted by the filthy conversation and blackguardly behaviour of some young officers. His wrath expressed itself thus: "They are not worthy to suffer and die in so great a cause as ours." I heard of this at a moment of despondency, weariness, and apathy, and it quickened me into renewed life, for I turned his words into a question which I put to myself and which I now leave with you: "Am I worthy of so grand a calling, of the privilege of living and labouring in the greatest work a man can be called upon to do?"

AN INQUIRY INTO THE VALUE OF THE STUDY OF LATIN AND GREEK.

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II.

3. THE "MENTAL GYMNASTIC" ARGUMENT.

WE come now to the third argument in support of the study of Latin and Greek, namely, that they give "a unique mental training." When the advocates of classical studies are led to admit that the average boy or student would get a better knowledge of classical culture through translations and ancient history, and that the average boy gets little or no literary training from his classical learning, and frequently becomes imbued with a distaste for other studies because of the unsuitability of the mental food offered him at school, such advocates usually reply as follows: "Even if this is so, the study of a difficult language like Latin gives a valuable and unique mental training, cultivating memory, observation, concentration of attention, and the exact use of language."

Mr. Livingstone himself in reality falls back upon this type of argument, when in the latter part of his book he takes up the question whether the main benefits of classical studies could not be gained through translations.

Canon Lyttelton, in a defence of the teaching of classics, written when he was headmaster of Haileybury, adopts the argument still more frankly. He says:

> To be told by great scholars and historians that our civilisation, philosophy, and art date from Pericles, or that the imbuing of the expanding intelligence with the glorious fruits of the Augustan age is the finest effort of pedagogy, is a dismal mockery for a raw and untrained schoolmaster whose pupils are going into Sandhurst at seventeen, or to Ceylon at sixteen. No wonder that secret scepticism tells upon his energy. He perhaps stops in his weariness to fortify himself with some finely written defence of classics, and finds nothing in it but a catena of bewildering anachronisms. Cannot something be done towards suggesting a true and intelligible reason for boys to work at classics, even though nine-tenths of them are never to be scholars? Putting it quite briefly, the learning of these ancient languages in its earlier stages affords an opportunity for training in precision of thought, memory, inference, and accuracy; in its later stages it is capable of enriching the mind with noble ideas. (In "Teaching and Organisation," edited by P. A. Barnet.)

Let us consider, then, this argument that the learning of Latin gives such an excellent mental training, even when not pursued to an advanced stage. The suggestion is that the pupils do not learn Latin in order to *read* Latin, but that the training given is much wider in its ultimate effects; it is implied that the training "spreads" to other kinds of mental activities, and that all the so-called "faculties" are exercised, so that the mind, as a whole, is trained even by one subject.

This argument leads us to consider the educational doctrine known as *formal training*. This is a somewhat difficult and complex question, but some serious and continuous thought on the subject is essential if we are to give due consideration to the problem before us, or, indeed, to any problem as to the school curriculum.

I will try to state as simply as possible the trend of recent thought on the subject.

Criticism of the "mental training" argument.—(*a*) Some of the old psychologists used to speak as though the mind were divided into a number of faculties or powers, such as observation, memory, judgment, each largely independent of the others. Further—and this is the important point for us—they supposed that the exercise of observation (or memory) on any one kind of material improved the faculty of observation (or memory) *in general*—that is, for all kinds of material. Now, this extreme position has been almost entirely abandoned. One scarcely requires psychological experiment or analysis to believe that practice in the observation of, say, plants is not likely to result in any improvement in the observation of the expression on human faces or of

pictures, unless, perhaps, pictures of plants. The exercise of *judgment* upon the value of horses will scarcely improve one's power of judgment as to the morality of divorce. Most of us have known distinguished mathematicians or classicists, the soul of accuracy in dealing with mathematical symbols or Greek particles, but recklessly inaccurate in statements as to political matters; or distinguished men of science, rigid in their requirements of exact proofs of facts and laws in the material universe, but satisfied with most elastic reasoning and wobbly proofs in reference to matters of the mind.

(*b*) Furthermore, the old view, at least in its extreme form, has been seriously undermined by recent work in experimental psychology. For example, the most thorough series of experiments upon the *improvement of memory* tends to show that, if one exercises one's memory on, say, poetry, it is likely to be improved for poetry, but need not be for prose.

It used to be thought that the study of, say, Latin "strengthened the memory," so that a boy could remember history or poetry better for having ground away at Latin verbs. We have now good reason to believe that practice of the memory with any given material will effect but little improvement in the memory for a second kind of material, except in so far as the two materials resemble one another.[1]

We certainly have no proof that the toilsome memorising required in the learning of Latin and Greek will necessarily have any beneficial effect on the memory in general—for example, the memory for dates or chemical formulæ. Still less likely is it that, even granting any such "transferred" improvement, it will be any greater as a result of learning Latin and Greek rather than other subjects which may be taken up in their place.

(*c*) As regards *accuracy*, it has been shown by experiments that an improvement in accuracy in dealing with one kind of arithmetical problem need not be accompanied by improvement even in other kinds of arithmetical work, so specialised may be the development of "accuracy." Much less, then, need we expect the training in accuracy given by arithmetic to show itself in other and different subjects. In other words, accuracy is largely a specialised habit, and we cannot be certain that the improvement in accuracy in Latin prose will result in any accompanying increase in accuracy in other mental work.

Even granting that it is probable that, in the long run, as a result of Latin prose exercises, the boy will learn to consider the meaning of *all* the English he reads more carefully, and not merely that English which he has to translate into Latin, it is still more probable from a psychological point of view that such a habit would be acquired through extended practice in careful reading in many varied branches of thought and knowledge *in English works themselves*. When we consider the question of the care and accuracy developed through translation from Latin into English, we find that such translation is still less likely to give a general mental improvement in these respects than would result from the study of various kinds of works in English.[2] For the same kind of mental processes which will be required for the careful reading of difficult English are still more likely to be developed by the reading of other difficult books in English itself. In reading English, for example, the dependence on memory work (so prominent in the study of Latin) is reduced to a minimum, and the relative proportion of attention to the meaning and context of (i) the present sentence, (ii) the preceding paragraph, and (iii) the whole page, at a given moment respectively, is quite different from what it is in the case of Latin. In other words, the total mental activity is considerably different, when reading even a "stiff" book in English, from what it is in translating Latin.

For a training in accuracy in dealing with English, then, we are much safer in relying upon direct training with English. It may possibly be argued that the expression of an idea in two languages, one very different from the other, gives a more certain grasp of the idea so expressed. Suppose we concede this—it is probably true in many cases. But it should be noted that this is *a specific training in reference only to the ideas actually dealt with in this manner*. For the great majority of boys who study Latin these ideas are so meagre in scope and number, compared with the mass of ideas they have or will have to deal with in the vernacular, that this effect is very slight. But I believe that this would be one of the most valuable results from classical studies when carried to an *advanced* stage, *i.e.* when the student reads widely in philosophy, political science, and history in Greek and Latin.

(*d*) As regards the training given by Latin and Greek in *reasoning*, here again it is a

1 "Experimental Psychology in Relation to Education," by C. W. Valentine, p. 143. Of course, we cannot always infer that there will be no general training of the memory as a result of several years of practice with one subject, simply on the ground that no such general improvement shows itself in the course of experiments lasting only a few weeks. But the important point is this, that the experiments were long enough to show a distinct improvement in the memory of the material on which it was being exercised, yet without any general improvement of the memory taking place

2 If a boy is led to see the value of accuracy and thus to set up a general ideal of accuracy in work, it will tend to show itself in all his work. But there seems no reason why this general ideal may not be developed through any school subject. More depends here upon the teacher and his method than upon the subject taught.

specific kind of reasoning that is involved. As Sidgwick pointed out, it is not a true reasoning from cause to effect.

It is, of course, an excellent training in the kind of reasoning required for Latin and Greek: as to what function this word performs, or what that phrase must mean from its form. To a less extent it is a training for the kind of "reasoning" required in German; to a still less extent for that required in French; and, again, for that required in the mere deciphering of the meaning of obscure English—by consideration of the position of words and phrases, etc. (that is, largely through a mastery of English grammar and syntax), in so far as it is common to both Latin and English. But it has never yet been shown how Latin can give the training required for this in any way better than that given in the direct study of English itself, and of its grammar, syntax, and analysis. If it be urged that some different language is necessary for comparison, it may be replied that a modern language could give this. The argument which is based upon the fact that Latin and Greek are more different from our language, and claims that they, therefore, give a better training in the understanding of the form of our language and so improve reasoning from form to meaning, seems to me to be supported by no proof either in practice or in psychological theory. That they may be necessary for the linguistic scholar's understanding of English and its development is a different question, to which we shall refer later.

Further, in translating Latin we are reasoning to a considerable extent about rules. The language and its difficulty absorb most of our attention: at least that is the case with the average boy (and Sidgwick maintains that he may often fit words to words without realising the meaning of either). Whereas the kind of training in reasoning we most want is reasoning about facts and hypotheses and their interconnection; and this can be best obtained simply by reasoning about them with a familiar language as medium, without the distraction of a strange language.

To sum up, *psychological considerations point emphatically to the conclusion that the best training for the thorough understanding and use of reasoned argument in English, and for the easy reading of comparatively difficult books in English, is practice in the reading of such books in English itself and practice in reasoning in English.*

But this, of course, implies that books of the right degree of difficulty are selected, and that a knowledge of the exact meaning of their contents will be demanded. We must prescribe for reading books which really make a demand for serious care and thought, books which are "difficult," not because of their antiquated style of language, as in Chaucer or even Shakespeare, but because of their continuity of argument, interconnection of parts, and, to a certain extent, depth of thought. Here we must, of course, be careful not to go to a stage which is necessarily beyond the reach of youth on account of immaturity. But this limits us as to emotional content rather than as to intellectual severity. In mere logic the boy of twelve is probably, if properly taught, much more like his father, and capable of understanding equally intricate argument, than he is like him in respect to emotional development. And even this latter relative disability disappears during adolescence, and at fifteen or sixteen the greatest books in our language in most departments of thought are capable of being brought within the comprehension of youth—that is, given the adequate training in English in the thought and knowledge necessary as a preliminary for such books.

I think there are few competent psychologists of to-day who would dispute the above argument, that the best preparation for sound reasoning about any subject, be it politics, or theology, or economics, or chemistry, is practice in reasoning in that subject itself, adequately guided and criticised.[3]

It has been urged that Latin affords an "unrivalled instrument for stimulating the reasoning faculties at an age in which their very existence might almost seem open to doubt."[4] An obvious reply to this is suggested, namely, that the reasoning involved at this stage may be of a very meagre type, as, indeed, those who have taught Latin to children know is often the case with the average or dull pupil. Too often the "reasoning" involved, when it is not guessing at the meaning of phrases from the given sense of other parts of the sentence, is the applying, in a rule-of-thumb manner, of such rules as "Take the verb first"—"Now the subject"—"What word agrees with the verb?"—"Any object?" Curiously enough, the attempt to translate by "guessing" what is probably the meaning of a given word or phrase so as to develop a sensible sequence of

[3] If there persists a demand for a *formal* training in reasoning—a training which may show its effects in reasoning on any kind of subject—then a short course in logic, which studies the general forms of both deductive and inductive reasoning and considers the general nature of proof, seems to be the best means. Or the logic of scientific method may be specifically brought out in the teaching of natural science. I do not say that even logic gives such a training in reasoning as would eventually show itself in all kinds of reasoning. Probably it does in the case of the best students, but not of the worst. Certainly if such transfer of training does not take place in the case of this study of reasoning—the most abstract and general, and therefore the most ready for direct application to all types of reasoning—there seems little hope of such a transference taking place when the abstracting (*e.g.* from the reasoning involved, say, in the construing of Latin) has first to be done by the pupil, and later on applied to a different substance-matter. Such a subject as logic, no doubt, is only suitable for pupils in the highest classes of secondary schools.

[4] See E. Lyttelton, *op. cit.*, p. 214.

thought, is probably, from the point of view of reason-training, as valuable a part of the process as any, yet it is a means which is usually discouraged, and, of course, as a guide to the meaning of the Latin is often disastrous.

But let us take up the question as to the special suitability for young pupils of such reason-training as is given by Latin. In the first place, there is a similar type of reasoning involved in the study of a modern language, which may be studied at the same age or earlier. Even admitting that the amount of linguistic reasoning is not so great proportionally to the amount of memory work, in studying those modern languages which resemble English more than does Latin or Greek, yet at least this type of reasoning is involved, and in so far as a modern language is easier it is likely to be more fitted for the average pupil, when the language is started very young.

Further, no experienced teacher would deny that boys of twelve can be got to reason about such matters as physical geography, animal and plant life, and even human affairs in history, biography, and literature; while more abstract reasoning is involved in mathematics suitable for this early age, and quantitative and mathematical ideas are constantly and directly involved in reasoning on almost all kinds of subjects of general interest in everyday life. So that there is ample scope for exercise in reasoning given in subjects suitable for young pupils.

Above all, we must remember that the setting free of the average boy from the study of classics would enable much more to be done to introduce him during his later years at school, through the medium of English, to more of the various subjects which essentially involve reasoning, and would provide so excellent a preparation for better reasoning on the subjects in after schooldays—for example, the great social sciences of history and political science (including the study in translation of masterpieces from the Greek and Roman classics); geography and its correlation with history, and including physical and economic geography, in addition to a due attention to physical and biological science, for which adequate provision should be made even for the boys not specialising in science, with whom we are at present concerned.

(*c*) We have not quite finished with the "mental training" argument. It is sometimes said that the very difficulty and dryness of Latin provide a unique mental gymnastic; the boy develops a power of volitional attention to what is uninteresting, and so later in life he is always able to attend better to things when necessary, even if they do not interest him. Some modern psychologists would scout this argument and say that there can arise an improvement of attention only as a result of added interest arising—specific interest in specific things—or as a result of added motives for attending; in other words, that no exercise of volitional attention upon *one* subject will improve the power of attending to *other* subjects.

Suppose we take a more conservative view in respect to this question.[5] It may be admitted that forced attention to Latin, *in so far as it brings success and satisfaction*, may lead the youth to face other inherently uninteresting things in a better spirit and with more determination. And if the removal of Latin from the boy's curriculum meant the disappearance of all necessity for effort and the substitution of "soft options," it would, no doubt, be an educational disaster.

Two replies, however, must be made to this argument. In the first place, mental effort is by no means confined to moments when we are dealing with uninteresting subjects. Keen interest and the most intense mental effort may be thoroughly consonant with one another. Also the rousing while at school of as many varied lines of interest as possible, consistent with an adequate degree of thoroughness, will make more probable a keen attention, interested and not forced, to any subject which has to be dealt with in later life.

Furthermore, even with Latin removed from the average boy's curriculum, plenty of opportunity and necessity for even "forced" attention will remain, if that is held to be necessary; especially if, as is being suggested, the time spared is given to really solid studies in English, involving close reasoning, with, perhaps, the more thorough study of a modern language in the earlier years.

This argument of the value of the difficulty of Latin cannot be better met than in the words of Sydney Smith written so long ago as 1825: "To the familiar objection that it was injurious to the pupil to remove difficulties [in the study of Latin] he answered that you might just as well say that the effect of Mr. Macadam's new roads would be to make the horses fat!"[6]

And every difficulty removed in the method of a subject, or the removal of a difficult subject itself, not only allows us to use our mental energy by covering more ground, as this simile suggests, and so reaching higher stages more rapidly, but set us free also to face difficulties in *other* subjects.

Furthermore, the admission made above, as

[5] The question is discussed more fully in a paper in *Mind* for January, 1918, by the present writer, on "Volitional Attention and its Training."
[6] Quoted by Lyttelton, *op. cit.* p. 216.

to the value of difficult studies as a means of training attention, was limited by the sentence "in so far as it brings success and satisfaction." It must be remembered that in a large number of cases the forced study of Latin fails to do this. Rather it tends to disgust the youth not only with Latin, but also with most of his school studies. Sir Samuel Dill, after long experience in teaching both in school and university, says:

> The effort to force the classical system on the mass of boys, irrespective of their peculiar type of mind, and with but slight regard to their destination in life, not only injures the boys submitted to it, but is apt to discredit real classical discipline, and its splendid influence on a certain number with an aptitude for such studies.

Another distinguished classic, a man of great gifts as a teacher, when I asked him what benefit he thought the average student in the pass Latin course in his university gained, replied: "They might as well be breaking stones." Canon Lyttelton writes: "Many a score of our pupils leave off too young to get even a glimpse of the beauties of any authors they read, many a score go on long enough to find that the taste for such reading has been denied them." So experienced a teacher and so enthusiastic a humanist as Mr. A. C. Benson also maintains that classics bring little of interest to the dull or even average boy.

If this be true, then it is almost certainly true that the dull "grind" brings little benefit by way of training of will or of voluntary attention. Effort constantly expended in vain is no encouragement to renewed effort.

Nevertheless, if this admittedly difficult and complex mental work is lost, even to some of our brighter pupils, through the dropping of Latin, we must see to it that some solid material is provided as a substitute, by means of a further development of scientific studies, or of the social sciences, or of the English courses as indicated above.

(To be concluded.)

HOW TO WRITE WITH THE LEFT HAND.

By P. B. BALLARD, M.A., D.Lit.

IV.—ADULT LEARNERS.

WHEN we come to deal with the adult who, for some reason or other, has been deprived of the use of his right hand and wishes to learn to write with his left, we encounter a special problem. It is not a case of learning something from the beginning, but of finishing a task already begun. For with him the intellectual part of writing is complete; it is only the motor part that needs to be perfected. The learner knows quite well what he wants to do, and what he intends to do; but he cannot do it. It is, in fact, a much easier matter for an adult to learn to write with the left hand than for a child to acquire the art with either hand. He can learn it in much less time and with much less effort. Even as a matter of muscular control he does not start "at scratch." His left arm has already received a considerable education in movement; mainly in the simpler and ampler movements, it is true, but not entirely so. He has learnt with his left hand to button his coat and his glove, to handle a fork, and perhaps to shave. If he is a violinist or a pianoforte player his fingers will have acquired much delicate skill. His left hand has, in fact, been *directly* educated in a variety of ways. But that is not all. It has also been *indirectly* educated through the training which the right hand has received. About this fact there can be little doubt. Whenever we learn to perform

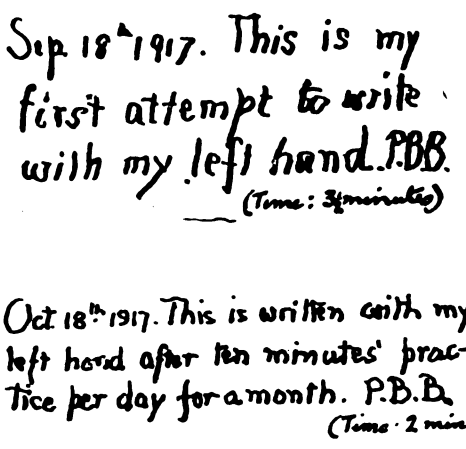


FIG. 11.

a definite act of skill with the right hand, a certain amount of that skill—not much, it is true, but still appreciable—is also learnt without any practice at all by the left hand.

Let the reader try to write with his left hand and he will probably be surprised to find how well he can do it, especially if he compares it with an attempt to write with his foot. I am myself pronouncedly right-handed, my left hand has had no specialised training of any kind, and I am no longer young. Yet it will be seen from the specimen of my left-handed writing given in Fig. 11 that I was at the first attempt able at least to write legibly, and at the rate of 15·7 letters per minute. This result is, according to the averages obtained by Dr. Kimmins from tests given to about 2,000 boys,[1] equal in the matter of speed to the achievement of a boy about seven and a half years old; a boy, that is, who has already prac-

[1] See *Child Study* for June, 1916.

tised writing for about two years. A reserve of writing skill seems to have been accumulating for many years in my unused left hand.

After ten minutes' practice per day for a month I was, as will be seen from the second specimen in Fig. 11, able to write much better and more than twice as fast. This speed (39·5 letters per minute) is nearly equal to that attained by an average boy of eleven. In other words, so far at least as speed is concerned, I had gained as much in a month as a young lad would have done in three and a half years. I do not record this as a boast (in fact, I believe most grown-ups would do much better), but as an encouragement. The adult learner may take heart of grace: to learn to write with the left hand is not a matter of great difficulty.

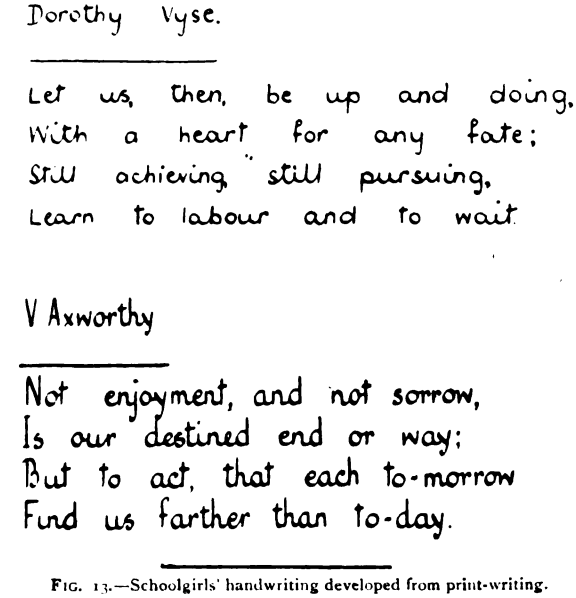
The print-writing reproduced in Fig. 11 was adopted for purposes of practice: it in no way resembles my ordinary writing. It is, however, worthy of note that when I write cursively with my left hand the result bears a very striking resemblance to the hand I wrote when I was a boy of seven. It seems to indicate that at whatever age writing is acquired it goes through the same stages of peculiar and personal development.

There is another and more definite form of indirect training, or cross-education, of the left hand to which reference has already been made—the training in reverse movements. The question here arises: Should the adult learner adopt mirror-script for his left hand? If he is congenitally a left-handed person who has written exclusively with his right, he will probably find it quite easy to write in reverse. The numerous manuscripts of Leonardo da Vinci are said to have been written entirely in this way. The main objection to this style of writing is that it cannot be read by others without a mirror. Even the writer finds it difficult. Mr. Clausen, who writes readily in reverse, says: "I know the Leonardo MSS. are written in reverse. I wonder if he was able to read them that way? I cannot read reverse writing, or only with the greatest difficulty, and not with certainty; but I suppose it is a matter of practice." Each will no doubt weigh the pros and cons for himself; will balance the advantage of economy in writing against the disadvantage of difficulty in reading. When it is necessary to write a normal hand, as in addressing an envelope, he can make shift to scrawl something that is at least legible.

An educated adult will have already acquired a definite and characteristic style of handwriting, and he will probably wish to continue that style when writing with his left hand. Unless it is signally unsuited to the left hand—unless it grossly violates the principles that have been laid down—he can, no doubt, with patience and practice, succeed. But, unless he has a strong prejudice against it (to practise a type of writing that one dislikes is weary and unprofitable work), he would be well advised to

FIG. 12.

start with the simplest form of lettering possible. In Fig. 12 will be found a suitable alphabet based almost entirely on the straight line and the circle. This is recommended as a beginning only. The learner should develop his own style from it. The only warning necessary is: Do not let your writing so far depart from the simple essential type that its legibility is imperilled. As one of the many ways in which a personal modification may be made, I give in Fig. 13 an example of the handwriting of two girls of twelve, both of whom began


Dorothy Vyse.

Let us, then, be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labour and to wait

V Axworthy

Not enjoyment, and not sorrow,
Is our destined end or way;
But to act, that each to-morrow
Find us farther than to-day.

FIG. 13.—Schoolgirls' handwriting developed from print-writing.

print-writing four years ago. It is unnecessary to tell the observant reader that they are right-handed.

The type of writing having been decided upon, practice is, of course, necessary. Which is the best, the most effective, way to practise? In the case of school children the practice is given in the writing itself, not in exercises that are merely designed to give muscular control or manipulative skill. The days of pot-hooks and hangers are over. It is felt that the small access of skill acquired in this way is not enough to compensate for the loss of interest in the art of writing. And, indeed, in any case, practice or no practice, the acquisition by children of control over the accessory muscles is necessarily of slow growth. It has been found by experiment in America, where drill in pen movements is much commoner than in England, that such drill is absolutely useless before adolescence sets in. It is found, in fact, that Nature refuses to be hustled. The older children, however, seem to benefit by this drill, which consists in rapidly and rhythmically making strokes and curves and ovals, the teacher setting the pace by counting or by using a metronome.

In the case of the adult, to whom drudgery may be full of meaning and promise, there is not the same objection to short cuts as there is in the case of the child. The earnest musician's attitude towards the irksomeness of five-finger exercises is very different from that of the reluctant beginner.

The first thing to do is to educate the arm. The reason for this has already been given. If the reader will try to write with his awkward hand he will find it easier to do with arm movements than with finger movements. Large free-arm writing is, therefore, the best starting point. A Frenchman named Albert Charleux, who at the age of forty had his right arm amputated, has not only acquired complete control of his left arm, but also had marked success in teaching left-handed writing to maimed soldiers at the Angers "Ecole Normale." He describes his methods in a little book entitled "Pour écrire de la main gauche." He points out the necessity of going slowly, and insists on the importance of educating the arm before proceeding to educate the hand. His pupils are first put to practise on a blackboard preliminary exercises of three simple types: first, horizontal and vertical lines of various sizes drawn backwards and forwards; secondly, oblique lines treated in the same way; thirdly, circles drawn clockwise and anti-clockwise. Then comes blackboard writing—large to begin with, but gradually diminishing in size. Finally comes writing with a pen on a flat surface. His exercises therefore follow this order: Blackboard drawing, large blackboard writing, small blackboard writing, ordinary writing on paper. This procedure is quite in accordance with the teachings of psychology.

As soon as a one-armed man starts writing at a desk or table he at once encounters difficulties unknown to the normal man. He finds that the paper shifts as he writes: there is no other hand to steady it. This inconvenience can best be remedied by resting a paper-weight on the top of the page. Then, again, there is the difficulty of maintaining a healthy posture while writing. The ordinary man can rest both arms upon the desk and thus keep his shoulders level; but the one-armed man always has a tendency to lean over towards the armless, unsupported side. M. Charleux, in referring to this difficulty, says that it can be overcome by strength of will only.

The one-armed man will, no doubt, be content to write a plain simple hand, a hand which

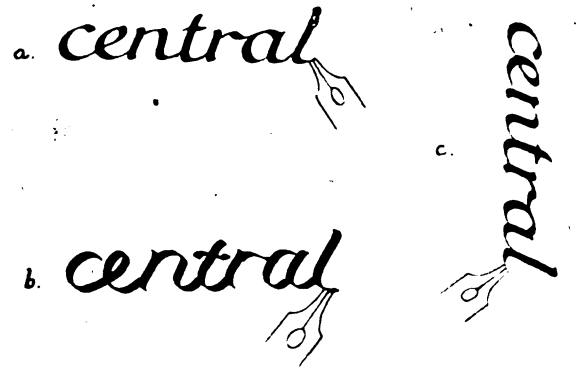


FIG. 14.—Vertical left handed writing (*c*) compared with (*a*) right-handed script and with (*b*) left-handed script written horizontally.

is written with facility and can be read without difficulty. Rarely will he wish to imitate the achievements of the professional penman—to do elaborate illuminating and lettering. There seems, however, to be no branch of penmanship which has not been mastered by M. Charleux. He can produce with his left hand the characteristics of the old manuscripts. And his method is ingenious. It can best be explained by reference to a diagram. He writes vertically down the page, as in Fig. 14, *c*. Right-handed script written in the ordinary horizontal manner with a broad pen is represented by *a*; *b* represents the same thing done with the left hand, and *c* left-handed script written vertically. It will be seen that by keeping the writing vertical the pen, when held in the left hand, bears the same angular relation to the vertical script as the pen in the right hand does to the horizontal. M. Charleux, although he does not teach his pupils this style, assures us that it can be acquired with very little practice.

The learner should not lose sight of the final

aim and purpose of such practice as he undertakes. He has not fully learnt how to write until he can do it without thinking about it—until it has become an automatic process almost entirely subconscious. It is necessary at first to attend to his posture, the way he holds the pen, and, possibly, the movements of his hand and arm. But the sooner he is able to cease thinking about these things the better. In learning, his attention should mainly be directed to the forms of the letters and words as they emerge from his pen. But this again is merely a stage in his progress towards the final goal, when his mind is free to concentrate itself on the ideas he wishes to express while his pen, almost without his knowledge, obeys the simple impulse to write.

The notion that all practice leads to improvement is false—and mischievously false. It is only successful practice that improves your form: unsuccessful practice vitiates it. The boy who, while writing in a copy-book with headlines, writes the first line as well as he can, and gets more and more careless as he proceeds down the page—and this progressive degeneracy is observable in nine copy-books out of ten—is worse than wasting his time. It is probable that the first line alone improves his style; the rest corrupt it. The moral is: Don't practise for long at a time. As soon as your hand is fatigued and you observe a falling-off in your writing cease at once. If you have a limited time to devote to practice, distribute it widely. Six periods of ten minutes each are much better than two periods of thirty minutes each. Even ten minutes is probably too long a period to start with. Make a strong effort each time to beat your former record. And don't expect too quick returns for your outlay of effort. It takes some time for the result of practice to register itself in the nervous system, so that after a long period of cessation of practice you will probably find that you have gained in skill. Hence the saying of William James: "We learn to swim in the winter and to skate in the summer." Distinguish between practice with the view of improving your style and practice with the view of fixing it—of making it automatic. The former demands concentrated attention on the script; the latter, a wise inattention. Abundant written composition is much the best way to press your writing forward towards an adequate degree of automatism.

Avoid unnecessary troubles, such, for instance, as writing with a steel pen. Even the right-handed find such a pen scratchy and unsympathetic; the left-handed will find it still more refractory. Use a smooth-running gold pen; it is cheaper in the long run and will save much friction between pen and paper. Once you have it keep it for your own use, for it gradually accommodates itself to your peculiarities of handling. If you let a right-handed friend use it you will find it pressed a little out of shape, and the process of accommodation has to begin over again.

Never use more than one line as a guide in writing. A double line will cramp your movements and impede your progress towards complete control.

These brief and general precepts may sound a little arbitrary. They are not really so. They rest on a sound basis of long-continued observation and experiment, the work of many minds in many lands.

TWO REPORTS ON THE TEACHING OF FRENCH.

II.

THE reports here summarised refer to the teaching of French in London secondary schools and were prepared respectively by the Board of Education and by Mr. Cloudesley Brereton, inspector to the London County Council. In the January issue of The School World those sections of the two reports were dealt with that concern the organisation of the teaching, such as the staffing of schools, homogeneity of classes, etc., and the teaching of pronunciation. We now proceed to state the views of the inspectors on other questions of method.

Grammar:

The inadequate attention now given in many schools to the claims of grammar well illustrates how the catchwords of controversy are sometimes fated to be so misinterpreted as seriously to damage the cause they were invented to serve. It was no part of the creed of the leaders of reform in modern language teaching to dispute or underrate the importance of grammatical accuracy. Misconception of their intention has led many of their faithful followers to disaster. (Bd. Educ., § 66.)

All pupils alike should have acquired the whole accidence and the elements of syntax by the beginning of the third year of instruction. (Bd. Educ., § 70.)

On the other hand, Mr. Brereton says:

In the opinion of the majority of teachers, the *third year* should be *par excellence* the one devoted to the rounding up of the commoner forms of the general accidence, especially of the irregular verbs, with such parts of the ordinary syntax that have already been acquired. To put it earlier would unduly abridge the time devoted to the acquisition of accent and vocabulary. (L.C.C., p. 13.)

[We are inclined here to agree with the view expressed in the Board of Education report. The first two years form the elementary stage,

in which the essentials of grammar should be acquired, together with a moderately large active vocabulary. It is more important at this stage that the grammatical knowledge should be sound than that the vocabulary should be extensive. It is because the vocabulary is too large and often ill-selected that many first courses are unsatisfactory. Beginners' books should be carefully built up and self-contained; it is not at all wise to "take an easy continuous text side by side with the book on which the instruction is mainly based" (Bd. Educ., § 69). Moreover, if the grammar is to be taught systematically, together with a well-chosen vocabulary, it is necessary to have books specially constructed for this purpose. The premature reading of literary texts is one of the commonest causes of inaccuracy; all depends on a sure foundation.]

Whether the grammar should be in French is a matter to be left to the teacher, and *a fortiori* whether the teaching should be in French should remain a matter of individual option. (L.C.C., p. 13.)

It was found, as a matter of fact, that only the exceptionally gifted teacher was successful in the use of a French grammar written in French. (Bd. Educ., § 73.)

[No difficulty is presented by the French grammatical terms used in elementary teaching, and there is no advantage in using the English ones; indeed, to introduce them in French sentences is a positive disadvantage. As for explanations of grammatical points, it certainly is sometimes preferable to give them in English; but most features of grammar, at any rate in the early stages, can be easily dealt with in French. A French grammar written for English pupils may be used with profit, when they emerge from the elementary stage. During the first year they may have a written *cahier de grammaire* (L.C.C., p. 12).]

Mr. Brereton has a useful section (L.C.C., p. 17) on the elimination of common errors. He says:

The gradual formation of a "black list" in the various classes of typical mistakes, according as they are first encountered, would do much to keep down the volume of common errors. Such a "black list" should take the form, not of rules, but of typical examples. . . . Each pupil should have his own copy of the list written either on the back of his book or at the beginning of his exercise-book. Moreover, three precautions are necessary in the formation of such tests:—(1) The list should be formed slowly. (2) In each year it should not exceed some fifteen typical mistakes, because while it is possible to keep ten commandments, it is nearly impossible to keep 100. (3) The writing should be neat and legible, and the number of times of writing out should be fixed at a nominal figure, because the test is not meant to be in any way punitive, but merely to serve as a system of pin-pricks for developing a linguistic conscience on certain points.

The main reason for the compilation of such a list is that the sum-total of the fifteen main errors, owing to their high frequency, represents a very large percentage of the sum-total of the whole. If, therefore, we can largely reduce the rate of their recurrence, we considerably lower the total number of errors made.

But, helpful as this remedy is likely to be, prevention is better than cure. If we want to prevent errors, let us say, in the order of the personal pronouns, the best thing is to use them so often in the correct order that it becomes a matter of instinct to do so; hence the importance of oral drill in elementary grammar (cp. Bd. Educ., § 72 A).

Vocabulary:

Both reports commend the compiling of vocabulary note-books (Bd. Educ., § 88; L.C.C., p. 11); the latter also mentions picture vocabularies. Both rightly dwell on the need for periodic and systematic revision. The following warning is judicious:

Mention should be made of two practices which effectively prevent the acquirement of an adequate vocabulary. One is to allow pupils to write the English of French words on the pages of their authors to be read off in their context when a pupil's turn comes and to be forgotten as soon as his turn is over. The other practice is similar and in itself equally futile, namely, to allow the use, during the translation lesson, of a word-list which the class has been required to compile and produce as evidence of preparation. (Bd. Educ., § 90.)

The value of *dictation* is recognised in both reports (Bd. Educ., §§ 91, 92; L.C.C., p. 12). In addition to the conventional form of this exercise which "affords a combined test of sureness of audition, accurate orthography, and knowledge of both grammar and vocabulary," dictation may also serve as a means of instruction—for instance, when there is what Mr. Brereton calls "syncopated dictation," viz. "the excellent practice of reading over a longish piece of dictation, and then asking pupils at the second reading to write down only . . . the verb-forms occurring in the passage dictated, or to direct the exercise exclusively in a similar way to some other series of allied phenomena." Mr. Brereton also refers to the useful device of getting one of the pupils to write out the piece at the same time on a blackboard which the rest of the class cannot see. [It is well to choose one of the best pupils and to lead him to correct his mistakes before the blackboard is shown to the class.]

Composition:

While there is nothing strikingly novel in the suggestions for the teaching of free com-

position and of translation into French in the reports (Bd. Educ., §§ 76–86; L.C.C., pp. 16, 17), we welcome the insistence on systematic teaching, on careful preparation, and on conscientious and judicious correction. It is well said that

where a teacher is solely responsible for the whole attainment of any given group of pupils, the number of corrections which it is necessary for him to make in their written work may fairly be said to vary inversely with his efficiency. (Bd. Educ., § 76.)

Teachers here have ready at hand a sure test of the success or failure of their efforts in teaching composition. It is also good to have it stated once more that

the written work, at least in lower and middle Forms, should, as a rule, be done under the eye of the teacher. (Bd. Educ., § 84.)

It is interesting that neither report states when translation into French should be begun. That it should not have a place in the earlier stages may, however, be inferred. Some English sentences for translation were included in the lower test paper set by the Board of Education inspectors at each school to a class of pupils in the second or third term of their third year of French instruction. It is worth recording that

among the girls' schools, one in which the direct method in its purest form was used was at the head of the list with 68 per cent. as average mark, while a boys' school in which the direct method was used almost exclusively was second among the boys' schools with an average of 58 per cent. Further, it may be noted that a test of precisely the same form was set as an experiment to a class of twenty-five twelve-year-olds who had been very skilfully taught on the direct method for three terms only; the marks obtained varied from 65 per cent. to 30 per cent., with an average of 47 per cent. (Bd. Educ., App. iv.)

Reading:

The instruction is based to a much greater extent than was formerly the case on the French text, and that this is true generally is significant of the advance which has been made in recent years. (Bd. Educ., § 93.)

The main concern is to provide an adequate and progressive course of reading in class with due regard both to language and subject-matter. The books in this course should be read intensively, and, whatever form the lesson takes, the teacher must be satisfied that every pupil in the class completely understands the text. At the same time the importance of acquiring facility must not be overlooked, and it is obvious that the texts selected for rapid reading, to be read largely by the pupil for himself, should be within the ready apprehension of the class as a whole—that is to say, texts well below the standard of difficulty of those read intensively in class. In all his reading the pupil should early be accustomed to intelligent use of his dictionary, which may well be a dictionary written wholly in French. (Bd. Educ., § 94.)

As regards the "readers" in use, the proportion of books of extracts is occasionally excessive, and in some schools the list of books for the four years' course might be more literary in nature, though the numerous cheap texts published offer an excellent choice. . . . In any case some Molière, like the first two acts of the "Bourgeois Gentilhomme" or the "Médecin malgré Lui," might well be read in the Forms below matriculation. One cannot help regretting that some children at present leave school without having ever read any Molière at all. (L.C.C., p. 12.)

In schools where French is not begun before the age of twelve, and where the course in the language does not, as a rule, extend over more than four years, these writers will naturally be representative of modern literature. The older French classics can be studied to full advantage only by pupils who have enjoyed longer preliminary training, and developed to some extent the historic and literary sense. (Bd. Educ., § 101.)

[It is likely that those who take the "First Examination" will be of somewhat lower average age than those who have hitherto taken London Matriculation; and it seems wise to confine their reading to modern authors.]

The Board of Education report contains in the sections (93–101) devoted to literature some warnings against excessive and unnecessary translation, against the complete exclusion of all translation by teachers who have no real mastery of the reform method, and against slipshod renderings. There is also an earnest plea for the scholarly and precise treatment of the texts read. Mr. Brereton has some valuable remarks (L.C.C., pp. 14–16) on the importance and encouragement of private reading. He has also the following useful suggestions as to the retention of books by pupils:

It would be well if some system could be devised in the maintained schools whereby the pupils became the possessors at least of their grammars and dictionaries for purposes of future study. Children who obtain a certain percentage of marks in the yearly examinations might be allowed to retain their books. It is sad to think of their leaving school without a single book available for continuing, if they so desire it, the study of the language. The principle obtains in one or two schools of allowing pupils to buy the books they have used at half-price. This might be extended. (L.C.C., p. 8.)

Both reports contain hints on teaching practice and class management (Bd. Educ., §§ 102–14; L.C.C., pp. 3, 7, 19, 20). These are deserving of earnest consideration. Many of them apply to the teaching of any subject, and many of the suggestions are, as the Board of

Education report says, of a quite elementary kind.

But our experience has shown us that the elementary points are often those most apt to be overlooked. Generally speaking, what is most needed is a fuller realisation that the object of the teaching is to get things learned, and to get as much learned as can be well and usefully learned in the available time. Resourcefulness in securing the effective assimilation of the imparted instruction and in utilising the available time to the best advantage is a quality the absence of which is a far commoner hindrance to progress than any other deficiency in the teacher's equipment. (Bd. Educ., § 110.)

We regret that limitations of space do not make it possible to reprint these suggestions in full. We must content ourselves with giving the most important in a condensed form:

It is very wasteful to distribute the available time mechanically among the various branches of the work (*e.g.* one period to grammar, one to composition, one to translation, etc.).

Have a short exercise in sound-drill at the beginning of each lesson.

Use the foreign language when uttering the stock classroom phrases, and use the French names of the letters for spelling French words.

It saves time and ensures thorough acquirement if a greater proportion of the lessons than is usual are conducted with closed books.

Make use of English only if you are sure it is indispensable for the testing of full understanding or the economising of time.

See that the pupil understands his mistake and repeats the faulty sentence in its correct form.

Do not spend too much time on the individual pupil; let the brighter members of the class correct his mistakes.

Various aids to teaching are indicated, such as attendance at lectures, etc.; the formation of a French "cercle" and a magazine club; to which may be added international correspondence and the exchange of French and English children during the holidays.

The problem of the study of other foreign languages is touched on in both reports (Bd. Educ., App. v.; L.C.C., p. 21). There is substantial agreement on the following points, as stated in the Board of Education report:

(1) No pupil should be allowed to begin a second language unless he is well abreast of his work in the first.

(2) At least one year, and preferably two, should elapse between the beginning of the first language (*i.e.* French in all London schools but one) and the introduction of a second.

(3) The time to be given to the second language should not be less than two and three-quarter to three hours per week, and the time still given to French should not fall below two to two and a half hours.

(4) No pupil should take up a second language unless there is a reasonable prospect that he will remain at school long enough to take at least a two years' course in it.

These principles involve two corollaries:

(*a*) That there should be in the great majority of schools a group of pupils taking only one foreign language, and that this group should give more attention to French than the rest and receive properly organised instruction in French, and probably English or some alternative subject, during the time allotted to the second language.

(*b*) In schools where the average length of school-life after twelve is only three years or under, it is very questionable whether a second language ought to form part of the normal curriculum.

The reports contain some important discussions on examinations and scholarships (Bd. Educ., §§ 114–18; L.C.C., pp. 22–24, 27). Some of these deal more particularly with questions specially affecting the London schools; others are of wider interest. It is very judiciously said that

the function of a general non-competitive examination of the Matriculation type can only be to test the pupils' possession of a reasonable minimum of acquirement; it is not, and cannot be, to determine the ultimate aims and define the scope of the course of instruction. (Bd. Educ., § 114.)

We are, however, unable here to deal adequately with the difficult questions raised. Especially in Mr. Brereton's report are there considerations which call for serious thought; in some respects they agree with the views put forward by the Education Reform Council.

The last sections of the Board of Education report emphasise the need for better libraries and other equipment. War economy may be pleaded as an excuse for reducing grants, but it is very doubtful whether this is real economy.

We are conscious that our summary of these reports does scant justice to them; but it will at least give some indication of their value. They contain extraordinarily little padding; they are worth reading right through, and fortunately they are now easily accessible to all modern language teachers. Very little in them has an application limited to London schools. If the two reports were fused into one and a few gaps (above all, a good bibliography) filled in, we should have an excellent little manual for teachers of French; and we owe warm thanks to all concerned in the issue of these budgets of sage counsel and sober criticism.

HIGHER EDUCATION WITH REFERENCE TO ADVANCED COURSES.[1]

By E. Salter Davies, M.A.
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EARLY in August of last year I addressed, on behalf of the Kent Education Committee, a letter to the Board of Education containing certain criticisms of the new Regulations for Advanced Courses. This letter was published in the *Educational Supplement of the Times*, and until the appearance of Circular 1,023 a few weeks ago its criticisms remained unanswered. I may say that my conviction that those criticisms were well founded was strengthened by the article on the same topic by Prof. Ripman in the August, 1917, issue of The School World, and subsequent thought and experience have only confirmed my judgment.

While I fully appreciate the engaging frankness and conciliatory tone of the Board's circular, its arguments have left me unpersuaded. In this circular the Board invites "expert criticism and suggestions from all quarters with a view to revision as regards both the scope and contents of courses suitable for recognition and the detailed conditions under which any such course can be recognised." It is a pity that such an invitation did not accompany the first issue of the regulations, and that their enforcement was not delayed until they had been revised in accordance with the criticism and suggestions received.

I do not propose to deal with what are, I think, serious defects in the constitution of the courses. These have been pointed out with clearness and cogency by Prof. Ripman. With his criticisms I am in entire agreement; and, in particular, raise my voice in protest against the unworthy treatment accorded to our own language and literature. My own criticisms will be mainly from the administrative point of view and with reference to the smaller provincial schools.

The most serious objection to the present scheme of advanced courses is that it is applicable in its entirety only to a few of the larger schools in the country. To these the adoption of the new scheme will mean little change in organisation or in curriculum, though the additional grant will, of course, enable the work to be strengthened and improved. Most of our secondary schools are not in the happy position of being able to organise, under the new regulations, separate courses for pupils desiring to specialise in classics, in science and mathematics, and in modern studies. They have perhaps, even in normal times, some half-dozen advanced pupils. The Kent Education Committee, in the letter to the Board of Education to which I have already referred, points out that

> the majority of secondary schools of any size or standing already attempt—and, in its opinion, rightly attempt—to give in all the main divisions of the curriculum such instruction as will lead to a university course. The records of the schools show that, in many cases, such attempts have had satisfactory results, since candidates from the same school have been successfully prepared for university scholarships in two or three different branches of study.

What will be the effect of the new regulations upon such schools? They will have to choose among three possible courses.

First, they may decide, as the Board apparently desires, that, as it is impossible for them to satisfy the conditions prescribed by the new regulations, they must draft those of their pupils who require advanced instruction, at the age of sixteen or thereabouts, to some larger and more fortunate school.

Secondly, many of the small schools may—and in all probability will—decide that they cannot afford to let slip the chance of an additional grant of £400 a year, and will proceed to try to organise an advanced course in one or other of the three groups of studies.

Thirdly, the schools may decide that, in the circumstances, they will do best to ignore the new regulations altogether, and to go on in the future as they have done in the past.

As regards the first possibility, the objection to such a system of transference was stated briefly in the letter of the Kent Education Committee:

> Such transference would in practice prove exceedingly difficult and would be attended by grave disadvantages. The school from which the pupils were transferred would suffer through the loss of its leading pupils, who naturally exercise a strong influence over the tone and character of the school, while the pupils themselves would suffer from a change to new methods and to a new environment with which they would not have time to become familiar before proceeding to a place of higher education.

The disadvantage of the system of transfer would be accentuated if it were applied to a boys' and a girls' school in the same neighbourhood as is suggested in Circular 1,023. The Board says it is fully conscious of the difficulties and drawbacks incident to any such system of transference. In particular, it says, it is alive to the most important difficulty of all:

> the risk that a school's sense of corporate unity may be enfeebled, and that its development may be arrested or discouraged.

[1] From an address to a meeting of the Teachers' Guild on January 5th, 1918.

In spite of this the circular argues that

it is not feasible for every secondary school to provide an advanced course, or for a large number of schools to provide more than one such course, and the principle of transfer, while it must be very carefully and considerately applied, is, therefore, essential towards bringing the benefits of advanced courses within general reach.

It adds that

the effective organisation of secondary education in an area is impossible if each school is to be treated as an isolated unit, free to take its own line independently of all considerations except its own efficiency and prestige, competing and not co-operating with other schools.

It seems to me that there is a hidden fallacy in this argument, and that it is contained in the word "competing." It is assumed that if a school does not co-operate with another school by the transference of advanced pupils it must compete with it. This assumption may be more or less true in certain special cases. It may be partially true in the case of two or more secondary schools which co-exist in the same town. It may contain a fractional element of truth in the case of schools in neighbouring towns, since both may draw a few pupils from the same town or from the same rural parish. It is certainly not true as a general proposition. A secondary school in a provincial town, as a rule, serves a fairly definite catchment area, and in no reasonable sense of the word can it be said to compete with other schools.

The Regulations for Advanced Courses with the system of transferred pupils may be applied successfully in such special cases. I do not think that they can be so applied generally. Regulations should be framed to cover the normal cases and not to meet exceptions. It may be argued that the advanced pupils from the smaller schools can be transferred to advanced-course schools by means of boarding scholarships. This expedient is likely to be useful only in a limited degree. In the first place, many parents will be unwilling to send their sons and daughters to boarding schools, and there can be no doubt that during recent years the day school has immensely increased in popularity and in prestige. In the second place, local education authorities will, I think, be reluctant to undertake the expenditure which would be involved in arranging a scheme of boarding allowances upon any large scale, and to face the many exceedingly difficult problems which would arise in connection with it.

The statement that our secondary-school system can be organised effectively only if the schools co-operate with one another is, of course, true. The assumption that the smaller schools can take their place in an organised scheme only by transferring to other schools their more advanced pupils is unwarrantable.

I think that the Board of Education has felt irresistibly attracted by the suggestion that an advanced-course secondary school should bear the same relation to an ordinary secondary school as a central elementary school bears to an ordinary elementary school.

Susceptibility to the seductions of logical but impracticable theory is the last infirmity of official minds. The analogy between a secondary school with an advanced course and a central elementary school is, I believe, wholly misleading. Every secondary school is already a central school with its own place in the educational scheme and serving a definite area, the size of which is determined by the facilities which exist within it for getting to and from the centre. To push the central school idea further than this is to leave the solid ground of common sense and practical experience for fantastic theory.

The proper line of progress is, I submit, to be found, not in narrowing and specialising the curricula of our secondary schools, but in giving the schools the assistance they require in order that they may develop themselves along their natural line of growth. It was with this object in view that the Kent Education Committee asked that the Advanced Course Regulations might be revised

so as to make a portion of the new grant available for the purpose of encouraging advanced work in those schools which, owing to the small number of pupils who remain after the age of sixteen, find it difficult in present circumstances to make satisfactory arrangements for their instruction. The grant to these schools might be paid on a capitation basis upon all pupils who have passed an approved qualifying examination and are receiving a continued course of instruction under conditions which are satisfactory to the Board.

The Board, in its circular, says that it regards two principles as essential in the recognition of any advanced course.

First, it

must provide continuous, coherent, and systematic instruction in a group of studies which have organic unity.

To this principle no exception can be taken, although there is room for difference of opinion as to what constitutes organic unity.

The second principle is that the course

must be taken in common by pupils working together as a class, and sufficient in numbers, regard being had to the size and circumstances of the school, to justify special staff aid.

This principle is more questionable. Much, however, depends upon its interpretation. At

present the Board seems to regard eight or ten as the minimum number of pupils which can be said to constitute a class, and holds that each year of the course must be taught as a separate class. This means, I take it, that there must be at least sixteen or twenty pupils in the two years of the course! With this interpretation of the principle I am disposed to quarrel. It is easier to organise a course for twenty pupils than for ten, and, generally speaking, there is greater competition, and therefore more stimulus, where ten pupils are working together than where there are only three or four. Nevertheless, I am convinced that the difficulties and drawbacks which, as the Board admits, are inherent in the system which it advocates are so serious as to outweigh the advantages. Some of the best and keenest work I have ever seen has been done, both in secondary and in technical schools, with groups of three or four advanced students. The policy of the Board, as it seems to me, should be directed towards strengthening and improving the advanced work in all schools which are already reasonably staffed and equipped, small schools as well as large, and without laying any great stress upon the present number of advanced pupils.

The second possibility which I suggested was that the smaller schools may refuse to transfer their advanced pupils, and endeavour themselves to organise an advanced course. In this event there will necessarily follow the result stated in the letter of the Kent Education Committee, namely:

> The establishment of a bias in the school towards the particular group of subjects selected. The pupils would naturally regard those subjects as being of supreme importance, while the headmaster would be tempted to use his influence to persuade pupils to specialise in them rather than in others. The temptation would be all the greater in cases where there was danger of an established advanced course failing to obtain renewed recognition owing to an actual or anticipated reduction in the number of senior pupils.

Moreover,

> in several cases the Board will doubtless require as a condition of recognition the appointment of a new specialist teacher. Even among those schools which have a reasonable number of pupils desiring advanced instruction in the same group of subjects many will hesitate to make such an appointment owing to the impossibility of ensuring in future years the continuance of a supply of pupils desiring to specialise in those particular subjects.

If such specialists are once appointed, it is inevitable that strong pressure will be put—consciously or unconsciously—upon older pupils to take up the particular branch of study which has been recognised. If—in spite of all—the supply of such pupils fails, what will be the position of the specialist teachers?

I can think of few developments more undesirable than this forced and unnatural delimitation and distortion of the curriculum of our schools in order that a share in the new grant may be secured.

Thirdly, it is probable, as I have suggested, that many of the smaller schools will reject both the alternatives I have discussed, and that they will decide to ignore the new regulations, and to continue their attempt to provide, as best they can, for the needs of their own advanced pupils.

We must all agree with the Board so far as to admit that the present arrangements are not satisfactory. Under present conditions it is impossible for most small schools to make really satisfactory arrangements for advanced work. The reason for this is, I believe, as a rule, not lack of teaching or of organising power, but inability, through want of funds, to use that power to the best advantage. It will be a lamentable thing if the smaller schools are to reap no benefit from the increased grants which have been supplied in order to make good the present inadequacy of our arrangements for higher secondary instruction. The larger schools are already fairly capable of organising satisfactory courses of advanced work. They are to have increased assistance. The smaller schools even in normal times had the greatest difficulty in doing this. These are to have no help. It must be remembered that their position generally has been, not bettered, but worsened, by what is called the "Fisher grant," since the new salary scales, as they mature, will more than absorb the increased grant.

Moreover, while all secondary schools for boys are badly hit by the war, both by loss of staff and of older pupils, it is the smaller schools which feel the pinch most acutely. They are struggling to maintain their post-matriculation work for the few pupils that remain, and need assistance more than ever they did. They ask for bread, and it is given to their more prosperous neighbours. In framing these regulations the Board appears to have acted on the principle embodied in the text: "To him that hath shall be given, and from him that hath not shall be taken away even that which he hath."

Finally, I suggest that the Board is showing some want of discretion in the manner in which it is administering the Advanced Course Regulations. It appears to be acting upon the assumption that, since it finds the money for the advanced course, it is its business to define in the closest detail the conditions upon which the grant shall be made. It is for the Board

to assign the exact number of teaching and study periods which are to be allotted to each subject, to decide the academic qualifications, and even to fix the salaries of the teachers who give the instruction. In dealing with such matters it seems to me that the Board is in danger of interfering with the powers both of the headmaster and of the governing body, and I view the innovation with dislike.

Education authorities have recently been engaged in arranging new and improved salary scales—not before these were needed. If an inspector of the Board is now to assume power to say that Mr. A or Miss B is to receive a salary of *x* pounds this year, and of *x* plus *y* pounds next year, a state of chaos will be produced, and the best-laid schemes of the authorities will "gang agley." For my own part I am not prepared to admit that a teacher in the lower or middle school should necessarily receive a smaller salary than a teacher who takes advanced work. I have a good deal of sympathy with the contention of Mulcaster —that the teachers of the junior Forms require the greatest skill and should be paid the largest salaries. In any case, I submit that these are problems which can be dealt with properly only by the governing body of the school, and do not come within the competence of the Board of Education.

In the county of Kent a rumour has gone abroad that the advanced courses are to be directly controlled by the Board of Education, and that the teachers engaged in such work will cease to be servants of the governing body or of the local authority, and will be directly responsible to the Board of Education. This rumour is, of course, absurd, but it is significant that it should have been raised, and that it should, apparently, have gained considerable credence. It is the duty of the Board of Education to lay down the general conditions which will qualify for the advanced course grant, and to satisfy itself that the syllabuses are adequate, the time-table suitably arranged, and the teaching staff competent. These are the limits of its control as regards not only the advanced course, but also all work which comes under its purview. Why should these limits be overstepped in regard to advanced courses? And, if they are to be overstepped in one part of the school, how long will it be before the same policy is followed throughout?

In certain cases the Board has shown a disposition to insist that in order that recognition of an advanced course may be obtained the whole of the grant, £400, must be spent upon it. Such a condition merely tends to encourage uneconomical expenditure. Underlying all such procedure, as it seems to me, is the mistaken assumption that an advanced course is not an organic part of the school, but an accretion subject to different laws.

I am very far from suggesting that there is a deliberate attempt on the part of the Board to supersede the authority of education committees. Mr. Fisher claims that the tendency of the Board

> has been consistently in the direction of dispensing with meticulous control and devolving more responsibility on local education authorities and giving them greater freedom.

I readily admit that this claim is fully justified, but it seems to me that there have been indications of a regrettable lapse from this ideal of conduct.

If the policy of the Board of Education were continued on the present lines it would, I believe, go far to destroy what I regard as the most blessed feature in our English system of education, the absence of any sort of artificial uniformity imposed upon it from above.

From an educational system of mechanical regularity, of which every detail is prescribed and controlled by Authority, good Lord, deliver us!

PERSONAL PARAGRAPHS.

DR. BUTLER, the Master of Trinity, died in his eighty-fifth year on January 14th. His death is a great loss to all workers in education. He was a distinguished member of a family of distinguished scholars. From Harrow he went to Trinity, where he carried everything before him. He secured, among other prizes, that for the Greek ode, for Latin essay, the Camden medal, and the Porson Prize. He was senior classic in 1855. At twenty-six he succeeded Dr. Vaughan as headmaster of Harrow, a position his father held from 1805 to 1829. His twenty-six years' rule over Harrow saw many extensions and developments of the famous school, and during that time old Harrovians raised £130,000 for their *alma mater*. In 1886 he became Master of Trinity; and until the other day "the most patriarchial figure in English academic life"—as the *Times* describes him—worked in this capacity. One of his sons, Mr. J. R. M. Butler, now holds a staff appointment under the Director of Military Operations; another, Lieut. G. K. M. Butler, died on active service in July, 1916; and a third, Mr. N. M. Butler, who was visiting Germany in August, 1914, is a prisoner there.

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LIEUT. H. B. RYLEY, Suffolk Regiment, was killed in France on December 15th last. Mr. Ryley was educated at St. Olave's Grammar School, and Exeter College, Oxford. He then

became a master at his former school, at which he remained until he was appointed headmaster of Sandwich Grammar School. Later he held for some years the headmastership of Emanuel School, Wandsworth. While in the States he heard of the death of his two sons at the front. He at once hurried to England, and, having formerly held a captaincy in the O.T.C., obtained a commission in the Suffolk Regiment. Mr. Ryley, while at St. Olave's, was an active member of the Assistant-masters' Association, in which he made many friends; his was, indeed, a most attractive personality, and many are the men who sincerely regret the tragedies of his life and mourn the loss caused by his early death.

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Lieut.-Colonel Hubert Podmore, D.S.O., Northampton Regiment (attached to the Middlesex Regiment), was accidentally killed on active service on December 31st last. Mr. Podmore, on leaving Oxford, accepted a mastership at his old school, Rugby, became an officer in the O.T.C., and obtained a commission on the outbreak of the war. A Rugby colleague writes: "Nobody has ever made goodness more attractive, and there was a noble simplicity about him, a complete absence of egotism, which made his very strength seem like some form of gentleness."

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Lieut. F. D. Purser, R.N. Division, was killed on December 27th last. Mr. Purser was educated at Mr. Thring's, Haywards Heath, and at Uppingham. After leaving Cambridge he held a mastership at Osborne, and in 1914 joined the staff of Haileybury. The headmaster writes: "Mr. Purser was a schoolmaster of the very first rank. His keen intellectual interest, his vigorous presentation of his subject, and his acute criticism made him a remarkably successful teacher of history to Sixth Form boys. . . . Those who knew him and loved him—and they were many—will cherish the memory of a nature singularly strong, simple, and sincere."

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The death is announced of Mr. Philip Wood, for thirty-five years headmaster of Darlington Grammar School. Mr. Wood was a governor of the Darlington Girls' School and also of the Darlington Technical College, and had been associated with all the educational developments which have taken place—and they were many—during his long residence in the town. He was president of the Headmasters' Association in 1910.

* * *

Educationists were represented in the New Year Honours by Lord Hugh Cecil and Sir Henry Craik, both of whom represent universities in Parliament; by Messrs. James Campbell, chairman of the North of Scotland College of Agriculture, George Lunn, chairman of the Newcastle Education Committee, and H. M. White, treasurer of Southampton University College; and by Profs. J. R. Dunstan, Agricultural College, Wye, and J. M. Jones, Bangor, and Dr. W. H. Hadow, Armstrong College, Newcastle. The list of additions to the Order of the British Empire included Messrs. A. T. Davies, Honorary Director of the Prisoners of War Book Scheme, and H. E. Fass, a senior examiner of the Board of Education, Prof. T. B. Wood, of Cambridge, and Mr. James Young, senior instructor in science at the Royal Military Academy.

* * *

Miss Reta Oldham, a former president of the Headmistresses' Association, who has been acting as chairman of the Headmistresses' Committee for inspecting girls from secondary schools for employment at the War Office, becomes an Officer of the Order, as does Miss Penrose, the principal of Somerville College, Oxford. Miss Edith Clarke, teacher of domestic subjects at the National Training School of Cookery, becomes a Member of the Order.

* * *

Mrs. Bryant, who has been headmistress of the North London Collegiate School for Girls since 1895, is retiring at the end of the summer term. Mrs. Bryant succeeded Miss Frances Mary Buss, with whom she had worked as mathematics mistress; the school has had, therefore, only two headmistresses since its foundation in 1850. In a short paragraph it is impossible to give an idea of the extent and influence of Mrs. Bryant's educational work or of the esteem in which she is held in the literary and scholastic worlds. Mrs. Bryant was born in Ireland and received her early education in Dublin; she then came to England, attended Bedford College, and graduated with mathematical and moral science honours at London in 1881; three years later she was the first woman to take the degree of Doctor of Science. At the age of nineteen she married Dr. Bryant, of Plymouth, and after his death a year later, became mathematics mistress at the North London Collegiate School. Such are a few of the facts relating to the life of a remarkable woman who has had a powerful and lasting influence on education, especially of women. A biography from a sympathetic hand will be of great interest and of incalculable value.

* * *

Three masters in the service of the London County Council have been doing good educational work during their internment as

civilian prisoners of war at Ruhleben Camp. Mr. Gourvitch gave a considerable number of lessons in English up to July, 1915, for the most part as individual tuition. Since then he has taken a class in elementary French and the English class preparing for the London Matriculation. Mr. George Walker joined the staff of the mathematical department of the Camp school in September, 1915, and has taken twice a week a class consisting mainly of marine engineers. Mr. A. Wechsler lectured from time to time on various subjects, mostly scientific; from the beginning of 1916 he has given two lessons a week on physical and inorganic chemistry. The Education Committee has agreed that the work of these gentlemen at the Ruhleben Camp will be noted for future reference.

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MR. SYDNEY JONES, formerly headmaster of Cheltenham Grammar School, and now a master at Manchester Grammar School, has been appointed headmaster of Barnstaple Grammar School in succession to MR. H. G. Abel. Mr. Jones was educated at Christ's College, Brecon, and Christ's College, Cambridge, and is the author of several valuable text-books of school mathematics.

* * *

THE Rev. R. W. Clarke, headmaster of Market Bosworth Grammar School for the past three years, is to succeed Mr. H. S. Cooper as headmaster of Lichfield Grammar School. Mr. Cooper has held the office with distinction for some twenty-five years. Mr. Clarke is a graduate of Oxford, was formerly Sixth Form master at Queen Mary's School, Walsall, a master at King Edward's High School, Birmingham, and second master and housemaster at King Edward VI. School, Stratford-on-Avon.

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THE Lord Mayor of Newcastle recently presented a cheque for £450 to Father Mann, who is leaving the headmastership of St. Cuthbert's Grammar School, Newcastle, to become rector of Bede College, Rome. Dr. Mann went to Newcastle in 1886 from Ushaw College, and in 1890 succeeded to the headmastership of St. Cuthbert's. Since then he has made a great contribution to the educational position of the city.

* * *

SOUTHPORT is facing its educational problems in an eminently practical way; it has appointed proved educationists as chairman and vice-chairman of the Education Committee, and it has now appointed as Director of Education Mr. William Allanach. Mr. Allanach is a man of wide experience in education; he has been engaged in elementary schools, secondary schools, technical schools, and the Sheffield University. At the University he taught students from the Sheffield Training College for Teachers. He holds a science degree of both Sheffield and London Universities and is the author of "Elementary Experimental Magnetism and Electricity." Since 1907 he has been at Southport, where he has organised the evening continuation classes.

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MR. A. C. BADCOE has been appointed assistant-secretary to the Norfolk Education Committee, in succession to Dr. A. E. Ikin. Mr. Badcoe was headmaster of the Bridport Secondary School and Pupil Teachers' Centre, 1905–6; he has since been assistant-secretary to the Dorset Education Committee.

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MR. A. HIBBETT, formerly inspector of schools, has been appointed secretary to the Education Committee of the Walsall Town Council. Mr. I. A. Picken, headmaster of Palfrey School, has been appointed inspector of schools.

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THE meetings of the I.A.H.M. were perhaps not quite so well attended as those of last year. Mr. W. G. Rushbrooke, the incoming president, in his presidential address, showed the high ideals that he keeps before himself, his school, and his colleagues in the association. Sir John McClure once again proved that a headmaster may retain his keen sense of humour, and that matters educational gain, rather than lose, by a lighter touch than that with which they are usually handled. The conference habit, once acquired, is apparently not easily broken. At the meetings of the headmasters were to be seen men formerly prominent in the Association of Assistant-masters; some were in charge of resolutions and others are officers of branches. Among them were Messrs. Coxhead, Greene, Cholmeley, and Charles, formerly chairmen of the larger association, Messrs. Rouse and Jemmett, secretaries, and Messrs. Sharples, Dazeley, Norwood, and Hensman.

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AT the annual general meeting of the Assistant-masters' Association it was a great pleasure to hear the retiring chairman acknowledge that he was in better health at the end than at the beginning of his year of office. Strenuous work evidently agrees with him, fortunately for his association. The association is to be congratulated in having Mr. G. D. Dunkerley, of Watford Grammar School, a former chairman of the association, for its new honorary secretary. Mr. Dunkerley has already done yeoman service for the associa-

tion and might reasonably have sought a sphere of less arduous labour than its secretaryship. He is a member of the Departmental Committee on Scales of Salaries at the present time.

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At the many meetings early in January there was much talk of Alec Waugh's "Loom of Youth." Quite a popular pastime was the search for the originals of his characters; there was even a certain amount of unanimity as to an ardent reformer who shares many characteristics with Ferrers.

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Mr. W. B. Steer, a past president of the N.U.T., has been chosen by the union as one of their six candidates at the next general election. He will stand as a Labour man, and a constituency will be found for him in consultation with the heads of the Labour movement.

Onlooker.

RECENT RESOLUTIONS ADOPTED BY ASSOCIATIONS OF SECONDARY-SCHOOL TEACHERS.

Association of Headmasters.

(1) That this association desires to express its regret at the withdrawal of the Education Bill of 1917, and to urge the Government to secure the passage into law at the earliest possible date of the Bill now promised in substitution for that measure.

(2) A resolution welcoming the appointment of the Departmental Committee on Scales of Salaries, and declaring the opinion that an essential requirement for educational progress is the adoption of adequate scales of salaries for both head- and assistant-masters.

(3) (i) That admission to a university should be granted to all who show (*a*) evidence of general education, and (*b*) evidence of ability to pursue a particular course of study at the university.

(ii) That as evidence of general education the university should accept a certificate awarded on the results of a "first examination" of the type described in Circular 849 of the Board of Education.

(iii) That as evidence of ability to pursue a particular course of study the university should accept either (*a*) a "pass with credit" in the appropriate subjects in the "first examination," or (*b*) satisfactory proof that the requisite standard has been attained in some part of a "second examination" of the type described in Circular 849.

(iv) That professional bodies should be urged to accept as the equivalent of their own preliminary examination a certificate awarded on the result of a "first examination" of the type described in Circular 849.

(4) All secondary-school units, whether O.T.C. or cadet corps, should be brought into a single organisation under the War Office; and the association protests against any attempt to induce secondary-school cadet corps to become affiliated to the Volunteer Force.

(5) Resolutions were passed reaffirming general approval of the proposals outlined in the report of the Departmental Committee on Pensions, and hoping that measures would be taken to bring the suggested scheme into force at an early date; pressing upon the Board of Education the necessity in the superannuation scheme of making some adequate allowance in case of breakdown at an early stage in a teacher's career, and also of making special provision for those teachers who may have had long periods of service in secondary schools before the scheme comes into force; and expressing the opinion that pensionable service should be past service given in any school which is now in receipt of grant, or recognised as efficient by the Board of Education.

Association of Assistant-masters.

(1) That this association, having in mind the ultimate welfare of the nation, expresses its general approval of the Education Bill, and therefore regrets the delay of its consideration by Parliament.

(2) That in order to attract into the teaching profession a sufficient supply of men and women of the right type, it is of fundamental importance that a national minimum salary scale should be compulsory in all secondary schools receiving State aid.

(3) That the representation upon the Secondary-School Examinations Council accorded to teachers engaged in secondary schools is quite inadequate.

(4) That this association protests against the action of certain local education authorities and of governing bodies in proposing to divert part of the supplementary secondary-school grants from educational purposes to the relief of the rates.

(5) That this association (i) reaffirms its general approval of the recommendations contained in the report of the Departmental Committee on Superannuation of Teachers; (ii) hopes that steps will be taken to bring the suggested pension scheme into operation at an early date; (iii) desires to press upon the Board of Education the necessity for:—(*a*) Increase in the proposed breakdown allowances, particularly in cases of breakdown at an early stage in the teacher's career, (*b*) special provision for augmenting the proposed pensions of existing teachers, who have had long service in secondary schools, prior to the inauguration of the scheme; (iv) is of opinion that past service in any school which is now in receipt of grant, or recognised by the Board of Education, should be regarded as pensionable service.

Association of Headmistresses.

That this meeting of the Association of Headmistresses, held in connection with the Conference of Educational Associations, January 4th, 1918, strongly urges on the Government the great national importance of proceeding at the earliest possible date with Mr. Fisher's promised Education Bill.

Association of Assistant-mistresses.

(1) That the A.A.M. considers that assistant-mistresses should be able to retire at the age of fifty-five and that the insurance policy should be available at that age.

(2) That this meeting is of the opinion that equal

work demands equal pay and that there should be no differentiation in the pay of men and women on the ground of sex.

(3) *Scheme of Salaries for Assistant-mistresses.*—(i) Minimum initial salary of mistress with university degree, or its equivalent, and training (without experience), £150; (ii) minimum initial salary of mistress with honours certificate of the Cambridge Higher Local, or any other equivalent certificate, and training (without experience), £120 (in all cases a higher initial salary should be given if the mistress has had experience); (iii) the rate of augmentation should be £10 per annum, up to a minimum of £180 for non-graduates, £250 for graduates. In all cases of entirely satisfactory service, salaries should continue to rise, to a minimum of £220 for non-graduates and of £300 for graduates. The salaries of assistant-mistresses occupying positions of special responsibility should be on a still higher scale. Teachers of special subjects, *e.g.* art, physical training, domestic economy, should be on scale (i) or scale (ii), according to their qualifications.

SOME TOPICS AT THE JANUARY CONFERENCES.

Dangers to Education.

On New Year's Day the President of the Board of Education gave an address to a conference arranged by the Teachers' Christian Union. He referred to two dangers to education, indifference and the natural desire of eager spirits to exploit education for specific ends. There is not a retired colonel at Bath or Cheltenham who has not framed his vision of the kind of citizen who should be supplied by the public elementary schools to the Empire upon whose shore the sun never sets. A smart, strapping young fellow, quick to the salute, with a sound knowledge of Navy League literature, and able to place the British Colonies on the map! Other ideals, other counsels. "We must," said Mr. Fisher, "rid ourselves of the fallacy of the particular end if we are to do any good in education. I do not deny that it is possible to put a stamp upon a generation by the powerful impress of an educational machine, incessantly ascending on the same point and with the same momentum. The Germans appear to have done something of the kind. Their education is, indeed, not what it is portrayed to be by lusty orators in the House of Peers and the House of Laymen. It is not undenominational or irreligious, but very much the reverse. Nor is it conspicuously materialistic, seeing that it assigns a larger place to the study of classical antiquity than is accorded in England. But it is political, and governed by a theory of statecraft, served by an army of State teachers, and dominated by the overshadowing and universal obligation of military service. Such a system of education, framed in the Spartan mould, with a constant view to the stern extremities of war, is capable of producing great feats of social coherence in times of patriotic stress. We must not underrate its virtues because it does not convert a savage into a saint, for it is those virtues which make Germany so formidable and tenacious an opponent. But the German system is open to one grave objection. It is blighting to the spirit of English liberty, and for this reason we may safely predict that slips from the German tree will never flourish on English soil. In our English view it is not the business of a public system of education to manufacture opinions. We are content to leave that branch of the trunk to the German Emperor and to the Central Labour College. What we can and should do is to give to young people some impression of the wealth and splendour of the spiritual inheritance which belongs to them as members of our nation, to train them to acquire knowledge, to weigh evidence, to think for themselves justly, temperately, and wisely, and to keep their faculties of self-criticism alive."

The Schoolmaster's Ideal.

In his presidential address to the Association of Headmasters, Mr. W. G. Rushbrooke said it is not likely, or even desirable, that education will ever assume the guise of an exact science. Authoritative experiment is impossible in the sense known to the man of science. The same experiment cannot be tried twice on the same group, since the individuals have changed in the interval. In the main, education is an art and proceeds by experience, by common sense, by fortunate conjecture, by the love of beauty and goodness, by sympathetic insight, by the fascination of creative work, by the sense of its transcendent issues—all conditioned in their working by the special circumstances of the school and by the personal aptitudes and correspondences of teachers and taught. However unpromising the capacity of the pupil may seem, the teacher must be no perfunctory artisan working in the mercenary spirit of the hireling, but an artist fired by reverence for his material, joyfully conscious of the dignity of his trust, lavishly spending himself for the sake of the children, and following them as best he can with an unforgetful interest in their after-life. So shall he be blessed in his work and find increasing rewards as the swift years go by. Already we are beginning to hear the suggestion that continuation schools and secondary schools must seek to justify themselves by giving a vocational training. To this we may reply that our duty is so to equip our pupils that they may bring intelligent and alert minds to their work, whatever it may be. To this end we shall have due regard to the importance of making our teaching serve to interpret the outside world, but we shall not betray our trust by pretending to train experts in business or industry. The time of youth is marked by strong emotions and a passionate desire to know the reason of things. Hence it is, above all others, the period of life when right impressions can be formed and just relations established. This twofold process demands that we shall not exclude either literature or science. In one we have the story of the created universe; in the other the record of the thoughts of men. Both are essential to a just conception of life. The world of things—vast and wonderful as it is—has no meaning for us until the thought of man has shone upon it. And in their turn these thoughts become themselves a part of the phenomena of the world, preserved in literature or history, not to be excluded or

disparaged, since they, too, are constantly operating as forces in the lives of men. Our plea is that education shall have an acknowledged unity of purpose; that it shall be directed towards the building up of knowledge, not as a mere possession or as an aid to material wealth, but as a means of interpreting life and of learning how the best life may be lived. In other words, education is the framing of ever closer links

> "Betwixt us and the crowning race
> Of those that, eye to eye, shall look
> On knowledge."

The Supply of Teachers.

Mr. H. P. Lunn, the retiring chairman, in his address to the Assistant-masters' Association, emphasised the fact that our greatest national need is now more than ever an efficient system of education. We have seen the production of many schemes of reform; we are on the eve of a great forward move towards better organisation and higher efficiency in our national education. But we are far from a solution of the most pressing of all our difficulties, the training and the supply of teachers. The cardinal factor governing the efficiency of any educational system is the teacher. The necessity for improving the status of the teacher, so long urgent, is now the most essential need; to give to the profession that status which it should enjoy, conditions of service must be such as to make it worth while for a man deliberately to choose teaching as his profession in face of the competition arising from other callings. A *sine qua non* to entrance to the profession should be qualification for the Teachers' Register, enrolment on which will soon necessitate a course of professional training. Our policy as to training is definite. We believe that the intending teacher should first live the ordinary life common to university students and take his degree, and afterwards undertake a course of specific training for his profession. Hitherto the State has not provided grants for training to the intending secondary-school teacher similar to the training grant for elementary-school teachers. Personally, I hope that no such grants will be provided. I suggest that the remuneration to which a man can look forward should be such as to make it worth his while to fit himself for the profession without any grant from either the State or the local authority. I feel that the profession would lose in dignity and prestige by the adoption of a system of grants such as I have mentioned.

ADVANCED COURSES IN SECONDARY SCHOOLS.

In Circular 1023 the Board of Education has set out the principles on which the provisions for advanced courses under the regulations for secondary schools have been framed, together with a statement of the progress already made, and notes on certain doubts or difficulties which have arisen. The Circular is here summarised:—

Up to the middle of November last between 270 and 280 applications for recognition of advanced courses had been received. Of these the greater number came from schools in large urban centres. The geographical distribution of the applying schools is uneven, and there are large areas from which no applications have been received. About half the applications were in respect of courses in science and mathematics; of the remaining half, those for courses in classics were little more than one-third of those for courses in modern studies.

Up to the same date, sixty-three courses in science, thirteen in classics, and nineteen in modern studies have been recognised. Nearly fifty were still undetermined. In the remainder (about 130) recognition was withheld, because the syllabus of instruction submitted was unsatisfactory, or because it was not shown that it could be satisfactorily carried out, or because a reasonable number of pupils qualified to enter on the course was not forthcoming. The proportion of refusals was by far the largest among modern studies courses. This is due partly to the fact that this type of course is more of a new departure than the other two, but more largely to failure on the part of school authorities to grasp fully either the meaning of advanced work, or the principle of coherence, in such a course.

The Board regards two general principles as essential. These are that an advanced course (1) must provide continuous, coherent, and systematic instruction in a group of studies which have organic unity, and (2) must be taken in common by pupils working together as a class, and sufficient in numbers, regard being had to the size and circumstances of the school, to justify special State aid. In other words, the regulations are not meant to encourage either "fancy" courses in an arbitrarily selected collection of disparate subjects, or courses, however good in themselves, followed by one or two individual pupils only. Further, not only should the bulk of the school time of the pupils concerned be assigned to the group of subjects taken as the advanced course, but the substantial nucleus of instruction given in that group should be the same for all the pupils following the course.

Representations have been made to the Board that in the groups as defined no sufficient recognition is given to such important subjects as English language and literature, geography, art, civics and economics, commerce, and domestic subjects. These representations are being carefully considered. But for the present what is most needed is concentration. Any substantial multiplication or subdivision of the three types of course now recognised would be attended by serious risk. Of these other subjects some, such as geography, may be, and should be, provided for within or in connection with one or other of the three recognised groups, while others, so far as specialised or intensive study is concerned, are outside the proper scope of secondary-school work. Further, considerable latitude is allowed in science and in modern studies courses as regards the choice of constituent subjects, and the relative importance given to each; and the syllabuses of courses already recognised show large variations.

In the preparation of syllabuses for proposed courses, especially in modern studies, proposals have been submitted which have had to be rejected or referred back for substantial amendment on the ground that they

do not embody the principle of coherently grouped studies. A very common fault is the absence of any attempt at correlation of history with the period of modern literature chosen for special study. It is not required that all the subjects in the group should be carried up to the same standard. Predominance may be given to history, or to two languages, or to history and one language, so long as organic connection between history and literature, as well as strict linguistic study, is secured. One language must be carried to the standard at which it can become the basis for history and literature; in the other, a lower standard of proficiency may be accepted. From the study of history that of geography is, of course, inseparable.

Special importance is assigned in the regulations to continuance of work in English by pupils following an advanced course. Proficiency in English is essential alike as the basis and as the instrument of all advanced studies, and of their effective use in later life. Adequate attention should therefore be paid to it in connection not merely with a modern studies course, but also with an advanced course of any type. While the share of school time directly given to it will be limited, much valuable work may be done out of school hours by systematic and exact reading, properly directed, supervised, and tested.

Some schools can organise two, or even three, advanced courses; but in many others the effective organisation of more than one will not be practicable. The establishment of such a single course will tend to give a particular impress to the scope of the whole school work. But it need not, and should not, follow that the range of the curriculum will be unduly restricted or that premature specialisation will be encouraged.

While the education of girls should be in no way inferior to that of boys, the educational requirements of boys and girls, like their capacities, are not identical. Girls' schools, though their curricula are largely (perhaps too largely) modelled on those of boys' schools, have characteristic features which call for special treatment. Such subjects, for instance, as art and housecraft may, where conditions are suitable, be properly taken as subsidiary subjects. This is a matter to which the Board is giving careful attention.

It is not the intention of the Board that any part of the advanced course grant shall be devoted to remission of fees or provision of maintenance allowances. The grant is meant to secure the efficient staffing, equipment, and conduct of the advanced course itself, and effective preparation for it throughout the school. Its first and most important object is the adequate remuneration of the teachers concerned.

The Board is fully conscious of the difficulties and drawbacks incident to a system of transferring pupils at this period of school life from one school to another. These may include, besides the minor consideration of loss of grant in respect of the transferred pupils, removal from the school of specially proficient pupils who are the school's own product and exert a good influence in it; and, most important of all, the risk that a school's sense of corporate unity may be enfeebled, that its development may be arrested or discouraged, and that it may find difficulty in creating within itself the nucleus of an advanced course. But the Board is glad to note instances in which a headmaster, taking a large and generous view of the position of his school in a wider system, has expressed the desire to transfer his own best pupils to a school where their needs can be more effectively met. The effective organisation of secondary education in an area is impossible if each school is treated as an isolated unit, free to take its own line independently of all considerations except its own efficiency and prestige, competing and not co-operating with other schools.

No minimum number of pupils has been prescribed as the "reasonable number" required; the number must be reasonable having regard to the circumstances of each case, and there must be the prospect of a steady and continuous supply of qualified pupils. Where there are few or no pupils ready to take the second year of the course forthwith, there must be sufficient assurance that those entering on the first year will proceed to complete their course in the second year. The grant is made for maintenance of a course actually taken by a number of pupils amounting substantially to a class; it is not given merely in order to enable a school to work up towards the creation of such a class at some future date.

The Board recognises that the organisation of advanced courses has been attended by special difficulties, both from the depletion alike among teachers and among older pupils due to the war, and from the shortness of the time between the issue of the regulations and the commencement of the current school year. The Board is convinced, however, that it was right to proceed in the matter, even though experimentally, at once. A large number of advanced courses are already recognised and in full working; and the practical experience now being gained will be of the greatest service in the future.

THE EDUCATION BILL.

MR. FISHER introduced his new Education Bill in the House of Commons on January 14th under the ten minutes' rule. So far as its educational provisions are concerned, it does not differ from the Bill of August last, but the new Bill introduces modifications of the administrative clauses to meet criticisms raised by education authorities. It is confidently hoped that the changes which have been introduced have rendered the Bill non-contentious, and that it may prove possible now to secure its passage into law early next session.

In his speech Mr. Fisher said the new Bill is substantially identical with the former. It imposes upon the councils of counties and county boroughs the duty of providing for all forms of education. It abolishes exemptions from school attendance between five and fourteen years of age. It provides for further restrictions upon the industrial employment of children during the elementary-school age, and for the gradual introduction of a system of compulsory day continuation classes for adolescents. In the new, as in the old, Bill local education authorities are empowered to

give assistance to nursery schools, and in other ways to help the physical and social welfare of the children committed to their charge. Indeed, attention to physical welfare is a special and distinctive note of both Bills.

On the other hand, certain of the administrative clauses have either been omitted or amended. A new clause has been introduced in place of Clause 4, which provided the machinery and procedure for the approval or disapproval of schemes. Clause 5, which provided for provincial associations, has been omitted, and in Clause 6 provisions which will facilitate the federation of local education authorities for certain purposes, which was the governing principle of Clause 5, have been embodied. Clause 29, which provided the procedure for the transfer of the powers of non-county boroughs or urban districts to the county councils, has been omitted. A new revised clause has been substituted for Clause 36, which dealt with public inquiries. Clause 38, which dealt with the reference to the Board of Education of certain educational questions, has been omitted. For Clause 40 a clause dealing with grants, and providing more specifically for a deficiency grant in aid of education in those cases where the substantive grant does not amount to 50 per cent. of the approved expenditure of elementary or higher education, as the case may be, has been substituted. Words have been inserted in different places in the Bill to meet apprehensions of religious bodies who feared that one of the effects of the Bill might be to prejudice the position of the voluntary schools and the religious education in those schools, and some alterations have been introduced in the clauses dealing with the attendance at continuation classes and at nursery schools, and also in the clause dealing with the abolition of fees.

It is desirable that when the consideration of the new Bill comes up again next session, said Mr. Fisher, the House should have before it the Bill in its amended rather than in its original form.

The Bill was read a first time.

ITEMS OF INTEREST.

GENERAL.

Addressing the Training Colleges Association on January 8th, Mr. Fisher said the test of success with which the training college fulfilled its high mission may be exactly measured by the stock of intellectual modesty possessed by the young men and young women it turns out. If the products of the training college are conceit and vanity, then, no matter what can be set on the other side of the account, the college fails. The student who leaves ought to be in a mood in which he desires to continue his course as a learner. The great secret of a good teacher is possession of a lively interest in two things—in the subject taught and in the pupil being taught; but it is impossible to maintain a lively interest in the subject unless you are prepared to pursue the subject, and young people who think that because they have obtained their certificates they are entitled to close the book as having no more interest for them will never make real teachers. Later the President of the Board of Education said he hopes training colleges will feel that they are organically related to every part of the educational system, and that they will not follow an isolated existence, as perhaps they have in the past, and have suffered for it. He hopes that training-college teachers will mix freely with the social and intellectual life common to the educational world, and that they will be regarded as instruments of a great national purpose for which no sacrifice can be too great.

The Science Museum, South Kensington, was reopened to the public on and from January 1st. The museum has been closed to the public for nearly two years; it has, however, been open without interruption for students. As compared with 1914 conditions, the extent and the hours of opening for 1918 are somewhat reduced, but the greater part of the museum will be open free on every weekday from 10 a.m. to 5 p.m., and on Sundays from 2.30 p.m. to 5 p.m. The collections contain many unique objects of great interest as representing discoveries, inventions, and appliances that have been of first-rate importance in the advancement of science and of industry.

The Modern Language Association held its annual meeting at University College, London, on January 11th and 12th. The president of the year was M. Paul Cambon, the *doyen* of the Ambassadors at the Court of St. James's. His presidential address was punctuated with applause. An unofficial ambassador of France, M. Henry Davray, gave an illuminating address on "Les Relations Anglo-Françaises," in which he showed the many misconceptions that had kept the two nations apart in the past, and how these were to be avoided in the future. The most important resolution before the meeting was that of Dr. Hargreaves: "That all permanent masters of modern languages in secondary schools should be of British birth." After a long discussion, marked by no bitterness, the previous question was moved by Mr. Cloudesley Brereton and carried, and consequently the proposal came to naught. Dr. Prior read a paper on the amount of philology a modern language teacher needs in his teaching, and Mr. D. Jones illustrated with interesting slides a valuable lecture on phonetics.

At the annual meeting of the Association of Directors and Secretaries for Education the following resolution was passed unanimously:—"That this association reaffirms its support of the educational principles embodied in the Education Bill (1917), viz.:—(i) The abolition of half-time; (ii) the raising of school age to fourteen; (iii) the establishment of day continuation classes; (iv) the preparation of schemes by local education authorities; (v) the regulation of child employment; (vi) the grouping and closure of schools; (vii) the promotion of social and physical training and welfare; (viii) research; (ix) the inspection of private schools; and is of opinion that in the national interest they should be passed into law at the earliest possible moment."

The January Conference of Educational Associations adopted the following resolution:—"That these meetings held in connection with the Conference of Educa-

tional Associations, January 2nd–12th, 1918, strongly urge on the Government the great national importance of proceeding at the earliest possible date with Mr. Fisher's Education Bill."

THE annual meetings of the Geographical Association were held on January 5th and 7th. At the preliminary business meeting special executive officers were appointed to take charge of such important work as exhibitions, regional surveys, examinations and syllabuses, text-books and maps. A lecture on "The Crafts of Britain, Past and Future," was delivered by Mr. Henry Wilson. Mr. W. E. Whitehouse, of Aberystwyth University College, read a paper on "Map Study in Geography and Military Education," in which he introduced a few of the very large number of replies he had received from secondary-school pupils who had been asked why they did not draw maps in illustration of examination questions. At the meetings on the second day papers were read by Miss Odell and Messrs. L. Brooks and W. H. Barker on "Geography in Advanced Courses." Miss Odell and Mr. Barker dealt with the kind of geographical work which could be taken in the new courses, whilst Mr. Brooks dwelt upon the inadequate position given to geography in school work. The discussion on the subject was of particular importance, because immediately after the meeting the two principal officers of the Board of Education met the council of the association for a frank discussion. The following resolution was adopted by the association:—"The Geographical Association believes that (*a*) geography is for varying reasons an essential constituent in each of the three groups selected by the Board of Education for advanced courses, but (*b*) regrets the fixing of these groups, because this limits possibilities of experiment which could be most valuable at the present stage in the development of the educational system. Geography is in an intense degree the study of experience, and therefore is uniquely concerned in combining direct observational work with more abstract work in the humanities. For this reason the association believes that geography has a very strong claim to be made the pivot of a group of advanced studies which would have for its main aim the training of citizens." Sir W. M. Ramsay, the new president, delivered his presidential address, taking for his subject, "The Great Goddess Mother Earth." This meeting was a joint session with the Classical Association. A new feature of this year's meetings was an exhibition in charge of Mr. L. Brooks illustrating various experiments in geographical teaching and regional studies.

A MEETING of the Secondary Schools' Association, presided over by Sir Philip Magnus, Bart., was held at Caxton Hall on January 18th to consider some of the effects of the new grants to secondary schools, and in particular their effects upon the denominational schools. These schools, which are excluded from the grant list because they fail to comply with the Board's regulations as to the composition of governing bodies and the selection of teachers, are, it was pointed out, placed in a relatively worse position than ever by the new grants. A resolution was passed to the effect that the schools concerned ought to unite on a policy and take joint action. The committee had suggested that the regulation as to free places for elementary-school children should be frankly accepted, but the meeting as a whole felt unable to go further than to take steps to ascertain how many schools were prepared to accept this regulation. Some difference of opinion was also expressed as to the position of the private schools. No speaker referred to the obvious inconsistency between the treatment (by Parliament) of denominational elementary schools and the treatment (by the Board) of denominational secondary schools. It may be suggested, also, that nothing is gained in these days by referring, as one of the speakers did, to undenominational schools as "secular," or as giving religious instruction of a "colourless" description. The true line of advocacy is to distinguish impartially between general and specific religious instruction, and to claim equal treatment for both. Nor is it fair to say, as the Dean of Worcester said, that a school is fined because the teachers belong to a religious body. It is because the teachers must belong to that body, and to no other, that the school, under present regulations, is placed under a disability as regards State grants. The meeting was not so well attended as one would have expected, considering the importance of the subject.

WE extend a hearty welcome to our new contemporary, *L'Ecole et la Vie*, the first number of which appeared on September 15th last. It is a weekly journal devoted especially to the interests of teachers in French elementary schools. There are two sections: (*a*) a journal of direct practical value to the teachers, and (*b*) a "libre tribune d'éducation nationale," which appeals to the layman who is interested in education. An inspection of the issues that have appeared fills us with admiration, and we are confident that *L'Ecole et la Vie* will prove a most valuable asset in the education of public opinion in France, as well as contributing greatly to the improvement of teaching in the schools. We should like to recommend it particularly to the teachers of French in this country. Each number of the (*a*) section contains admirable lesson notes under the headings of "langue française" and "histoire," which can be utilised for the teaching of free composition, dictation, and "lecture expliquée." For teachers within the Postal Union the annual subscription for the (*a*) section is 11 francs, and for both sections 13 francs; the publishers are Messrs. Armand Colin, of Paris.

THE object of the Committee of Education as National Service is to endeavour to find a much greater number of men and women willing to prepare themselves to take part in the educational work of the nation. For this purpose the committee has rented the Mansfield House Residence in Canning Town, to accommodate about twenty students and social workers preparing to teach in day continuation schools, and in the classes of boys' and girls' clubs, the Workers' Educational Association, and other adult organisations. Certain rooms in the residence are being set aside for day continuation classes, and another building with a large hall, known as Fairbairn Hall, will also be used

for classes as soon as the day continuation school grows. A staff of fully qualified graduates will teach in the school. The curriculum will include such subjects as regional survey, citizenship, history and literature, science, home craft, and personal hygiene. The classes will be small, and discussion and debate encouraged. The school will form a self-governing community, and will thus be a helpful demonstration school to teachers in training. Further information may be obtained from the Hon. Sec., Education as National Service, 11 Tavistock Square, W.C.1.

Books and pamphlets and articles on the educational values of different subjects of instruction pour from the press in greater profusion than usual, because of the changes which everybody feels to be impending in our educational system. This activity shows itself not only in defence of the older, but also in efforts to improve the teaching of the newer, studies. Sir R. T. Glazebrook, for example, in his Rede lecture, frankly owns that though the teaching of science to really scientific persons is in a prosperous state, the teaching of science to all and sundry is as yet an unsolved problem. If the exact knowledge essential to the few is required from all, "the majority find the process dull, they get no further than the elements, and when the dreaded examination is over they forget even these, and have no further interest in the subject." Sir Richard, who was a pioneer in science teaching three decades ago, speaks with great authority, but lesser folk can fully corroborate his statements. The republication by Mr. Heinemann, under the title "Science and Education," of lectures given at the Royal Institution in 1854 by such men as Faraday, Tyndall, and Whewell is a rather melancholy reminder that things have not gone so well with the teaching of science as might have been expected. These lectures, with an introduction by Sir Ray Lankester, are issued at a shilling, and, needless to say, are well worth reading. Indeed, they will probably be better appreciated to-day than they could have been "sixty years since."

The annual report for 1915 of the Department of Public Education in the Cape of Good Hope records that 40 per cent. of the male staff of the head office are serving with the forces in Europe or in East Africa. The annual cost during the year for education per European pupil was £9 7*s.* 11*d.*, and per non-European pupil just above £1. Four additional inspectors have been appointed; 539 schools have been established, and 377 schools have been closed. Of the net gain of 162 schools, 136 were small rural schools. These schools are opened among a thinly scattered population; in four or five years the children have grown up or gone away, and the school is no longer needed at that place; but there has arisen an opening for a school in another locality. Many school boards provide free transport for children who live more than three miles from school. The Department encourages in every legitimate manner both cadet corps and boy scout troops. The supply of third-class certificated teachers is steadily growing, but that of second-class certificated teachers has declined. In ten years the enrolment of European pupils has increased by 54 per cent.

SCOTTISH.

The Secretary for Scotland, in the course of an address on January 11th to the Edinburgh School of Social Study, explained and justified the provisions of his new Education Bill in greater detail than was possible during the first reading debate. He again emphasised that his one aim was to advance national education and to give to every youth a better chance in life than his father had. To this end all else in the Bill was merely subsidiary. He claimed that criticism, so far as it had yet expressed itself, had not touched the really educational part of the Bill, but had been directed entirely against what might be called the machinery. Mr. Munro traced the history of Scottish education from 1872 onwards, showing how attempt after attempt had been made to circumvent the entrenched position of school boards in order to secure a fair field for secondary education. Finally, Lord Pentland, in the 1908 Act, succeeded in setting up county committees for secondary education. These bodies had done much to foster and advance higher education, especially in rural districts, but they were in an anomalous position as regards school boards, the powers of which in certain fields they had entirely usurped. From the experience gained of the working of these two bodies in the same field he was satisfied that the time had come to set up a single body, and that for the widest possible district—the county. If they accepted the county as the area, he showed what difficulties would be experienced in setting up any other authority than the county council.

This year's Congress of the Educational Institute of Scotland was held in the Royal Technical College, Glasgow, on January 3rd and 4th. By general consent it has been voted one of the most successful in the long history of the institute. The subject-matter of all the papers and discussions concerned the new Education Bill, and the proceedings were followed with intense interest by crowded audiences at each of the four sederunts. The president, Mr. John Strong, in an able exposition of the principles of the Bill, maintained that its provisions constituted the children's Magna Charta. He ridiculed the contention that it was a teachers' Bill, as it failed to deal with many of their most cherished aspirations. But the fact that it raised the school age, limited juvenile employment, set up compulsory continuation classes, and opened wider the portals of higher education was ample reason for regarding it as the children's charter. Mr. James Young, Biggar, presented a masterly case for the county area and the county council authority, and a resolution in favour of this position was carried almost unanimously. Other papers dealt with the raising of the school age, rural education, continuation education, and salaries. Resolutions in favour of the institute's traditional policy on these subjects were carried in most cases by acclamation.

School boards, as was to be expected, have hardened their hearts against that part of the Bill which provides for their dissolution. The Secretary for Scotland has called these sections "subsidiary," but school board members regard them as all-important,

and it is quite clear that they will do all in their power to wreck the Bill if these provisions are retained. At a meeting of the School Boards' Association in Glasgow on December 8th last the case for the *ad hoc* authority was put with great ability and fairness by the president, the Rev. Dr. Smith, Partick. He did not attempt to defend the school boards as at present constituted, but maintained that the only way to secure adequate consideration for educational questions was to have them dealt with by a specially elected body. If they were mixed up with questions of drains and sewers, of water and gas, of roads and bridges, it was hopeless to look for educational advance. A resolution protesting against this part of the Bill was carried almost unanimously.

LITTLE sympathy is felt in educational circles for the outcry that has been raised against the proposal to institute a chair in German in Glasgow and Edinburgh Universities. Whatever may be the outcome of the war, Germany will still remain our nearest and most dangerous rival for trade supremacy. We cannot afford to neglect or to remain in ignorance of her plans. Merely on this, the lowest grounds of utility, the study of German will be required. Other and far better reasons can be advanced for the study of a language that enshrines a great literature. At the same time both the educationist and the man in the street agree that the universities have displayed singular lack of tact, to say nothing of good feeling, in bringing the proposal forward at the present time. This all the more that they now declare there is no intention of making an appointment during the period of the war.

THE development of the teaching of English in Glasgow, together with a description of the early books which were used, formed the subject of the address given by Dr. David Murray to the Scottish Branch of the English Association at its autumn meeting in Glasgow University. Until nearly the middle of the nineteenth century English, according to Dr. Murray, was not a subject of instruction in any of the grammar schools in Glasgow, nor, indeed, in Scotland. When he himself entered the University of Glasgow in 1857, English literature was not a subject of University study. There were in Glasgow during the eighteenth century a few schools known as "English schools," where an attempt was made to teach the elements of English, but as the pupils left at a very early age, only a mere smattering was given. At the afternoon sederunt Dr. J. T.T. Brown exhibited a MS. of Bellenden's and Pitscottie's histories, compiled by a scribe as one chronicle. Dr. George Neilson described shortly an early sixteenth-century printed edition of Virgil with glosses, sometimes in Latin, but more frequently in English. The Rev. Prof. Moffat gave an address on "Twisted Sayings," meaning by that sayings which had become altered in their application during the course of popular transmission. As an illustration of how easily phrases may be altered, Dr. Neilson, who is stipendiary magistrate in Glasgow, said, in the course of the discussion, that an Italian to whom he was administering the usual oath swore to tell "the truth, the whole truth, and nothing of the truth," whilst another undertook to tell "the truth, the whole truth, and nothing like the truth." Principal Sir Donald MacAlister was elected president for the ensuing year.

PROF. DARROCH, whose educational activities in the northern capital seem limitless, submitted to a recent meeting of the governors of Heriot-Watt College a reconstruction scheme for the future working of the institution. Its general lines indicate at once a widening and a contraction of the sphere of its operations On one hand it is to be officially recognised as the technical college for the whole East and South of Scotland. On the other, it must contract its field of effort, abandon the omnibus idea of education, and devote itself entirely to technical and technological subjects and courses. The report was adopted, and it was agreed to hold conferences with the various bodies affected.

EDINBURGH School Board has for some time been negotiating with the managers of the voluntary schools within its area with a view to their transference to the national system. In the case of the four Episcopal schools it has proved successful, and these will in future be under the direction of the School Board, with adequate safeguards for the religious interests involved. The Roman Catholic managers have not seen their way to accept the conditions offered, and prefer, for the present, to continue as hitherto. This is unfortunate, as the strain on the resources of the voluntary managers is excessive, and the educational interests of the pupils are undoubtedly sacrificed.

IRISH.

THE Intermediate Board has published the time-table of examinations for the present year. They will commence on Wednesday, June 12th, and continue until Thursday, June 20th. There is nothing specially new in the time-table with perhaps one exception. After being requested by various educational associations for several years to increase the time allowed for the papers in Latin and Greek, this year these subjects have each two hours and a half allotted to them instead of two hours. The examinations in science and drawing for pass candidates will continue as last year. The conditions of passing remain the same as last year, except that boys must pass in arithmetic and algebra, and in geometry.

LAST year closed amid general disappointment without any statement from Mr. Duke in Parliament as to the allocation to secondary-school teachers in Ireland of any equivalent grant corresponding with the Fisher grants in England and Wales and in Scotland. The disappointment will be very bitter if the Parliamentary year closes without the grant being given.

SIMILARLY, the year ended without any definite statement concerning the registration of intermediate teachers. The proposed rules, amended in accordance with the suggestions of the Government, were forwarded to the Castle early in the autumn, and there should have been no undue delay in dealing with them, but months have now passed, and the question seems scarcely any further advanced than a year ago.

THE Executive Council of the Association of Secondary Teachers held its annual meeting in January in the Royal College of Science, when it passed the following resolutions:—(1) That the association protests strongly against limiting the new grant in aid of Irish secondary education to the £48,000 proposed as the Fisher equivalent, and that Ireland has an unanswerable claim to a much larger sum—the equivalent of Imperial grants to secondary education in Great Britain, made previously to the new grant—estimated in the last report of the Intermediate Board as £86,000; (2) That until there are adequate salaries and reasonable security of tenure for lay secondary-school teachers a strenuous objection be offered to the diversion of any of the Fisher grant for the purpose of making provision for summer courses. Another resolution demanded that all written agreements between assistant-teachers and head-teachers shall be countersigned by officials of the Intermediate Board.

JUST before Christmas a largely attended lecture was given by Prof. Browne, of University College, Dublin, in the Royal College of Science, on "The Development of Attic Vase-painting," the object of which was to give information on the Greek vases purchased from the Hope collection last summer, of which part are exhibited in the National Museum and part belong to University College. Before the lecture Prof. Browne gave interesting information about the vases to visitors in the museum.

AN important official document has been issued from the Office of National Education in Dublin in reference to the equivalent grant of £384,000 made last year to elementary education in Ireland. Great dissatisfaction has been expressed by the primary teachers and many education authorities both as to the amount and as to the mode of expenditure, and much criticism and censure have been levelled at the National Education Board. Hence this document, which may be taken as an official statement of the policy aimed at by the Board. It states first that the supplementary grant referred to above falls very far short of the amount estimated by it as necessary to place primary education in Ireland in a satisfactory condition and on an equal footing with the English and Scottish systems. It then sets forth the following heads under which it made proposals:—Improved salaries for all teachers, including increased grants for convent schools; gratuities for the training of monitors and pupil teachers; the discontinuance of the teachers' contributions towards their pensions, and the provision of these pensions wholly by the State; retiring gratuities to junior assistant-mistresses; increased grants to the training colleges; the establishment of day continuation schools; increased grants for evening schools; the establishment of higher grade departments in national schools; grants for the instruction of pupils in woodwork; increased grants for school gardens and the extension of the scheme so as to provide for the instruction of girls as well as boys; the provision of books and stationery for use by the pupils; special grants for teachers of model schools, including a grant for house rent for women principals similar to that allowed at present in the case of men teachers; grants for residences for teachers of ordinary national schools who are not already provided with free residences; grants of the entire cost of schemes for the medical and dental treatment of pupils; appointment of divisional inspectors, and increased salaries for the administrative staff.

THE estimated cost of the entire scheme was £780,875 for the first year, rising ultimately to more than one million pounds sterling, whereas the actual sum voted was £384,000, and this to be fixed. The Commissioners object to the artificial or mechanical methods of calculating an equivalent grant for Ireland based either on the population or on the number of pupils in attendance as unjust to the country, to which grants for reforms which have been operative in Great Britain for many years have been hitherto denied.

WELSH.

NEWPORT has now definitely announced its decision not to support the proposal for a National Council of Education for Wales. The scheme, desirable enough on educational grounds, appears to be in great danger from local jealousies, as well as from the excessively political bias of many of its supporters, to whom education is merely a secondary consideration compared with their real purpose, that of securing complete autonomy for Wales.

IT is proposed to erect on Pilkem Ridge a statue of Hedd Wyn, the shepherd-poet, whose empty chair was draped in black at Birkenhead National Eisteddfod, and to engrave on its base the names of the Welsh officers and men who fell in the action that resulted in the taking of Langemarck.

AT a recent meeting of Swansea Education Committee Alderman Colwill read a newspaper extract showing that Mr. Gott, of the Intermediate School, had said at a meeting of schoolmasters that "it seemed the chief qualification for members of education committees was colossal ignorance." Alderman Colwill eulogised the work of education committees, and asked whether teachers had the right to make such statements. Mr. Powlesland replied that the committee could not interfere with the freedom of speech of its employees.

IT would not be a matter for wonder if the ears of many members of local education authorities tingled on the day of the meeting referred to—and many other meetings. They have been accused of "embezzling"—not, of course, in the sense of converting to private gain—the moneys entrusted to them to hand over to others; it has been said that the teachers and the office staffs could do all the work of the "authorities" in their own spare time—and do it better. The committees have been described as a set of irresponsible, casual amateurs, who apply their intellects once a month to educational matters, and control those whose daily business these matters are; it has been pointed out that the members often deal with nothing but buildings and finance, knowing nothing at all about education, and being entirely dependent on their clerks for a knowledge of what to do and how to do it; and that there are boards of governors who have

not so much as seen a copy of the regulations under which they work.

IT is gratifying to note the fairness of Mr. Powlesland's remark about freedom of speech for teachers; he might have added another consideration—forcibly brought on a recent occasion to the notice of a county committee in South Wales—that the teacher is a citizen, and loses none of his rights as such by being a teacher; he is often a ratepayer—sometimes even pays income tax.

THERE is another side also to public comment; there are those who take delight in belittling the teacher at every opportunity. One South Wales paper recently referred to his "wages"; Cardiff teachers were not long ago told that "public men" had the right to criticise their "employees" (whom they do not pay); and the action of the Merthyr teachers in sending in their notices was described as "a piece of unwarrantable arrogance." There is considerable support in South Wales for the proposal that teachers should join the Labour Party.

THE honours conferred under the Order of the British Empire fall in several cases to men whose names are familiar to those interested in Welsh education. No one who has any idea of his services to education and to Welsh nationalism will be surprised to learn that Sir A. T. Davies becomes a Knight Commander, and that the like honour falls to Sir Edgar R. Jones, M.P. for Merthyr, formerly a teacher, and now the able head of the Priority Department. Among the Commanders is Alderman Hopkin Morgan, chairman of the Glamorgan County Council and Mayor of Neath, and a consistent friend of the teacher; and among the Officers Alderman S. N. Jones, J.P., of Newport, chairman of the Monmouthshire War Agricultural Committee, an authority on educational administration and a doughty fighter.

THE DEFENCE OF THE CLASSICS: AN AMERICAN SYMPOSIUM.

Value of the Classics. 396 pp. (Oxford University Press.) 6*s.* 6*d.* net.

THE appearance of an American manifesto on the value of the classics reminds one inevitably of Mr. Livingstone's volume, published about a year ago, and reviewed at the time in these columns (vol. xix., p. 70). The two publications differ, however, not only as the product of one mind differs from that of many minds, but also as American educational conditions differ from those of England. In England, as Mr. H. G. Wells has recently pointed out, "the attack upon the classical education does not involve a denial of the high value of that education; it is an attack merely on its exclusive predominance." In this country the classical curriculum is by no means in the position of having to fight for dear life, notwithstanding that modern studies have made great inroads upon the territory it formerly held. In America, the force of tradition, though in favour of the classics, was naturally not so powerful, and real danger to the older studies is therefore greater; and this danger is increased by the confessed peculiarities of the American character—its impatience of that which seems to lead to no immediately practical results, and its belief in short cuts to success.

The work here under review is a record of the addresses delivered at the Conference on Classical Studies in Liberal Education held at Princeton University in June, 1917, together with an introduction and a collection of statements and statistics. A few of the statements are British and French, but the vast majority are American, and they are made by representatives of public life, business, universities and colleges, schools, the ministry, law, medicine, engineering, physical and natural science, journalism, literature, and the non-classical human studies, including history, political science, economics, philosophy, sociology, the fine arts, and Oriental studies. Teachers of the classics are excluded, except in cases where they are the authorised representatives of institutions. We thus have the testimony of about 300 competent and impartial observers, representing the leading interests of modern life, and including many of the highest names in the land, such as Wilson, Taft, Roosevelt, Senator Lodge, and N. M. Butler. "This testimony," as the editor truly says, "with only occasional variation in its degree of conviction or of emphasis on one or another factor, converges steadily to one main conclusion, namely, that classical studies are of essential value in the best type of liberal education, and that whenever the classics are well taught the results are satisfactory."[1]

The variations of conviction and emphasis to which the editor refers are perhaps more marked than he seems to imply. Yet, on the whole, these collected opinions, sometimes barely stated and sometimes carefully reasoned, constitute a sane and consistent plea for "a fair field and no favour." Our English apologists for the classics are not always so modest, but on the whole the contributors to this volume simply ask that America's sons and daughters shall at any rate not be practically denied the opportunity of finding intellectual salvation in the literatures of Greece and Rome. The arguments are not new; they are not all of prime importance; and they are not all equally convincing. But one is glad to see prominence given to an argument which should surely make a strong appeal to any really *scientific* mind—that if you want to understand anything, including modern civilisation, you must go back to origins; you must study it as a problem in evolution. Our civilisation owes more to Greece and Rome than to Assyria and Babylonia, and none of us therefore should desire the day to come when the study of the former, like that of the latter, shall be pursued only by a very few select persons.

Did space permit, there are several contributions to which one would like to direct the reader's special attention. In particular, Senator Lodge's powerful and eloquent plea should not be missed. Mr. Roosevelt writes with characteristic force and directness, and his incidental remarks on education in a democracy are well worth pondering. As to the specific question before him, he agrees that it is a waste of time to force the average boy to acquire a smattering of the classics, but he sees and says clearly that if the best members of a democratic society are to give of their best to that society, some of them must have full opportunities for drawing inspiration from classical studies.

The moderate position, whether for America or for Britain, is admirably summed up by Lord Bryce. "I do not contend," he says, "that the study of the ancients is to be imposed on all, or even on the bulk, of those who remain at school until eighteen, or on most who enter a university. . . . The real practical

[1] The other side of the case has been put by Dr. C. W. Eliot in his pamphlet, "Latin and the A.B. Degree," issued by the General Education Board of New York.

problem for all our universities [including Oxford and Cambridge] is this: How are we to find means by which the study, while dropped for those who will never make much of it, may be retained, and for ever securely maintained, for that percentage of our youth, be it 20 or 30 per cent., or be it more, who will draw sufficient mental nourishment and stimulus from the study to make it an effective factor in their intellectual growth, and an increasing spring of enjoyment through the rest of life? This part of our youth has an importance for the nation not to be measured by its numbers. It is on the best minds that the strength of a nation depends, and more than half of these will find their proper province in letters and history."[2]

If only our more truculent controversialists would approach the question in the spirit of Lord Bryce's wise utterance, the old antagonism between science and the humanities would speedily vanish. It would be seen, as someone has recently said, to be "simply silly."

T. Raymont.

WINCHESTER COLLEGE IN BYGONE DAYS.

About Winchester College. By A. K. Cook. To which is prefixed *De Collegio Wintonensi*, by Robert Mathew. 584 pp. (Macmillan.) 18*s.* net.

School life of the past has a never-failing interest, and that is increased when the school is one of those ancient institutions which are as much a part of England as the House of Lords. How it comes that these great institutions are established in the dark days of autocracy, and only despised or destroyed in the enlightened days of democracy, perhaps some hierophant of the latest cant will proclaim. To us they seem to embody the very spirit of England, and only to need an intellectual new birth. Winchester is the noblest of these establishments, and Mr. Cook has compiled a most entertaining book upon it. The Latin poem which opens the book has been dated and assigned to its true author for the first time: Robert Mathew, 1647. This poem gives a sketch of Winchester life. What a life for less hardy generations! Chapel at 5.30 a.m., school at 6, no fire (except as a special favour)—he thanks heaven for the winter sun in the south; breakfast at 9, with honest English beer and bread, school at 11, dinner at 12, then work again; bevers at 3.30, prayer at 5, then supper; from hall to chambers, and, after light refreshment, a Latin Psalm at 8, then chapel, and bed. The work mentioned is nearly all Latin.

From this poem Mr. Cook takes a number of suggestions as texts for discursive chapters: the various masters, their titles and their duties, with tales about this or that; prefects and bible-clerk; chambers, the children and their meals; classrooms and laws; work, games, and holidays. It is impossible to open the book without finding something to entertain. Here is a list of naughty boys handed in to Dr. Harris in 1600, of whom eight *comas alunt*. Here are the children partaking of bevers or merenda, or washing their faces and hands at "the children's pump"; the first washing-room dates from the accession of Queen Victoria.

Here, again, is Dr. Gabell flogging an innocent boy, and, on finding out the truth, giving him "five tickets of remission from future punishment." A happy boy that must have been, for a week or so! Here and there a headmaster stands out for his personal achievements: Goddard, whose "honourable compact" between masters and boys did wonders for the discipline; George Ridding, the "second founder," who did so much for the welfare of the school through its buildings, and made a veritable revolution in its institutions; George Moberley, who left his mark in many ways. There is not much for the modern schoolmaster by way of "tips"; but someone who took notes of method about 1670 shows that there was more common sense then than there is now. "They pickt up Latin rules," he says, "as they learnt them in the Authors"; and again: "They made no Latin [translated no English pieces into Latin] at Winchester till they had learned high classick authors. . . . Time is lost in making Latin much at first; but reading the classick authors, and then boyes will be able of themselves to do it. . . . They speak Latin everywhere." Cases are on record of boys having the whole "Iliad" or the whole "Æneid" by heart.

The institution of prefects is popularly associated with Winchester; and although Wykeham did not invent them, he certainly put something like prefects into his statutes. The elder boys had their natural power and influence recognised and were also made responsible, and the effect throughout the school's history has been excellent. They were intended at first to be monitors rather than fag-masters, and they had no right to punish. This custom, however, grew up, and by the end of the eighteenth century was believed by the prefects to be their statutory right. It seems to have been authorised, after a misunderstanding, in 1790. Fagging is not in the statutes. There is no doubt that this custom was abused; but if not abused, there is no harm in it and much good.

And so we bid farewell to this excellent book: and we hope that readers of The School World will get as much advantage from it as we have.

USEFUL BOOKS ON GARDENING.

(1) *Jottings of a Gentleman Gardener.* By E. T. Ellis. viii + 268 pp. (Reeve.) 3*s.* 6*d.* net.

(2) *The Vegetable Garden.* By Ed. J. S. Lay. 144 pp. (Macmillan.) 1*s.* 6*d.*

(3) *The Cultivation of Allotments.* By Percy Elford and Samuel Heaton. 62 pp. (Clarendon Press.) 8*d.* net.

(4) *Food Gardening for Beginners and Experts.* By H. Valentine Davis. viii + 44 pp. (Bell.) 6*d.* net.

(1) It would be easy to poke fun at the early Victorian title of Mr. Ellis's book, but it is apparently meant merely to convey that the author is an amateur writing on his hobby. The book was written before the possibility of a national food shortage became serious, and so is concerned almost wholly with the cultivation of flowers. The instructions for laying out a garden and securing a constant succession of attractive flowers are practical, and written with an enthusiasm which cannot fail to awaken a response in every garden-lover reading them. Soils and manures, the eradication of weeds and other pests, and kindred topics are touched upon in a manner which makes very pleasant reading. Two useful chapters on the cultivation of vegetables have been added in view of the present urgent need for increasing the national food supply.

(2) Mr. Lay's little book is intended for young pupils, and should lead them to understand the reasons of common garden processes. Its aim is to cultivate such an attitude towards plant-life as will enable children to become intelligent gardeners rather than to depend upon rule-of-thumb methods. No attempt has been made to describe at length the manual operations of the garden, but the book contains excellent illustrated accounts of the various crops and the principles

2 *Fortnightly Review*, April, 1917. The article has been reprinted in pamphlet form by the General Education Board of New York.

of their cultivation. Instructions for simple experiments are given at the beginning, and a summary and a set of useful revision exercises at the end, of each chapter.

Nos. (3) and (4) of our list are severely practical in nature, and will rightly appeal to busy workers whose one object is to produce the maximum amount of food from their gardens and allotments. They are both the work of experienced and scientific instructors, and form ideal guides for serious gardeners, whom they will save from many of the pitfalls which beset the path of the unwary and ignorant. They are remarkably good value at the price.

The attention of beginners may be directed, in conclusion, to the free leaflets on food gardening published by the Board of Agriculture and Fisheries, Whitehall Place, S.W.1.

RECENT SCHOOL BOOKS AND APPARATUS.

English.

Twenty-two Goblins. Translated from the Sanskrit by A. W. Ryder. With illustrations by P. W. Nahl. 220 pp. (Dent.) 7*s.* 6*d.*—If this book is meant for the child, or even for the youth, it is difficult to know what to say without being ungracious, for most people would think that many of the stories are unsuitable. But if it be a contribution to semi-fabulous and allegorical literature, then, with a reservation, its value seems great. Let us say at once that it is fascinating from cover to cover, and there is a wealth of colour that seems to harmonise with the somewhat ardent stories. The reservation is in the form of an *if*; and the translator must put it at the door of the author of "The Digit of the Moon" and other "mystifiers," if we ask for more information about "translations from the Sanskrit." Notwithstanding a curious use of words which are generally banished from fairy- and folklore, such as "policeman," "specialist," "crematory," "punctuated," and many others, the grisly goblin's tales do read as though they were the real thing; while the short discussion at the end of each harks back to days long before the Gesta. It is interesting to note that one of the stories is found also in the "Persian Tales of a Parrot," another in Miss Wardropp's "Georgian Stories," and a third in any collection of English folklore. In the hands of a teacher who knows how to treat these tales the book might bring an entirely new air over the story-hour; but care is needed. Had the translator followed Mr. J. Jacob's learned and delightful method we should not have had to be so cautious in our praise.

An Anthology of English Prose. By S. E. Goggin and A. R. Weekes. 315 pp. (University Tutorial Press.) 2*s.* 6*d.*—The reviewer has sometimes to point out what seem to him to be glaring omissions in books that are edited even by well-known scholars, and with all respect for the editors' excellent illustrations of prose written after Earle it must be admitted, we think, that the promise of the preface "to illustrate the development of our prose in scope and subject . . . and in point of style" has not been fulfilled. Neither Alfred, nor Aelfric, nor the "Ancren Riwle," nor the "Monk of Evesham," nor "Reynard" finds a place in this anthology; Hakluyt has to be content with three pages. But the crowning omission is that of all Bible work. There is no Wiclif, no Tyndale, no Geneva, no Authorised Version here; and the editors know very well the untold debt we owe to Tyndale. Indeed, we read on p. xvi of "the unique splendour of the Authorised Version . . . which has had more influence on our language than any other book." The answer is, of course, that students know the Bible and have the A.V. at hand. Any tutor of the young should know that a qualified denial may be given to both these statements. A Bible, especially if it be submitted in the actual form of the A.V. or of Tyndale (which is the same), is an unknown book to most students. The latter part of this book is, as we have said, well and fully done. From Milton to Kipling the extracts are well chosen and well introduced. A glossary is appended, but, as usual, we miss the very full introduction. When we consider that translators, with the exception of Bible translators, are well represented, it seems a pity that editors do not recognise that without translators the average student would have no books at all. Translators are the greatest benefactors that the literary world has ever neglected.

Selections from "Le Morte D'Arthur." Edited by D. M. Macardle. 116 pp. (Macmillan.) 1*s.*—The whole of this little book may be praised. The passages taken are the best, the glossary is adequate, the questions at the end are suggestive, and that part of the introduction which deals with Malory as a story-teller deserves to be learnt by heart by the young enthusiast, the only fault being that Miss Macardle has limited her words to two pages. One might hazard the guess that the editor is a story-teller herself, and none but a story-teller should meddle with Malory in school. Possibly, for older pupils, some harder questions should be added. But the book is one of the most successful in its already successful series ("English Literature for Secondary Schools").

History.

The Later Middle Ages. By R. B. Mowat. 339 pp. (Clarendon Press.) 4*s.* 6*d.*—This volume is one of the Oxford "Text-books of European History." It fills the gap (A.D. 1254–1494) between Mr. Kenneth Bell's "Mediæval Europe" and Miss E. M. Tanner's "Renaissance and Reformation." It is rather longer than either of these, but, owing to the fact that (probably because of war conditions) it is printed on thinner paper than they, it appears on the shelf to be much the slightest of the three. Mr. Mowat, who has done good work in various historical fields and has made himself in particular a master of the fifteenth century, has treated the complex period of the Later Middle Ages with vigour and ability. He deals primarily with the Empire and the Papacy (tracing the decline of both from the end of the thirteenth century), and with the new and rising kingdoms of France and England. The Spanish peninsula does not receive adequate attention, and the intellectual ferment which marked the Renaissance is insufficiently emphasised. As a sketch of the political history of the period, however, the book will be distinctly useful.

Stories for the History Hour. By Nannie Niemeyer. 256 pp. (Harrap.) 3*s.* net.—This volume is one of a series of "Books for Story-tellers," of which Messrs. Harrap have already issued half a dozen. It contains sixteen tales carefully selected from among the notable episodes of the period 50 B.C. to A.D. 900. All these tales have a biographical centre; they tell of the great deeds of famous men, beginning with Augustus and ending with Rolf the Ganger. But all of them have also historical significance; they are intended to furnish such information

as a young child's mind can grasp concerning the leading movements of the nine centuries which they cover. In the form here given they are intended for teachers rather than for scholars; they provide the prominent facts which require to be known, leaving the teacher to supply from her (Miss Niemeyer seems to have written exclusively for women) general knowledge the necessary background. Teachers will undoubtedly find here much valuable and interesting material which will aid them in their efforts to make the history-lesson attractive. The literary style of the stories has suffered from the condensation which has had to be applied. In a few cases inexact or infelicitous terms have been employed. A comet, for instance, is not correctly described as "a great star with a long shining flame behind it," nor is August rightly called the "eighth month" of the Roman calendar.

Serbia. By L. F. Waring. 256 pp. (Williams and Norgate.) 1*s.* 3*d.* net.—Miss Waring here presents us with a careful and well-written sketch of Serbian history from the earliest times to the outbreak of the European war. The medieval portion of the story is treated cursorily, and main attention is concentrated upon the developments which occurred in the nineteenth century. It would be unfair to call Miss Waring's history impartial, for Miss Waring is an enthusiast on behalf of Serbia, filled with admiration for its heroic people and with love for its legends and traditions. Her zeal, however, sometimes blinds her to defects in Serbian civilisation, and causes her to underestimate the difficulties which the neighbouring peoples have had in living peaceably with the Southern Slavs. The Serbian Minister in London has written a preface to the book, in which he deals in an illuminating manner with the crisis which led to the outbreak of war in 1914.

The Land of the Two Rivers. By Edwyn Bevan. 126 pp. (Edward Arnold.) 2*s.* 6*d.* net.—The "two rivers" of the title of this little book are the Tigris and the Euphrates, and the book itself presents an outline of the long history of human activity in that home of ancient civilisation which their valleys provided. The story begins "ten thousand years before Christ," and it continues to the time of the Mohammedan conquest. Mr. Bevan, who made his reputation as a notable historian some years ago by his masterly work on "The House of Seleucus," condenses a lengthy and complex narrative into brief compass and simplicity with a skill which only a complete control of the materials could give. Those who wish to know more about "Mesopotamia" and the regions bordering upon it can be confidently advised to procure this lucid and authoritative handbook.

Sailortown. By the Rev. G. H. Mitchell. 157 pp. (Jarrolds.) 2*s.* 6*d.* net.—The author of this collection of short essays, sketches, and poems began his career as a sailor on the *Warspite* training ship. He is now chaplain in the Port of London to the Mariners' Friend Society. It is mainly of his experiences among the seamen of the East End of London that he writes. He presents a series of slight but vivid pictures of the sailor's normal life in times of peace, and of his abnormal perils in this current time of war. Mr. Mitchell has a happy gift of writing. Above all, his experiences as a preacher to the denizens of Sailortown have taught him the virtues of brevity and pith. He goes straight to the point; he never allows interest to flag; he stops when he has reached his goal. His revelation of the East End of London should do much good—especially in the West End.

Science and Technology.

Boys' and Girls' Ask-at-Home Questions. By Marian E. Bailey. 283 pp. (Harrap.) 3*s.* 6*d.* net.—This is a more modern and much fuller book of the "Magnall's Questions" type beloved of our grandmothers. The questions refer to a miscellany of topics ranging from the countryside to the technicalities of commerce and the mysteries of X-rays. The author claims that the paragraphs are self-explanatory for all children who can read, but we fear that few youngsters would make much of such answers as those on "What is an atom?" or "What is water made up of?" The book is generally well-informed, though some of the science is not above suspicion. The volume can be recommended to parents and to teachers of young pupils, who will find most of the answers to out-of-the-way questions very helpful.

Miscellaneous.

Comparative Religion. By Dr. A. S. Geden. 144 pp. (S.P.C.K.) 2*s.* net.—We have nothing but high praise for this timely and interesting little book. With so little space at his disposal, no more can be done on so wide and important a subject, as the author admits in his preface, than to give a brief introduction. But this is done with such completeness that to the reader of little leisure who wants elementary information on this subject of ever-increasing human interest the book will come as a great boon. Brief though the reviews and comparisons of the more influential systems of the religions of the world are, the attempt to give an intelligent insight into the teachings of them is well achieved, and Dr. Geden can be assured that his little book makes it possible to form a fair estimate of the significance of truths held in common and of the cleavages and differences which profoundly separate them. A sound and well-selected bibliography is given, which will prove helpful to the serious student wishing to pursue the subject further.

St. Matthew. By Dr. Charles Knapp. (Murby's Smaller Scripture Manuals.) xxxiv + 112 pp. (Murby.) 1*s.* 6*d.*—This little commentary is a worthy addition to a useful series. It is eminently practical, and should prove invaluable for class purposes. The notes at the foot of each page, though brief, are of absorbing interest, and quite unlike the usual run of school commentary notes. The text used is that of the Authorised Version, but all important Revised Version readings are given in heavy type—a great gain. The abundant explanations of the numerous similes used in this Gospel are beautifully done, and will fascinate and arrest even the youngest of students who may have the good fortune to use the book. The introduction, as in all Dr. Knapp's commentaries, is an excellent piece of work. The language is simple and clear, and the choice of matter, both as to inclusion and exclusion, has been wisely made. We recommend the book with confidence either for class use or for the private student who wants a safe preliminary guide to St. Matthew.

The Writers' and Artists' Year Book, 1918. A Directory for Writers, Artists, and Photographers. Edited by G. E. Mitton. xii + 185 pp. (Black.) 2*s.* net.—This useful work of reference has been enlarged again, and writers anxious to know how to dispose of their work will find it invaluable. If only aspiring journalists would study and follow Mr. Mitton's advice, they would save themselves much irritation and give editors far less trouble. The book well deserves the wide popularity it has secured.

EDUCATIONAL BOOKS PUBLISHED DURING DECEMBER, 1917.

(Compiled from information provided by the publishers.)

Modern Languages.

"Selections from the Italian Poets." With Critical Introductions by Dr. Ernesto Grillo. 618 pp. (Blackie.) 7*s.* 6*d.* net.

"Selections from the Italian Prose Writers." With Critical Introductions by Dr. Ernesto Grillo. 616 pp. (Blackie.) 7*s.* 6*d.* net.

"Stories and Poems from Famous Russian Authors." Edited by P. M. Smirnoff. With Biographical Notes, Annotations, and Vocabulary. 188 pp. (Blackie.) 2*s.* 6*d.* net.

Hugo: "Hernani." Edited, with Notes and Questionnaires, by F. W. Odgers. 116 pp. (Blackie.) 10*d.*

"Rabelais in his Writings." By W. F. Smith. viii+230 pp. (Cambridge University Press.) 6*s.* net.

De Banville: "Gringoire." Edited by H. L. Hutton. (Oxford French Plain Texts.) 62 pp. (Clarendon Press.) 8*d.* net.

Sallykóv: "Pilgrims and Wayfarers." Edited by Nevill Forbes. (Oxford Russian Plain Texts.) 80 pp. (Clarendon Press.) 1*s.* 3*d.* net.

English: Grammar, Composition, Literature.

"The Army Tutors' Précis Book." Select Passages for Précis and Reproduction for the Use of Candidates Preparing for the Army Entrance and Other Examinations. With Some Useful Hints and Specimens. By A. Grant. First Series. 240 pp. (Blackie.) 3*s.* 6*d.* net.

"Selections from the Poems of William Wordsworth." Edited by A. H. Thompson. (English Romantic Poets.) xl+204 pp. (Cambridge University Press.) 2*s.* 6*d.* net.

Oxford Plain Texts:—Shakespeare: "Antony and Cleopatra." 92 pp. "Cymbeline." 92 pp. "Othello." 88 pp. "Romeo and Juliet." 76 pp. "Winter's Tale." 80 pp. (Clarendon Press.) 8*d.* net each.

History.

"A History of South Africa." By D. Fairbridge. 336 pp. (Clarendon Press.) 3*s.* 6*d.* net.

Mathematics.

"A Course of Pure Geometry: containing a Complete Geometrical Treatment of the Properties of the Conic Sections." By E. H. Askwith. New edition. xii+286 pp. (Cambridge University Press.) 7*s.* 6*d.* net.

Science and Technology.

"The Vegetable Garden." By Ed. J. S. Lay. 144 pp. (Macmillan.) 1*s.* 6*d.*

"The Motor Industry." By Horace Wyatt. (Common Commodities and Industries Series.) 140 pp. (Pitman.) 2*s.* net.

Pedagogy.

"Cambridge Essays on Education." Edited by A. C. Benson. xx+232 pp. (Cambridge University Press.) 7*s.* 6*d.* net.

Miscellaneous.

"The Historical Register of the University of Cambridge: being a Supplement to the 'Calendar,' with a Record of University Offices, Honours, and Distinctions to the Year 1910." Edited by J. R. Tanner. xii+1186 pp. (Cambridge University Press.) 12*s.* 6*d.* net.

"The Epistle to the Hebrews." Edited by A. Nairne. (Cambridge Greek Testament.) clxvi+142 pp. (Cambridge University Press.) 4*s.* 6*d.* net.

Year Book Press Series of Songs for Schools:—No. 147, "Snowflakes Falling." Composed by Basil Johnson. 2 pp. (Deane: The Year Book Press.) 2*d.*

"Reading Exercises on Pitman's Shorthand Rapid Course." 62 pp. (Pitman.) 1*s.*

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.*

Grammatical Reform.

AT a meeting held under the auspices of the Teachers' Guild at University College, London, on January 3rd, to discuss the teaching of English in relation to the teaching of other languages, ancient and modern, remarkable unanimity of feeling was shown on the part of the large body of teachers present as to the need for a new departure in the teaching of English grammar, a subject which has been much neglected of late with disastrous results to the teaching of languages, both modern and ancient. Emphasis was laid by several speakers on the fact that in the old days pupils were better provided than they are at present with a foundation of grammatical principles on which a study of foreign languages might later be erected. There was no intention to revive the mechanical methods of the past, but what was demanded was such a study of English grammar as should serve as an introduction to the grammatical structure of all the foreign languages studied in schools. For a fuller statement of what this involves we may refer to the anonymous articles entitled "The Curriculum" (especially the article on language teaching of August 30th) and "The Rediscovery of English" which have appeared within the last few months in the *Times Educational Supplement*. The desired results would, we believe, be achieved by intelligent teaching based on the scheme of grammatical reform proposed by the Joint Committee for the Unification and Simplification of Grammatical Terminology, the report of which (published by Mr. John Murray, and to be obtained through any bookseller, price 6*d.*) has been recently commended to the attention of teachers (i) in the Report on the Teaching of French in London Secondary Schools, drawn up by six of H.M. inspectors at the instance of the Board of Education (see § 74, p. 34), and (ii) in the report on the same subject drawn up by Mr. Cloudesley Brereton for the London County Council (see p. 13f.).

We, the undersigned members of the Standing Committee on Grammatical Reform, representing the Headmasters' Association, the Headmistresses' Association, the Assistant-masters' Association, the Assistant-mistresses' Association, the Association of Preparatory Schools, the Classical Association, the Modern Language Association, and the English Association, hope that we may at this juncture render a service to education by asking for information on the following points:—

(1) How far efforts have already been made in schools to co-ordinate the teaching of foreign languages with English and with one another.

(2) Whether the scheme of terminology put forward

by the Joint Committee has been found useful to this end.

We should be grateful if heads of schools would kindly help us by sending information on these two points to the hon. secretary of the Standing Committee, Miss Edith Hastings, 180 Elm Park Mansions, London, S.W.10.

An immediate response to this request would greatly assist us in the further steps which we contemplate taking.

E. A. Sonnenschein (Chairman of the Standing Committee).
Cloudesley Brereton.
R. M. Haig Brown.
Edith Hastings.
W. E. P. Pantin.
Eleanor Purdie.
F. M. Purdie.
W. G. Rushbrooke.
P. G. Thomas.

The Schools Personal Service Association.

The Schools Personal Service Association, to which reference was made by our vice-president, Mr. Cumberland, in his article in the January number of The School World, was founded in September, 1914. The solidarity of all classes of our people appeared to the founders to be the vital need of that time and of the years that lay ahead. So far as the future was concerned the path to that union lay through the schools.

The ideal of the association has been expressed in the following words:—"A nation linked together from childhood in active goodwill by mutual knowledge and appreciation, by mutual service and responsibility."

Its aims and objects have been formulated as follows:—(1) The aim of the Schools Personal Service Association is educational.

(2) It seeks to educate the boys and girls in our schools in such a way as will lead to the betterment of social relations and conditions, and so to contribute to the solution of social problems.

(3) It seeks to develop in young people clear conceptions of social rights and duties.

(4) It seeks to bring together teachers and other educational workers connected with schools of all types, so that by mutual counsel and service they may more effectively attack the great national problem of social education.

Membership of the association is open to all teachers and other workers connected with schools, to parents, employers, and others interested in education. The minimum annual subscription is 1*s*.

The association arranges lectures and meetings for the discussion of problems bearing upon social education. From time to time it issues pamphlets bearing upon the same subject. It links together teachers in schools of all types, members and officers of education committees, care committees, and juvenile employment committees, inspectors and social workers. It has recently found it necessary to extend its membership to parents and employers. Opportunities for co-operation in securing the welfare of the child constantly and naturally arise, and can be immediately utilised.

It brings into touch schools of different type on the basis of mutual service. Within the schools through the teachers it aims at developing the social consciousness by such means as direct instruction in social science, by developing the social aspects of other subjects in the curriculum, and particularly by encouraging social life within the school. By means of prefects, houses, clubs, and other self-directed activities, children are accustomed to life and service in a democratic community. Again, by means of school journeys, by foreign correspondence, by old pupils' associations, and through the war service of scouts, it would keep children in touch with the world of reality outside the schools.

The full benefit of the idea underlying the formation of the association can be secured only when a branch is formed linking up all the educational activities of a single area. This has been done in Tottenham, Hornsey, and Edmonton, and is being done in the Metropolitan (N. and E.) Branch. The membership of these branches ranges from eighty to 140. There are also more than one hundred members scattered throughout the country, and we are looking forward to the formation of other branches in districts where we are represented.

I shall be glad to send a copy of the third annual report to anyone interested on receipt of 3*d*. to cover printing and postage.

W. E. Gibbard,
Hon. Secretary.

41 Warner Road, Hornsey, N.8.

Permanent Clay Geographical Models.

After a visit to the Cardiff Museum to examine the large relief model of Wales prepared by Mr. W. E. Whitehouse and Dr. Fleure, with the co-operation of several students of the University College of Wales, I became convinced of the practicability of producing a similar model of our locality with the view of improving the teaching of geography in our school. The necessity for such a model has been present to my mind for many years, but previous attempts with various materials had met with only a fair amount of success, so I had to abandon the idea owing to numerous difficulties, such as the limited time allotted to the subject, the question of expense, and the lack of a suitable plastic material for forming a permanent model in the course of one or two lessons.

Cardboard was tried on the step or layer system, and answered well when coloured to represent lowland, plateau, and mountain, but the process is laborious, and I came to the conclusion that it would be more profitable to spend the time in studying a good relief *map*. As an exercise in cardboard modelling it may be commended, as it is an excellent method of giving the pupil some idea of the meaning and value of contour lines, and is the *only* method possible of reproducing the actual map with all the detail of a model.

We then obtained the assistance of some of the woodwork pupils in preparing layers of wood for the purpose of making simple models of geographical features, and these were afterwards finished with a layer of plasticine to obliterate the steps and to give greater detail than was possible with thin layers of wood, but we found that this was even more laborious than the previous method. It was possible, however, to provide by these means relief models of typical areas which enabled pupils to draw four sections from the sides of the model. As the models were all constructed from contoured maps, with which the pupils were provided, a comparison of the two soon enabled them to "spot" such features as gorges, mountain passes, etc., on a relief *map*.

Our next attempt was to cover a wet-clay model with a layer of plaster of Paris mixed with water to the consistency of thick cream, painted on with a brush, and I applied this mixture to step models of cardboard also, but the fragile nature of the finished models made them inconvenient for class use. I also used the method of drawing sections every ¼ in. with benefit to the pupils, who thus gained an insight into map reading, which is, after all, the main object, and not the modelling.

The materials at present available, therefore, for preparing geographical models in school hours possess

several disadvantages which make their constant use impracticable in most schools. Plasticine is expensive for large models; wet clay has a tendency to crack unless covered with a damp cloth; wood and cardboard are difficult to work, and must be finished with plasticine or similar material; wet dough and papier mâché are out of the question in war-time; plaster of Paris requires time for setting, and the preparation of negatives and positives is altogether too elaborate a process for young pupils. A material is needed which will set fairly rapidly without cracking, so as to form a permanent model for class work. For this purpose a mixture of ordinary clay and calc spar (or plaster of Paris from broken models) possesses certain advantages, being clean to work with, inexpensive, and permanent.

Our first experiment was to model the urban district area from a 6-in. Ordnance sheet on which the contours at intervals of 50 ft. had been clearly marked with red ink. A thin sheet of paper was then laid on the map, and the lowest contour line traced on it. This was repeated with the other contour lines, a separate sheet being used for each. The paper is now cut along the contour line so as to give the exact shape of the step or layer.

The following articles comprise the equipment necessary for preparing a permanent relief model in clay:—A half-inch board, such as an old drawing board, a table knife, a glass roller or cylindrical ruler about ¾ in. in diameter and 1½ ft. long, a few trays or cardboard sheets, and some modelling tools. The size of the modelling board depends on the size of the model which is desired, although I have found it more convenient to make a large model in blocks about 15 in. square. Strips of wood, 1 in. wide and ¼ in. deep, are nailed along the edges of the board so as to form a shallow tray, in which the sheets of clay are rolled in order to form the step model. The thickness of the sheets can be varied to suit the vertical scale; thus we used a 6-in. map (1 in. = 880 ft.), and a vertical scale of ¼ in. to represent 50 ft. (1 in. = 200 ft.), the vertical exaggeration being 4·4 times.

The work was arranged to occupy a small class of boys, some of the pupils being employed in kneading and preparing the wet clay, some in rolling the sheets out to the required thickness, while others were tracing contours from the Ordnance map. After kneading a number of small pieces of clay, they are placed on the board (which has already been dusted with powdered calc spar or plaster of Paris), rapidly rolled in two or four directions, dusted with more powder until the surface is fairly dry, and then turned over, when the rolling is repeated until all cracks disappear. The sheet of clay is now detached with a slicing movement of the table knife and laid on one of the trays, and the sheet of paper with the lowest contour laid upon it, when the superfluous clay can be cut away with a pocket knife. The pupils, working in pairs, can now mould the clay without difficulty to the required shape with the aid of the contoured map. In some cases it becomes necessary to number or mark with suitable letters the various sheets of paper so as to prevent mistakes. The clay sheets are now collected, carefully laid in their correct position, and lightly pressed or rolled into a solid mass, slightly damping the under surface of each to make the layers cohere. A modelling tool is now used to give the necessary detail, and pins may be stuck in the clay before it hardens, to which labels are attached with the names of the prominent features. The finished model is then mounted on a large sheet of clay about ½ in. thick, to which it will adhere if lightly pressed. It is then placed aside for a few days to dry slowly, and afterwards baked in the sun or in a warm oven, which is not, however, absolutely necessary. A coat of enamel improves the appearance, and the features can be marked with appropriate colours, or strips of paper may be gummed on, and the model painted or varnished in order to preserve the surface. Small boxes with glass lids are easily obtainable, and keep the models dust-proof.

F. L. LOWTHER.

The County School, Milford Haven.

The Fisher Grant.

MAY we, through the valued aid of your journal, seek to remove various misapprehensions, which are unfortunately prevalent at the present time, concerning the position of assistant-masters in secondary schools? It is commonly assumed that the supplementary grant, introduced by Mr. Fisher, which received the sanction of Parliament some five months ago, has solved the problem of school finance, that the under-payment of assistant-masters is happily passing into oblivion, and that higher education in this country is being placed upon a satisfactory footing.

Unfortunately, the facts give little warrant for such optimism. The Fisher grant, if devoted entirely to the salaries of teachers, would provide an annual addition of perhaps £40 in England and £30 in Wales. These amounts, even if granted in their entirety, would not do more than partially restore the value of salaries to their pre-war standard, which is now universally recognised to have been grossly inadequate.

But the case is even more serious. The Board of Education, while stating in its Regulations that it regards teachers' salaries as the primary object to which the new grant should be applied, has apparently left the local education authorities with a perfectly free hand as to the use of the money, merely expressing the hope that there will be no such abuse of liberty as to necessitate more stringent conditions. But this hope has proved ill-founded, for the authorities and governing bodies have in many cases given to their teachers a very meagre proportion of the new grant. We find that in some schools salaries have been increased by £10 and even smaller sums. Furthermore, although the Fisher grant to secondary schools is based upon the attendances of pupils from August 1st, 1916, the teachers' increment is only too often dated from April 1st, 1917. By this device some authorities and governors are retaining for objects other than the primary one the whole of the new grant for the first eight months; and we know of several cases where an even later date has been chosen, and not one penny of the 1916–17 grant has found its way into the pockets of the teaching staff. This breach of trust not only deprives the teacher of what everybody knows to be his due, but also retards the development of higher education, without which our plans for national rebuilding may be laid in vain.

S. A. BIRKS (chairman),
G. D. DUNKERLEY (hon. secretary).

Association of Assistant-masters in Secondary Schools, 35 John Street, Bedford Row, W.C.1, January 8th.

Some Unsatisfactory "Proofs" in Elementary Geometry.

IN the December issue of THE SCHOOL WORLD Mr. Hawkins criticises adversely the proof usually given in text-books of the converse of Euclid's proposition (III., 21), viz.: If the line joining two points subtends equal angles at two other points on the same side of it, these four points are concyclic. His criticism is unjustifiable, for it is based on an erroneous figure (Fig. 2), drawn contrary to the hypothesis that the angles ACB and ADB are equal. If the ingenious pupil of whom your correspondent speaks has seen the

earlier Elements of Euclid before attempting this theorem, he will at once discover that :—(1) The point C cannot fall inside the angle ADB (Prop. 21, Bk. I.); (2) neither can it fall on the line AD (16, I.); and lastly (3), it cannot fall *anywhere* on the circle BAD' of Fig. 2, since the points C, D must lie on the *same* side of AB. Thus, the only possible case is that of Fig. 1; and, with apologies, it *is* true that the circle ACB must cut AD at another point, which must lie

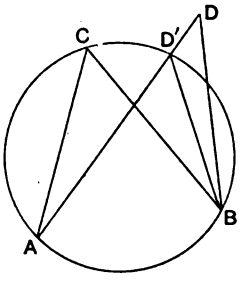

FIG. 1.

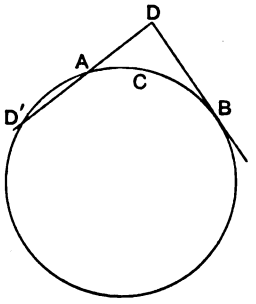

FIG. 2.

between A and D. It is, moreover, irrelevant to the proof whether the circle does, or does not, cut DB in two coincident points.

If such an investigation is necessary, surely it should not be found in a text-book. A note, however, might be useful to remind the pupil that, since the angles ACB, ADB are equal, the vertex of one of the triangles cannot fall within the other.

M. COLGAN.

Rockwell College, Cashel, Co. Tipperary.

MR. COLGAN seems to have missed the point of my criticism, which is concerned with the position of the point D', not that of C. In a *reductio ad absurdum* proof it is necessary that you should have an erroneous figure to represent an impossible position supposed to be correct. Furthermore, it is necessary to dispose of every impossible position which an ingenious opponent could suggest. This Mr. Colgan—attacking the difficulty from a slightly different point of view—does by showing that if the angle ADB is equal to the angle ACB, the line AD must cut one of the chords AC or CB, and must therefore cut one of these arcs. I prefer the method of dealing with the difficulty which I suggested in your December issue, and which has been previously employed by Messrs. Workman and Cracknell. As regards my criticism being "unjustifiable," I should like to point out to Mr. Colgan (1) that I criticised the statement that AD must cut the circle again towards D as a general statement, which it certainly appears to be in the text-books criticised. (2) That the pupils who are learning their geometry from these text-books have not seen the earlier Elements of Euclid. (3) That neither 21, I., nor 16, I., appears in the majority of these books. I also feel sure that a very small percentage of the many thousands of pupils I have dealt with would "at once discover" for themselves the various points which Mr. Colgan credits them with the power to discern. As a matter of opinion, I should not consider it advisable to relegate so important a step in the proofs to a note.

CECIL HAWKINS.

The Value of the Study of Latin and Greek.

WRITING upon this subject in the January issue of THE SCHOOL WORLD, Prof. Valentine comments upon the "unhappy narrowness of thought and sympathy" shown by some classicists in failing to recognise the possibility of a humanistic education without either Latin or Greek; and he finds this failure the more remarkable in that the Greeks themselves attained to the highest culture as a result of an education which did not include the study of any foreign language. It is to be regretted that such a confusion of the issue should have appeared in the very forefront, as it were, of what those who have patience to continue reading will find a very reasonable and reasoned article. We do not, of course, advocate the study of Greek *because it is a foreign language*, but because—to use Prof. Valentine's own words—the Greeks achieved such "masterpieces of literature, philosophy, and history."

R. B. APPLETON.

Lyndewode House, Cambridge.

AN expansion of the paragraph to which Mr. Appleton refers will show, I think, that there is no "confusion of the issue," though a desire not to make my article longer than was necessary may have resulted in considerable compression. The first sentence quoted by Mr. Appleton refers to the fact that some classicists speak of the "humanities" as though they were identical with the Latin and Greek classics. The second sentence quoted by Mr. Appleton has reference to the fact that some classicists would oppose the view that a humanistic education could be given even without any foreign language—a point stated in the preceding sentence in my article, which Mr. Appleton omits in his quotation. That some classicists would (and do) do this is shown by the undoubted fact that they support their argument for the study of Latin and Greek by statements as to the value of the study of these foreign languages as a "mental gymnastic." Some classicists even put the chief stress upon this argument: *cf.* the quotation from Canon Lyttelton near the beginning of my second article (p. 39 of the present number of THE SCHOOL WORLD). I am glad to gather that Mr. Appleton is not one of these; but his "we" suggests that all classicists think alike. Will he please note that I wrote "some"?

As an example of a very different type of classicist, giving a very broad interpretation to the term "humanities," may I mention that distinguished classical scholar, Prof. John Burnet, in whose recent book, "Higher Education and the War," the author contends that science itself may be so treated as to be included within the humanities, and that an elementary education may be essentially and properly humanistic.

C. W. V.

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A Monthly Magazine of Educational Work and Progress.

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THE ARITHMETIC OF CITIZENSHIP.

By T. PERCY NUNN, M.A., D.Sc.
Professor of Education in the University of London.

I.

IN the valuable Report on Elementary Mathematics in Girls' Schools, recently published on behalf of the Girls' Schools Committee of the Mathematical Association,[1] it is recommended that, for girls between the ages of fourteen and sixteen, the work in arithmetic should "consist in following up some of those applications . . . which are of importance in the general life of the community, *e.g.* municipal and national finance, banking, insurance." There is a further suggestion that, for girls who leave school at about sixteen, this course may replace the algebra and geometry prescribed for other girls of their age, together with part of the work in those subjects allotted to the preceding stage.

The committee has acted upon the counsel of prudence which bids us deliver our opinions boldly, but abstain, if possible, from disclosing the grounds upon which we hold them. I propose to follow its example, and to confine myself to describing, at the invitation of the Editors of THE SCHOOL WORLD, certain simple exercises in the "arithmetic of citizenship" which have been found interesting and profitable not only to boys and girls between the ages named in the report, but also to the scholars in the highest classes of elementary schools. I should like, however, to record my opinion, for what it may be worth, that the recommendations of the committee are soundly based. For reasons of which some—such as the competition of other essential subjects—are indisputable, while others—such as the alleged lack of natural interest in mathematics among girls—are open to question, there is undoubtedly a demand for an alternative course for girls more limited in scope than that usually assigned to boys of the same age. The "arithmetic of citizenship" goes at least some way towards meeting that demand. For, in the first place, it deals with topics which, since they concern everybody, may usefully be considered by all; and, in the second, while it may be made an excellent medium for mathematical discipline, its study does not require the mastery of any elaborate technique. Moreover, the subject seems to be particularly suitable for girls' schools. Whether the recent irruption of young women into banks and similar institutions portends a feminine invasion of *la haute finance* is an intriguing question, but not one to be discussed here. It is, however, safe to predict that women will acquire increasing influence in those departments of public policy that touch, and may be regarded as an expansion of, the economy of the home. A course on the "arithmetic of citizenship" supplies a basis of information and discipline indispensable for the due exercise of these wider responsibilities.

[1] London: G. Bell and Sons, Ltd., 1916. 1s. net.

MUNICIPAL FINANCE.

A convenient way to begin the course is to start a discussion about the more obvious public services of the district. Streets are paved, repaired, and lighted; policemen keep order in them and guard our safety at night; we have, in addition to public elementary and secondary schools, public libraries and public baths and wash-houses; perhaps a public system of tramways. There are also the postal service, and, possibly, a local workhouse and a public cemetery. How are all these things paid for, and who has the handling of the money and the direction of the work? Commencing thus, we soon reach, on one hand, the local rates and the income-tax, and, on the other, the rating and taxing authorities. Everyone knows that the Post Office is a national service, but ideas are not so clear about the other services. We proceed, therefore, to study the information printed upon the demand-note served by a local rate-collector. For conveni-

ence, we will assume the recipient to be a resident in a London borough. In this case, the first thing we discover is that, although the note is issued by the borough council, and the money exacted is to be paid to one of its officers, three distinct authorities conspire to make the demand, and share the receipts between them. These are the borough council itself, the London County Council, and the guardians of the poor.

Before proceeding to examine the details set out in the note, we inquire into the principle upon which the total sum required is portioned out among the ratepayers. We find that the rates are a burden upon the occupier of house property, learn to distinguish between the rental value of a house and the rent of the ground on which it is built, and find what is meant by the statement that the rate is at so much in the pound. This last point is made clear by a few straightforward arithmetical examples, which serve (incidentally) to justify the statement in the time-table that the lesson is a mathematical one.

The next thing is to examine the several items of expenditure named in the demand-note, and to see how they are allotted among the rating authorities. This is best done graphically. Fig. 1 exemplifies a suitable form of graph, showing the destination of the rate of 8*s.* 5*d.* in the pound levied in the borough of Battersea for the year ending March 31st, 1910. It appears that out of this sum the borough handed over 5*s.* 0·3*d.* to the County Council, and 6·01*d.* (Gu) to the local guardians of the poor,[2] retaining only 2*s.* 1·69*d.* (B) to meet the expenses for which it is itself responsible. The graphic strip is divided, therefore, by a thick line to show what part of the rate goes to the central authority and what part is expended locally, while a broken line is inserted to show how the local expenditure is divided between the guardians and the borough council. It is convenient also to show that the sum passed on to the County Council is: for education (E), 21·09*d.*; for general purposes (G), 18·87*d.*; for police (p), 6·1*d.*; for asylums (A), 5·8*d.*; for the "common poor fund" (P), 10·01*d.*; and for the "equalisation fund" (e), 6·62*d.* The sections into which the strip is thus divided may, with advantage, be coloured.

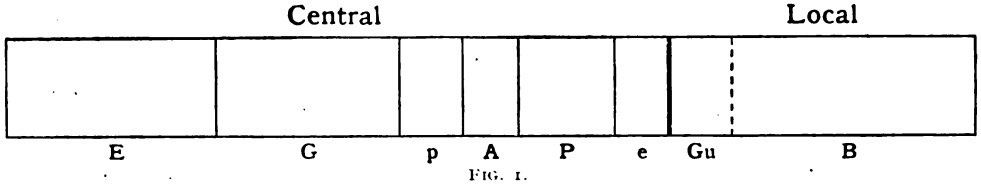

Fig. 1.

Certain questions at once arise. Why do the County Council and the guardians both exact payments for the support of the poor, and what is the equalisation fund? We learn that the common poor fund and the equalisation fund are devices for tempering the financial wind to the shorn lamb, and that in the case of both funds every borough in London receives its contribution back, *plus* or *minus* an amount determined by its rateable value, its population, and its expenditure on the poor and other services. We find, further, that both the guardians and the borough council receive additional "county grants" tending to reduce or to equalise their burdens. Thus the actual sum required by the guardians for Battersea was at the rate of 1*s.* 4·49*d.* in the pound, but was reduced to 6·01*d.* by a county grant (C) of 2·31*d.* and a contribution from the common poor fund (P′) of 8·17*d.* Similarly, the total sum needed to meet the expenses of the borough was at the rate of 3*s.* 0·11*d.* in the pound, but was reduced to 2*s.* 1·69*d.* (B) by a grant from the equalisation fund (e) of 10·00*d.*, and by a county grant (c) of 0·33*d.*

We are now in a position to represent graphically, as in Fig. 2, the sums expended and received for the localised services of Battersea in the year in question. In the upper graph P stands for the total expenditure on the poor (1*s.* 4·49*d.*); S for that on the streets (1*s.* 10·16*d.*), including their lighting and paving and the maintenance of the local sewers; H for that on public health (8·73*d.*); *b* that on the baths (2·61*d.*); L that on the libraries (1·26*d.*); and R the residual expenses (1·35*d.*). The references indicating the sources of revenue represented in the lower graph have been given in the preceding paragraph.

The study of these statistics will be seen to offer an excellent starting point for excursions into "civics." The graphic method of presenting the figures is particularly useful from that point of view, since it gives the young student a vivid idea of the relative prominence of the several items of public expenditure. Who, for example, could fail to be impressed by the tenuity of the strip marked "L" in

[2] It happens that, for the administration of the Poor Law, Battersea is joined with the neighbouring parish of Wandsworth. It is clear, however, that the service may be counted local.

Fig. 2, especially when he learns that Battersea's zeal for culture, as measured by the rate-standard, was, in 1909-10, notably higher than that of any other London borough? It is obvious, also, that a considerable variety of profitable arithmetical exercises may be based upon the records. Here are some typical questions that at once suggest themselves:

(1) What percentage of the rates levied in Battersea is expended (*a*) locally, (*b*) centrally?

(2) What percentage of the whole rate is devoted to (*a*) education, (*b*) the support of the poor, (*c*) the police?

(3) The rateable value of the houses in X Street is £45 per annum. How much does each householder contribute to (*a*) educating the children of London, (*b*) maintaining the streets of Battersea?

(4) The produce of a 1*d.* rate in Battersea is £4,400. (*a*) What is the total rateable value of the borough? (*b*) How much does it cost to maintain the libraries?

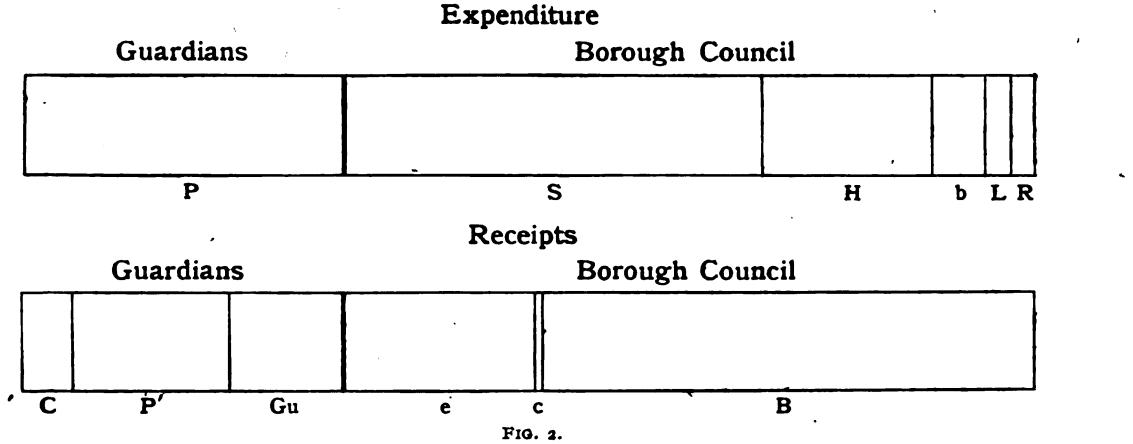

FIG. 2.

COUNTY AND NATIONAL FINANCE.

After studying the local budget, the natural next step is to follow up the contribution marked "central" in Fig. 1, and to see what place it occupies in the finance of the county. This is best done by constructing graphs, like those of Fig. 2, showing the annual expenditure and receipts of the London County Council. There is no space here for the details, but they are easily accessible, together with a rich mine of information admirably set out, in any volume of the "London Statistics" (P. S. King and Son) published by the Council. A convenient summary will be found every year in "Whitaker's Almanack."

In considering the county budget, three important new facts come into view. The first is that London does not by any means pay its way out of its own rates, but is assisted by "imperial subventions." Of these the most important are the grants for education, for the upkeep of the police system, for the support of the poor, and for the relief of the unemployed. The imperial subventions are the source of the "county grants" which, as we have seen, ultimately find their way to the guardians and to the borough council, but much the greatest part of the total is expended directly by the central authority. The second new feature consists in the "revenue-producing services," such as the tramways. Since these not only produce income, but also involve expenditure, they will necessarily appear in both halves of the graphic budget. The third fact that emerges is that the central authority is both a borrower and a lender of money on a large scale: it borrows from the public and from the Government the capital needed for building schools, extending the tramway system, etc., and it lends to the guardians, the borough councils, and other authorities (such as the Water Board) the sums they need for their new undertakings. The sums received and disbursed, partly in repayment of capital advanced and partly as interest on the amounts outstanding, must appear in their proper places in the graphic statement. The arithmetical problems suggested by their presence will be considered below.

The treatment of national finance should follow the same general lines. Here we investigate the main sources of national revenue and expenditure, finding out, for instance, how much is received from direct and how much from indirect taxation, how much the State contributes to education, what old-age pensions cost, what the difference is between funded and unfunded debt, etc. It will generally be better not to consider these subjects immediately after county finance, but to postpone them until the

second year of the course, when their treatment gives an opportunity for the revision of earlier knowledge. All the information that the teacher needs will be found in the annual issue of "Whitaker's Almanack" or in the "Statesman's Yearbook."

The Theory of Interest.

It may be assumed that, either concurrently with, or before, the study of municipal finance, our pupils learn how to calculate percentages. There is not the least need to teach what is called "simple interest" as a separate subject. The exercises in calculating percentages should themselves contain, from the outset, problems concerning the return or "rent" from capital invested in house property, in public funds, such as war loans, and in industrial undertakings. In dealing with these, as with public finance, the teacher should use the arithmetical problem as an instrument for communicating essential information upon matters that have an intimate bearing upon the general weal of the community. Thus the investment of capital should be considered primarily, not as a means by which well-to-do shareholders may live at ease, but rather as an indispensable factor in any advanced state of industry and public polity. The lessons should include the examination of the prospectus of some new useful undertaking, such as a railway or waterworks, and also the study of some straightforward industrial balance-sheet. The distinction between ordinary shares and "debentures" should be elucidated, and the meaning of such terms as "reserve fund" and "depreciation" explained. Simple calculations on the value of investments should be included in the work, but should not be made the only or even the central subject of consideration.

The theory of interest, in the proper sense, is reached only with the study of "compound interest." It is well to place this topic on a wider basis than is customary, by making the calculation of financial "amounts" and "present values" appear as merely special cases of the general problem of determining the value of a magnitude subject to a specified law of growth. Two such laws have special interest and importance. The first is that exemplified by the depth of water in a reservoir into which, or from which, a uniform stream is pouring, by the uniform increase or decrease in velocity of a moving body, such as a stone or a train, and by other similar instances. In all these cases the increase or decrease takes place by equal increments or decrements in equal times, and the graphic representative of the phenomena is a sloping straight line. The second typical law of growth is exemplified by a quantity the magnitude of which increases or decreases in equal times by geometrical progression. We may conveniently describe the "common ratio" of this progression as a "constant growth-factor." Thus, in Fig. 3, let the ordinate Ao represent the height of a girl on her eleventh birthday, and let us make the assumption (which may be roughly true) that for a few years before and after this date her height increases in such a way that its annual growth-factor is always 1·045. Then the heights of the ordinates B1, C2, D3, . . . which represent her stature on her twelfth, thirteenth, fourteenth, and subsequent birthdays are to be calculated by multiplying Ao by the growth-factor once, twice, thrice, etc. Similarly, her stature one, two, three . . . years before her eleventh birthday is to be determined by

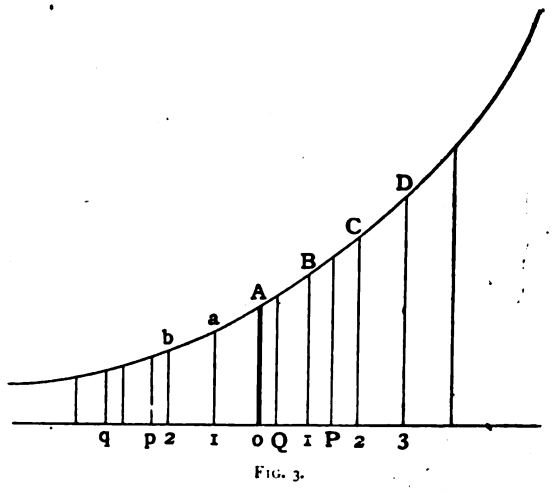

Fig. 3.

one, two, three . . . successive divisions by the growth-factor. If, as time advances, the magnitude of the quantity decreases (as in the case of an isolated population whose death-rate exceeds its birth-rate), the growth-factor will be less than unity, but the method of calculating the magnitude at a given time will be the same as before.

In order to bring out the effect of this law of growth it is natural to add to the calculated ordinates the smooth curve shown in Fig. 3. It cannot, however, be assumed that this curve, like the straight line which represents the first law, gives the magnitude of the growing quantity at times intermediate to those for which they are computed. But we may easily assure ourselves that this is the case. Let the several members of the class draw pairs of equidistant ordinates, such as those labelled P and Q, *p* and *q*, choosing at random the position of each pair and the interval between

them. Then every girl will find that the ratio of the height of the right-hand ordinate to that of the left-hand ordinate is the same for both her pairs, though it will, of course, not be the same as the growth-factor for the unit of time, unless, by chance, the interval between the ordinates represents that unit. From this discovery we may fairly draw the conclusion that each ordinate of the curve represents the size at the moment indicated by the abscissa, of a quantity growing uniformly in such a way that the successive magnitudes for unit intervals of time are calculable by the given growth-factor. For instance, if the distance *op* represents $2\frac{1}{4}$ years, the ordinate at *p* represents the height of our girl at the age of $8\frac{3}{4}$.

The financial applications of the argument are obvious. Let Ao, in Fig. 3, stand for a given sum of money subject to interest payable at a given rate once a year. To fix our ideas, let the rate be $4\frac{1}{2}$ per cent., so that the annual growth-factor is 1·045. Then the ordinates B1, C2, etc., represent the "amount" of this sum one, two, etc., years after the moment represented by o, while the ordinates *a*1, *b*2, etc., show its "present value" one, two, etc., years before that moment. The former are to be computed by successive multiplication by the growth-factor, the latter by successive division.

It will be observed that this mode of approach to compound interest has the signal advantage of reducing the calculation of amounts and present values to mere variants of a single process, and of making their connection with one another so clear that not even the dullest pupil can find difficulty in it.

We pass now to an important but simple refinement—the distinction between "nominal" and "effective" interest. Money invested at compound interest does not, as a rule, grow, like a girl's height, continuously. The general custom is to "add the interest to the principal" at stated intervals, which are, however, usually less than a year. Suppose the "nominal" rate to be 4 per cent. per annum, and the interest to be added to the principal quarterly. Then it is obvious that we are really concerned, not with an annual growth-factor of 1·04, but with a quarterly growth-factor of 1·01. To obtain the amount of our principal at the end of a year we must multiply four times in succession by 1·01—which is equivalent to multiplying once by (approximately) 1·0406. In other words, the "nominal" interest of 4 per cent. per annum is, in this case, equivalent to an "effective" rate of about 4·06 per cent. per annum.

There is a simple and very instructive method of exhibiting results of this kind graphically. In Fig. 4, let the curve AP be *any* "growth-curve" drawn in accordance with the foregoing prescription, *i.e.* so that ordinates at equal intervals increase geometrically. Let the height of AO be unity, that of *pr* be $(1+i)$, where i is the nominal rate of interest per *pound* per annum, and let that of PR be $(1+i/n)$, n being the number of equal intervals per annum at which the interest is added to the principal. Through A and *p* draw lines parallel to the axis OR, and through AP a secant cutting the parallel through *p* at *p'*. Then it follows that *p'q'*, being equal to *pq*, is n times PQ, and hence that A*q'* is n times AQ. Thus, if a series of ordinates were drawn to the right of AO at equal distances OR, PR would be the first and P'R' the nth. It follows that P'R'

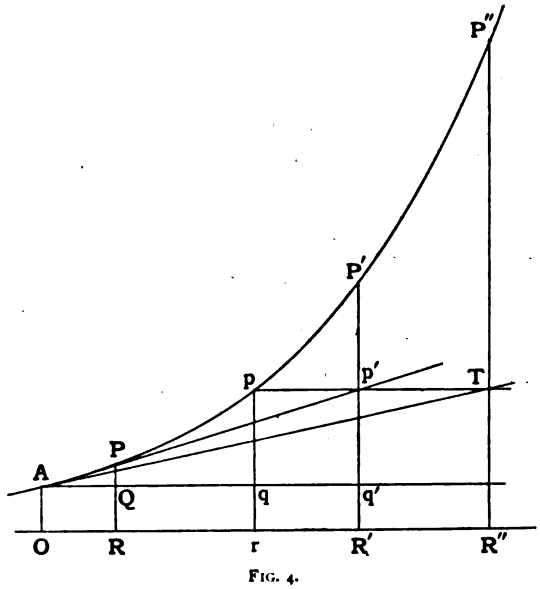

FIG. 4.

$= PR^n = (1+i/n)^n$: that is, that P'R' represents the effective annual growth-factor, and P'*q'* the effective annual rate of interest per pound.

We are now in a position to answer a very fascinating question. The more frequently the interest is added to the capital the greater is the effective annual interest. If, then, we could persuade an obliging financier to add the interest frequently enough—say every second—could we acquire in a year "riches beyond the dreams of avarice," or is there a limit to our possible gains? I find that, as a rule, students expect illimitable profit, but consideration of the graph shows that their anticipations are ill-based. As the interval for the payment of interest grows smaller, PR approaches AO, and the secant AP becomes nearer to AQ. But AP can never pass beyond the tangent AT, and

the effective annual growth-factor can never, therefore, exceed P″R″, the ordinate through the point T where the tangent is cut by the parallel through p. As I have shown elsewhere, it is easy to express this limiting growth-factor in terms of the celebrated number called e, and to conclude the whole argument without the help either of the exponential or of the binomial theorem.

(To be continued.)

PRÉCIS-WRITING IN SCHOOLS.

By Norman Hepple, M.A., M.Litt.
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My text is a sentence from the examiners' report on the work of candidates in English at the Oxford Senior Local Examination held in July last:—

> Relatively few candidates seem at all adequately to realise the distinction between a précis and a paraphrase.

Like many divines, however, who announce a text, I do not propose to say a great deal about it, but merely to make it the occasion of some remarks on the teaching of précis-writing in schools. If, in the course of these remarks, I find it necessary to distinguish between paraphrase and précis, it must not be thought that I am crediting my fellow English teachers with the same shortcomings as the candidates who drew down the above animadversion on their heads. I need scarcely say that to suggest such a thing is as far from my purpose as the suggestion itself would be remote from the truth. In mentioning paraphrase at all in this connection, I merely wish to show the relative positions of the exercises in the school course, and how far the principles involved in the one exercise may be used in teaching the other.

Précis may be defined as an abridgment or brief summary in continuous prose of the essential ideas in any given passage, document, or series of documents. From this definition it will be apparent that the writing of précis involves a double process, selection and abbreviation—double in the sense that a flower may be double, and not merely twofold, for each process is part of the other. Here at once emerges the fundamental distinction between paraphrase and précis: the former merely requires the comprehension and re-expression of *all* the ideas in the passage to be treated; the latter demands, first of all, the extraction of what is most vital and essential, and the rejection of all that is of less importance. So that, involving as it does, not merely the understanding, but also judgment and discrimination, précis-writing as a formal exercise should follow paraphrasing, and come late in the school course. Moreover, for reasons which will presently become apparent, it will be of great assistance to both teacher and pupil if the exercise is delayed until the latter has acquired that facility in analysis and synthesis of sentences generally to be gained only by practice during the first two or three years of his school life.

If I may at this point revert for a moment to our text, let me say that I am not without a certain amount of sympathy for the candidates who incurred the criticism expressed therein. In the examination paper they were instructed to "rewrite in a shorter and simpler form, but so as to preserve *all*[1] the ideas contained in it," the passage that was set. Now, as many of them had doubtless been taught that a paraphrase must retain all the ideas of the original, and a précis generally only the most important ones, they may, perhaps, be to some extent forgiven for having failed to notice, or having forgotten, that the instruction also asked for abridgment. To make any considerable abbreviation without sacrificing at least some of the less essential ideas must have been an exceedingly difficult achievement for young people, especially when they were required, in addition, to re-express the passage in a simpler form, which is actually a species of paraphrasing. After all, the exercise, as set, was a kind of hybrid, and for the candidates to have emphasised one of the component elements at the expense of the other was an offence which might be not unreadily condoned.

It is, however, with unadulterated précis-writing that the present article is concerned. How can a pupil best be taught to perform that joint operation of selection and condensation which, we have seen, lies at the root of the matter? He is too often, I am afraid, merely told to omit all that is superfluous, unessential, or less essential, and to retain what is most important; to make a summary or a digest, an epitome or an abstract; to give the gist of the passage, and so forth—all of which is excellent advice and entirely to the point, but scarcely adequate for a beginner. It seems desirable that for his guidance in such a difficult task we should give him something more tangible, some definite method which he may apply, if he so wishes, to any exercise he may be given; some principles to the touchstone of which he may bring any difficulty he may meet with in practice. Many occasions will, of course, arise when considerations of speed make it impossible to follow out the method *in detail*; we have sometimes to leap quickly to a result and leave out some of the intermediate steps; but

[1] The italics are my own.

the result so arrived at will approximate to accuracy according as we have or have not previously put into practice methods which we can count on always to produce a correct result; in much the same way, for example, as the accuracy of a sudden judgment by appearances is determined by our previous experience in judging other cases, after having deliberately and carefully measured them by well-considered standards.

From what has been said it will have been gathered that the three points on which special stress must be laid in teaching the subject are: (*a*) thought-analysis, (*b*) abridgment and selection, (*c*) the expression of the précis in continuous prose; and bearing these in mind, we must devise some scheme by which the pupil may be taught both what a précis is and how to proceed in making one. With these purposes in view, I venture to tabulate the stages in a method which I have found serviceable in the case of my own pupils, and suggest that, if followed out a few times, it would dispel any misapprehension that might exist as to the respective natures of précis-writing and paraphrasing.

1. CAREFUL READING. The pupil should, first of all, be advised to read the passage through once or twice with great care. The object of this preliminary reading is that he may acquire a general knowledge of the contents and the mode of their distribution in the passage, in order that he may not disproportionately emphasise any one phase of the subject at the expense of the others—a thing he might easily do if he at once attacked the various parts of the passage piecemeal and *seriatim*. This fault is so common that measures should be taken at the outset to anticipate it, and, if I may suggest a simple illustration which generally makes the matter clear, the pupils might be told that a précis bears the same relation to the original passage as a landscape viewed through the wrong end of a field-glass bears to the same landscape as seen by the naked eye: the most prominent objects in the real landscape remain the most prominent objects in the reduced view.

2. THOUGHT-ANALYSIS. It is impossible for a pupil to select what is most important in a passage if he has not thoroughly explored all its contents and mastered its meaning. To enable him to do this I know of no better method than the making of a thought-analysis, which seems as indispensable in précis-writing as it is in paraphrasing. In the latter exercise, as it is necessary for the pupil to re-express, if possible, every shade of thought in the original, I recommend that he should seek to isolate for a while each complete idea, and grapple with any difficulties it may present until they are overcome, and the thought stands out singly and clearly in his mind, when he should state it accurately in his own words, and tabulate it on paper. A precisely similar process may be gone through in précis-writing, except that in tabulating the individual thoughts in his analysis he must abridge his statement of them. As this is the point where the paths to paraphrasing and précis diverge, advantage should be taken of it to press home the distinction between the two exercises and to emphasise the fact that while in the former all the details are retained, in the latter there must be abridgment, the methods of effecting which bring us to the next step.

3. ABRIDGMENT AND SELECTION. These are, as we have seen, complementary processes, but for the purposes of this paragraph we shall distinguish them as two kinds of abridgment:

(*a*) Abridgment of language only, by which (1) all superfluous expressions may be excised, and (2) shorter forms substituted for longer ones—a single word, for example, for a phrase or for a clause. Exercises worked during the rhetoric course in connection with offences against the rule of brevity should prove of advantage here.

(*b*) Selection, which is equivalent to abridgment of thought. The extent of such abridgment must be determined by the dimensions to which the original passage has to be reduced. In most examinations, where only one or two paragraphs are set for the exercise, it is usual to reduce the passage to anything from about a half to a third of its original length. In other cases, where an entire document or a series of documents has to be dealt with, the reduction has to be much more drastic, the précis often amounting only to about one-sixteenth of the original. Guidance as to the length desired should always be given, and in giving it the teacher ought, of course, to consider carefully the style of the passage he prescribes, as it is obvious that some writers lend themselves to condensation more than others.

In any case, abridgment by selection can be properly done only when the relative importance of the facts is appreciated, for only thus can the essential facts be retained and the less important details dropped. The success of a précis depends, therefore, on the degree of intelligence and judgment exercised by the pupil in the process of abbreviation; but it may be of some help to him if we point out that a certain amount of guidance can be obtained from an application of the principles of grammatical analysis, with which we may assume he is familiar. Thus, in a simple sentence, the unenlarged subject, the

verb, and the simple direct object are generally of primary value, all qualifying and modifying words being, as a rule, of secondary importance. Similarly, in a complex sentence the subordinate clauses are usually less vital and necessary than the principal statement. Such aids are, however, more or less mechanical, and cannot always be relied on, though they may be used by a beginner for what they are worth.

In teaching pupils how to prepare a contracted thought-analysis I have found it a good plan to write up the passage on the blackboard, and to strike out the parts dealt with as they are replaced by their shortened equivalents, which should be tabulated on the same board by the side of the original. In this way the pupil can see the passage melting, as it were, before his eyes into the smaller dimensions of the précis.

4. SYNTHESIS. In the last stage of the method, the preparation of the finished précis, advantage may be taken of the exercises in synthesis of sentences so universally worked in connection with the composition lessons. If the separate sentences in the contracted thought-analysis be now synthesised in similar fashion, the effect will be at once to achieve additional abbreviation and to produce the finished précis in the form of a continuous prose passage.

As an illustration of the method in operation, may I here be permitted to make a précis of the passage set at the Oxford Local Examination already referred to? The passage is as follows:

When at school, the tasks in which he excelled were those only which he undertook voluntarily; and his situation as a young man of rank, with strong passions, and in the uncontrolled enjoyment of a considerable fortune, added to that impatience of strictures or coercion which was natural to him. As an author he refused to plead at the bar of criticism; as a man he would not submit to be morally amenable to the tribunal of public opinion. Remonstrances from a friend, of whose intentions and kindness he was secure, had often great weight with him; but there were few who could or dared venture on a task so difficult. Reproof he endured with impatience, and reproach hardened him in his error; so that he often resembled the gallant war-steed who rushes forward on the steel that wounds him.

CONTRACTED THOUGHT-ANALYSIS.

(1) At school he excelled only in voluntary tasks.
(2) His strong passions, rank, and the free use of a fortune increased his impatience of control.
(3) As an author he ignored criticism.
(4) In his morals he ignored public opinion.
(5) He would often listen to the remonstrances of a tried friend.
(6) Few could or dared remonstrate.
(7) He was impatient of reproof.
(8) Reproof merely hardened him in his error.
[The simile is omitted as being merely explanatory.]

FINISHED PRÉCIS.

At school he excelled only in voluntary tasks, showing an impatience of control increased by his strong passions, rank, and the unrestricted use of a fortune. As an author he ignored criticism, and in his morals, public opinion; though he would listen to the remonstrances of the few tried friends who dared make them. He was impatient of reproof, which only hardened him in his error.

The finished précis, it will be observed, is in this case about half the length of the original. If further reduction be required, we must drop out some of the particulars, always selecting for this purpose those next in order of unimportance. The ultimate précis of a passage would be its title, and it is a good exercise for the pupil to find suitable titles both for the entire passage and for the separate paragraphs in it, should there be more than one.

The teacher should insist on seeing the contracted thought-analysis in every case for the first half-dozen exercises or so, when, it may be presumed, the pupil will thoroughly understand what is required of him in précis-writing, after which, if it is thought desirable, and especially in the case of long exercises, it may be remitted.

The uses and applications of précis-writing are numerous. Apart from its undoubtedly great educational value as a method of developing the judgment and inducing concentration of thought, it has uses of an eminently practical character. It assists in the formation of a concise prose style; it forms the basis of indexing; it is the secret of intelligent note-making in connection both with reading and with listening to lectures or speeches, while to a journalist or a barrister it is invaluable. If these allurements are judiciously displayed to the pupil, he may be induced to undergo willingly and with patience the necessary training in an exercise which, though interesting, is in its initial stages undoubtedly a severe form of mental discipline to a young mind.

A Short History of French Literature. By George Saintsbury. xvi+638 pp. (Oxford University Press.) 8*s.* 6*d.* net.—No words are needed to praise this standard work, of which the seventh edition has just appeared. There is no better handbook of French literature in the English language. Since its first appearance it has been revised and corrected with scrupulous care. The veteran scholar is well justified in his hope that he leaves this book "as a definite estimate of the great subject concerned, made towards and at the close of one of its most brilliant periods, on the basis of personal knowledge and direct judgment, not unassisted by acquaintance with literatures other than itself."

DESCRIPTIVE ASTRONOMY IN "SCIENCE FOR ALL" CLASSES.[1]

By the Rev. A. L. CORTIE, S.J., F.R.A.S.

BY descriptive astronomy is meant some knowledge of the physical appearances of the heavenly bodies as disclosed by the telescope and the spectroscope, and elementary notions as to the causes of their real and apparent motions. In the memorandum on the aims of science teaching in general education drawn up by a committee elected by the Association of Public School Science Masters, it is stated that, in a course of general science, an attempt should be made to arouse the pupil's appreciation of the value and scope of science. Hence such science is to be taught in a general manner "by directing the attention of pupils towards objects rather than by making them learn subjects. Such objects would in their range embrace the universe and the electron, and would include a generalised knowledge of the facts and methods of astronomy, geology, physics, biology, and physiology." Similarly, in the Report of the Committee on Science in Secondary Schools of the British Association for the Advancement of Science, particular importance is attached to the teaching of natural science, "as a body of inspiring principles," and as possessing a truly humanising influence. This includes a training in the power of independent observation, particularly in reasoning upon the facts of observation and deducing their causes. Observation and experiment are the groundwork of science, which essentially and primarily consists in the deduction of causes from the phenomena observed.

Descriptive astronomy is admirably adapted for that training of the mind which is generally designated by the term "a liberal education." The contemplation of the sun, the moon, the planets, and the stars, appeals to the sense of admiration and wonder at the works of God the Creator in Nature, and that, too, in a manner peculiarly its own. This is a motive or an incentive to observation which affects not only the young, but also all who can acquire some idea of the vastness of space, the multitude of the stars which people it, and the beauty and magnificence of their orderly arrangement. There is an immense field for even naked-eye observation. And accurate observation of the apparent movements of the sun, the real and apparent movements of the moon and the planets, and the varying aspect of the stars at different seasons of the year, to go no further, will inevitably stimulate curiosity as to the causes of these movements, and lead to a knowledge of their laws.

[1] Paper read before the Association of Public School Science Masters on January 9th, 1918.

Among the seven arts, the subjects taught in the trivium and quadrivium, which constituted the syllabus of a liberal education in the schools in the Middle Ages, astronomy occupied an honourable position. In this respect the school boy or girl of that period seems to have been more favoured than those who receive even a public-school education in these more modern and scientific days. Chaucer's "Canterbury Tales" for instance, and later the plays of Shakespeare, were written for an educated audience, and we must suppose that the people understood the astronomical allusions. At any rate, in these works there are not found such glaring and elementary mistakes in descriptive astronomy as are not infrequent in modern times, even in the works of writers of repute, not to speak of the daily Press. We wonder how many boys or girls who are educated in our elementary and secondary and public schools to-day could give an intelligent explanation of the astronomical allusions to be found in the works of these classical English authors.

Among Chaucer's prose works there is a treatise on the astrolabe—the modern equivalent would be a stereographic projection of the celestial sphere, on the plane of the equator, or of the meridian—which he composed for the instruction of his youngest son, Lewis, who was then studying under a tutor at Oxford. The following is the dedication:—"Lytel Lewis, my sonne, I perceive well by certaine evidences thine abilitie to learn sciences touching numbers and proportions, and also wel consider I thy busie prayer in especiall to learn the Treatise of the Astrolabie . . . therefore I have given thee a sufficient Astrolabie for an orizont, compounded after the latitude of Oxenford." He adds that the reason he had compiled it was because the charts of the astrolabe that he had seen were "too hard for thy tender age of ten yeares to conceive," and he had written it in English, "for Latine ne canst thou nat yet but smal, my lytel sonne." This was in the fourteenth century.

But even in the tenth century the illustrious scholar and Benedictine monk Gerbert, afterwards Archbishop of Rheims, and the first French Pope under the name of Sylvester II., taught astronomy by means of models of globes which he constructed with his own hands. In fact, he was probably the first of the schoolmen who illustrated his theoretical teaching by practical work. Even as a busy Pope he did not disdain to instruct his scholarly correspondents in the mode of construction and use of such globes. His biographer, Richer, describes the various instruments which he made, in order to render the science of astronomy practically sensible to the

eyes of his pupils. The world was represented by a round wooden ball with its poles oblique to the horizon, on which were drawn various circles to explain geographical and astronomical phenomena. From the descriptions of Richer we are led to conclude that Gerbert exhibited in his lectures two very passable examples of the terrestrial and celestial spheres. And this was in the Dark Ages!

In the British Association Report on Science Teaching in Secondary Schools, under the heading "Method in Science Teaching," we are told that

> among the motives which have prompted men to make those persistent attempts to understand Nature which we call science, three have always been especially conspicuous. The first is derived from the contemplation of the beauty and orderliness of the phenomena in Nature, delight, for instance, in the splendours of the heavens. This appeal is made to the minds of all, but perhaps is most conspicuous in the case of the young. The beauty of Nature arouses not only their wonder, but likewise stimulates their curiosity, and their eagerness to know the reason of the phenomena observed. At a later stage there enters also another motive, which is designated as the "utility motive"—that is, the motive which makes men study natural phenomena in order to turn the forces and powers of Nature to their own advantage and profit. Lastly, and this belongs pre-eminently to those who have studied natural phenomena in some completeness, comes the motive that prompts men "to seek fundamental principles in Nature, and to co-ordinate their knowledge in a unified system.

All these three motives have their vogue and realisation in a study of descriptive astronomy. We need not, by needless repetition, insist on the first, the wonder or admiration motive. Its influence is patent and self-evident. But, if we consider the utility motive, we find its application, for instance, in the determination of time, in the construction of the calendar, by which we regulate the ecclesiastical and civil ordering of our lives, in the navigation of our ships across the trackless oceans, in surveying, or in the direction of our troops in a night-attack upon the enemy. The "systematising motive" is found in the history of the science, in the unifications of the movements of the heavenly bodies, first devised by Ptolemy, and afterwards extended and improved by the theory of Copernicus, the empirical laws of Kepler, the law of universal gravitation discovered by Newton, and its applications to the explanation of the movements of the bodies of our system and its stability by Lagrange and Laplace. Such books as Miss Clerke's "History of Astronomy in the Nineteenth Century" and Prof. Grant's "History of Physical Astronomy" would form an excellent course of reading for students who had reached such a stage as to be affected by the notions of law and order as applied to the starry firmament.

We may now approach the consideration of a course of descriptive astronomy that would be suitable for our schools and colleges. Let us begin with practical work. There is always a difficulty in such work inherent in the order of the day in our schools, and the necessary discipline, which does not contemplate late hours. However, there is a whole series of instructive observations that can be made on the sun and his spots by means of a simple projection apparatus attached to a telescope, the positions of the spots being determined by discs which contain the orthographic projections of his parallels and meridians, and their areas by simple graduated scales. Again, in the months in winter in which sunset is early, there is generally ample time for observing before any late hour. The moon, too, can always be observed when at a suitable phase in the twilight sky. The same is true also of the brighter stars when observed in a transit-instrument.

It would be advisable, therefore, that, if possible, every physical laboratory in a public school should have attached to it, preferably as part of the laboratory itself, a small astronomical observatory. The equipment should consist of a transit-instrument, most essential of all for teaching accuracy of observation by the eye-and-ear method for beginners, a sidereal clock, a chronometer, and an equatorial telescope, about 4 in. in diameter. How interested boys would be to keep correct time in the school clocks by observations of the transits of stars, besides the training in accurate observation that would result by observing transits! Armed with Webb's "Celestial Objects for Common Telescopes," the telescope could be employed in the early hours of the winter nights to explore the more remarkable objects among the nebulæ and the stars, and the aspects of the planets. Bootham School at York possesses an observatory such as has been described, and much good and useful work is done by some of the older students. But even if a school is without any instrumental equipment, a series of lectures illustrated by lantern slides will do much to supplement its want. In such a series of slides, for instance, as that issued by the Royal Astronomical Society we have the finest observational results, obtained at the chief observatories in the world, placed at the disposal of all. A good elementary text-book such as Tancock's "Course of Descriptive Astronomy" could be studied in conjunction with the projecting-lantern in lieu of, or preferably in addition to, a small telescope. In Prof. Percy

Nunn's "Scheme of Science Work for an Urban Secondary School for Boys," as printed in the report of the British Association already referred to, will be found several simple experiments to be performed by the students which illustrate the course of astronomy outlined. Experiments bearing on the subject could also be performed with gyroscopes and spinning-tops. 'Orreries and astronomical models, such, for instance, as that constructed by Dr. Wilson, which was exhibited to the association, would be found to be useful adjuncts in teaching. We might also direct attention in this connection to an excellent scientific sundial, the helio-chronometer, invented by Mr. G. J. Gibbs, which bears upon it the necessary corrections, made by settings, for the equation of time, so as to derive mean solar time from the local time of the sun's passage across the meridian. Many interesting illustrative experiments are also detailed in Prof. Turner's admirable book "A Voyage in Space."

With regard to a theoretical course in the subject of descriptive astronomy, the following may serve as a specimen. It has been drawn up mainly by the Rev. J. P. Dolan, O.S.B., of Ampleforth College, and is the syllabus actually followed at the school. The course extends over three years, one period a week of the "science for all" teaching being devoted to it.

First Year. For younger boys: Descriptive course on the solar system, the sun, the planets, comets and shooting stars, stars and nebulæ.

Second Year. For the mathematical classes: Apparent motions of the heavenly bodies; the great circles of the celestial sphere; Ptolemaic and Copernican systems; historical development; diurnal and annual motion of the sun; the equation of time; the seasons; precession of the equinoxes; the moon's motion; eclipses.

Third Year. For the mathematical classes: Kepler's laws; Newton and the law of gravitation; cause of precession illustrated by experiments with gyroscopes, on the lines of Prof. Perry's "spinning-tops"; tides; celestial measurements; parallax; distance of the sun; methods of measuring the sun's distance; stellar parallax; the motion of light; aberration; the spectroscope and constitution of the sun and stars; Adam's method of finding stellar distances; structure of the universe; stars and nebulæ; proper motions of the stars; nebular hypotheses; other modern theories.

It might be invidious to suggest text-books for such a course, but among possible books that would be helpful are Tancock's elementary book on descriptive astronomy, and for older students Prof. Young's "General Astronomy." There is also a primer on astronomy by Sir Norman Lockyer, the little book "The Stars" in the "People's Library," and Prof. Newall's admirable elementary manual "The Spectroscope and its Work," which can be recommended. Such works, too, as Sir Robert Ball's "Story of the Heavens" and "The Earth's Beginning," and Newcomb's "Popular Astronomy," furnish interesting and stimulating reading, and should find a place in every school library. Among star maps we have Bigourdan's excellent "Petit Atlas Céleste," with its explanatory matter, and the little book published by George Philip and Son, "The Stars at a Glance." The Scottish Provident Institution also distributes as an advertisement an instructive series of "Star Maps," with accompanying tables. In the issue for 1918 there is also a projection of the heavens in hemispheres, or an astrolabe, by means of which such problems as to find what stars would become visible to an observer in any part of the earth, when a star will come to the observer's meridian, the approximate times of the rising and setting of a star, or of the sun, or of any heavenly body, can be solved by inspection of the projection and the use of the tables.

But the main object of this paper is not to draw up a scheme of instruction in elementary astronomy, theoretical and practical, but rather to enter a plea for the inclusion of some course of descriptive astronomy in the syllabus of the "science for all" classes. It is also intended to elicit the opinions of those who have had experience in the teaching of such a course, that they may be helpful in the reconstitution of the "science for all" classes in our public schools, so as to present more fully the human and the humanising aspects of the pursuit of natural knowledge. We want our teaching to be broad and comprehensive, not narrow and specialised, to furnish, in a word, the elements of a truly liberal education.

Poems of Keats. Edited by W. T. Young. 331 pp. (Cambridge University Press.) 3*s*.—This volume gives us the usual introduction, but delays the commentary to the end of the book. This is excellent, if the late editor's directions are followed by the class that reads Keats How far Keats or similar poets should be read in school before that preliminary training in Keats's material is given which our schools are very shyly considering is a matter that is not yet permitted to be discussed in the magazines. But this commentary, all too short, leads us to suppose that Mr. Young, whose lamented death in Flanders lays its own wreath upon the book, could have envisaged a series of volumes far more "introductory" to English literature than are our ordinary school editions.

AN INQUIRY INTO THE VALUE OF THE STUDY OF LATIN AND GREEK.

By C. W. Valentine, M.A., D.Phil.
Professor of Education in the Queen's University of Belfast.

III.

4. Classics as a means of selecting the intelligent.

We come now to a more uncommon argument in favour of retaining Latin, namely, that it is, because of its difficulty, a useful eliminator of the weak—especially at university matriculation examinations. It may be admitted that the standard of work required in Latin is generally higher both at matriculation and often in the pass university courses than is the case with some other arts subjects. The reason is, largely, that tradition has assigned such an important place to classics and mathematics that relatively more time and care are given at school to these than to other subjects. The obvious means of preventing a lowering of the matriculation standard, if compulsory Latin be dropped, is to require a higher standard in some other subject or subjects at matriculation; and to begin with a higher standard in modern languages than is at present sometimes required, may be demanded, and will be provided for, as a result of the greater amount of time that could be given to it at school, especially in the earlier years, say from eleven to fourteen or fifteen, if Latin were not taken. Then in a very short time the standard in other subjects might reasonably be raised somewhat, especially in English, in which the literary and linguistic paper might well be supplemented by another requiring critical treatment of the substance-matter of a course of reading selected works of admitted literary merit, and involving at the same time solid thought and reasoned argument.[1]

5. Latin and Greek as bases for the study of other languages.

We have finally to deal with another argument in favour of the study of Latin and Greek, namely, that they form an excellent basis for the study of other languages. This argument is particularly used in reference to the study of Latin, and we may confine our discussion to that language.

In the first place, how many pupils do proceed far in the study of other languages? If Latin is an excellent foundation, it is usually a foundation scarcely built upon. If the object is to teach the boy French, he would certainly know far more French when he left school if he spent upon French even half the time per week devoted to Latin than he does by dividing his time between the two languages. The argument is really one of the linguistic scholar, who is thinking of the *advanced* student of modern languages. But this argument is surely not enough to justify the teaching of Latin to the majority of boys on the chance of their becoming advanced students of other languages.

But what of the help which Latin affords in the study of English? In the first place, we tend again to forget the richer vocabulary and phraseology in English which boys would acquire if part of the time now devoted to Latin could be given to a much wider reading in English. The argument that grammar is best taught through Latin is considerably weakened now, as it is so widely recognised that much of the grammar teaching of the old type is unnecessary for the teaching of English.

Prof. Bennett[2] argues that the close attention to the precise meaning of words in translating gives a training in the exact use of English. With this point I have already partially dealt; but Prof. Bennett on an adjoining page supplies an excellent reply to his own argument in his long quotation from J. M. Barrie's "Sentimental Tommy," describing the essay competition in which Tommy takes part. The topic for the essay was "A Day in Church." Tommy, it will be remembered, spent nearly all his time trying to find the right word to indicate precisely the number of people in the church. "Puckle" was almost right, but did not mean so many people as he meant.

Someone suggests "mask." "I thought of mask," says Tommy, "but that would have meant the kirk was crammed, and I just meant it to be middling full." "Flow would have done," suggested another. "Flow's but a handful." "Curran, then, you jackanapes." "Curran's no enough." The friends throw up their hands in despair. "I wanted something between 'curran' and 'mask,'" said Tommy, dogged, yet almost at the crying. Then Ogilvy, the master of the victorious McLauchlan, but whose heart is secretly with Tommy, and who with difficulty has been hiding his admiration, spreads a net for him. "You said you wanted a word that 'meant middling full. Well, why did you not say 'middling full,' or 'fell mask'?" "Yes, why not?" demanded the others. "I wanted one word," said Tommy. "You jewel," muttered Ogilvy under his breath.

[1] We have suggested that some time saved from Latin in later years might well be spent partly in some study of Greek and Roman thought and institutions through English translations. If a paper on these lines were set at matriculation requiring a knowledge, among other things, of one or two philosophical Greek works, it might, at some universities, be required as an alternative to Latin and Greek, and could easily be made a guarantee (and one in the hands of the classicists themselves) of a sufficient standard of mental capacity in dealing with "humanities."

[2] "The Teaching of Latin and Greek." By C. E. Bennett and G. P. Bristol. (Longmans.)

Later on Tommy runs back to shout with joy that he had found the word: it was a "hantle."

Now the interesting points here for us are: (i) that this careful thought about language is entirely in the vernacular. Yet Prof. Bennett uses the illustration in an argument to show the importance of Latin as a training in the careful use of English! (We have seen before that the Socratic dialogues, the most thorough-going inquiries into the exact meaning of terms, were an exercise in the vernacular.)

(ii) Tommy's efforts were concerned with finding the right word to express a thought *originating in the mind of the writer*—an extremely important linguistic function and one not practised by translation. In translating from Latin it is the thought of another that one has to express in language, and, as already urged, effort (except at the higher stages) is largely concerned with finding out what the foreign words mean rather than with finding a means of expressing that meaning in English. It may be that by providing the pupil with ideas in Latin to express in English we are giving him practice in expressing a wider range of ideas than if we left him merely to express his own ideas. But what is the purpose of developing a power to express ideas which we cannot conceive for ourselves? This only leads to verbalism, except, of course, in so far as it leads to the ideas themselves being absorbed and later on used by the reader—and this can be done far more readily by more extensive reading of varied books in English. English composition in schools and universities surely suffers as much from lack of ideas as from lack of careful thought as to the precise meaning of words.

Another form taken by this last argument in favour of the study of Latin and Greek is this—that they help the student to understand the meaning of English through a knowledge of the words from which so many of our own words are derived. One may hear a man of science say that his Greek has been useful in understanding technical terms in science. As a matter of fact, most men who studied classics only at school probably find that the tracing of a derivation is a means of rubbing up their remnants of Latin and Greek, rather than that these help them much towards the meaning of English terms. No doubt the study of derivations and the history of words is to many a fascinating one. But it is absurd to suggest that the numerous Greek and Latin verb-forms, Latin and Greek syntax, the use of particles, etc., must be all learned so that single words in English, derived from Latin or Greek, can be understood, the derivation of which, if desired, could easily be studied *ad hoc* individually. It is significant that the Medical Council has now admitted that Latin is unessential even for the doctor.

6. SUMMARY OF PRECEDING ARGUMENTS.

In summing up the various arguments the following points, I think, tend to emerge:

(i) The cry "Classics *versus* Science" is misleading. If less time is to be devoted to classics, the appropriate substitutes would be to a large extent other "humanities," other literature or some of the human sciences.

(ii) The fact that such a large proportion of our leading men have been classically trained may mislead us as to the value of classics as a training, for the majority of the best men at the universities, until comparatively recently, studied either classics or mathematics, many being selected through the numerous scholarships in these subjects. Further, their training was very much wider than the mere study of the language. They advanced far enough to be concerned largely with the admirable content of all that is best in Greek and Latin literature.

(iii) The argument that so much of our culture and thought has its roots in Greece and Rome only justifies the study of the ideas and institutions of those countries, and this can be done through translations. The *finesse* of thought which can be got in the originals alone can be appreciated only by advanced students. For the average boy or student any loss through reading only translations is far more than compensated for by the larger amount of ground he can cover in English translations.

(iv) More may be lost from an æsthetic point of view, but here again the loss is largely confined to the advanced student; the average pupil is too much occupied with the difficulty of the language. Also, time for æsthetic training could be better employed by a wider reading of English literature, of which the pupil is usually so ignorant, and by more attention to the appreciation of music and art.

(v) The argument that Latin and Greek afford a unique general training in observation, memory, judgment, and reasoning is based largely on a false psychology. In so far as it is true, it probably holds only for the very best students of these subjects, while for the average student the training can be got better by more direct practice with the material for which the "faculties" are to be trained. As a means of such training the resources of English literature especially have hitherto been most inadequately exploited.

(vi) Converging lines of argument (as well as the testimony of many experienced teachers) thus point to the view that, in so far as the

various reasons for the study of classics are valid, they apply only in the case of those who have a real talent for the subjects, and who also carry them to a stage represented by an honours course at the university; except that perhaps honours students of other languages derive sufficient benefit to make merely a pass course in Latin or Greek worth while the time spent upon it.

7. Practical scheme of reform.

The question now arises: How, if we are not to let classics entirely disappear as a study, are we to select the students competent to pursue the subject to an advanced stage?

It remains, then, in conclusion, to make one or two practical suggestions, which I throw out in a most tentative way, as, of course, a satisfactory scheme requires the collaboration of a number of experts. The scheme refers to secondary education only. If French were begun at, say, ten years of age, the concentration on one language only at a time for four years would result in a much greater facility in the use of this language at fourteen than is now the case, when time and energy are diverted from it at eleven or twelve, or even earlier, by the study of Latin. We may reckon the time spent by the average boy doing Latin, at the early stage, at about nine or ten hours per week (half in school and half preparation). This time now set free between the years ten or eleven and fourteen might be spent as follows: About one-third to be added to the time already given to French, and the rest to be given largely to wider studies in English, with perhaps the addition of a little more time to a more scientific study of geography, or to nature-study.

By fourteen years of age, after four years of French and a fuller study of English, the boys of marked linguistic ability would have revealed themselves, and these might now begin Latin, at the special wish of parents, or if some career was already so clearly marked out for them as to involve the likelihood of their wishing to pursue honours courses in classics or modern languages (including English) at the university. The exceptional boys, who are likely scholars in classics, will, indeed, have reached this stage probably by thirteen, and, if we take the school-leaving age to be seventeen, will still have before them four years of school for the study of Latin. We must assume that the Latin and other languages taught, except French, will be taught in "sets," and not as a part of the regular form work, so that boys from the same form can go into different sets in Latin. During the first year of Latin the time given to French could be reduced by more than half, and the time thus saved added to the present usual Latin allowance, thus making the year fourteen to fifteen a time of close concentration on Latin, say eight or nine hours in school instead of five. Thus, as these students would be (i) boys picked for linguistic ability, (ii) much more mature than the average beginners on the present system, (iii) prepared to some slight extent by their more thorough French studies, we may certainly expect far more rapid progress than is the case at present. There are classical teachers already who hold that boys in the long run do better when they begin Latin *later* than at the age at present customary.[3]

After one year of such concentrated study of Latin (*i.e.* at fourteen or fifteen), some of the boys who show special talent in their Latin studies might take up Greek, if a classical honours course at the university was already decided upon. Others might prefer to take up another modern language or to extend their studies in English. The hours stolen from French for Latin at fourteen would now be added to the usual allowance for Greek or the second modern language, in order, as before, to concentrate on the new language during its first year of study.

Let us now return to the majority of boys, who, having shown no special linguistic talent at fourteen, do not take up Latin. For them, too, the year fourteen-fifteen would be one of more or less marking time in French. Some would now take up a second modern language; others would prefer additional science work. (All, it is hoped, would be doing *some* science work.) Even at fifteen it would not be too late for a boy whose linguistic talent has revealed itself somewhat late to take up Latin in time to do a good two years' work before matriculation, if there appears any special reason why he should do so, such as that he desires to aim at an honours course in modern languages. Those who do not take up Latin would have ten or twelve hours a week saved partly for extended studies in English, including selected translations from the classics, and partly for any other subjects which the particular school may choose to develop more fully.

I have confined my attention largely to the classical and modern sides, but it is to be hoped that the time saved by the concentration on one foreign language only, in the early years, and the lessening of the hours required for this at fourteen, would enable the boys specialising in science to share in the extended English course of later years.

Two special difficulties remain to be dealt with, the first, I think, not serious. What

[3] Prof. Burnet, in his delightful "Higher Education and the War," pays a remarkable testimony to what may be done by able linguists who start Greek as late even as their first year at the university. See especially p. 176.

would become of the many teachers of Latin and Greek in the schools? Their obvious function would be to take up the extended English work and, of course, the studies of classical culture through translations. The opposition of keen classicists to extended reforms would, I think, be greatly lessened by the wider influence through their lessons on classical culture, and also by the fact that those pupils who do take up the Latin and Greek languages will be picked linguists. On such a scheme the lot of the future university teacher of classics would be an enviable one.

The other difficulty is more serious, namely, that such a large proportion of scholarships at some universities are restricted to classical students. Some changes would have to be introduced here if the old evil is not to be continued—the compelling of such a large proportion of the ablest boys to specialise in classics (or mathematics). As it is, while the scheme suggested above will exclude from the classical studies all but the ablest linguists, it will at least leave open the door to specialisation in modern languages to some of these talented linguists, and will also set free boys whose special ability does not lie at all in linguistic studies. Its greatest danger would probably be that, owing to the careful selection of classical students, the universal excellence of the classically trained man of the future would lead to a revival of the belief that classics should be prescribed for all.

PERSONAL PARAGRAPHS.

THE announcement that the King has been pleased to approve of the appointment of Sir J. J. Thomson to be Master of Trinity College, Cambridge, has been received with much satisfaction, not only in the University, but also in all circles where scientific genius is held in honour. Sir Joseph was elected a fellow of the college in 1880, when he was second wrangler and second Smith's prizeman; and he has been Cavendish professor of experimental physics at the University since 1884. The remarkable researches carried out by him and his students have opened up completely new fields of physical science, and provided conceptions which have led to unexpected developments of scientific work and thought. An account of these investigations was given in NATURE of March 6, 1913, when Sir Joseph was the subject of an article in the series of "Scientific Worthies." Since 1915 Sir Joseph has been president of the Royal Society, and he is an active member of many important advisory and other committees and councils appointed since the opening of the war. He has shown unmistakably that high administrative capacity can be combined with brilliant scientific knowledge, and these attributes will make him one of the most distinguished of the series of Masters of Trinity, which extends from John Redman in 1546 to the late Dr. Butler, who was appointed in 1886, and includes Isaac Barrow, who preceded Newton in the statement of the principles of the Infinitesimal Calculus; Richard Bentley, author of the scholarly "Dissertation on the Epistles of Phalaris"; and William Whewell, author of the famous "History of Inductive Sciences."

* * *

CONSIDERABLE satisfaction is felt in the teaching profession at the appointment, announced in these columns last month, of Mr. J. A. Picken, headmaster of Palfrey Senior Council School, Walsall, as inspector of schools under the Walsall Education Committee, his predecessor, Mr. A. Hibbert, having accepted the secretaryship of the same authority. Mr. Picken has had thirty-five years' teaching experience in Walsall, and the authority may be congratulated on selecting one of its own teachers for such an important administrative post. Mr. Picken has been a keen member of the National Union of Teachers throughout his career. He is honorary secretary and vice-chairman of the Walsall Education Society, and has held the offices of president and secretary of the Walsall Head Teachers' Association. The appointment is of considerable interest in that teachers are united in the opinion that successful teaching experience should be a necessary qualification for candidature to an administrative post.

* * *

THE Essex County Education Authority has appealed at the County Appeal Tribunal, Romford, for Mr. E. L. Miskin, schoolmaster on Foulness Island. "Far from the madding crowd's ignoble strife," Foulness Island lies at the mouth of the River Crouch, north-east of Shoeburyness. It is difficult of access and numbers a population of some 500, mainly engaged in agriculture. Mr. Miskin has occupied his spare time successfully in rendering scientific advice and assistance to the farmers, and the tribunal granted temporary exemption only, in the hope that some other teacher would volunteer for service on this lonely island.

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THE Italian silver medal *pro valore militare* has been awarded to Mr. P. J. Baker, fellow of King's College, Cambridge, and son of Mr. J. Allen Baker, M.P.

* * *

AT the Town Hall, Sheffield, public recognition has been given to Miss Escott, who, for nineteen years, occupied the position of

headmistress of the Sheffield High School for Girls previous to her recent appointment at the Clapham High School. The Lord Mayor, on behalf of the Education Committee and the old pupils of the school, presented Miss Escott with a necklace, a cheque, and an illuminated address. Her portrait is to be hung in the school, and the deep influence of Miss Escott's work on the social and intellectual life of the city was referred to in the address.

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Miss Cook, head of the Cookery Centre, Retford, has resigned her position, having taken up a commission in the W.A.A.C. in France.

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The impending resignation is reported of Sir Walter Parratt, D.Mus., C.V.O., honorary fellow of Magdalen College, from the professorship of music in Oxford University. Sir Walter has occupied the chair for some ten years.

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The early publication of "War Letters of a Public-school Boy," by the late Lieut. H. P. M. Jones, son of Mr. Harry Jones, assistant-editor of the *Daily Chronicle*, is announced by Messrs. Cassell. Mr. Jones was head of the modern side at Dulwich and captain of football, 1914-15. Before joining the Army he was scholar-elect of Balliol College, Oxford. He was killed on July 31st, 1917, after two years' service with the Cavalry and the Tanks.

* * *

The Leeds Education Committee has made arrangements whereby the services of Mr. James Graham, secretary to the committee, have been placed at the disposal of the Government. Mr. Graham is to assist in organising the establishment of municipal kitchens in populous centres. At the same time he will retain control of the local administration of education in an advisory capacity.

* * *

It is interesting to note that Dr. F. W. Lloyd, the new Prime Minister of Newfoundland, was formerly a schoolmaster in England. Dr. Lloyd received his early education at Christ Church School, Heaton Norris, and, after a short experience as a pupil teacher, migrated to Newfoundland some twenty-eight years ago. He there graduated in Laws and finally gave up teaching for the Press and law work. His success soon brought him into public prominence and he became a member of the House of Assembly.

* * *

Prof. J. A. Green, professor of education, Sheffield University, has been placed by the Sheffield Education Committee on a small sub-committee which is to consider what provision should be made in the district for additional secondary education, the character of the education to be provided, and the advisability of providing additional free places at King Edward VII. School. Prof. Green's knowledge and experience of the educational systems on the Continent should be of invaluable help to the committee.

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Administrative circles will regret the resignation of Dr. H. Lloyd Snape, Director of Education for the County of Lancashire, after seventeen years' service. Dr. Snape suffered from a nervous breakdown in 1916–17 and finds it necessary to reside in a warmer climate. His tact and ability in the administration of education in Lancashire are shown in the high degree of efficiency reached in the various districts in the area. Dr. Snape is at present a member of the Departmental Committee upon Salary Scales in Public Institutions for Higher Education.

* * *

The Church has suffered a great loss by the death, on February 3rd, of Canon Knox-Little. Born in 1839, Canon Knox-Little took his degree at Trinity College, Cambridge, and entered Holy Orders. For some time he acted with unqualified success as an assistant-master at Sherborne School, and in 1870 accepted a curacy at Turweston, Bucks. He was appointed a Canon of Worcester in 1871. During the South African War he served as Army chaplain to the Brigade of Guards and the Household Cavalry, being mentioned in dispatches and receiving the Queen's medal and clasps. On returning home he was appointed Dean of Worcester. An eloquent preacher and a prolific writer, with clear convictions and an openness of mind, Canon Knox-Little was fearless in his endeavour to say and do what he believed right, and his character and charm of manner endeared him to all.

* * *

Miss Ethel Sargant, honorary fellow of Girton College, died at Sidmouth on January 16th after a brief illness. Miss Sargant was educated at the North London Collegiate School and Girton College, Cambridge, taking the two parts of the Natural Sciences Tripos in 1884–85. She was the first woman to serve on the council of the Linnean Society, and she was president of the Federation of University Women at the time of her death. Miss Sargant earned fame by her botanical researches in the direction of anatomy and morphology. She had the distinction of being the first woman elected president of a section of the British Association when in 1913, at Birmingham, as president of the Botanical Section, she gave an

address on "The Development of Botanical Embryology since 1871."

* * *

LIEUT. G. A. LE CHAVETOIS died on January 22nd from the effects of wounds received in action. Mr. Le Chavetois was a pupil at St. Olave's from 1895 to 1905. After graduating at London University he was appointed to a mastership at Emanuel School. In 1912 he joined the staff of his old school, and was largely instrumental in organising the school cadet corps. He was an officer in the corps until he undertook military service. With his battalion, he took part in the campaign in the East, and was dangerously wounded in the head in November last.

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THE death is reported, on January 23rd last, of Mr. C. G. Kiddell, educational editor of Sir Isaac Pitman and Sons, Ltd. A former student of St. John's, Battersea, Mr. Kiddell graduated in Arts at the London University, and for some time occupied the science mastership at Queen Elizabeth's Grammar School, Barnet. To his facile pen we owe the pleasing and popular "Selborne Nature Readers" and the "Observation Lessons in Botany."

ONLOOKER.

SALARIES OF TEACHERS IN ELEMENTARY SCHOOLS.[1]

THE Departmental Committee appointed by Mr. Fisher "to inquire into the principles which should determine the construction of scales of salary for teachers in elementary schools" has just issued its report. The first part of the report deals with general principles, and the second with the detailed application of the general principles to the different categories of teachers. There is a concluding memorandum on the existing situation as regards scales of salaries. This memorandum, which, with the accompanying tables, is nearly as long as the report itself, was drawn up by the secretaries, with assistance from various competent quarters.

On the general question of scales of salary, which were adopted by the early school boards and have ever since prevailed in large areas, the Committee recites the arguments on both sides, and pronounces in favour of scales. A definite scale suits the authorities, which aim at getting and retaining a constant supply of persons to whom competing careers are open; and they suit the teachers, who know exactly what to expect, and receive increments as their needs and the value of their services increase. In the absence of any definite default or wilful neglect, the increments should, the Committee adds, be receivable as a matter of right, at least up to the point representing an adequate salary. Authorities should, in constructing scales, proceed upon a common basis of principles, though the application of the same principles must produce varying results as between London and the provinces. We observe, however, that the Committee gives no countenance to the great differences usually made between salaries in urban and in rural districts. The cost of bare living is, no doubt, less in the country than in the town, but, on the whole, the cost of maintaining a standard of life appropriate to an educated man or woman is not so much less as is commonly assumed. Besides, why should the country children be permanently doomed to receive instruction from the worst qualified teachers? The point here taken is one of the most interesting and important in the report.

The troublesome question of differences of salary as between men and women is firmly handled by the Committee. It says in effect that the law of demand and supply, though it should not count for everything, should count for something, and that in this case the operation of that law is on the whole just. The Committee sees no reason for marked differences at the bottom of the scale, which, in the case of trained, certificated teachers, concerns young men and women fresh from college; but the men should be able to rise to a maximum considerably higher than that of the women.

Various other questions of general principle are discussed by the Committee. The witnesses disagreed a good deal about the recognition of superior merit by selecting the best teachers and giving them a higher maximum, but on the whole the Committee is in favour of the plan, provided the practical difficulties can be overcome. The withholding of an increment is held to be fair in some cases, provided it is purely temporary and has no effects which last throughout the teacher's career. Another very important matter is the recognition, for purposes of applying a scale, of service under other authorities. Within reasonable limits such recognition is strongly favoured by the Committee, on the ground that greater mobility amongst teachers is desirable.

As regards certificated class teachers, the men should receive annual increments for about twelve years, and the women for about eight years, and there should follow, in each case, increments at intervals of not more than three years for another period of about ten years. Time spent on college training should count as

[1] Report of Departmental Committee on Scales of Salary for Teachers in Elementary Schools. Vol. i. 63 pp. (H.M. Stationery Office.) (Cd. 8939). 6d. net.

years of service. Academic qualifications should not affect the scale, though they should count when questions of promotion or special remuneration arise. The cases of higher-grade or central-school teachers, and of first assistants, or, in mixed schools, chief women assistants, call for additions to the scale salary.

As regards head-teachers' salaries, the size of the school is not, in the Committee's opinion, the only factor to be taken into account. A limited plan of grading is desirable, depending mainly, but not entirely, on size. In some areas the schools are so much alike that no grading is necessary, whilst in small areas general scales for head-teachers are not necessary.

The cases of uncertificated and supplementary teachers are made the subject of definite recommendations, the maximum suggested for the former being about the minimum for certificated teachers, and that suggested for the latter about the minimum for uncertificated teachers. Trained teachers of domestic subjects, who have hitherto been rather hardly dealt with, should be placed on the same scale as ordinary trained, certificated teachers. Teachers in special schools should be put on the same general basis as teachers in ordinary schools, though their work is often so trying that the common practice of putting them on a somewhat higher scale is justified.

The findings of the Committee strike us as sane and level-headed throughout, and it is obvious that they are, at any rate, based upon the most careful and exhaustive inquiry. The report will be, and ought to be, subject to a good deal of criticism in detail, but its appearance marks a distinct step in advance. For the first time the whole subject has now been generally and impartially treated. Authorities have hitherto been very much at sixes-and-sevens in the matter of fixing scales, but with this standard of reference before them they will have less excuse in future.

We print below some of the more important passages in which the Committee deals with general principles:—

The Teaching Profession.—Teaching is by common consent a profession. Its range is wide, as it includes on one hand men and women in high and well-recognised positions, such as university professors, and on the other self-appointed teachers, and teachers with no claims to a liberal education. At the same time it suffers from the fact that its membership is not so strictly defined as is that of law or medicine. For this as well as for other reasons, historical, economic, and social, the English public have not realised its great importance to the national welfare, and have not accorded to its members the position to which their education and the importance of their work entitle them. We may, however, look forward to a time when admission to the profession will be limited to persons who have reached accepted standards of education and training, a result which will be of great benefit to national education. It is true that the position of the most numerous and important section of teachers in elementary schools is defined by the possession of a certificate; but even they will remain isolated until the profession as a whole is organised in the manner suggested.

The efficiency of national education cannot, in our opinion, be fully secured unless all school authorities, central and local, treat fully qualified teachers in elementary schools as men and women engaged in a liberal calling, and so mould the conditions of their service as to make it possible for them to bring to their work a culture as wide and deep as can be expected of their years. With this end in view, teachers should be so remunerated as to have every reasonable opportunity of maturing their knowledge and widening their horizon through study, through social intercourse with educated men and women of their own and other callings, and through travel.

Advantages and Disadvantages of the Scale System.—The reasons why teachers in public elementary schools are paid by scale are fairly obvious. . . . A scale of salaries defines the prospects before a teacher, determines more or less automatically questions which might otherwise create friction between the authority and the teachers for whose salaries it is responsible, and reduces to a minimum the possibility of favouritism or unfair treatment.

Variations in Scales from Area to Area.—We believe it is possible to find a common basis of principles for scales in general, but we are bound to recognise that the application of the same principles in the circumstances of different areas will produce a diversity of results.

Cost of Living.—As salaries are fixed by the local education authorities it is inevitable that there should be some variations, but we see no good reason why differences in cost of living alone should be held to justify the offer in one town of salaries which are much less than those offered in other towns.

. . . If proper weight were given to all the factors which enter into the maintenance of a standard of life proper to a teacher, especially one having children to educate, the advantages of smaller places in point of cheapness might appear, on a balance, to be less than is commonly taken for granted.

Town and Country.—We wish to see the country child in possession of as many as possible of the educational advantages that are available for the town child; and we should be glad to see the salary of the country teacher equal to that of his colleague in the town. We cannot hope to see such equality immediately; but we shall welcome any approximation of the lower to the higher salaries, and hope that all possible means may be taken to bring it about.

Men and Women.—In our view any scale of salaries whether for men or for women should offer an adequate provision, and as the schools cannot be efficiently staffed by teachers of one sex, the cases of men and women call for separate consideration. By adequate

we mean that the scale of salary offered must be good enough to attract a sufficient number of recruits suitable for the work to be done, to retain them while other careers are still open, and to secure service of the desired quality from those who adopt teaching as their life-work. The ratepayers and taxpayers of the country cannot in our view with justice be asked to undertake the burden of paying, whether to men or to women, higher salaries than such as are adequate in the sense in which we have used the word; and we are satisfied that in existing circumstances a scale of salaries which is adequate for women teachers is not adequate for men.

Teachers of Special Merit.—We have given our most careful attention to the question of adding to the normal scale a system of payments, other than those for special services, which may be awarded to teachers who have reached the maximum of the normal scale and whose long and exceptionally meritorious services are thought to deserve special recognition. In our opinion such a system presents some practical difficulties, particularly in large areas; but if these difficulties can be overcome, we are of opinion that the selection of certain members of the staff who may proceed to a maximum higher than that of the normal scale may be advantageous.

The Withholding of Increments.—In every scale there should be an adequate salary to be reached by increments which are receivable as a matter of right by every teacher unless he is guilty of a definite default, or unless the unsatisfactory performance of his duties may be attributed to wilful neglect. . . . An authority which proposes to withhold a teacher's increment should realise clearly what it is it means to do. If a fine of £5 is to be inflicted, let that be deducted from the teacher's salary by the convenient method of withholding his increment for that year. In the following year, if the cause of offence has been removed, the teacher should be placed in the same position as regards salary as he would have reached if no fine had been inflicted; in other words, he should receive a double increment that year.

Teachers who have Served in other Areas.—We are satisfied that a certain amount of change in school staffs is good both for schools and for teachers. . . . Within reason some mobility in the teaching profession is to be desired, and we are aware of no educational reason why such mobility should be limited to movements of teachers from school to school within the same area. But unless the authority for the area to which a teacher goes is prepared to give substantial recognition to satisfactory service elsewhere, a good teacher is unlikely to enter the area for other than personal reasons.

Authorities will, of course, reserve power to determine as they think fit the initial salaries of any immigrant teachers as to whose efficiency or suitability there may be room for doubt. Subject to this, we think that authorities would be well advised if they decided to count, within a reasonable limit, actual service elsewhere which is satisfactory as if it had been service in their area.

Probation.—We do not think that the fact that a teacher's appointment is on probation should affect the application of the scale to that teacher, and we strongly recommend that the ultimate position of a teacher on the scale should depend upon the total of his confirmed and probationary service.

Superannuation and Disablement of Teachers.—It is clear that those who have to arrange a salary scale for a long-service calling must have some regard to the arrangements which exist for superannuating those who come under the scale. The Elementary-school Teachers' Superannuation Acts . . . apply only to certificated teachers. . . . We are informed that no pension has yet exceeded £69 6*s.* 4*d.* for a man, or £59 0*s.* 4*d.* for a woman. The average amounts of the retiring allowances commencing in 1916–17 were £60 for men on an average service of forty years, and £49 for women on an average service of thirty-eight years. It is evident that the maximum pensions we have mentioned do not in themselves constitute a sufficient provision for the old age of a teacher, so that those teachers without private means who seek to assure themselves a reasonably comfortable existence in their declining years will have to do so out of their incomes in the course of their working lives. Moreover, the scheme makes no provision for a teacher's dependents in case of his or her death in the service, a specially material consideration for a man teacher who undertakes the responsibility of marrying and bringing up a family. . . . In considering whether a teacher's salary is adequate in relation to his or her needs, it will therefore be necessary to bear in mind that until the present superannuation scheme is improved teachers in most areas will have to make out of their salaries some further provision for old age or disablement, and some provision for the contingency of early death.

The Application of Revised Scales to Existing Teachers.—Excessive immediate rises in salary from the maximum of an old to that of a new scale might be avoided by raising the maximum year by year until the new figure is reached. Similarly, if the transition from present salaries to those which will be accorded when the new scale comes into full operation entails advances which would be excessive if made in one step, the case might be met by a provision that no rise should exceed a certain sum in any year; but care would have to be taken that newly appointed teachers were not more liberally treated than the existing staff.

Again, teachers who were originally appointed at low salaries are not in every case the right persons to be remunerated at the much higher rates which may for the future be assigned to their posts. A teacher underpaid at £110 may be overpaid at £200. . . . It would not always be equitable to pay such teachers at rates which would secure much better candidates at the present time. If serious overpayments are to be avoided such cases as these will require careful consideration, and while we hope that authorities will consider sympathetically the cases of all older teachers, we think that the upper ranges of revised scales should not of necessity be open to them without an extended review of their work.

GEOGRAPHICAL ASPECTS OF THE CHANNEL TUNNEL.[1]

ONE of the fascinations of geography lies in the visions of future possibilities when some great change in man's arrangements is about to alter the relative values of the countries of the world. Such a vision is presented by Sir Francis Fox in his address to the Royal Geographical Society on the "Geographical Aspects of the Channel Tunnel." London to Hong-Kong by train in a fortnight; London to Sydney almost entirely by train within the month; to Paris but a six hours' run—these ideas conjure fantasy after fantasy. Troop trains at ten-minute intervals, a constant stream of war material, and, better still, the comfort of the hospital train for the return journey of the heroes—these are visions which belong to the realm of what might have been. The *Entente* bids fair to bring the tunnel within the range of probability for constructive work after the war. Other minds may think that the suggestion comes too late, for the following reason: Traffic through the air is in its infancy, and the construction of a tunnel may perchance be wasteful because it might try to hold back the clock of progress by sinking needed funds in an enterprise which may fundamentally belong to the past and not to the future. These are visions of the years to come; let Sir Francis Fox propound his view of the next decade or so.

It is an established fact that England and the Continent at one time formed continuous land, and that the geological strata on both sides of the English Channel are identical. The beds, their thickness, the dip, the formation, are similar in all respects; and the outcrops of the various strata have been surveyed by several thousand soundings and borings, made over the entire distance between England and France.

In bygone geological ages a great river flowed along the line of what is now the Channel. On the Admiralty chart of the Channel there will be found a very remarkable ravine north of Guernsey, called the "Hurd Deep," or "La Grande Fosse." This ravine in the sea-bed extends for a distance, from east to west, of about seventy-five miles, with an approximate width of three miles. The depth of the British Channel north and south of "La Grande Fosse" averages from thirty-four fathoms to thirty-five fathoms, but the soundings in the ravine itself rapidly increase until they reach 110 fathoms. This ravine is nothing less than the remains of the great river of past geological ages, which was an active agent in eventually separating the two countries.

The white chalk cliffs of England and of France in the neighbourhood of Cape Grisnez rest upon a lower bed of Grey Chalk, the "Cenomanian," some 200 ft. in thickness; and this in its turn lies upon a solid bed of Gault. Both beds are very suitable for tunnel construction, being almost, if not wholly, impervious to water, the mixed material of which they are constituted bearing a close analogy to that employed in the manufacture of Portland cement. The grey chalk was doubtless at one time white chalk, and was then water-bearing—but from some undefined cause the bed became saturated with liquefied clay, which percolated into it and "choked the filter," thus rendering it water-tight.

In deciding upon the actual route of the Channel tunnel the one great precaution which has to be, and has been, taken is to keep the work well within the thickness of the Grey Chalk; but as the line may, near the two coasts, have for a short distance to run out of this bed, it is so arranged as there to enter the Gault, which is another equally good and water-tight material. Owing to the observance of these precautions the tunnel will not make a "bee line" from England to France, but the slight sinuosity or curve introduced is otherwise of no importance.

In the Channel above the sea-bed the maximum depth of water would be from 160 to 180 ft., and as we shall be asked to leave undisturbed such a cover of chalk over the roof of the structure as will guard against any possible hostile contingency, this solid protection has been fixed at a minimum of 100 ft.

The tunnel would consist of two tubes, as in the case of the great Simplon tunnel (12¼ miles in length) in the Alps. The reasons for adopting twin tunnels are numerous. They include better facilities for ventilation, drainage, repairs to the structure and permanent way when required during traffic, as well as greatly increased safety in case of derailments. But one special reason for adopting the system in the case of the Alpine tunnel—where 7,000 ft. vertical of material exists above the work—was the reduction of pressure on the arch and side walls. This great load will not, however, have to be provided for beneath the English Channel.

It is proposed that the work of excavation shall be performed by revolving cutters, fixed in Greathead shields, by which system a rapid rate of advance will be attained, the débris being removed from the "face" by high-speed endless belts. These will be so arranged as to deliver their load direct into wagons without the necessity of shovelling or of manual labour.

All the work will be carried on by electrically driven machinery, by which the volume of air required for ventilation will be greatly reduced, and arrangements will be made so that excavation and other operations can be carried on simultaneously at many points, thus abbreviating the period required for construction.

The diameter of each tunnel should be 18 ft., so as to accommodate main-line rolling stock. At intervals of 200 yards along the entire length oblique cross-tunnels will be formed, to enable empty wagons to be brought in by one line and full wagons despatched on the other, and also to permit a most excellent system of ventilation to be installed. Foul air should be considered as a slur on the management, as unfair to the workmen, and injurious to the progress, in addition to its being an unnecessary expense to the company.

The tunnel could be worked, ventilated, and pumped by electricity supplied from a power-station in Kent, possibly ten miles inland. The problem of ventilation when regular traffic is running will consequently be

[1] Abridged, with permission, from a paper read by Sir Francis Fox, M.Inst.C.E., at the meeting of the Royal Geographical Society, April 23rd, 1917, and printed in the *Geographical Journal* for August, 1917.

comparatively simple, no combustion of coal on the railway being necessary. The tunnel would be maintained under the authority of the War Office, and a dip in the level of the rails, forming a "water lock"—by which the tunnel could in case of emergency be filled with water from floor to roof for a length of a mile—would also be under the control of the commandants of Dover Castle and the neighbouring forts. This water would not injure the tunnel works, and it could only be pumped out by the energy developed at the power station inland. Entrance and exit of both tunnels would likewise be under the gunfire of all the forts and of vessels in the naval harbour of Dover.

The gauges of the English and French railways are very similar, as is proved by the fact that at the present time hundreds of the largest English and Scottish locomotives, with thousands of trucks, are running in regular traffic on French railways, rendering invaluable service in the transport of the Allied forces.

Trains would be run direct from London to Paris in fewer than six hours, and these could, if required, travel at a "headway" or interval of not more than five to ten minutes.

Doubtless in course of time more than two pairs of rails will be required to deal with the enormous volume of traffic which must inevitably develop in each direction. It should be remembered that, owing to dislike of the Channel crossing, our Continental neighbours never go on shipboard if they can avoid it, and the pre-war traffic from *all* Continental ports to England and *vice versâ* did not exceed 1,600,000 passengers a year as compared with 4,000,000 travelling between France and Belgium and 4,000,000 between France and Germany.

The probabilities are confidently anticipated by Baron Emile d'Erlanger, chairman of the Channel Tunnel Company, that the traffic will, as the result of the opening of a submarine railway, double or treble itself, not only as regards passangers, but also in respect of perishable goods requiring prompt delivery; and that the financial return upon the capital expended will be highly satisfactory.

It is not necessary to dilate further upon either the geological or the engineering side of the question, and although much could be said on both, the geographical considerations will now be dealt with. These, however, will to some extent be affected by the extraordinary difference of gauges on the various railways which exist in the world—varying from 5 ft. 6 in. to 2 ft. Probably many of these will be altered to what may become practically the standard gauge—whilst in other cases a transhipment of passengers and goods, say once in a thousand miles, will minimise the inconvenience. One, however, cannot forget the delay and discomfort caused by the difference in gauge already existing at the Russian frontier stations on arriving from France, Germany, or Turkey.

So soon as trains can pass under the Channel they

Sketch-map to illustrate express services from London by a Channel Tunnel.

will be able to traverse France, Belgium, Holland, Spain, Italy, Germany, Austria-Hungary, and Turkey as far as Constantinople without any difficulty as to gauge or minimum structures. The Orient Express connection formerly left London at 9 a.m., an inconvenient hour for many; but so soon as the Channel tunnel is an accomplished fact it could be arranged to leave at noon and still depart from Paris at the usual hour. It would pass through Germany and Austria-Hungary to Bucharest, or through Bulgaria to Constantinople. A quarter of an hour later a train would leave Charing Cross as the Nord Express for Brussels, Berlin, and Königsberg to Petrograd, and for Warsaw, Minsk, and Moscow, where it would correspond with the Siberian Railway Express to the Far East, and provide communication also with the charming and healthy watering-places in the southern Crimea, where great developments are taking place. At further intervals of a quarter of an hour the Rome Express would leave for Paris—the Riviera, Rome *viâ* Turin and Milan, and Brindisi; followed by the Sud Express to Paris, Bordeaux, Madrid, Algeria, on one hand, or to Lisbon on the other. Communication would be provided not only with Belgium, Holland, and Denmark, but also with Finland, Sweden, and Norway *viâ* Torneå.

This wonderful network of railways deals only with Europe, but far greater developments are possible. From Petrograd and Moscow trains already run through the Ural Mountains, traversing Siberia—eventually reaching Peking and the Chinese system of railways—and to Vladivostok, in thirteen days from London. Some fifteen years ago a great extension of the Siberian Railway was advocated as "The Trans-Alaska Siberian Railway." Starting from the Trans-Siberian at Irkutsk, and skirting the north shore of Lake Baikal, it would run to East Cape, the most easterly point in Asia, at Bering Strait. At the same time an extension of the Canadian and American system of railways was to be built from Vancouver to Dawson City, going due west to Cape Prince of Wales, the most westerly point of the North American continent. There would still remain a gap in railway communication at Bering Strait. Plans and estimates of a proposed tunnel beneath this strait have been mentioned, and two islands exist on the centre line of this projected work which would enable construction to proceed from six different points. The total length of the tunnel was said to be thirty-eight miles; and, indeed, well-known gazetteers like those of Lippincott and Chisholm give thirty-six miles as the width of the strait. But the Admiralty chart and Findlay's "Northern Pacific" make it about fifty-six miles instead of thirty-six. A tunnel under Bering Strait is therefore impracticable, at least to present ideas of engineering.

The western terminus of the Bagdad Railway (4 ft. 8½ in. gauge) is at Haidar Pasha, near Scutari, on the Bosphorus, where some means of communication will be required to connect what is now Turkey-in-Europe with Turkey-in-Asia. The details of this necessary work will demand much consideration; for although a tunnel, a bridge, or a ferry has each its own advocates, there are many points requiring to be weighed carefully. The last-named proposal, a ferry, is free from the all-important objections to a Channel ferry—there being no tide with all its complications, and no such tempestuous weather as is met with in the English Channel. The Bagdad Railway thence traverses Asia Minor and the Taurus Mountains, where one hundred tunnels are required, all of which are not yet finished. It then passes to the north of the Gulf of Alexandretta, with its fine harbour, through Killis (the junction for the Syrian Railway and Mecca), towards Mosul and Bagdad. The development of Mesopotamia as one of the great granaries of the world, when the necessary barrages and dams, the drainage and irrigation works are in operation, will inevitably be accelerated by the railway; and the British oil pipe line in Persia will be accommodated. The railway will have to be extended to Basra and Koweit, and passing round the northern end of the Persian Gulf will reach Karachi, and thus get into touch with the whole of the Indian system of railways. At Killis, previously mentioned, is the junction between the Bagdad Railway and the existing Aleppo-Hamah-Homs of the same gauge; and with the Hedjaz Railway (3 ft. 5·34 in.; 1·05 metres) connecting Damascus and Medina; junctions will be (or are already) made with the railway from Jaffa to Jerusalem (1·00 metre gauge), which would have to be widened —also with the Beirut and Damascus Railway (1·05 metres gauge). From the Aleppo line at Rapak a direct line to Cairo already exists as far as Beersheba, and from an adjacent point the railway at present being made by the British Army from the Suez Canal to Gaza will be available. This will be 4 ft. 8½ in. gauge, and from Aleppo to El Kantara, on the east bank of the canal, the distance will be 420 miles. The canal would have to be tunnelled or provided with a lifting bridge or a ferry, and thus connection would be effected with the entire system of Egyptian State Railways.

The projected and partly constructed Cape to Cairo Railway would eventually carry on the system to the Victoria Falls, Bulawayo, Johannesburg, and the Cape; and it would follow as a natural corollary that the Uganda Railway, as also the East African and West African lines, would be joined up eventually with it.

I am informed that surveys have been made for a railway from Irkutsk through China to Hong-Kong. Were this to be built, the time from London to Hong-Kong would probably not be more than fifteen days, as compared with thirteen to Vladivostok. Or Singapore could be reached in about the same time if the Indian and Burmese lines were to be connected with those of the Malay States. Either of these routes would very materially reduce the sea passage between England and Australia; and when the transcontinental railway is built the London mails could probably be delivered in Sydney well within thirty days from London.

It may seem to us of to-day a very remarkable prospect, but by no means impossible of realisation, that within a comparatively few years travellers from London will be able to reach such distant places as the

whole of Europe, the most eastern parts of Asia, North and South Africa, India and China, without leaving the railway systems of the world, through the medium of the Channel tunnel; this will offer a very great incentive to travelling to regions at present scarcely regarded as being within the bounds of possibility.

THE PROBLEM OF CONTINUED EDUCATION.

THE Uplands Association and its committee have been engaged for some time upon the problem of continued education, and the following are among the conclusions at which they have arrived. All programmes for continued education should be based on a recognition of the changes in mental outlook accompanying the onset of adolescence. For while these changes characterise all normal adolescents, the youth who earns wages undergoes a special transformation as the result of his partial economic independence. Public authority, in claiming control of the adolescent up to eighteen, should provide for individual knowledge and interest in each young person. This can best be done by putting him under the care of a supervisor or tutor. The class instruction (320 hours a year is the actual amount proposed in the Education Bill) to be imposed by authority will often be given directly by the local education authority, but it may partly be arranged either in a workshop or in a scout troop, a girls' or lads' club, or a religious institution. Such instruction should be recognised, and, if possible, aided, by the State.

The two upper standards of the public elementary school, reorganised so as to include all pupils who have reached the age of twelve, should be adapted to fit in with the scheme of part-time instruction and supervision after fourteen, for the years from twelve to fourteen constitute a time of transition from childhood to youth. This reorganisation would be of advantage in other ways. First, twelve is the age at which pupils ordinarily leave the public elementary school for the new experience of a trade or domestic economy school or a secondary school; for those who are left behind some change of school conditions is necessary, both in corporate life and in curriculum; the new conditions can be extended and made effective by reaching up to eighteen, providing what in principle will be found to be secondary education for the wage-earner.

Secondly, as soon as public opinion warrants the extension of full-time compulsory education to fifteen, this can be carried through without disturbing the public system. Many of the teachers in this reorganised upper section of the public elementary school would serve also as supervisors or tutors to youth, but in any event they would co-operate with the voluntary agencies through which many young persons of both sexes will continue to find opportunity for development.

The insistence in the Bill upon physical training is to be welcomed, together with the prospect of holiday or school camps. Technological instruction is a necessity to enable the youth to find in his occupation something more than wages. The choice of fit persons to take charge of youth is by far the most important factor in the problem. Many of these can be found among the professional teachers now engaged in elementary, secondary, or technical schools; especially those who by working in continuation classes have gained a first-hand knowledge of wage-earning boys and girls.

ITEMS OF INTEREST.

GENERAL.

BEFORE this number of THE SCHOOL WORLD is issued, the London Education Committee will have considered the report of its Teaching Staff Sub-Committee on the question of teachers' salaries. The report covers sixteen closely packed foolscap pages, which is not to be wondered at, considering the vast and complicated London service. The general principles upon which the scales are constructed seem to accord pretty closely on the whole with the findings of the Departmental Committee, set forth in another part of this issue. For example, it is proposed that certificated assistants shall proceed as a matter of right to what is presumably regarded as a competency (£240 for men and £177 for women), and that those who are considered to have rendered, and to be rendering, "thoroughly satisfactory service" shall be allowed to proceed to a higher maximum (£300 for men and £210 for women). Again, in order to attract young teachers who have gained valuable experience outside London, and thus to promote what the Departmental Committee calls greater mobility, an allowance is proposed of six years of outside service on the same scale as if such service had been rendered in London. The scales proposed are, of course, higher throughout than are to be expected in any provincial area.

THE recently issued class lists of the Cambridge Local Examinations held in December last show that the total number of candidates entered was 7,137, exclusive of 5,505 candidates who were examined at Colonial centres. In the senior examination 572 boys and 687 girls satisfied the examiners, 48 boys and 24 girls being placed in the first class; 316 boys and 197 girls showed sufficient merit to entitle them to exemption from one or both parts of the Previous Examination. Of the junior candidates 1,254 boys and 804 girls passed, the numbers of those placed in the first class being eighty-one and nine respectively. In the Preliminary Examination 899 boys and 585 girls passed.

THE British Science Guild has circulated a report on the Education (No. 2) Bill. The Guild expresses its approval of the following provisions made in the Bill:—(1) The general development and organisation of all forms of education other than elementary; (2) practical instruction for all elementary-school children, provided that such teaching does not involve direct instruction for a trade; (3) continuation schools and compulsory attendance thereat for 320 hours per annum; (4) co-operation of local education authorities, particularly by means of the formation of federations, chiefly because many local education authorities are obviously unable to deal adequately with higher educa-

tion; (5) the removal of the 2*d.* rate limit for higher education in county areas; (6) abolition of exemption from attendance at school between the ages of five and fourteen; (7) further restrictions as to employment of children; (8) school holiday camps, centres for physical training, playing-fields, school baths, school swimming-baths, etc.; (9) the extension to secondary schools and other provided schools of the powers and duties of local education authorities respecting medical supervision and treatment; (10) aiding teachers and students in carrying on research; (11) the collection of information respecting schools and educational institutions not in receipt of grants from the Board of Education.

The British Science Guild recommends that provision be made in the present Bill:—(1) To compel local education authorities to provide nursery schools in those districts where the Board of Education deems such schools necessary; (2) for the inspection, by an approved authority, of all schools not now liable to inspection, whether a request for inspection is made by the school authorities, or not; (3) for the adequate registration of all schools and other educational institutions.

Highly technical and semi-popular articles are judiciously mingled in the January issue of *Science Progress*. Dr. Joseph Reilly and Prof. W. N. Rae contribute a very useful description of various methods of determining the density of liquids, an operation of the highest importance in numerous branches of research. A few diagrams would have enhanced its value. Dr. J. C. Willis's recent theory of the geographical distribution of plants, known as the "age and area law," is explained by Mr. James Small. Dr. K. M. Parker writes on the structure and development of the hypophysis cerebri, or pituitary body, which was at one time supposed to be the seat of the soul. Students of zoology will find this a useful summary of the present state of knowledge of a still unsolved problem. A more general appeal will be made by Mr. J. Reid Moir's article on "Pre-Palæolithic Man in England." The author maintains that the antiquity of the famous Piltdown remains is enormously greater than has been supposed, and denies that there is any reason for supposing the human race to have originated in Asia. Prof. W. C. McC. Lewis contributes a first instalment of a "popular science" article on "The Structure of Matter," which will repay a careful study by senior students of physics and chemistry. The usual full summaries of recent advances in science, notes and reviews, and a letter from Lord Leverhulme on the abolition of slums are other valuable and interesting features of the journal.

The issue of *School Science and Mathematics* (vol. xviii., No. 1) for January contains a detailed account by Prof. Roger Adams of the efforts made in America to meet the shortage of chemicals and drugs arising from the war, and references to the chemistry of gas-warfare are particularly interesting. An excellent contribution on "Pascal's Mountain Experiment," including some of the contemporary correspondence, and another article on the determination of the electronic charge *e*, deserve special mention. Some useful ideas may be obtained from an article on "Logarithms and Some of their Applications for High-School Pupils."

The November issue of the *Education Review* of New York contains a suggestive article on "The Big Brother Movement in the High School." In English secondary schools the scholarship boy—an increasingly numerous element—is often very lonely; and the article conveys ideas as to how his loneliness may be remedied, and, further, how his failure to get the best out of his scholarship course, because of his apparent isolation, may be removed. The teacher of English drops a note to the head of the Big Brother Organisation that John F—— is lazy, indifferent to his work, etc. John is sixteen, tired of school, and wants to leave. The machine is set secretly to work. Capable bigger boys speak to John; a member of the "footer" team asks John why he does not try for a place, John's circle of acquaintances grows, his eye grows brighter, his tie is more neatly arranged, he shuffles no longer. Consider another case. A certain class habitually rags a lady teacher who is a substitute. The organisation is informed, the bigger boys, responsible Big Brothers, engage members of the class in conversation and put the situation to them in a different light; the ragging ceases, and the lady, relieved of disciplinary troubles, teaches well and gains the loyalty of the class. The ideas behind the movement have been tested, and the successful results are fully recorded in the article, which we commend to English schoolmasters—housemasters particularly.

All the money in the world cannot take the place of wheat for food. This fact dominates the world situation, and the *Review of Reviews* for November, in its customary survey of the matters of moment the world over, directs attention to two areas where the best is not being made of the possibilities of wheat cultivation within the Empire. Ten million acres of land, capable of producing 150 million bushels of wheat, are lying idle in Manitoba, Saskatchewan, and Alberta, because the profits which would accrue from the cultivation of wheat thereon would be too small. The quantity of wheat in question is a quarter of the normal English crop. In India, the total normal yield is five times that of England, on an average yield of 11 bushels per acre; if the yield were increased generally to 12 bushels per acre, the increase would equal almost half the annual normal English crop. Are the Canadian and Indian Governments attending to these possibilities? Facts of this kind are familiar to teachers of geography, but geography has been neglected in schools, so perhaps our bureaucrats are not awake to the possibilities of the situation.

Russian was taught last year at Cheltenham, the Leys School, Harrow, Oundle, Bradford, Cardiff, and Liverpool, and the October issue of *Modern Language Teaching* contains reports on the year's work from these centres. One writer avers that a two years' course for boys in the upper forms, with at least four periods a week, should suffice to give them a fair knowledge of the language. Russian should not be the first foreign language attempted is one opinion, while another writer recommends five or six periods a week at an early age in order to make the acquisition

of Russian an enormous help in learning other languages, such as French or German. A report of the first Conference of Teachers of Russian includes a summary of a paper by Mr. Raffi on graded Russian courses to cover three years of study. It was agreed that the desirable qualifications for a teacher of Russian are (1) ability to speak standard spoken Russian; (2) possession of an education not lower than that of a secondary school; and (3) a knowledge of English combined with general experience in teaching modern foreign languages.

MR. G. G. CHISHOLM contributes to the November issue of the *Journal of Geography* of Wisconsin an article, "The Metal Resources Employed in the British Iron and Steel Trade," which is based upon and supplements the "Report on the Resources and Production of Iron Ores and other Principal Metalliferous Ores Used in the Iron and Steel Industry of the United Kingdom," published by H.M. Stationery Office (2*s.* net). The production of pig-iron in the United States, Germany, and the United Kingdom—the three chief producers—ranks almost precisely in the proportion 3 : 2 : 1. The October issue of the same journal, in an article on the preparation of geographical teaching material, contains a useful suggestion for prolonging the life of maps used frequently by the pupils. Mount the map on linen in the usual way, and while the map is still on the mounting board, and after it has become bone-dry, varnish with a thin coating of white shellac. The varnish should be thin enough to spread readily, and applied with a soft brush of moderate width. Round off the corners of the map with scissors before use. The varnished surface may easily be cleaned with a damp cloth.

UNDER the title of "The War and the Schools," the Ontario Department of Education has issued a pamphlet of special regulations for the school year 1917–18, including suggestions as to courses and examinations in history and geography. Ever since the fateful autumn of 1914, the teachers of the province have been made responsible for enlightening their pupils as to the "causes and the interests at stake, as well as the relations thereto of the different nations directly or indirectly concerned" in the war, and the Minister now acknowledges with pleasure the zeal with which that responsibility has been discharged. Now that the war is in its fourth year, and events continue to crowd upon one another, the duty becomes more difficult of fulfilment. To assist the teachers, the Minister has accordingly issued an outline syllabus, which is, however, to be regarded as suggestive only. The syllabus sets forth briefly (1) the remote causes of the war; (2) the immediate causes; (3) the chief events on the various fronts; (4) the share of the Overseas Dominions; and (5) the entry of the United States and other Powers into the war. Suggestions for supplementary reading, and for modifications of the syllabus to suit schools of different types, are also given.

THE *Education Gazette* for September 20th last contains the Ordinance of the Cape of Good Hope Province regarding teachers' salaries and pensions. Assistant-teachers are classified in three grades, according to qualifications and class of work undertaken and independently of the school in which they serve. The salaries are: for men, £120–£267, £160–£322, and £220–£430; and for women, £100–£190, £120–£210, and £160–£265. The increments are annual, large for the first three years, and smaller for the succeeding twelve years. In primary and intermediate schools with fewer than 150 pupils the principal's salary is £10 or more higher than the salary the principal would receive as an assistant. Principals of other primary schools range in salary between £265 and £450, on scales with ten annual increments. In larger intermediate schools the principal will receive between £320 and £500 on scales with ten annual increments. The principals of higher schools will have salaries between £400 and £700 on scales with fifteen annual increments. The figures refer to men's salaries; the salaries for women principals of large schools are: primary, £180–£310; intermediate, £230–£320; and higher, £260–£410. Pension contributions are one per cent. of the salary. The Ordinance contains complete details of the status and conditions of service of teachers.

AN article, "Geography in Practice and in Theory," in the *Educational Review* (New York) for January comments upon the present-day teaching of geography in the United States. Practice lags behind theory, and widespread use of any principle of education lags behind experimental practice. It is concluded that there has been no general attempt to substitute thought-provoking questions which involve fact for the fact questions. Geographical teaching as a rule is not progressive; the type of test question used in early years is used also in later years. The problem method of treatment is not in general use, and the author, Prof. R. M. Brown of the State Normal School, Providence, R.I., commends an examination paper in which the use of the text-book is permitted. A consistent development in the geography work is lacking, especially in the highest-grade school work.

AN article on "The Growth of Native Female Education in Bengal" is included in the *Educational Review* (Madras) for October. The first ladies took the B.A. degree of Calcutta in 1883; there had been slight progress before that date, and in 1891 it was officially reported that the girls in school do obtain a certain amount of real education. Teachers were scarce for many years, and it was not until 1902 that signs of improvement became manifest. Even at the present time, although the education authorities state that there is no prejudice against the education of girls, the shortage of efficient teachers is the main difficulty.

PROF. H. H. MOORE, of Reed College, Portland, Oregon, has obtained useful results from a *questionnaire* addressed to high-school boys anent the prevalent social evils, and the attitude and knowledge of the boys regarding them. His work is described in "The High-school Boy and Modern Social Problems," in the New York *Educational Review* for October. A social evil was defined as anything which causes human suffering, and the two chief evils reported were the

liquor traffic, and questionable personal habits, such as smoking, attending dance-halls, and loafing. The various sex evils were third, but were only recorded by half the boys. Dishonesty in business and public life was tenth on the list. More than a third of the boys, who are about to enter college or to go to work, averred that they did not know the meaning of the terms economics and sociology. In reply to the question, "How long do you think the U.S.A. will survive as a great nation?" two-fifths of the boys expressed the opinion that the nation would endure for ever or indefinitely. The boys were asked questions pertaining to their views of their future vocations. Two-thirds were definitely individualistic, *e.g.* they wanted to get rich; the others were socially inclined, *e.g.* they desired to do good in the world. Sixty per cent. wanted a college education, all but nine of them for individualistic reasons: "So I may get a better job," "For my own welfare," "The business world looks on the college man as a very polished and efficient man." Prof. Moore uses these results as a plea for more attention to sociology in the high schools. A noble army of men and women in many walks of life is now combating the social evils that threaten the State. A larger force is needed if the warfare against poverty, crime, and disease is to be waged with success. Never has there been greater need for men who will give up selfish pursuits and direct their attention to the welfare of the community.

Civic studies loom large on the educational horizon. In the *School Review* of Chicago for October it is suggested that a school course in English can do much towards inculcating the ideals of citizenship by attention to a systematic use of civic subjects for essays. The scheme planned by Mr. Z. E. Clark, of Chicago High School, deals with "myself, the house I live in, the street in which I live, my neighbours, the beauty of our neighbourhood, the location and history of our city, transportation, what our city produces, our city's government," and leads to observation and thought by the child concerning the *milieu* in which his life is passed. The appeal is strongly personal, and suggests a steady growth of the pupil's capacity to understand what citizenship means. Needless to say, these essay subjects should not exclude recourse to the numerous subjects of literary, historical, and imaginative interest, but they may supersede the casual attention to local affairs which is betrayed by the occasional choice of subjects dealing with community affairs. The main idea of the scheme is a graded, systematic survey of the child's locality.

The October issue of *Indian Education* gives the results of measurements of schoolboys at the Secondary Training College, Bombay. Boys of nine weighed, on the average, 50 lb., and were 50 in. in stature; comparative figures for Scotland and Boston give a similar height, but a weight of 60 lb. Boys of thirteen in Bombay were 57 in. high, equal to Scottish boys, but not quite so tall as the boys of Boston, while the Indian boy weighed but 70 lb., as against 83 lb. and 88 lb. for Scotland and Boston. The comparative decrease in stature increases with age, until at eighteen the difference amounts to 3 in., and while the Indian boy weighs only 103 lb., the Scottish and American boys weigh 30 per cent. more. The number of boys examined in Bombay is small, but the consistency of the results indicates that age for age the Indian boy is slightly smaller in stature and of considerably less weight than the boys of Scotland and Boston. Can it be that the Indian schoolboy suffers from the comparative absence of meat in his diet?

Compulsory primary education for boys is to become possible in the Bombay Province. The municipalities may make provision for primary education and may then declare such education compulsory within the municipality. At present this administrative power is conferred upon the municipal authorities on the understanding that no extra expense will fall upon the provincial Government. The Bill makes provision for the issue of attendance orders by magistrates, for penalties upon those who employ children in contravention of the Act, etc. This progressive step will, in the opinion of the editor of the *Educational Review* (Madras), be a lead to the other provinces. Madras and the Punjab have already moved in the matter. The urban populations which will be affected are small; in Bengal but 6 per cent., Madras 12 per cent., and Bombay 18 per cent. of the people live in the municipalities; and it is hoped that this modest beginning is but the prelude to greater progress. The main fact of importance is the recognition by the Government of India that compulsory education is desirable.

SCOTTISH.

Lord Haldane, in addressing the secondary-school teachers of the West of Scotland on January 26th, said that his main interest in public affairs to-day was centred, apart from the exigencies of the war, upon education, because he was convinced that upon the training of the rising generation depended the future of the Empire. The Scottish Education Bill was constructed on great lines, and clearly had in view the calls upon the initiative, knowledge, and capacity that would be made on the citizens of the future. The question of the abolition of school boards had aroused much controversy in Scotland, and the decision might well be left to the strong good sense of the people. For his own part, he favoured the county-council system, as he believed that by making education a part of their duties, they would not only arouse a keener interest in education itself, but also improve and strengthen the composition of these local parliaments. Scotland would do well to note the remarkable progress that had been made in English education since the passing of the Act of 1902, a progress that would never have been obtained under an *ad hoc* authority.

Controversy still rages round the question of an *ad hoc* or non-*ad hoc* authority in education. This question, which, after all, is one merely of machinery, has drawn the whole fire of criticism on the Bill, and the purely educational provisions, far-reaching as some of them are, have been left severely alone. This is ever the way in the case of Education Bills. Education proper has but little interest for the majority of the public, not so much because they do not value

it as because they do not understand it. Its machinery, however, they think they do understand, and so on an occasion like this the gargoyles of self-constituted public opinion begin to spout. Clergymen, who regard themselves as educators by tradition, have been the most vocal. As almost every school board contains two or three on its membership, antagonism to the county-council authority is the predominant note in their utterances. Scottish education owes a deep debt of gratitude to its clergy in the past. They strove and fought for education when Government and people were both apathetic, and no true educationist will now complain of the part they are playing in the present controversy, even though their views are generally hostile to the present Bill. They have been shorn of so many of their ancient privileges that it is but natural that they should put up a strong fight to retain their hold over a province where they once reigned supreme. No one wishes the link between church and school to be severed completely, but the connection must be on different terms. The school will accept their help as partners, not as patrons. On these conditions they will welcome the closest co-operation in the great work of training the rising generation.

THE Educational Institute in co-operation with the Historical Association of Scotland has been engaged for some time in preparing a syllabus for the intermediate history course in Scottish schools. The committee specially charged with this work had before it the following aims:—(1) To exhibit in outline the development of the country's history; (2) to ensure that the pupil has been taken through an adequate course of historical study, looking to the fact that the majority of pupils leave school at the close of the intermediate stage; (3) to indicate such a scope of work as could be covered and revised in a three years' course of 1½ hours per teaching week; (4) to leave to the teacher complete liberty in the treatment of his subject, and in the expression of his own individuality. The syllabus, which is, we believe, the first of its kind in this country, reflects great credit upon the committee responsible for its preparation. It is a remarkably sane document, and keeps rigidly in view throughout the capacity of the pupils and the limitations of teaching time. The report, which is issued to the public as a booklet of twenty-five pages, with chart, may be obtained at the Educational Institute Office, 34 North Bridge, Edinburgh, price 6*d*. (post free, 7*d*.).

THE council of the Educational Institute has prepared a memorandum on the proposed new regulations for the Indian Civil Service. The fear is expressed that the lowering of the age for entrance will seriously affect the supply of Scottish candidates, but it does not feel justified in opposing this provision in view of the unanimous finding of the recent Royal Commission that this step was urgently required in the best interests of India. The memorandum, however, takes up a strong attitude in regard to the conditions for the proposed competitive examination. It points out that the normal curriculum in Scottish secondary schools does not allow of specialisation in any of the groups offered in the new regulations. To give equality of opportunity to all parts of the United Kingdom it is suggested that a new group comprising English, mathematics, and a foreign language should be recognised.

REPRESENTATIVES of secondary education committees from thirteen counties with a large rural population waited upon the Secretary for Scotland to protest against the method of allocating the new grant of £140,000 for secondary education. By this some counties received more money than they required, while others, and these for various reasons the most necessitous, failed to obtain sufficient to carry on effectively the work of education in rural areas. The money was intended mainly to further higher education in these areas, yet the bulk of it went to those who had no rural problem. Mr. Munro, in his reply, said that the present method of allocating the money was arrived at by agreement among all the counties in 1912. He admitted that the method was not ideal, but the new Bill, if adopted, would remove almost all the anomalies and inequalities complained of.

IRISH.

THE Government has at last presented to Parliament rules for the application of the proposed grant of £50,000 for the purpose of intermediate education in Ireland. The grant is Ireland's equivalent of the new Treasury grant made to English secondary schools under Mr. Fisher's scheme. Concerning the amount two things may be said. First, Irish secondary education is not receiving its equivalent for the Treasury grant already being paid to English secondary schools; if it did so, it would receive at least double the proposed amount. Secondly, Mr. Fisher's grant to English schools will not remain fixed at its present amount, but the Irish grant is fixed. The rules state, first, that £2,000 may be spent in courses of instruction for teachers; and, secondly, that £5,000 may be applied in making advances to schools for building and equipment. The rest of the grant is to be distributed every year as a capitation grant to schools payable on all pupils between the ages of twelve and nineteen who make 100 attendances while between those ages during the school year. The grant for pupils above sixteen on June 1st is to be double that of pupils below that age. Each school must employ one duly qualified teacher for each complete forty pupils on whom the grant is payable, with a proviso that a second qualified teacher will not be essential unless there are more than sixty pupils, a third unless there are more than 100, and so on; and also each qualified teacher must receive at least £20 above the minimum salary prescribed in the teachers' salaries grant. The Intermediate Board is given powers to vary the grant in special cases. The new grant will be greatly welcomed, and should help to improve intermediate schools and the salaries of the teachers, but it is not clear whether it is designed to, and will eventually, improve the position of lay assistant-teachers.

THE definite establishment of registration would help the lay assistant-teacher. The present rules defining a duly qualified teacher under the teachers'.

salaries grant are only temporary and not very stringent; they do not, therefore, securely establish the position of the teachers, but a teacher who satisfies the proposed registration rules of the Registration Council will be able to assert his claim to a professional status, and will be greatly strengthened in his demand for improved conditions. It is to be hoped that the Government will soon sanction the proposed registration rules. The Registration Council is now in its third year of existence. In answer to a question in the House of Commons, Mr. Duke said they had been referred to the Intermediate Board, though why this should be done is not clear, as the board has five representatives to watch its interests on the Registration Council.

The High Court of Justice in Ireland has drawn up a scheme of scholarships, called the Earl of Cork's scholarships, arising out of a reorganisation of the charitable trusts relating to the schools and almshouses founded at Lismore and Youghal by the will of Richard, first Earl of Cork (created 1620). The endowments are now vested in the Intermediate Board to provide two scholarships of equal amount every year, one for boys and one for girls, to be awarded on the results of the junior grade examinations. The scholarships are confined to candidates educated in the Lismore district. The capital sum of the endowment is £1,487 10s. The scholarships will be awarded for the first time this year.

The Classical Association of Ireland held its annual meetings in Dublin on January 25th. The president for this year is Mr. J. Thompson, headmaster of the High School, Dublin, whose address, delivered in the lecture theatre of the Royal Dublin Society before a large audience, was on "Alexandria and its Literary Influence." The chair was taken by the retiring president, the Rev. T. V. Nolan, S.J., and the meeting was also addressed by the Rt. Hon. W. J. M. Starkie, chairman of the Intermediate Board, and by Prof. R. M. Henry, professor of Latin in Queen's University, Belfast.

The Department has issued its time-table of technical school examinations for the present year. They will be held in different courses at various dates during the month of May. The latest date for receiving entries by the Department is March 16th. The general regulations governing the conduct of the examinations can be had on application.

The Department has published the first number of its *Journal* for the present year. Apart from the official documents, which have already been noticed in these columns, there is little that bears directly on school work or education, but there are interesting articles on several matters of great importance in agriculture, such as (1) the production and distribution of power and its influence on Irish industry, (2) potato diseases, and (3) chemical manures in Germany.

The Technical Education Committee of the Corporation of Dublin has published a statement on the industrial educational conference which it convened on "Training of Apprentices" and "Reform in Primary Education." Its leading recommendation was in favour of the establishment of a scheme of apprentice scholarships in connection with a proposed preparatory trade school. The Department, however, has no funds available for the purpose of these scholarships, and a deputation which waited on the Chief Secretary with the object of obtaining funds could obtain no definite promise. The committee, therefore, foresees no likelihood of being in a position to inaugurate the scheme in the near future.

WELSH.

The report of the council of Aberystwyth University College presents an interesting picture of work carried on with a large measure of efficiency under the most adverse conditions. In spite of the fact that there are in the present session 298 students in all, compared with 429 in 1913–14, and of the absence on active service of seventeen members of the teaching and administrative staffs, few of the activities of the college are in abeyance. Greek, honours mathematics, geology, and law are the subjects that seem to have suffered most from lack of the usual number of students or from the calling up of those who had entered on the courses. The Agricultural and Technical Departments suffered severely from the loss of students, the Dairy School not being opened for this reason. A class in the subject was, however, held at Brecon, for the students who were forthcoming from that county, and a large amount of advisory and demonstration work in agriculture, with special reference to the food-production campaign, was done in various counties of South and Central Wales. The summer school had the largest number of students since its commencement, owing to the success of the library service course and the popularity of the geography course. Several members of the staff and research students have rendered valuable assistance in the prosecution of work of national importance.

The appointment of a successor to Principal Griffiths at Cardiff has aroused much public interest, and considerable criticism has greeted the "short list" drawn up by the committee of selection, exception being taken both to the fact of the vacancy not being advertised and to the inclusion of names of holders of Arts degrees only, though a large proportion of the work of the college is scientific, and there is a call for the appointment of a person distinctly in harmony with Welsh national aspirations. At a meeting of the council on February 8th it was resolved, on the motion of Lord Pontypridd, that Principal Griffiths should be asked to remain in office for another year. This would be the second time that the tenure of the office by Principal Griffiths has been extended; he has, however, declined to retain the position, while not entirely severing his connection with the college. In addressing the Court of Governors for the last time as principal on February 14th, Dr. Griffiths insisted that while every encouragement should be given to Welsh studies and to the fostering of Welsh national feelings, it would be the worst possible service to Welsh students to make the colleges wholly and entirely Welsh; moreover, the relations between the colleges should make for freedom of development rather than for uniformity, in order

that each might render the best possible service to the surrounding community.

THE proprietors of the *Western Mail* have offered to the committee of the National Eisteddfod at Neath the sum of £100 as a prize for the best heroic poem in English on "Wales and the War." The poem is to commemorate the part played by Welshmen since the commencement of the war, and the adjudicator is to be Sir William Watson. This is the third prize of £100 offered for the Neath Eisteddfod.

TEACHERS continue to complain of the way in which the Fisher grants are allocated. The Cardiff Headmasters' Association recently pointed out that the Education Committee's policy of assigning only two-thirds of the grant to the improvement of salaries would cost the city £75,000 in lost grants during the next three years. Many secondary schools have given the whole grant, others not more than half. The rush to establish scales in advance of the reports of the Departmental Committees seems to have received a check.

A FEW WORDS ON SEX INSTRUCTION.

(1) *How to Enlighten our Children.* By Mary Scharlieb. 202 pp. (Williams and Norgate.) 3*s.* 6*d.* net.

(2) *The Incidence of Venereal Diseases and its Relation to School Life and School Teaching.* By Sir Thomas Barlow. 15 pp. (National Council for Combating Venereal Diseases.) 2*d.*

(3) *Straight Talks Series.* (i) *What Makes a Man;* (ii) *A King's Daughter;* (iii) *Friendship, Love, and Courtship;* (iv) *Marriage and Motherhood;* (v) *A Woman's Honour;* (vi) *Our Girls;* (vii) *Our Lads;* (viii) *Liberty and Popular Amusements.* By Spencer H. Elliott and Sylvia M. Hill. (S.P.C.K.) 1*d.* each.

READERS of THE SCHOOL WORLD have had their attention fairly consistently directed to new books which have appeared during the past year or two on the subject of sex instruction. The subject is not pleasant, and no one enjoys writing about it. Yet the duty of doing so stares us in the face. Teachers and intelligent parents have alike reached the conclusion that innocence and ignorance are not the same thing, and that in order that the young may have more of the former they must have less of the latter. The appearance of the books enumerated above forms a suitable occasion for taking stock of the present position, and for asking ourselves a few plain questions. We will state the questions and suggest the answers which, as we believe, commend themselves to the most thoughtful and experienced teachers. Our remarks apply to the instruction, not of young men and women, but of boys and girls at school.

(*a*) *Should the instruction be collective or individual?* As a rule, to which there are very few exceptions, it should undoubtedly be individual. The vast majority of teachers would instinctively shrink from giving class instruction on so delicate a subject. One might call to witness the whole world's literature, as well as the mass of common experience, that there is no other subject in which the descent from the sublime to the ridiculous may be so swift and disastrous. And even if we could invariably escape this danger, there remains the fact that in no case is it desirable that the subject should become one of ordinary and frequent conversation. If collective warnings are given, they should, as Sir T. Barlow says, have a special object, and they should be rare.

(*b*) *Should the instruction be given by means of talks or by means of books—or both?* We think that teachers generally will agree with the opinion definitely expressed by Sir T. Barlow, and clearly implied all the way through Dr. Mary Scharlieb's really excellent book, that, so far as boys and girls are concerned, this is a case for the spoken and not for the written word. The fundamental objection to books and pamphlets on purity being distributed among boys and girls is that they may so easily be used to bring the subject into discredit. As Sir T. Barlow says: "With boys, even more than with men and women, it is imperative not to run the risk of illustrating the French proverb that it is ridicule which kills." Here, therefore, we find ourselves at issue with the "Straight Talks Series." Frankly, we hope that the first two numbers of the series, which are intended for boys and girls respectively, will not reach the hands of many boys and girls, though we hope they will reach the hands of many fathers and mothers, who may get suggestions from them for tackling a difficult problem. Sensitive children are apt to brood over these books, and the other sort are apt to make fun of them. As a rule, we believe literally in the straight *talk.*

(*c*) *What are the respective functions of parents, teachers, and doctors in this matter?* Circumstances vary so immensely that it is impossible to lay down any rule about the respective functions of parents and teachers, except that the teacher must, here as elsewhere, try to supply what the home lacks—which may be very much or very little. But the teacher should take care to go to the doctor for his facts. The writer of one of the "Straight Talks," for example, in speaking of the habit of self-abuse, states that many men are in our asylums to-day through the practice of this vice. Both Sir T. Barlow and Dr. Mary Scharlieb deny this. The former tells us that in some forms of insanity it occurs as a symptom, not as a cause; and the latter tells us that "it does not lead to insanity, though nearly all persons of unsound mind practise it." There can, of course, be no question as to whose word to take on this point. *Ne sutor ultra crepidam.*

(*d*) *Should the instruction be direct or incidental?* As adolescence advances, incidental opportunities of inculcating a right attitude towards the opposite sex will arise, and should be made use of in connection with (*e.g.*) the literature and the Bible lesson. And on the physiological (as distinguished from the moral) side, the study of botany introduces the question of modifications of structure in relation to sex. "There is," says Sir T. Barlow, "no moral potentiality in all this, but there is a scientific approach to a rational understanding of the fundamental problems of generation which is useful, so far as it goes, and free from dangerous suggestiveness." Still, the step to direct instruction must at some time be taken, though in a very cautious and limited way. For, to quote the eminent physician once more, "knowledge of sex physiology is not by itself much of a safeguard against sexual vice."

(*e*) *To what extent should the teacher's or parent's instruction be moral-religious, and to what extent scientific?* No experienced teacher is likely to misunderstand the statement that the former mode of treatment is very easily overdone. A certain number of boys will no doubt respond to the private religious appeal, but frontal attacks of that kind, always, of course, well meant, are apt to presuppose a stage of religious experience which has not, in fact, yet been attained. Such is the reflection suggested by many passages in "Straight Talks." Nor is it wise to talk sentimentally about the beauty and pathos of the relation between mother and child during the ante-natal period. The appreciation of beauty, whether in a poem, or in a

picture, or in the maternal relationship, is not cultivated by talking about beauty and gushing over it, but by putting these matters to the pupil in such a way that he can make up his own mind about their beauty. Again, we doubt the wisdom of one of the writers of "Straight Talks" in denouncing the habit of self-abuse as "filthy." Hard words do not generally make converts. A boy will be infinitely more impressed when it is explained to him, with a judicious admixture of science and morality, that he is robbing himself of that which gives to a man all his specifically manly qualities.

After what has been said, it is scarcely necessary to characterise further the books here under review. Dr. Mary Scharlieb's little treatise is manifestly written by one who combines learning with that rarer commodity, wisdom. The distinguished author knows human nature as well as the human body, and we should be glad if every parent in the land could read her book. Sir T. Barlow's pamphlet is, in its way, equally to be commended, and ought to be widely known. The "Straight Talks" offer some good suggestions to persons responsible for the upbringing of the young, but, as we have hinted, they need to be used with discrimination.

SOME EDUCATIONAL ADVISERS.

Cambridge Essays on Education. Edited by A. C. Benson. With an Introduction by Viscount Bryce. 232 pp. (Cambridge University Press.) *7s. 6d.* net.

In education, as in theology and in politics, periods of ferment and unrest have usually been marked by joint manifestoes on burning questions. One cannot take up these "Cambridge Essays on Education" without thinking, for example, of the "Essays on a Liberal Education," edited by F. W. Farrar fifty years ago, and the "Thirteen Essays on Education," edited by Dr. Lyttelton about thirty years ago. The three books are very similar in scope, and, indeed, the titles of the essays they contain sometimes match one another closely. The curious reader is thus offered the opportunity of making interesting comparisons between the thoughts of distinguished persons on the same subject at the intervals we have named. He will find the process facilitated by a fact which is perhaps not altogether to the good. The essays in the older volumes were, almost inevitably, written entirely from the public-school point of view, and most of the contributors to this new volume freely confess that they, too, can write only from that point of view. The two outstanding exceptions are Mr. Mansbridge, who takes the broad outlook upon the subject of "Citizenship," and Mr. F. Roscoe, whose subject, "Teaching as a Profession," is new to this generation, and who even now has to admit, alas! that the title of his essay is prophetic rather than descriptive.

The real occasion of the "Cambridge Essays" is indicated by Lord Bryce when he warns us against "rushing to new schemes which seem promising chiefly because they are new," and tells us that the special need of the hour is a re-statement and enforcement by argument of sound principles. To the same effect Dr. Benson writes:—"To deal with current and practical problems does not seem the *first* need at present. Just now, work is both common as well as fashionable; most people are doing their best; and, if anything, the danger is that organisation should outrun foresight and intelligence." The familiar adage, "Look before you leap," might, in fact, have been appropriately inscribed on the title-page. But there is no doubt in the minds of any of the writers about the stern necessity for the leap. The poor old nineteenth century, which men now in middle life look back upon with such wistful disappointment, comes in for some hard knocks. "The last century," says Mr. Paton, "with all its brilliant achievement in scientific discovery and increase of production, was spiritually a failure. The sadness of that failure crushed the heart of Clough, turned Carlyle from a thinker into a scold, and Matthew Arnold from a poet into a writer of prose." The tragedy of the century was that, "when it had acquired wealth, it had no clear idea, either individually or collectively, what to do with it." The keynote of most of the essays is struck in these sentences from the first of them. They are meant as an attempt, and on the whole they are a genuine attempt, to ensure that the education of the twentieth century shall not be another spiritual failure.

We are warned by the editor that each writer has been given as free a hand as possible, and that no effort has been made towards fusion of view. The warning was scarcely necessary, for in certain respects the company is indeed oddly assorted. The Dean of St. Paul's has taught boys in his time, but he is better known to fame as the historian and expounder of the mystical element in religion, and, still better, for that gift of crisp and incisive criticism which is well exemplified in his contribution to this book, and has led some people to call him, inappropriately as we think, "the gloomy Dean." But in directing men's attention to the "inner light" of mysticism, Dr. Inge has always straitly enjoined them not to ignore or belittle the light of reason. It is therefore in perfect keeping with all his previous teaching that he now admonishes his countrymen to attend to "The Training of the Reason." He declares that Britannia has too often been told to be good and to let who will be clever, and he quotes with approval Meredith's warning:—

> "She, impious to the Lord of Hosts,
> The valour of her offspring boasts,
> Mindless that now on land and main
> His heeded prayer is active brain."

But Dr. Inge is not of those who believe that science and logic are the only avenues to trustworthy knowledge. It is not many years ago since he spoke to a company of teachers about a "world which, though unseen, is not unknown, and of the existence of which we have a far greater certainty than we can have of the world which we perceive with our senses." We should, therefore, be curious to see what the Dean would make of the contemptuous reference of his co-essayist, Prof. Bateson, to those "supernatural teachings which make preferably their defence by an appeal to intuition and other obscure phenomena which can be trusted to defy investigation." Prof. Bateson seems to make a clean sweep not only of Bergson with his intuitionalism, but also of the Dean with his notions of superior certitude. We think it is going to make a great difference to the education of the twentieth century which of these two essayists is commonly held to be in the right. We should like to know whether Mr. Paton thinks that Prof. Bateson and his kind are on the road towards making the twentieth century a marked spiritual success.

A book of composite authorship is usually the despair of the reviewer, and, for purposes of comment, one must be allowed to pick and choose rather arbitrarily. Prof. Bateson's essay on "The Place of Science in Education" teems with other points of interest. He makes bold to say that laboratory work, at any rate in biology, is overdone; and he condemns the attractive but fallacious theory that students of science should find out everything for themselves. He believes in a general and undifferentiated scheme of science teaching, with a bias on the side of natural history, for pupils up to sixteen, and he gives a suggestive sketch,

not perhaps quite germane to his theme, of a secondary-school curriculum which would satisfy him. On certain bigger questions we find him rather depressing. He seems to think that men of science can never command much influence in a democracy, which "inevitably worships and is swayed by the spoken word." But it may surely be suggested on the other side that men of science are by no means always dumb dogs, whilst scholars and philosophers often are; that the tradition by which the typical product of Oxford proceeds, even now "with self-complacency unshaken," to "take charge of Church and State" cannot be worn down in a day; and that, after all, a man's influence is determined not so much by his special studies at school and university as by his temperament and his native aptitudes. Again, in the closing passages of his essay, Prof. Bateson, speaking as a biologist, turns with a shrug from the notion that all nations may yet achieve freedom to develop, "unhindered, unthreatened, unafraid." The life of one, he says, is the death of another. Well, it may be so. But it is comforting to reflect that the biologists are not all agreed. Prof. J. Arthur Thomson, for example, has reminded us that the struggle for existence need not be competitive at all; that it is illustrated not only by ruthless self-assertiveness, but also by all the endeavours of parent for offspring, of mate for mate, of kin for kin; and that the world—even the world of "Nature"—is not only the abode of the strong, but also the home of the loving. Even if biology were unable to certify as much, we should be left with the question whether the law of the jungle is to remain the law of nations. On the whole, we prefer the wisdom of the non-scientific Dean of St. Paul's. "The laws of psychical and spiritual life," he writes, "are not the same as the laws of chemistry and biology, and the besetting sin of the scientist is to try to explain everything in terms of its origin instead of in terms of its full development; 'by their roots,' he says, 'not by their fruits, ye shall know them.'" We suggest that Prof. Bateson might here take a leaf out of Dr. Inge's part of the book.

We have left ourselves little space for remarking on the remaining essays. We are glad to see that more than one writer lays stress upon the value of hobbies, or, in other words, upon training for the use of leisure. This is a vital matter for all classes of society. Mr. Nowell Smith advises the teacher to try to secure that everyone grows up with at least two hobbies, of which, whatever one may be, the other should be literature. Mr. W. W. Vaughan writes on "Religion at School," the reference being entirely to the public school and the Established Church. He tells us that teachers have overcome their timidity in dealing with the difficulties of the Old Testament. We hope that this statement is as true as he thinks it is, but we have grave doubts. He tells us that more diffidence is felt, and rightly felt, in approaching the New Testament, but that diffidence ought not to involve silence. We confess we should like Mr. Vaughan to have developed this theme on practical lines, even if much else that he says must in that case have been left unsaid. The modern psychologist will sometimes smile at Dr. Benson's amateur psychology, and the modern pedagogue will smile at Dr. Inge's assertion that "it does not matter very much what is taught; the important question is to ask what is learnt." But at the worst these are mere blemishes. The Cambridge essays were extremely well worth producing. Even to a needy schoolmaster, the brilliant contributions by Mr. Paton, Dr. Inge, Mr. Nowell Smith, and Sir John McClure are alone, if the anti-climax may be forgiven, well worth the shillings that the book costs.

T. RAYMONT.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

An Intermediate Spanish Reader. By E. S. Harrison. (Ginn.) 3*s.*—We have very few Spanish readers suitable for the second year of instruction, and therefore Mr. Harrison's little volume should be welcome. The earlier pieces may even be attempted in the second half of the first year. They are mainly anecdotes, and fortunately not hackneyed ones. Gradually the stories increase in length. They are fairy-tales, including versions of some of the exploits of Baron Munchausen and the Japanese tale of the fisherman Urashima. Other tales, grave and gay, are drawn from modern life. As is now customary in American editions of foreign texts, there are questions based on the stories and English sentences for translation. The notes deal fully with all difficulties of subject-matter or grammar, and the vocabulary is good. There are a few illustrations, but they are not of much use, especially as they do not always agree with what appears in the text.

Elementary Spanish-American Reader. By F. B. Luquiens. xi+224 pp. (New York: The Macmillan Company.) 4*s.* net.—The commercial importance of Spanish is more fully recognised than ever before. The study of the language has, however, not been so common in this country as might be desired, and our publishers have not bestirred themselves in the matter. Far more attention (as is but natural) has been devoted to Spanish in the United States. Among a number of helpful readers published in that country this, compiled by Prof. Luquiens, deserves much praise. It contains eighteen prose extracts relating mainly to the history and geography of South America, as well as a Mexican fairy-tale, a version of Longfellow's "Village Blacksmith," and the Argentine National Anthem. There are questions in Spanish on each extract and English passages for retranslation. There are good notes (in Spanish) on the subject-matter, full grammatical notes (in English), and an excellent vocabulary. The printing is very good, the text is free from misprints, and there are useful and well-selected illustrations. The reader of this book not only extends his Spanish vocabulary and knowledge of grammar, but also receives a stimulating introduction to the past and present life of the great nations of South America.

First Steps in Russian. By J. Solomonoff. viii+131 pp. (Kegan Paul.) 2*s.* 6*d.* net.—In the text of the book it is called a "First Russian Reader," and this is really a better description of it than the title on the cover. It consists of pictures, drawn from school books such as are used for the teaching of Russian in the Baltic provinces, with a descriptive text, questions in Russian, and explanatory notes, dealing with matters of grammar in no very systematic way. There is also a vocabulary. A good teacher may be able to make satisfactory use of this book, but he will be at the trouble of supplying the grammatical exercises. The private student may use it for extending his vocabulary. Perhaps the best feature is the pictures, which, though often crude and badly reproduced, provide genuine representations of the Russian peasantry, of utensils, scenery, etc.

French à la Française. By Lady Bell and Mrs. C. Trevelyan. (Arnold.) Book I., 64 pp. 10*d.* Book II., 95 pp. 1*s.* Book III., 96 pp. 1*s.*—Who does not know "French without Tears"? The title was an inspiration, and the little books have found

many readers since they were issued twenty years ago. Whether these successors will be equally popular we should hesitate to foretell. The title is no improvement; it has no clear meaning. The text contains simple stories of an amusing kind. The new words occurring in each lesson are given at the head of it, with English renderings, and there is a vocabulary to each book. Very up-to-date pictures in the "Fish" manner are supplied by a nameless artist who has some quaintness of fancy but has not taken much trouble to give the people an appearance "à la française"; nothing could be more painfully English than Grand'mère on p. 29 of Book I., or the maid Euphrasie on p. 44. One does not like to appear ungracious, but these booklets seem specially suitable for the select little boys and girls who learn French in the nursery. They are not adapted, and probably not meant, for use in secondary schools.

Classics.

Oxford Junior Latin Series. Virgil, Æneid IV. Edited by C. E. Freeman. 108 pp. *Selections from Ovid.* Edited by C. E. Freeman. 128 pp. *Livy I.* Edited by C. E. Freeman. 198 pp. (Clarendon Press.) Each 1*s.* 6*d.*—We extend a hearty welcome to this new series, which is assured of success if the future authors to be included in it find editors with the lucid powers of exposition and understanding of boys' needs which are possessed by Mr. Freeman. The introductions are admirably adapted for young readers, and Mr. Freeman is to be heartily congratulated upon what he has achieved, both in these and in the notes, and it is all done simply by taking to heart the old injunction of Marcus Aurelius, *ἁπλωσο σεαυτόν!* There is a vocabulary to each volume; the text of the Livy and Virgil (Oxford text) is, of course, complete, and the Ovid selections—elegiac, *plus* about 200 lines of the "Metamorphoses"—are as excellent as any selection, from an author so unsuited to young schoolboys as Ovid undoubtedly is, could well be. Our only criticism is that long quantities, at any rate in the prose author, should have been marked.

The Epistle to the Hebrews. Edited by A. Nairne. clxv+141 pp. (Cambridge University Press.) 4*s.* 6*d.* net.—This latest addition to the well-known "Cambridge Greek Testament for Schools and Colleges" contains the Greek text of the Epistle (twenty-four pages long), more than 100 pages of notes, an excellent index, and a very exhaustive introduction extending to some 150 pages. Such an introduction passes, of course, far beyond the needs of schools; but, for the theological student, the history of the criticism and interpretation of the Epistle and the scholarly appraisement of its theology which Dr. Nairne propounds are invaluable. All such will be deeply grateful for such an excellent modern edition of a remarkable Epistle.

English.

Typical Forms of English Literature. By A. H. Upham. 281 pp. (Oxford University Press.) 6*s.*—All books of this stamp require a second volume of extracts to explain and illustrate their statements. The book takes the form of chapters on formation of types, the ballad, the lyric, the epic, the personal essay, the novel, the short story, and the drama. This division in its detail and in its omissions is academic; and thus, though it intends to attract us to a wise outlook on literature, it leaves quite untouched the greatest book we possess, and untouched but for half a line the greatest romance. Let us have our grumble over this and say plainly that as no English history has yet been written, so no account of literature in this country has ever seen the light. Perhaps it is reserved for a democratic public to demand a democratic book. Prof. Upham is woefully short in dealing with the formation of types—an extremely interesting subject; and though a note sends us to Brunetière, we should have preferred a short abstract of "L'Evolution des genres." What made Francis Thompson a lyrist and North a translator and Pindar an odist?

The volume brings us down to to-day, and each chapter is accompanied by a list of books of reference, very valuable, though many of these, being from American pens, are difficult to obtain. There is all the more the necessity for illustrative matter and for points of view offered by little-known writers. A book lately noticed in these columns ("The Rise of Literary Prose") would gain greatly by an additional volume; and we notice that the "Cambridge History of English Literature" has promised added matter to illustrate its statements and criticisms, just as a teacher who is going to do anything with a class sees that he is within the reach of library shelves. But we hasten to add that the book is the most complete of its type and supplies a link between America and Oxford, which have joined in its production.

The English Journal. November issue. (Chicago University Press.)—The first article in this issue is by Mr. Pendleton on "The New Teacher of English." The whole view of English as a subject is raised in his restrained but really eloquent pleading for a new kind of English and a new kind of teacher. It seemed to the reviewer, while reading it, that he had by some magic been wafted back as by a Henry James into the atmosphere of Renaissance enthusiasm, when scholar and teacher co-operated for an aim seen by both. It should "pay" any enterprising English publisher to reprint this article and send it for twopence to many, not all, of our teachers of English. Not to all, for we have here some who have long ago been working on Mr. Pendleton's suggested lines. The rest of the number discusses the teaching of grammar and the history of literature; it contains also an interesting paper on an adult school such as we do not find room for in England.

Books for the Bairns: Shakespeare. 47 pp. *Freshwater Fishes.* 47 pp. *Our Bird Friends and How They Live.* 47 pp. (Stead.) 2*d.* each.—Except for the increased price, the books of this admirable series are as of old. But the "Life of Shakespeare," by J. Booth, demands more than a passing word. Of course, the greater lives are used in its compilation, but the result is a marvel of correctness, suitability, and simplicity. There is perhaps too much reliance placed on tradition; but in this the larger books are not without blame. A little more might have been said about the First Folio—still procurable in a reduced facsimile for 7*s.* 6*d.*; and as the Bairns' Books are for young children we might have heard more about Shakespeare's schoolboy. But we have a trustworthy and illustrated life for 2*d.* The books on fishes and birds are thoroughly interesting, and will bear reading aloud in class. There is now a French edition of this series, also for 2*d.*, so that a clever young person may improve his own French for 4*d.* It is easy to teach a child the mysteries of retranslation.

Four War Plays for School Children. By the Rev. H. J. Bulkeley. 126 pp. (Routledge.) 1*s.* 3*d.*—Anyone who will take the trouble to coach a set of children in one of these should find plenty of fun. No fee is charged, and half the profits on the sale of the book

go to the Red Cross Association. We congratulate the author on a bright and cheerfully useful bit of war work. The book is admirably printed.

Hazlitt: Selected Essays. Edited by George Sampson. 251 pp. (Cambridge University Press.) 3*s.* 6*d.* —Many there are (*de gustibus . . .*) who say they prefer Hazlitt to Lamb. But undoubtedly Hazlitt is coming once more into his own. Here, with very full notes, but not too full, we have "The Fight," "The Indian Jugglers," "On Reading Old Books," "Persons One Would Wish to Have Seen," three art essays, and others. There is a full introduction, which brings before us the man who maundered over his love, quarrelled with the world, and "had a happy life." On any canvas of the time Hazlitt stands out, flamboyant. But all his prose is solid stuff, with gems pricking through. This edition is excellent in size and type.

History.

Illustrations of Chaucer's England. Edited by Dorothy Hughes. xiv+302 pp. (Longmans.) 7*s.* 6*d.* net. —This volume is the first of a series of "University of London Intermediate Source Books of History," planned by the Board of Studies in History. The purpose of the series, as explained by Prof. Pollard in a short preface, is to provide a general selection of original documents, covering, when complete, the whole course of English history, suitable for students preparing for the Intermediate Arts Examination of London University. The volume now before us is set by the University as the special subject for 1919. It is hoped, however, that the series, by reason of its attractiveness and usefulness, will appeal to a much larger and more general public as well. The documents in the present volume, all of which, if not originally in English, are translated, relate to four main topics, viz. the Hundred Years' War, social life, ecclesiastical affairs, and the political and constitutional developments of the fourteenth century. The selection is carefully and judiciously made. The explanatory introductions to the documents, however, are frequently far from adequate. Notes, also, are almost wholly absent, and they are often urgently needed. A preliminary general survey of the period, too, would be useful.

Germany, 1815–90. By Sir A. W. Ward. Vol. ii., 1852–71. xvi+588 pp. (Cambridge University Press.) 12*s.* net.—Sir A. W. Ward's notable history of Germany in the nineteenth century expands as it proceeds. This second volume, larger though it is than most of the series to which it belongs, covers only twenty years, and brings the story no farther than the date of the founding of the Empire. Students, however, have reason for gratitude rather than complaint. For Germany is a theme of absorbing historical interest at the present time, and no greater master of the intricacies of its annals exists than the author of the work before us. The topics treated in this volume are, first, the chaos and the conflicts of the period 1852–63; secondly, the Schleswig-Holstein question and the Danish war; thirdly, the Austro-Prussian conflict; fourthly, the North German Confederation; and, finally, the Franco-Prussian struggle and its sequel. Particularly noteworthy is Sir A. W. Ward's exposition of the complex Schleswig-Holstein problem; it is an original contribution of high importance, based largely on first-hand evidence not before available. Mr. Spenser Wilkinson has furnished some valuable sections on the military campaigns of the period, elucidated by numerous plans.

Everyman's Library: New Historical and Biographical Volumes. (1) *Maine's Ancient Law.* One vol. (2) *Duruy's History of France.* Two vols. (3) *Memoirs of Cardinal de Retz.* Two vols. (Dent.) Cloth, 1*s.* 6*d.* each; leather, 3*s.* each.—The new volumes of "Everyman" just issued (at the enhanced price necessitated by war conditions) are of great interest. They are all classics of established worth and of old popularity. (1) Maine's "Ancient Law," first published in 1861, is not only a book of prime importance to all students of early institutions; it is also a fine monument of English literary style and a work of absorbing interest. (2) Duruy's "History of France" sketches with remarkable lucidity and accuracy the course of French history from the earliest times to 1815. Duruy himself appended a summary of the events of the period 1815 to 1871, in which latter year the work was originally published. The present English edition, well translated by Mr. Jane and Miss Menzies, adds an epitome of the subsequent era, 1871–1914. Students who use this convenient edition will have to bear in mind that some of Duruy's views have been modified by researches made since 1871; but the general reader need not hesitate to peruse this masterly survey with confidence in its broad fidelity to truth. (3) The "Memoirs of the Cardinal de Retz" form an authority of first-rate significance for the social and political life of France in the mid-seventeenth century. The Cardinal, a worldly and unprincipled courtier and one of Mazarin's leading opponents, was born in 1613 and died in 1679. His memoirs were written for the most part between 1655 and 1665, but they were not published until some forty years after his death. They then created a considerable sensation, because of their scandalous revelations and their revolutionary sentiments. They are still indispensable authorities for students of the period of the Fronde.

Geography.

Introductory Geography. By H. Clive Barnard. 154+ii pp. (Black.) 1*s.* 8*d.*—This book is designed for children aged from ten to twelve. It aims at laying the foundations for the geographical superstructure and deals with the earth, maps, the work of wind, rain, rivers, and ice. It makes a concession to the older views of what constitutes geography by a chapter on earthquakes, volcanoes, and geysers, but is modern in the devotion of a fifth of the book to "The Natural Regions of the Globe." The book concludes with an outline of the geography of the British Isles. There are many exercises intended as an integral part of the course, and meant to be taken orally.

Cambridge Industrial and Commercial Series. Agriculture and the Land. By G. F. Bosworth. 93 pp. (Cambridge University Press.) 1*s.* 6*d.*—Within its few pages this book touches cursorily on many topics, which have one connection—the land. The following sample topics will give some notion of the range of the book:—The history of British agriculture, garden cities, canals, coast erosion, co-operative societies, the functions of the Board of Agriculture.

Mathematics.

Elliptic Integrals. By H. Hancock. (Mathematical Monographs, No. 18.) 104 pp. (Chapman and Hall.) 6*s.* net.—This is a well-arranged and compact monograph on the Legendre-Jacobi theory. Limitations of space have compelled the author to confine the discussion almost entirely to elliptic integrals of the first and second kinds, but the book provides a firm foundation upon which a more extended knowledge of the

subject may be erected. It is a pity, however, that no room has been found for a brief account of the Weierstrassian forms, for the student will meet them in his reading as frequently as the others. The first chapter deals with the reduction of elliptic integrals to Legendre's normal forms. The second explains the inversion of the integrals and discusses the properties of the *sn*, *cn*, and *dn* functions. In both these chapters graphs are given which materially assist the reader to understand the peculiarities of the functions. The third chapter is on the reduction of elliptic integrals to Legendre's form, while the fourth shows how the numerical values of the integrals are computed. A final chapter gives a number of miscellaneous examples involving elliptic integrals, and the book concludes with three five-place tables taken from Levy's "Théorie des fonctions elliptiques."

Science and Technology.

Britain's Heritage of Science. By Arthur Schuster and Arthur E. Shipley. xv+334 pp. (Constable.) 8*s.* 6*d.* net.—The main purpose of these distinguished authors is to give a plain account of the part which Great Britain has played in the progress of science, especially the progress of the last three centuries. Prof. Schuster is responsible for the treatment of the physical (including the chemical and engineering), and Dr. Shipley for that of the biological, sciences. After following their straightforward records, one cannot but conclude that the heritage here outlined must fill every British worker in science with pride, and enable him with confidence to court a comparison with the accomplishment of any other country's men of science during the same period.

The language of the volume, with its free use of technical terms, will scarcely be understood, we fear, by the general reader, and only the more advanced science classes of schools will have knowledge enough to appreciate the book. College students taking up science will find the history invaluable as taking them from a consideration of the details of their own particular subject to an authoritative view of the growth of experimental and observational science as a whole. The book should certainly be in every school library, and be constantly referred to in connection with the subject of science included in the curriculum. But it is not quite the book teachers of science are looking for, as giving boys on the classical and mathematical sides broad general views of the outstanding principles of science, and at the same time emphasising the heroism and devotion to their work of many of the men whose researches are here epitomised.

The attractiveness and usefulness of the book would have been enhanced if, by one of the many expedients possible with modern type, the authors had made it clear where each biography begins and when a new subject is introduced.

(1) *Introduction to Inorganic Chemistry.* Third edition. xiv+925 pp. 8*s.* 6*d.* net. (2) *Experimental Inorganic Chemistry.* Sixth edition. vii+171 pp. 3*s.* 6*d.* net. (3) *A Laboratory Outline of College Chemistry.* v+206 pp. 3*s.* net. All by Prof. Alexander Smith. (Bell.)—Prof. Smith's books on chemistry are well known and highly esteemed in the schools and colleges of this country. Of the "Introduction" it is only necessary to say that in the third edition the general arrangement of the book has not been altered, excepting that the difficult chapter on the oxygen acids of chlorine has been transferred to a later position in the book, the contents have been brought up to date, and more applications of chemistry have been introduced.

The "Experimental Inorganic Chemistry" is intended for college students beginning chemistry. The sixth seems to be a reprint of the fifth edition, and some idea of its popularity may be gathered from the fact that German, Russian, Italian, and four other foreign editions have been published.

The "Laboratory Outline of College Chemistry" is for use with the "Introduction," and provides an admirable course of experimental work for students taking up the serious study of the subject.

Miscellaneous.

The Historical Register of the University of Cambridge to the Year 1910. Edited by J. R. Tanner. xii+1186 pp. (Cambridge University Press.) 12*s.* 6*d.* net.—This is described as a "supplement" to the well-known "Calendar," but it is no mere appendix. In recent years the "Calendar" has reached such proportions that the Syndics of the Cambridge University Press decided to issue a special volume, as a historical register, which should contain part of the information previously incorporated in the "Calendar," treated in greater detail, together with all other information about the University which historical research could add. The present volume is the result, and it is no unworthy monument to painstaking and accurate research. In it the Tripos lists are extended back to the year 1498–99, and there is much new information upon the history of the University Courts. Altogether, the volume is invaluable to the bibliographer, and the general reader—whether a Cambridge man himself or not—will be interested to turn over the records of the names of men now famous in history—especially those of the Elizabethan age—to which Dr. Tanner's lucid and curt footnotes form an excellent commentary.

EDUCATIONAL BOOKS PUBLISHED DURING JANUARY, 1918.

(Compiled from information provided by the publishers.)

Modern Languages.

Labiche: "La Grammaire." Edited by H. L. Hutton. (Oxford French Plain Texts.) 48 pp. (Clarendon Press.) 6*d.* net.

"L'Avare: Comédie par Molière." Edited by Prof. A. T. Baker. lxxxvi+120 pp. (Longmans.) 3*s.* net.

"Russian and English Commercial Correspondence." (In Russian and roman characters.) By S. G. Stafford and W. Chevob Maurice. 128 pp. (Marlborough.) Fawn wrapper, 2*s.* net; cloth, 2*s.* 6*d.* net.

"Foundation Book of French Verbs, Accidence and Syntax." By F. A. Hedgcock. 91 pp. (Pitman.) 1*s.* net.

"Spanish Conversation." Book I. By E. A. Baton. 102 pp. (Rivington.) 2*s.* 6*d.*

History.

"Social Life in Britain from the Conquest to the Reformation: A Series of Extracts from Contemporary Writers." Edited by G. G. Coulton. xvi+540 pp. (Cambridge University Press.) 15*s.* net.

"Illustrations of Chaucer's England." Edited by Miss Dorothy Hughes. With a preface by Prof. A. F. Pollard. xiv+302 pp. (Longmans.) 7*s.* 6*d.* net.

"An Introduction to Early Church History." By R. Martin Pope. viii+164 pp. (Macmillan.) 4*s.* net.

"Short History of Australia." By E. Scott. Second edition. 383 pp. (Oxford University Press.) 3*s.* 6*d.*

Geography.

"Introductory Geography." By H. Clive Barnard. 154+iv pp. (Black.) 1*s.* 8*d.*

"The Preliminary Geography." Edited by A. J. Herbertson, revised by O. J. R. Howarth. Sixth edition. 160 pp. (Clarendon Press.) 1*s.* 6*d.*

"Elementary Geography." Vol. v. Edited by A. J. Herbertson, revised by O. J. R. Howarth. Second edition. 158 pp. (Clarendon Press.) 1*s.* 6*d.*

Mathematics.

"Infinitesimal Calculus." By Prof. F. S. Carey. Section II. (Longmans.) 10*s.* 6*d.* net.

Science and Technology.

"Lecture Notes on Light." By J. R. Eccles. viii+218 pp. (Cambridge University Press.) With 85 pp. of diagrams, 12*s.* 6*d.* net; with blank pages for diagrams, 5*s.* net.

"Industry and Finance: War Expedients and Reconstruction." Edited by A. W. Kirkaldy. 380 pp. (Pitman.) 4*s.* 6*d.* net.

"Glass and Glass-Manufacture." By Percival Marson. 130 pp. (Pitman.) 2*s.* net.

Pedagogy.

"The Dawn of Mind: An Introduction to Child Psychology." By Margaret Drummond. 188 pp. (Arnold.) 3*s.* 6*d.* net.

"The School and Other Educators." By John Clarke. (Longmans.) 5*s.* net.

"The Rural Teacher and his Work in Community Leadership, in School Administration, and in Mastery of the School Subjects." By H. W. Foght. (Macmillan.) 7*s.* 6*d.* net.

Miscellaneous.

"Mother Stories." By Maud Lindsay. 192 pp. (Harrap.) 4*s.* 6*d.* net.

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 Fisher Grant.

As there seems to be general dissatisfaction with the allocation of the Fisher grant, and as it might be well if all the members of the profession could unite in one common demand for an equitable distribution, I beg you to be good enough to make public the appended letter, signed by the nineteen members of our staff, and recently forwarded to the governing body.

We belong to a secondary endowed girls' school, with a boys' school on the same foundation, and the governors have adopted the scheme of the London County Council, a fact of which we became aware only last month.

AN ASSISTANT-MISTRESS.

"We have just become aware of the particulars of the scheme according to which the Fisher grant has been allocated by the . . . governors. We were assured in advance by our honoured and trusted headmistress that we were certain to receive as favourable treatment as our men colleagues in regard to this extra grant; but we find now that this is far from being the case. Yet the fact that we are women has not protected us from a great and sudden rise in our income tax; our rents and rates are the same as for men; prices of food and clothing have increased for us as much as for men. All the hardships of war, in short, fall just as heavily on women as on non-combatant men. On the other hand, our professional qualifications have to be at least as high as those of our male colleagues; and our devotion to, and skill in, our common work have never been questioned. Finally, the Fisher grant is earned equally by girls and boys.

"We deplore and resent the ungenerous, if not unjust, treatment meted out to us by our governing body, and we trust that this unfair scheme may be immediately so revised that we may feel less bitterly than we now do that our sex is a disqualification in a profession which would appear to be one eminently suited for women."

Advanced Courses: An Examination Paper.

IT has recently been part of my burden to construct instruments of torture for the youthful mind, and as I proceeded I was filled with the desire to invent others adapted to the needs of some of our statesmen. So here is one for the President of the Board of Education. It is confined to one special aspect of his vast subject, but the time allowed for answering the paper is unlimited.

ADVANCED COURSES.

Question I.—X is a town of some 350,000 inhabitants, with public secondary schools as follows:—

A.—A boys' public school—day fees, £25–£30 a year—not in receipt of Government grants. Could organise all three courses, and already has their equivalent.

B.—A girls' high school—fees £25–£30 a year—no Government grants; numbers 200. Prepares girls of the quite well-to-do classes for home rather than professional life; sends a selection to Oxford or Cambridge.

C.—Boys' grammar school—£9–£12 a year—numbers 300. Has boys preparing for the university in all three groups, but not enough to establish all three "advanced courses."

D.—Girls' high school—fees £14–£16 a year—numbers 200. Accepts Government grants. Could manage a "modern studies" course, but not enough students to run two "advanced courses" in the sense of the Board.

E.—A boys' technical school, with an advanced engineering top.

F.—A girls' endowed school—fees £7 a year—takes Government grants; numbers 450. Post-matriculation students, about ten.

G. and H.—Mixed secondary schools, three miles away.

(*a*) What is C to do with its classical boys? They can't afford A, and would not be welcome if they could.

(*b*) D now sends girls to the university in all branches, but only one or two in each branch. How is D to get enough in one group to satisfy the Board?

(*c*) What is F to do with its clever girls?

(*d*) If D organised a modern studies course and F a science one, is it likely that girls will leave D to go to F?

Question II.—Y is a composite semi-urban district with two girls' schools, A a G.P.D.S.T. high school and B a county high school.

(*a*) Mary Jones, having distinct ability for languages, is asked to go from B to A at the age of sixteen. Will she go? What sort of time will she have if she does?

(*b*) Ellen Smith wants to work for a science scholarship, and is requested to leave A for B. Will she do it? If she refuses, what provision is A to make for her needs?

Question III.—Z is a small country town of 10,000

inhabitants, with one secondary school of 300 pupils. No other exists within fifteen miles.

(*a*) Is no one in Z ever to study classics?

(*b*) Whose interests are to predominate in deciding between the requirements of boys and girls in the selection of a "course"? What happens to the group not provided for?

Question IV.—A headmaster, on examining his "senior school" examination list, finds he will have six post-matriculants. Of these, three have a bent for science or mathematics, one is fairly safe for a university scholarship in English, one wants to do modern languages, and the sixth would prefer history, but might do French.

(*a*) Will the Board accept three as the nucleus for an advanced course in science?

(*b*) If not, what *ought* the headmaster to do? Persuade the others to take up science, or forgo the attempt to form a group?

(*c*) What *will* he do?

Question V.—There are two schools within reasonable reach of each other. One has a special reputation for a certain tone and character, and is run on rather unorthodox lines. The other is more traditional and ordinary. Write a letter to the head of either of the schools expressing, *in moderate terms*, the opinion and feelings of a British parent asked to transfer his son to the other school.

Question VI.—Mary Smith is a clever girl, who has distinct ability in languages, but is apt to say 2+2=5 when faced with a mathematics or science paper. She is rather shy and retiring, but has much character, which only needs responsibility to bring it out. The school has an "advanced course" in science, but language specialists are expected to transfer to another. If Mary stays where she is she will have two years of responsibility and at least one of leadership as head of the school. If she moves she will miss this training, and in new surroundings, among strangers, will have her shyness increased and her faculties will lack full play.

Which is the headmistress to advise her to risk? Her university scholarship by staying, or her two years' character training by transferring?

Question VII.—Would Mr. Fisher ask a Wykehamist to move for his last two years to Shrewsbury or Charterhouse? If not, why not? C. M. W.

The Metric System in America.

May I beg the hospitality of your columns for the following extract from the *New York Tribune*, dated January 22nd, 1918:—

War Department Adopts Metric System for Guns.

"Adoption of the metric system of measurements for artillery and machine-guns and maps for the American overseas forces was announced to-day by the War Department.

"The change was agreed upon at the suggestion of the French Government to avoid confusion in France, where the metric system is used exclusively."

After the war it is unlikely that American engineers, who will have grown accustomed to working on the international system (which renders all parts of machinery interchangeable), will readily return to the English system.

E. Merry,
Acting Secretary of the Decimal Association.
Finsbury Court, Finsbury Pavement,
London, E.C.2.

Miss Waring's "Serbia."

Your reviewer of my book "Serbia" says that my zeal causes me "to under-estimate the difficulties which the neighbouring peoples have had in living peaceably with the Southern Slavs." He evidently refers to the relations between Southern Slavs and Austria. May I point out to him that the famous Press Bureau of Austria for years previous to the war tried to give other nations just such an idea of the Southern Slavs as your reviewer cherishes, and they carried on their campaign to some extent by the use of forged documents, which, as someone has pointed out, would have brought a private individual to penal servitude? Your reviewer is behind the times in clinging to misrepresentations made for the purpose of preventing any Power from standing up for Serbia if she were attacked by the Central Powers May I suggest that he should read the books of Mr. H. Wickham Steed and Dr. Seton-Watson, in which the bearing of the anti-Serb propaganda is exposed?

I do not, of course, wish to deny that the Southern Slavs have been a danger to Austria. About two-thirds of them were misruled by Austria, and wished for union with Serbia. But we, who were stirred with enthusiasm by Garibaldi and the Young Italy movement, ought to be equally stirred by a movement of the same kind among Southern Slavs.

In the interests of justice, may I ask for the hospitality of your columns for this letter?

L. F. Waring.
Centre Cliff Lodge, Southwold, Suffolk,
February 11th.

It is difficult to see the point of Miss Waring's objection. She protests against my reference to "the difficulties which the neighbouring peoples have had in living peaceably with the Southern Slavs," but she naïvely admits that "the Southern Slavs have been a danger to Austria." That is precisely the fact, slurred over in her book, which I wished to emphasise. It no doubt is true that Austria exaggerated this danger, and forged false evidence of its magnitude; but, as I am pleased to see Miss Waring now allows, that does not mean that it was non-existent. Miss Waring is good enough to refer me to two books on the Southern Slav question written by authors who share her prejudicial "enthusiasm" in the matter. May I in turn refer her to chap. xiii. of Capt. Temperley's "History of Serbia," from which she may possibly be able to learn what impartiality in this particular department of history means?

Your Reviewer.

The School World.

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The School World

A Monthly Magazine of Educational Work and Progress.

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THE ARITHMETIC OF CITIZENSHIP.[1]

II.

By T. PERCY NUNN, M.A., D.Sc.
Professor of Education in the University of London.

THE THEORY OF LOANS.

AS soon as the pupil understands how to calculate the amount and present value of a sum at compound interest, she can follow the theory of the repayment of loans—a subject of immense importance, upon which every intelligent citizen should be informed. The simplest case is that of the loan—the present war loans are an apt instance—which is returned in a lump sum, with or without a premium or bonus, a uniform rent or dividend being paid to the lender throughout the period of currency. The only thing that needs explanation here is the method of "drawing the numbers" of the bonds that are to be repaid at a given date. The daily newspapers frequently contain among their advertisements a list of numbers so drawn in connection with some home or foreign loan. The teacher should also deal with the method by which the loan is subscribed, explaining with the help of a prospectus of a public loan what is meant by the payments due "on application," "on allotment," etc.

The more complicated cases are those in which the capital borrowed is repaid to each lender by instalments. Such loans may be divided into two types: (i) those in which the annual sum paid by the borrower varies, and (ii) those in which it is constant. The following is a simple instance of the first type. In order to buy his house a man borrows £500 from a building society. He undertakes to make an annual payment to the society of not less than £50, which sum is to include interest at 5 per cent. on the borrowed capital still outstanding immediately before each annual payment. Let us suppose that he begins by paying £100 at the end of the first year; then this sum must be regarded as made up of £25 interest on the £500 together with £75 repaid capital. Thus he begins the second year with £425 borrowed capital outstanding. If, at the end of that year, he is able to pay £120, then this includes £21·25, the interest on £425, together with a further repayment of £98·75 capital. He begins the third year, therefore, owing £326·25. In this way we can trace the discharge of the loan to its happy conclusion.

The second type of loan is of more importance. It may be illustrated by a modification of the previous example. Suppose our building society to require the discharge of the loan by *equal* annual payments of such amount that the business is closed up in exactly seven years; what must the amount of the annual payment be?

It is usually assumed that problems of this kind can be solved only by means of the formula for summing geometrical progressions; that, however, is not the case, as the following argument will show. Imagine that you take £100 to some financial institution and leave the sum there for seven years, receiving annually £5 as interest on the deposit. At the end of the term you will be in this position: you will have received an income of £5 for seven years and you will still be able to withdraw your £100 intact. It appears, then, that at the moment when you handed over the £100 you were purchasing two distinct things: (i) the right to receive £100 in seven years' time, and (ii) the right to receive £5 annually for seven years. Now the value of the first right, at the moment when you struck the bargain, is easily calculated; for it is the present value of £100 due in seven years at 5 per cent. compound interest per annum. It is,[2] in fact, $£100/(1{\cdot}05)^7 = £100/(1{\cdot}4071)$. It follows that the second of the two values is $£100 - £100/(1{\cdot}4071) =$

[1] The first article appeared in the March, 1918, issue of THE SCHOOL WORLD.

[2] There is no need to inflict on a class the tedious labour of evaluating $(1{\cdot}05)^7$. As soon as it has thoroughly grasped the method of computing amounts at compound interest, the results for long terms should be taken from Compound Interest Tables such as those given in "Whitaker's Almanack."

£40·71/(1·4071). In other words, if you had paid the financiers the sum of £40·71/(1·4071) instead of £100, they could have afforded to make you the annual payment of £5 for seven years, but you would not have been entitled to receive any further sum at the end of that period. Moreover, they would have received each year 5 per cent. interest on whatever amount of your deposit still remained in their charge. With this result before us, we can proceed to solve the problem of the building society. The question to put is: If seven annual payments of £5 will discharge a loan of £40·71/(1·4071) and give the lender 5 per cent. interest on the capital outstanding immediately before the end of each year, what must the annual payment be when the loan is £500? The answer is obviously:

$$\frac{£500 \times 5 \times 1{\cdot}4071}{40{\cdot}71} = £86{\cdot}41.$$

It is a profitable exercise to calculate the varying amounts of interest and repaid capital contained in this uniform sum in successive years. The interest due at the end of the first year is £25, so that the capital repaid is £61·41, and the capital outstanding at the commencement of the second year £500 − £61·41 = £438·59. The interest due on that sum at the end of the second year is £21·9295, the capital then repaid £86·41 − £21·9295 = £64·4805, and the capital outstanding when the third year opens £438·59 less this amount—that is, £374·1095. Proceeding in this way, we find that the amount of capital returned increases from one annual payment to the next, the instalment of interest due decreasing *pari passu*, until with the seventh payment of £86·41 the whole transaction is exactly closed.

Life Insurance.

There is no need to dilate upon the importance of the subject of life insurance. The computation of the premiums actually demanded by assurance companies is too laborious to be attempted in a school course, but the principles by which they are determined can be readily illustrated by examples which, though improbable, are perfectly possible. Let us suppose, for instance, that a father, elated by the birth of his first boy, wishes to celebrate the event by securing for the newcomer a handsome gift of money to be paid to the latter on his twenty-first birthday. Let us further suppose that he can devote £100 to this interesting purpose, and that, with that sum in hand, he approaches an assurance company. What sum will the company guarantee to give the boy if he survives the perils of infancy and is alive twenty-one years hence?

To compute the amount, the company's actuary takes note of the fact (which the present reader will find set out in the invaluable "Whitaker's Almanack," under the heading "Expectation of Life") that, out of 1,000 male babies born, 708 reach their majority. He then proceeds upon the assumption that a large number of fathers, say 1,000, desire, simultaneously, to make a similar provision for their new-born sons, and argues as follows. Allowing interest at, say, 3½ per cent. per annum, the total sum in the hands of the company at the end of the term of twenty-one years would be £100 × 1,000 × 2·0594, the last figure being the amount of £1 in twenty-one years at 3½ per cent. per annum compound interest. Since there will be only 708 claimants left to divide this sum, the amount that can be promised to each is £205,940/708 = £290·876. In other words, a father can, under the conditions stated, secure for his son nearly £2·91 for every pound he is able to pay as a premium on the day of the child's birth.

With the help of the tables of expectation of life and compound interest, a class of girls, dividing the computation among them, can calculate the premiums appropriate to less hypothetical cases than this—for example, the annual premium for an "endowment policy" taken up by a woman of forty to mature at the age of fifty, or at her death if it occurs before that age.

Banks.

I conclude with a few suggestions about the treatment of that highly important institution—the bank. Everyone appreciates the use of a bank as a custodian of a customer's money and knows that, in addition to being ready to hand over any part of this money to a person authorised by the customer's cheque to receive it, the manager is also prepared to give interest on sums left "on deposit." With regard to this aspect of the bank's work, one has only the obvious suggestions that it is profitable to explain and illustrate the operations of drawing, crossing, and endorsing cheques, to indicate the difference between cheques payable respectively to "order" and to "bearer" (comparing them with postal orders), and to compare the methods of computing interest on deposits and the general custom of banks in reference to withdrawal with the methods and rules of the Post Office Savings Bank. What are not generally understood are the functions of banks in relation to industry and commerce. These may be considered under two heads: (1) the services of banks in relation to the currency, and (2) their services as furnishers of capital.

An argument of the following type has proved useful in elucidating the former of these two functions. Imagine an isolated, self-contained township X which as yet knows nothing about banks, and let it contain ("if possible," as Euclid says) a butcher B and a draper and outfitter D. It may be regarded as inevitable that these tradesmen and their families will frequently need one another's goods. We may suppose that for some time they conduct their mutual transactions on the principle of "cash with order," each paying, in the local currency, for goods at the moment of purchase. But as they develop relations it may occur to them that this plan, though obvious, is both inconvenient and unnecessary. Having learnt to trust one another, they may agree, instead of paying for each article purchased, to record the values in writing—B keeping account of food supplied to D, D of clothing supplied to B—and to "settle up" only at certain stated intervals. It is clear that, upon this plan, the two families might do a great deal of business with one another, and yet square their claims by the exchange of quite a small output of cash. We may next imagine that their neighbours, impressed by the usefulness of the idea, conceive the notion of making it universal in the town. How is the plan to be carried out, in view of the fact that in some cases the relations between two given persons are bound to be more or less one-sided? (For instance, although the doctor's family will constantly need beef and mutton, the butcher's may be obstinately healthy.)

It is here that some public-spirited and universally trusted inhabitant will find his opportunity for social service. He will start an office where he will undertake to keep a record of all the debits which each townsman incurs towards another. To facilitate the book-keeping, every purchaser who makes use of the new institution will be required to hand the seller a voucher (*i.e.* a cheque) which, when transmitted to the philanthropist at his office, will authorise the latter to transfer so much "credit" from the purchaser's account to the seller's. But when the thing is done on this scale, even in the most idyllic community, it will be found necessary to devise some means for preventing an inhabitant from incurring debits which he could not meet if he were called upon to "settle up." This problem will be solved by the adoption of a rule that no one shall be permitted to incur a net indebtedness greater than the sum of cash which, in accordance with his means, he is prepared to deposit with the philanthropist. The institution thus constituted may now be called a bank, and it is clear that it will make it possible for the citizens of X to do business with one another to an amount exceeding indefinitely the total value of the sums they have deposited with the banker as guarantees of their solvency.

Next let the inhabitants of X discover, and enter into business relations with, the dwellers in another town Y. Then so long as the primitive principle of "cash with order" persists, we shall have, from time to time, the absurd spectacle of messengers conveying gold from X to pay for goods bought in Y passing on their way other messengers bearing gold from Y to pay for purchases made in X. This inconvenience could be ended only if Y also started a bank which entered into relations with the bank of X. It would then be possible for a tradesman of X, ordering goods from a manufacturer in Y, to pay, not by sending gold, but by transmitting a cheque on the bank of X which the manufacturer would hand over to the bank of Y, where its value would be added to the debits which that bank is accumulating against the inhabitants of X. Meanwhile a similar process would be going on in the bank of X. The result would be that, instead of a double stream of gold incessantly passing both ways between X and Y, there need be only an occasional settlement of the balance of debits recorded by the two banks. Thus the business relations of the two towns could go rapidly forward upon the basis of an amount of gold which, if the original method of payment had not been superseded, would have been totally inadequate to support them.

The third stage is reached when the financial dealings between X and Y become part of a system involving, as in modern England, a vast number of towns and villages, each with one or more banks. There then arises the need for an institution that shall do for the different banks scattered throughout the country what the original bank of X did when it extended to all the inhabitants of that town the mode of financial intercourse first devised by our friends B and D. There must be, so to speak, a bank of the banks. Here we arrive at that celebrated institution, the Bankers' Clearing House, which is, in essence, an office serving the various banks in precisely the same way as the philanthropist of X served his fellow-townsmen when he began to keep account of their claims against one another. The parallel is carried further. For, just as our first banker found it necessary to require his clients to deposit cash to meet their prospective net liabilities, so the banks which use the Clearing House are obliged to furnish deposits which are entrusted to the safe-keeping of the Bank of England, and guarantee the security of the mutual adjustments of

credit that are effected daily between the banks concerned in the arrangement.

At this point of the course it would be proper to give one or two lessons to elucidate the prerogative position and special functions of the Bank of England. There is, however, no space to give here the details, which will be found lucidly set forth in Straker's "The Money Market" (Methuen), in Barker's "Cash and Credit" (Cambridge Manuals), and in other books of similar scope.

To round the subject off, it may be useful to point out that the method of argument and illustration that led us from the friendly tradesmen to the bank of X, and thence to the Clearing House with the Bank of England behind it, can be extended to show how the City of London became the financial clearing house of the civilised world, so that traders at the opposite ends of the hemisphere or (a thing which is more remarkable) living in neighbouring countries have long been accustomed to settle their accounts by means of "drafts on London." For the details of the mechanism by which this immensely important part of the nation's (and the world's) business is carried on the reader must be referred to books such as those just cited.

Finally, a few words must be said about the bank as a furnisher of capital to industry. Returning to the primitive bank at X, we can easily understand that as confidence in the institution grew, and deposits increased beyond the amount found necessary to support the current business of the town, the public-spirited manager would seek some means of making himself and his institution still more useful. Being consulted, for example, by a trustworthy farmer who was anxious to build a new barn but had not the money needed to pay for the materials and the labour, he would take the responsibility of allowing the enterprising agriculturist credit beyond the amount covered by his deposit, accepting as "security" a lien upon the produce of the forthcoming harvest, and demanding the payment of "interest" for the accommodation. Or, being himself a manufacturer, he might invest some of the superfluous wealth entrusted to him in extending his works and buying new machinery. As this branch of the bank's business developed, the manager would invite additional deposits by offering to give interest upon them, covering his fresh responsibility to his clients by exacting a higher rate of interest from borrowers like the farmer, or by crediting to the bank a proportion of his profits on the capital transferred from the bank to his own business. The histories of banking illustrate both these ways in which banks began to climb to their present position as indispensable factors in industry. For the further development of the theme the reader must once more consult treatises such as those I have mentioned.

It remains only to recommend that the course should not conclude without the examination both of one or two examples of the statement issued weekly by the Bank of England and published in the daily and financial journals, and also of either the monthly statement or the annual balance-sheet of some representative joint-stock bank. The teacher will find in these materials for many useful arithmetical exercises, ranging from the addition of "tots" to relatively abstruse calculations about the value of immature "bills."

THE USE OF BOOKS IN AMERICAN SCHOOLS.

By Hilda J. Hartle, B.Sc.
Mary Ewart Travelling Scholar of Newnham College, Cambridge, 1915–16.
Homerton College, Cambridge.

To those of us brought up to reverence books, it comes as somewhat of a shock to find books regarded merely as tools, to be used as required and discarded as soon as the work is done Many of us were taught to regard the printed word as sacred, and any skipping on our part was met by severe reproof. The American student, on the contrary, is brought up to regard books largely as means to an end, and receives considerable training in the suitable use of books. The American undergraduate probably needs more guidance than his English rival because of his younger age and less extended experience on entering college. However this may be, he certainly is not left so often to wander aimlessly round the library, but is led to consider the various reasons for which one reads, and to distinguish methods of reading which are suitable when dealing with informational material from those which are desirable when reading for literary appreciation. The desire for business efficiency, which is so characteristic of American education in general, may be seen in the work of the schools. Thus in the elementary schools more and more time is being devoted to silent reading, and less attention is paid to oral reading, since few of the children will be called upon to read aloud in later life.

The thought and time which are being devoted to the subject of the reading and use of books are shown by the many investigations which are being made. These are often undertaken by post-graduate students who are working for the doctor's degree. Thus from many universities are emanating theses dealing with

this subject, and often containing standardised tests for gauging the reading abilities of both elementary- and secondary-school children. I use the phrase "reading abilities" advisedly, since great emphasis is placed on the fact that the power of oral reading is a very different capacity from that of "silent thought-getting," and that the rate of reading is a very important factor, and must be measured by itself in both oral and silent reading.

These tests are used by their authors for measuring the reading efficiency of a whole school, or for comparing the results obtained by the use of different methods for the teaching of reading. One advantage of the huge numbers to be found in the schools of a large American city is that tests such as these can be applied to a sufficiently large number of children to make the results of value.

The reading tests devised by W. Gray, of the University of Chicago, will show the nature of the work that is undertaken as part of the inspection of many schools. These tests are twofold, one series being intended to judge the rate of oral reading and power of articulation, while the other is used to measure the rate of silent reading and the capacity of the child to obtain the thought from the printed word. In using the first series a card containing printed paragraphs of increasing difficulty is presented to the child, a similar card being in the hands of the investigator. As the child reads aloud the time required for each paragraph is noted, also the nature and number of mistakes made are entered. Some idea of the cleverness with which these paragraphs have been chosen, and graduated in difficulty, will be obtained by reading aloud the following extracts, which form the first, fourth, sixth, and last, of the standardised paragraphs for oral reading.

I.

A boy had a dog.
The dog ran into the woods.
The boy ran after the dog.
He wanted the dog to go home.
But the dog would not go home.
The little boy said,
"I cannot go home without my dog."
Then the boy began to cry.

IV.

One of the most interesting birds which ever lived in my bird-room was a blue jay named Jakie. He was full of business from morning to night, scarcely ever still. He had been stolen from a nest long before he could fly, and he had been reared in a house, long before he had been given to me as a pet.

VI.

It was one of those wonderful evenings such as are found only in this magnificent region. The sun had sunk behind the mountains, but it was still light. The pretty twilight glow embraced a third of the sky, and against its brilliancy stood the dull white masses of the mountains in evident contrast.

XI.

The hypotheses concerning physical phenomena formulated by the early philosophers proved to be inconsistent and in general not universally applicable. Before relatively accurate principles could be established, physicists, mathematicians, and statisticians had to combine forces and work arduously.

The complete test contains eleven paragraphs, and their order of difficulty was determined by experimenting with them on more than three thousand children.

In the second series, which deals with silent reading, the test consists of a story or a description printed on a card in three columns, and the rate of reading is judged by recording the time which the child requires for the reading of the middle column. This is determined by watching the eye movements as the child passes from the bottom of the first column to the top of the second, and again from the bottom of the second to the top of the third. In this way the rate of reading is determined, not at the beginning of the operation, but when the child has got into its stride in reading. In order to judge how much the child has understood of what has been read he is now asked to write all that he can remember of the passage, and after that to write the answers to certain questions.

The selection used for testing children of seven and eight years of age is as follows:

Tiny Tad.

Tiny Tad was a queer little fellow with only two legs and a short tail. He was nearly black, too, and much smaller than most tadpoles in the big pond. He could hardly wait for his front legs to grow. "When I have them all," he said, "I'll leave this dirty water and go up into the orchard. What fun it will be to hop and hop and hop. If only I had a little brother to hop with me, I should be so happy."

It wasn't long before his legs began to grow. He moved about and kicked around until his legs were quite strong. "I am going out on the bank to see if I can hop," he said one night when he was just six weeks old.

The sun was hardly up next morning when a little toad jumped out of the water and hopped up on the bank. He was very small, but none too small for the little legs that wobbled under him. It was Tiny, the young toad.

The questions that the child is asked after reading this silently are:

1. How many legs did Tiny Tad have at the first of the story?
2. How did Tiny compare in size with most of the other tadpoles in the pond?
3. Which legs did Tiny wish would grow?

4. Where did Tiny say he would go when he got all his legs?
5. What did Tiny wish he had to hop with him?
6. What did Tiny do to make his legs grow strong?
7. How old was Tiny when he decided to leave the pond?
8. What part of the morning did Tiny choose for leaving the pond?
9. How did Tiny get upon the bank?
10. What size was Tiny at the end of the story?

For children of twelve and thirteen the following passage is used, and the questions to which the children are asked to write the answers are quoted at the end:

Ancient Ships.

There is no more interesting study to marine architects than that of the growth of modern ships from their earliest form. Ancient ships of war and of commerce equally interest them; but as they study the sculptures and writings of the ancients, they find records of warships far outnumbering ships of commerce.

Among ancient nations, the Greeks and Romans were the best shipbuilders. Judging from the description of their works, their crafts must have been elegant, swift, and seaworthy. This is more than can be said of many of the more showy productions of the shipyards of Britain, France, and Spain even so late as the Middle Ages.

There is no question now that the ships of the ancients made extended voyages urged by oars alone. A thousand oarsmen were sometimes required to man the sweeps, besides a crew of five hundred soldiers and sailors. Written descriptions give us splendid pictures of fleets of these ancient ships moving swiftly along the villa-dotted shores of Greece, or majestically sweeping into some mirror-like harbour, and with sounding trumpets saluting the setting of the low, western sun.

We are able to make from old records very fair models of these ancient warships. One writer describes the great galley of Philopator as propelled by forty banks of oars. His description is questioned, for however plain the description of these warships may be, no one has yet shown the precise manner in which forty banks could be arranged. A bank of oars means a row on one deck, and while there are many pictures of galleys they show nothing more than a trireme, which is a ship of three banks. A ship of forty banks puzzles our imagination.

Questions on the above:

1. To whom is the study of the growth of modern ships interesting?
2. How do the records of warships compare in number with the records of ships of commerce?
3. What peoples were the best shipbuilders among the ancient nations?
4. How did the ancient vessels compare in elegance and swiftness with the more showy productions of the Middle Ages?
5. What kind of voyages were sometimes made by ancient ships when propelled by oars only?
6. What was the total number of men required on some of the ships?
7. Explain clearly what a "white villa-dotted shore" means to you.
8. From what source do we secure the ideas which enable us to make models of the ancient warships?
9. What does a "bank of oars" mean?
10. Why do we question the statement that the great galley of Philopator had forty banks of oars?

As previously mentioned, tests such as the above are used for the purpose of school inspection, and the results are set out so clearly that even the dullest must understand. By their aid teachers can be convinced, almost against their will, that undue time is being spent on oral reading, and that their children are below the average in the understanding of what is read.

Again, by these methods, clear demonstration can be obtained that rapid silent reading and good understanding usually go hand in hand, and that increase in the rate of reading may be gained by practice and by the use of good methods. Apart from any idea of inspection, these tests could be made very useful to the children themselves by forcing upon their notice some of the reasons for which we read, and in helping them to form habits of rapid, concentrated work.

Although training in the appreciation of good literature is by no means omitted from the education of American children, yet considerable time is devoted to inculcating good habits of reading and to the teaching of the use of dictionaries and of encyclopædias. Children are encouraged to make use of the public libraries. It is not unusual for one of the staff of the public library to visit the elementary school in order to give a short course of lessons on the use of the library, showing the children how to consult a card catalogue, and how to look up a given subject in the books of reference. This is just one example of that ready co-operation that one so often finds amongst the various educational agencies in America. Not uncommonly the school library is a branch of the public library, but situated in the school building, and the school librarian a member of the public library staff. This librarian will be found at the public library on Saturdays, so that the children who know her well will easily pass from the use of the one kind of library to that of the other. This connection is further strengthened by the fact that a child-

ren's room is to be found there in charge of a specially trained member of the staff.

I recall one such room that I saw in the free library of one of the suburbs of a large American city. It was furnished in oak with small tables, decorated with flowers, and small armchairs. The walls were lined with books beloved of children, and, luxury of luxuries in America, there was an open fireplace. The librarian—a woman, as is so usual—not only advised the children as to the books they should read, but also held a story hour each day after school to which many small visitors came. Such friends had she become with some that she had taken a group of them out to camp that summer.

The librarian is usually a very efficient person, often more carefully trained than the teacher. At one of the schools in Chicago I found that, in addition to her other duties, she supervised the study of the older children, and if any of the children were discovered to be unsatisfactory in their work their names were given to her so that she might offer them individual help when in the library.

America spends much more money on her libraries than we do in England. Consequently the children have access to a great wealth of books, and even in the small, one-roomed school of some remote rural district a suitable selection of books will be found. In many of the elementary schools the children use books freely, and are in the habit of consulting them in order to find the subject-matter of their discussions in class. This was especially noticeable in such schools as Prof. Meriam's Experimental School at Columbia, Missouri. This is one of the four schools mentioned by Prof. John Dewey in his book "Schools of To-morrow." I found there that the older children—that is, children of the ages twelve to fourteen—spent the greater part of their time in silent reading in preparation for future discussion. The most striking feature in the equipment of the school was its shelves of books lining the central room, into which the staircase opened, and which formed the classroom of these older children. The classrooms of the younger children also contained many books. This school building was specially designed by Prof. Meriam himself, and bears witness to his belief that to-day we obtain much of our information from books. So marked was the use of books in this school that one was tempted to deplore the small amount of time devoted by the children to observational and experimental work. It was, however, delightful to watch the ease with which these children made use of books.

The demand for good teachers in America is far in excess of the supply, and probably there is a deliberate attempt to minimise the difficulty by supplying the schools with books, which partly explains the greater use of reading material in American schools. Again, the American publisher is not slow to produce the kind of book that will meet the needs of the child, so that there is an ever-increasing wealth of material for selection. Meanwhile the child is benefiting enormously by the training he is receiving in the use of books, a training which will stand him in good stead all his life.

THE TRAINING OF PLAY LEADERS.

By M. Jane Reaney, D.Sc.
Author of "The Psychology of the Group Game."

ALTHOUGH the value of play as a great educational factor had been recognised in all ages up to the end of the nineteenth century, there had been no real attempt to organise play on a national basis since the time of the Greeks.

Towards the latter end of the century the Playground Movement was started in America, and between 1894 and 1898 public playgrounds were established in many of the leading towns of the United States. The movement, although initiated by private enterprise, grew so rapidly that the municipal authorities and the educational bodies took it up; and the Playground and Recreation Association of America was formed to carry on the work. This association now has its representatives in every part of the country and holds an annual conference which is attended by delegates from every State.

In England, the Playground Movement has not reached the same stage of development, but has already made rapid strides in three main directions:

(1) The establishment of evening play centres.

(2) The organisation of vacation play schools.

(3) The establishment of public playing grounds in parks and open spaces.

The movement was inaugurated in England, as in America, by voluntary enterprise, and it is only recently that the subject has been taken up in this country by public educational bodies and grants made towards the maintenance of the play centres. The Regulations for Evening Play Centres published by the Board of Education, which came into force on August 1st of last year, show that the need for such work has at last been realised. In these the Board lays down rules for the proper organisation and supervision of play centres. The centres which are for children attending the elementary schools must be held on premises approved by the Board for the purpose. Each centre must be under a superintendent responsible for the general conduct, supervision,

and discipline, and the assistant staff must be adequate and suitable. All centres receiving a grant, which may reach one-half of the total expenditure, must be under the inspection of the Board.

The far-reaching result of the Playground Movement, both in America and in England, has been fully recognised. There has been a marked increase in school discipline and in efficiency and a decrease in truancy and juvenile crime which can be clearly traced to the introduction of organised play and games amongst the children of the poorer classes. The wonderful results following from the development of the Boy Scout Movement confirm this. At the same time we are gradually beginning to realise that in order to make full use of play as an educative and humanising factor, it is not enough to provide playgrounds and apparatus; the play must be in the hands of leaders and supervisors who have a knowledge of the great psychological principles underlying the instinct of play, and have been trained in the application of these principles in the playground.

In America this fact has already been realised, and courses of play have been established in which play leaders and supervisors of the public playgrounds are given such training.

In England as yet we have no facilities provided for the training of play leaders either for the play centres or for the public playgrounds. Many assistants at play centres realise, however, that they could do far better work if such a course of training were provided for them, and the time is therefore ripe for a consideration of the lines on which such a scheme should be based. The play leader requires very special training because he has to realise two conflicting facts: (1) that play is not truly spontaneous, but depends largely upon the imitative faculty which is such a marked characteristic of the child; and (2) that, if forced, play ceases to be play and loses its value. The play leader suggests and guides the play, but the guidance must be subtle, suggestion rather than command must be the rule.

It requires an expert in the matter to do this properly. The play leader needs:

(1) A knowledge of the psychological principles underlying the instinct of play.

(2) A practical knowledge of the kinds of games which appeal to children of different ages.

(3) A knowledge of the broad effects of different types of play.

(4) Experience of playground discipline and organisation.

Many theories have been advanced to account for the play instinct. Amongst these, two of the latest suggest that the play of childhood follows the stages of race development, and that the higher types of play, such as the organised game, have been evolved as outlets for instincts which have been suppressed as a result of civilisation. It is interesting to note in this connection that the Anglo-Saxon race, which is noted for its warlike proclivities, is the only race which has evolved highly specialised national group games. Recent research has shown the far-reaching effects of suppressed instincts upon the development of the individual, and it is probable that a carefully thought-out course in play may do much not only for the mentally deficient child, but also for the abnormal child who is a nuisance to himself and others.

Again, the result of careful and prolonged investigation has shown that we can formulate definite play periods; roughly these are as follows, although there is much overlapping and children vary in the age at which each stage is reached:

Age 1– 3. Experimental play.
" 3– 7. Imitative play.
" 7–12. Imaginative and individualistic play.
" 12. Co-operative play.

A careful consideration of these types of play shows that each satisfies the changing needs of the child in his development, and a knowledge of this fact will go far to simplify the discipline required. Many other facts could be brought forward, if space would allow, to show that a trained leader is essential for the efficient development of play.

It is necessary, however, to consider briefly the form such training should take and the way in which it can be organised. Broadly speaking, the courses in play required are twofold:

(1) A short general course for teachers and social workers.

(2) A longer and more comprehensive course for play leaders, supervisors of playgrounds, etc.

The first should be an essential part of the training of teachers; it might therefore be instituted as a special course on the theory and practice of play, to be given in all training colleges, and would comprise a short account of the psychological principles underlying the play instinct, followed by lectures on the management and organisation of school games. A similar but rather modified course could be given in all great centres for the benefit of social workers.

The question as to what form the main course for play leaders should take needs discussion. It should certainly extend for at least a year, and probably many students would

benefit by a two years' course. The question arises as to whether the play course should be a special university course parallel with the general university course, or a special branch of the work of the physical training colleges already existing, or whether special colleges should be established for the purpose. In America the first course has been followed. Several universities have established chairs of play. In Pittsburgh University a professor of play was appointed in 1910, and many others have special play courses covering one or two years.

Whatever line may ultimately be followed in England, the play course will have to comprise the following main subjects:

(1) Elementary general psychology, elementary physiology, hygiene and first aid.

(2) Nature and functions of play. The play theories; the play periods; age and sex difference in play; factors controlling the expression of the play instinct.

(3) The history of play in education (Greek education, Froebel, Montessori, Dalcroze, etc.). The Playground Movement in England and America; the Boy Scout Movement; national folk games.

(4) Organisation of play centres, public playgrounds, including administration, discipline, playground equipment and construction and other technical details.

The full course would have also to include practical training. An apprenticeship served under responsible play leaders or administrators would be the natural method of securing such training. This would probably lead to three months of the year being devoted to such apprenticeship, while nine months were occupied with the study of the theory of the subject combined with visits to different types of playgrounds and play centres.

Let us now turn to a consideration of the organisation of the play in towns and villages under the trained play leaders. Much has already been done in this direction; it is only possible to suggest the lines along which further development tends. These are briefly:

(1) The allotment of public playgrounds in the chief districts of all large towns. Each playground to be under the administration of a skilled administrator, assisted by trained play leaders. Certain days or parts of days to be allowed for each school in the district, and the organisation of the play of each school to be under the supervision of the playground administrator in conjunction with the teachers. The playground to be open after school hours for the use of children beyond the school-leaving age. Clubs, etc., to be formed for such children by the administrator and others.

(2) The organisation of play centres for the children of school age and of recreation centres for other children and young adults. Each centre to be controlled by a trained administrator, assisted by voluntary workers who have taken the shorter course on play. In the country the organisation would be modified to suit the district, and would combine when possible practical courses with Nature-study.

At the present time we are only at the beginning of this great movement for the organisation of recreation for the children of the masses, but the public mind is already awake to its importance and to its significance for the training of the future generation, and it is to be hoped that in the great schemes of educational reconstruction after the war the Play Movement will take its right place and the training of play leaders become an actuality, as it is only by such means that it will be possible to make the highest use of this great natural means of education.

SOME THOUGHTS ON SCIENCE TEACHING IN SCHOOLS.[1]

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

I HAVE been asked to talk to you this afternoon about science teaching in schools—and especially biological teaching in secondary schools, and what it aims at and may be expected to lead to—in view of some contemplated development of further and higher courses of science in this school. It is delightful to hear of any further developments of science teaching, although, as will be explained more fully presently, I regard advanced courses for the few as less important than elementary courses for all; and I sincerely hope that your advanced courses will not be so formal and detailed as to frighten off any young inquirers into the beauty and meaning of Nature.

I am anxious to remove at the outset an impression one occasionally meets with, that science is something very special and difficult and remote from ordinary life and thought. Science is an affair of everyday life. It is often said—quoting Huxley—that "science is only organised common-sense," but we can make it even simpler than that. When any of you look around, notice something, and draw a correct conclusion in regard to it, you are using the scientific method, and the fuller study of science is merely applying that method to a more detailed investigation of all the natural objects by which we are surrounded.

Some of you grown-up people may remember an old essay by Huxley, entitled "The Method of Zadig," which appeared in the

[1] An address given (December 8 th 1917) at a Liverpool Secondary School for Girls, where it was proposed to develop further teaching in biology.

Nineteenth Century in the days of our youth, in which he quotes from Voltaire and discusses the story about the Babylonian philosopher who was studying Nature by the banks of the Euphrates one day when he met a number of court officials and soldiers running hither and thither searching for the lost pet dog of the queen.

"Was it," he asked the officials, "a small spaniel lame of the left fore leg and with long ears and such a kind of tail?"

"Yes, yes, where is it?" they said.

"I don't know."

"But where did you see it?"

"I have not seen it," replied the philosopher, "and I never knew the queen had such a dog."

Zadig was thereupon arrested and brought before the police-court by the Magi, or wise men (no doubt the education authorities of the day), and was accused of stealing the dog. Fortunately, the dog at that moment returned from its walk; but when the philosopher explained that he had drawn his conclusions as to the dog from minute examination of certain tracks he had seen in the sand, he barely escaped with his life, and was heavily fined for talking about things he had not seen and could not possibly know. I am not surprised. He must have been a very annoying philosopher; but his methods were simply those of science—correct conclusions drawn from accurate observations, and based upon the reasoning that *like effects imply like causes*.

Well, we have advanced, I hope, since the days of Babylon, although there may still be some Magi amongst us who do not approve of the scientific method. Their cause is hopeless, for the scientific method and an appreciation of science are, I believe, deeply implanted in most of us and only require a little encouragement and help to become evident and effective—to be drawn out by appropriate education.

Man is by nature a scientific experimenter. We probably all began when in the nursery to satisfy the instinct by breaking our first toy to see what was inside it, and by swallowing various undesirable objects. I believe, from observations on my own and other people's children, that most young folk have an inherent love of Nature and curiosity in regard to natural objects, which are in many cases lost later for lack of encouragement and direction. It depends largely upon early environment whether the child's love of Nature will die or develop. My plea is that every child should at least be given the opportunity of letting that little implanted germ of science develop into something that will be of value during the remainder of life.

I suppose we shall all agree that science is now coming to be generally recognised as an essential part of a liberal education. My contention, then, is that some training in science should form a part of the general school education of *every* boy and girl. It should begin in the elementary or preparatory school, and every child between twelve and fourteen should have an elementary course in each of the two main divisions of science—the observational or natural history sciences (zoology, botany, and geology) and the experimental sciences[2] (chemistry and physics). The former, at this stage, would be mainly Nature-study, and the latter practical measurements and tests of the properties of matter. The teaching should be practical at every stage, the children doing as much as possible with their own eyes and hands. All children, then, must be given equal opportunities in science and in languages, or literary studies, until they are old enough to show which line of study they can most profitably follow.

In thinking about elementary scientific education there are two distinct things to be considered—scientific *information* and scientific *training*. Scientific information can be given by lectures or lessons on, for example, such matters as the most obvious phenomena of Nature, simple facts of astronomy as to the movements of the earth and moon, and of physical geography or the elements of geology, and such like. But the scientific habit of mind, which is the principal benefit to be derived from scientific training and is of very great value in every line of life, can be obtained only by practical work in one or more branches of science—such as experimental physics, practical chemistry, or practical biology.

As to what kind of science ought to be taught first in schools—what is most suitable for the youthful mind—it ought to be some guide to us to note that probably the earliest impulse that caused man to observe and to try to understand Nature around him (and that is the beginning of scientific study) was the pleasure he felt in the beauty and interest of natural phenomena, and in the diverse forms and marvellous ways of plants and animals—for example, of flowers and butterflies. It has been said that "the foundation of science is the love of Nature." This idea suggests a branch of Nature-study, the elements of biology, as the most suitable subject for the earliest training in science—a training that leads to using the eyes, to correct observation and accurate description, followed by the drawing of justifiable conclusions.

[2] Of course, the biological sciences in their modern developments are not only "observational," but also to some extent "experimental."

Another motive that comes later is the desire to make something useful, to understand so as to make use of the forces of Nature. That leads to chemistry, physics, and engineering, and all the applications which become scientific industries.

Finally, and still later, there is the desire for theoretical explanations which leads men to seek fundamental principles and laws of Nature. These, if taught at all in school science, in senior classes, should be demonstrated in relation to their practical applications seen in everyday life.

These three have been called[3] the "wonder motive," the "utility motive," and the "systematising motive," and in the case of most young minds they probably predominate in that order, and should therefore be provided for more or less in that order, though some overlapping is, no doubt, inevitable and even desirable, as minds, of course, differ considerably in bent and degree of development.

The first object in the school teaching of science ought, then, to be to create an interest, or encourage the interest which may already be there, in the attractive things around us in the public gardens and parks, in ponds and ditches, in fields and hedgerows, and to convert this interest into correct observations, inquiries, and conclusions.

Then, later, in cultivating the utility motive much elementary chemistry and physics can be taught by making one thing from another, by boiling and melting and freezing, and measuring and dissolving and precipitating, and by examining and making simple experiments with such familiar things as chalk and flint, air and water, coal and sugar, and the like—avoiding, in my judgment, all matters of theory, or postponing them until they seem to arise naturally in the inquiring mind after the acquisition of facts. Throughout, the pupils should be kept in the closest contact with realities, through their own senses and by means of their own investigation.

But, in addition to this practical or laboratory work, which will afford training in observation and experiment, I would attach importance to lessons or lectures on broad aspects of natural knowledge so as to stimulate interest in world-wide phenomena, such as coral reefs, volcanoes, and glaciers, the depths of the sea, the arctic regions, the life of the jungle, and other things that cannot be worked at in the laboratory, but are full of wonder and interest and very stimulating to the imagination, and should undoubtedly form part of any general education. Notice that I prescribe a form of science for *every boy and girl*, and I do not believe in overmuch specialisation in school science.

In my opinion, then, this kind of elementary "science for all" is an essential part of a general education, and it must not be all or mainly measurements and observations of facts, but should be made human and interesting by descriptive lectures or lessons.

For example, some acquaintance with the lives and work of the foremost men in the history of scientific discovery and some account of how the discoveries were made should be a part of the course. The discoveries of Darwin, Pasteur, Metchnikoff, and Lister can be made intensely interesting in connection with lessons on the work in the world of such things as earthworms and silkworms and microscopic disease germs. And in Liverpool schools it would surely be appropriate to tell, in any course on elementary zoology, how the pioneer work on the life-histories of many of the lowest forms of animal life, creatures the enormous practical importance of which in the world is only now coming to be recognised, was done about forty years ago in Rodney Street by two well-known Liverpool men, Dr. Drysdale the physician and Dr. Dallinger the Wesleyan minister. They were both expert workers with the microscope, and the reason they worked together in Dr. Drysdale's house was that the work they were doing was a two-man job. The minute animal the life-history of which was being followed under the microscope must never be allowed to escape from the observer's eye, so while Dr. Dallinger had his breakfast Dr. Drysdale was at the microscope. They kept watches and took turn and turn about, and while the one slept the other was at his post. And in that way they discovered and recorded all the complicated changes that take place in the lives of these minutest of animals, the monads of organic infusions. Probably there are similar pieces of scientific history of local interest that could be utilised in the schools of most cities and other parts of the country.

It is of interest to everyone, and ought surely to be of importance to point out to young people, the many ways in which the results of scientific investigation affect matters of daily life, and that can perhaps best be done by telling how the investigations arose and the discoveries were made. In the days of Huxley and Tyndall inspiring demonstration lectures were given illustrating the history and development of science, which must have had an arresting and awakening influence on many young minds. Such lectures on the romance of science encourage a love of the natural world, bring the imagination to the very crest of the advancing wave of knowledge, and suggest the

[3] In a recent British Association Report on Science Teaching in Secondary Schools (1917). [See pp. 128–132 of this issue.]

need for further investigation. They awaken the spirit of research, and should always accompany practical laboratory work in a general course of "science for all."

And now let me mention one or two points in which I do not wholly agree with some scientific and educational authorities of the past.

First, I cannot support an extensive use of what is called the "heuristic" method in teaching practical science. It is quite unnecessary nowadays in a general course on science to make the pupils suppose that they are rediscovering what the history of science provides for us. Surely, living in the twentieth century, we are entitled to take the fullest advantage of the achievements of our predecessors and need not retrace the devious paths that led to their results. A little heuristics may be profitable on occasions, but much of it leads to a grievous waste of time.

I entirely differ from those educational or scientific authorities who have laid it down that one ought to teach only what the pupils can see for themselves, so that they may in their practical work or other observations, as it were, check and verify the instruction given. That is sound enough in regard to part of the work—that part where it is possible for the pupils to make their own independent observations; but to rule out all other matters as unsuitable for school teaching leads to the loss of much that is interesting and instructive. Are children to know nothing about the habits of whales, kangaroos, and ostriches because we cannot produce them in the classroom for investigation?

The Great Barrier Reef of Australia is one of the natural wonders of the world. It is a coral reef more than a thousand miles in length and in places extending to more than a hundred miles from the coast. It is a demonstration on the grandest scale of what animal life can do in building up solid land, the crust of the earth. I am sure that a school lesson on the great reef and the life and work of coral polypes would be full of interest and quite scientific, although neither teachers nor pupils were ever likely to visit the north-east coast of Australia.

There is still another controversial point on which I should like to express my views. We have been told lately by some high authorities at educational conferences that humanistic subjects can, and should, be taught scientifically, and the natural sciences studied in a humanistic spirit, and that then all will be well educationally, and apparently the inference is that it does not matter much what you are taught so long as the spirit is as prescribed.

These are fine sentiments—brave words—but only words, I fear. Of course, we all teach our subjects in what we regard as the best way, whether humanistic or scientific; but the counsel I have quoted leaves untouched the subject-matter to be taught. You can get no knowledge of science by having other subjects which are not branches of science taught to you in a manner called scientific. What you must have is science itself, whether it be taught to you in what educationists call a scientific or a humane method.

And now possibly it may be of some use if I say a few words as to biology [4] especially, as a school subject. The value of biology in relation to any form of liberal or general education is very great, since this branch of science has application to much in our daily life, and an economic value in many important industries.

I prefer, as you may have noticed, to use the term biology, re-introduced and popularised in the early 'seventies by that great man of science and educational reformer, Prof. Huxley, rather than botany and zoology. Biology is more general and less specialised. It includes the elements of zoology and botany and elementary physiology, with applications to hygiene, agriculture, and much of what is coming to be called domestic science. It is not, as some think, simply zoology *and* botany, but rather what is common to those two allied sciences—the fundamental facts and principles of life, of protoplasm, the physical basis of life, the only living thing in the world, and its manifestations or vital phenomena as seen in various organisms high and low, some of them plants and some of them animals. Botany alone, zoology alone, will not give all we want as an introduction to the study of life in the world around us.

I have heard it stated by those who have not tried that it may be difficult to get the materials for teaching biology practically in schools. There is nothing in this objection. The necessary animals and plants are cheap and common and can be obtained almost anywhere. Any neighbourhood with gardens, parks, hedges, and ditches, supplemented by school aquaria and insect cages, and, if possible, even a small museum, will provide material for courses in elementary biology.

As to the instruments, a great deal can be done with a small pen-knife, a pair of scissors, a few stout needles, and a hand lens. A little microscope work is desirable now that the lowest and simplest of animals—the protozoa and micro-organisms in general—are recognised to be of such great practical importance

[4] I am consciously throughout laying stress especially on the biological or natural history side of the science studies in the hope that I can be of most use by doing so, but I assume that there is a similar course in the experimental sciences (physics and chemistry) running concurrently or perhaps in alternate terms.

in the world around us. For example, the yeast plant can be grown in Pasteur's solution and examined under the microscope; moulds, fungi, bacteria, Dallinger and Drysdale's monads, and many other lower organisms can easily be kept in jars of various organic infusions and used to illustrate lessons on our unseen friends and foes constantly working for our weal or woe, helping in the preparation of our food or causing dire disease.

Both animals and plants should be shown alive and should be grown in the laboratory: There is really no difficulty in this. Plants can be grown from seeds, and insects reared from eggs. In spring frogs' eggs can be kept and hatched, and the tadpole stages studied with much interest and profit. In summer the relation and practical importance of insect visitors to flowers, the recognition of injurious and beneficial insects, and their relation again to bird life are all obvious subjects for the elementary biology of a school course. And I should hope that it would be possible to vary the work in school by visits to a large museum in winter and by some field work and expeditions to neighbouring ponds in summer. Some physical geography or elementary geology could also be taught on such biological rambles.

In order to get the full benefit from any plants and animals we are studying we must try to get to know them individually and enter into their lives. We must approach each new type, such as a frog or a sea-weed, in the spirit of "Well, who are you? Where do you live and how do you get along? Are you a success in life, or are you dying out? And if so, why? Who were your ancestors, and who are your relatives and friends at the present day? What are the difficulties of your environment, and how are you trying to overcome them?" We should even make such curious inquiries as: "What are your diseases, and have you any parasites, and if you have, are they a nuisance or helpful to you—as some parasites sometimes are?"

Just as to be a good fisherman you must think like a fish—that is, try to think the fish's thoughts—so to be a good biologist you must enter into the life of the living things you study. I always tell my students to remember they are trying to understand, not the dead things in the laboratory and museum, but living Nature in the field, the pond, and the sea.

The elementary biology course will form a natural introduction to that acquaintance with the working of the human body, and the elementary laws of health, which all young people should have towards the end of their school career. For this purpose general biology should in higher classes develop into zoology treated from the physiological point of view—that is, the animal (frog, let us say) should be studied as a machine in action, so as to illustrate all the important processes of life in a higher animal, such as digestion, respiration, nerve-action, and reproduction. The nutrition of the body in relation to dietetics, respiration and the need for ventilation, and many other points in connection with personal health can be introduced simply and naturally during the study of a typical animal which has life-processes more or less similar to our own. The simpler phenomena of heredity and the lessons they teach would also naturally find a place here.

If such a course were generally adopted in school education, it would lead to the diffusion of sound biological thought on public health and other social questions. It would surely be a great gain to the community if many girls were to become scientific observers and thinkers in regard to all such matters of everyday life.

And now, if you ask me, What does all this natural science I am advocating lead to—what is the object in teaching *science to all* at school? I answer: First, to give every boy and girl the opportunity of finding out whether they have any special aptitude for a scientific career and ought to specialise in science; but, secondly, and even more important, to let those who do not continue scientific studies, who will never specialise in science, who have no idea of pursuing a scientific career, have just such an acquaintance with the elements of physics, chemistry and biology, and just such an insight into scientific methods of investigation and discovery, as will enable them afterwards, as ordinary citizens, to understand and appreciate the *search for truth* based on evidence rather than on authority, the value of accurate observation, clear description, and correct reasoning, to understand how the forces of Nature may be employed for the benefit of mankind, and to realise the sequence of cause and effect in regulating their own lives—and the importance of insisting upon the use of scientific methods not only in the management of business enterprises, but, more important still, in guiding the action of those who are entrusted with the direction of public affairs.

If next you ask me of those who, in their general course of science, find that they have a special liking and aptitude for either the experimental or the observational sciences and propose to study them further, then I may tell you that many careers of interest and usefulness seem to be opening up before them, and will probably continue to do so to an increasing extent in the future.

I hope some of you girls will be medical practitioners in the future. We need all the medical women and scientific women as investigators that we can get to take the place of the young men we have lost. Many sisters will, I hope, in the future take up the work that their brothers would have done. Science and medicine are most intimately related. A school course of science is an excellent introduction to medical studies at the university. The medical man cannot have too much science. Most of the recent advances in medicine have been due to scientific, and especially biological, discoveries. Pasteur's purely scientific work on fermentations and the study of the yeast plant led him through silkworms and vines to his discovery of the cure for that dire disease, hydrophobia. Lister, like Pasteur, started from studies in pure science, on the circulation of the blood in a frog's web, and so passed to inflammation and infection, and the antiseptic treatment of wounds. I have heard Sir David Bruce say that it was being a naturalist—a student of natural history—that set him on the right track in his various investigations of tropical diseases, such as the fly disease of horses and cattle in Zululand and the terrible sleeping sickness of the Congo.

And so it will be in the future. We are as yet only on the outskirts of these fields of discovery in natural history in relation to medicine. Three great sections of zoology have now become of prime importance amongst medical studies: parasitology; entomology, or the study of insects which are the great carriers of disease; and protozoology, or the study of the lowest and simplest microscopic animals which we now know are the causes of some of the most fatal diseases that afflict mankind.

Finally, it has been asked, Will science teach you *how to live your life* as well as how to make a living? That is too large a subject to enter on now. Let me answer it quite briefly in words uttered by the President of the Royal Society in a recent address. He said—and I entirely agree with Sir Joseph Thomson: "I recognise—and I know no man of science who does not—the necessity of literary studies as a part of the education of every boy and girl, but I must protest against the idea that literature has a monopoly in the mental development of the individual. The study of science widens the horizon of his intellectual activities, and helps him to appreciate the beauty and mystery which surround him. It opens up avenues of constant appeal to his intellect, to his imagination, to his spirit of inquiry, to his love for truth. . . . A knowledge of science brightens and widens the intellectual life, and is a constant stimulus to the imagination."

THE SCHOOL CHILD DURING THE WAR—AND AFTER.

DESPITE the exceptional demands made upon the depleted staff of both its official and voluntary workers, the Report[1] of the Chief Medical Officer of the Board of Education for the year 1916, filled as it is with a mass of valuable and interesting information, shows that the work of the School Medical Service has still been able "to secure the maintenance of an irreducible minimum of its working." And, as in the reports of previous years, alongside the evidence of much good work initiated and achieved, there stands abundant proof of the large amount of leeway which remains to be made up before the avoidable wastage of child welfare has been reduced to such a ratio as can be regarded without feelings not far short of dismay.

In his prefatory letter to the President of the Board, Sir George Newman claims that the School Medical Service is now the recognised national agency for the advancement of school hygiene—that branch of public medicine which is concerned with everything that affects the healthy physical development of the child of school age. Thus viewed, and rightly viewed, it will be observed that school hygiene is concerned not merely with all that affects the individual child from its earliest infancy, but also with all those ante-natal conditions which have a bearing upon the future welfare of the child as yet unborn. "Medical inspection"—essential though this be, as a means to an end—is thus far from summing up the functions of school hygiene; the latter embraces in its sphere the whole physical condition and development of the child—beginning with ante-natal care and mothercraft, and, at the termination of the school age, being concerned with those agencies which have for their purpose the health of the adolescent and his preparation and equipment for life. Thus school hygiene is linked up with the public system of education on one hand, and with the public system of State medicine on the other—being, indeed, an integral and essential part of both; for its object is the development of the healthy, capable, and well-trained citizen of the immediate future.

The Great War has given a new and definite emphasis to the vital importance of the child as a primary national asset; and the dominant note in Sir George Newman's report is his insistence on the development of a sound

[1] Annual Report for 1916 of the Chief Medical Officer of the Board of Education [Cd. 8746]. (H.M. Stationery Office.) 1s. net.

physique as the necessary basis of sound and successful education :—

The future and strength of the nation unquestionably depend upon the vitality of the child, upon his health and development, and upon his education and equipment for citizenship. Great and far-reaching issues have their origin and some of their inspiration in him. Yet in a certain, though narrow, sense everything depends upon his physique. If that be sound, we have the rock upon which a nation and a race may be built; if that be impaired, we lack that foundation and build on the sand. It would be difficult to overestimate the volume of national inefficiency, of unfitness and suffering, of unnecessary expenditure, and of industrial unrest and unemployability to which this country consents because of its relative failure to rear and to educate a healthy, virile, and well-equipped race of children and young people. There is no investment comparable with this, no national economy so fundamental; there is also no waste so irretrievable as that of a nation which is careless of its rising generation. And the goal is not an industrial machine, a technical workman, a "hand," available merely for the increase of material output and the acquisition of a wage at the earliest moment, but a human personality, well grown and ready in body and mind, able to work, able to play, a good citizen, the healthy parent of a future generation. If these things be true, as I believe they are, no reconstruction of the State can wisely ignore the claims of the child.

An immense amount of useful spade-work has been done towards the attainment of this end, and there are signs of substantial progress. The School Medical Service has won its way to recognition as a force not merely to be reckoned with, but also to be grateful for; local education authorities and their officials are furthering its progress by their enterprise, skill, and devotion; a new understanding of the child, of his nature, his importance, and his claims, has been developed. And hundreds of thousands of children are to-day already healthier, better, and brighter for the discriminating labour which has been spent on their behalf. Yet the fact remains that the records of 1916, as in former years, proclaim a large amount of ill-health, of bodily impairment, and of physical and mental defect. In addition to the great group of defective children—blind, deaf, halt and lame, feeble-minded and epileptic—for many of whom special schools have been provided, and to the large number of children not in attendance at any school on account of sickness or invalidism, medical inspection has shown that, of the six million children in attendance at school, many are so dull and backward mentally as to be unable to derive full benefit from schooling; more than 10 per cent. are verminous, and 10 per cent. ill-nourished, thus suffering from conditions equally disabling from the educational point of view. Disease claims a toll still more heavy :—

Perhaps the largest contributor is dental disease, which handicaps children almost as seriously as it does adolescents and adults. Probably not fewer than half the children are in need of dental treatment, and a substantial number (not fewer than half a million) are urgently so. Again, upwards of half a million children are so defective in eyesight as to be unable to take reasonable advantage of their lessons. Many of them need spectacles, some ophthalmic treatment; others special "myope classes," and all of them careful supervision and attention. Next we must add diseases of the ear, throat, and lymphatic glands, another quarter of a million in a relatively serious condition. Then there come skin diseases, disorders of the heart, infectious disease, and tuberculosis. Many of these children suffer from more than one disability, but a year ago a moderate computation yielded not fewer than a million children of school age (not, be it observed, children in school attendance) as being so physically or mentally defective or diseased as to be unable to derive reasonable benefit from the education which the State provides. For 1916, owing to necessary modification in the system of inspection, it is not possible to render any more exact account than formerly, but there are no grounds for believing that the figures here quoted are otherwise than a moderate estimate, or under-estimate, of the existing condition of things to-day.

This is a serious state of things as regards the present, and pregnant with the possibilities of a future even more alarming. It can be remedied only by systematic and continuous attention, carried out wholeheartedly and persistently throughout the country. The machinery necessary for doing this already exists; what is needed is its systematic and effective application.

In some areas it is yielding adequate returns; in other areas it is insufficiently applied, or misapplied, to the problems presented; and in other areas again, particularly in regard to medical treatment, it is in abeyance, or wholly ineffectual, due in part to a failure to foresee the vital importance to the nation of the health of the children, and in part, perhaps, to a sense of false economy or even parsimony.

It is this "sense of false economy or even parsimony"—the outcome of an inability to realise the vastness, the complexity of the problem (and the wasteful extravagance which attends all piecemeal attempts to cope with it)—that constitutes the greatest obstacle to success. Not that the local authorities are wholly to blame for this. Sir George Newman points out that under existing conditions the school child passes through their hands somewhat as a "bird of passage." Before the

child comes to them it is often marked or maimed by previous experiences, and it leaves them to be often handed on to pass under conditions which modify, impair, or even destroy the good effect produced by their efforts.

Even their period of authority is not one of absolute and undivided responsibility. The treatment of the infant, of the child under five years of age, of the school child, and of the adolescent comes within the purview of different, and sometimes of competing, authorities; so that, in each of these stages, there is an inevitable tendency to overlapping and confusion—an inevitable blunting of that sense of the call of duty which attends the knowledge that someone other than oneself is responsible for what has gone before, and that yet others will be called upon to fulfil and complete what we may have only partly done.

What is needed, under existing circumstances and under existing law, is therefore an effective unification of all the powers having for their purpose the healthy upbringing of youth: . . . an understanding of the whole problem as one and the same problem and an administration of the law affecting it as a unified and co-ordinated administration in every locality.

But unification of administration will be of little value if each local education authority has not continually before it a clear understanding of the proceedings which are necessary from a medical point of view in order to secure for every child of school age within its area the full value of the School Medical Service. The following are laid down as "the irreducible minimum" of what is called for in order to yield such results as the national need requires:—

(i) That every child shall periodically come under direct medical and dental supervision, and if found defective shall be "followed up."

(ii) That every child found malnourished shall, somehow or other, be nourished, and every child found verminous shall, somehow or other, be cleansed.

(iii) That for every sick, diseased, or defective child, skilled medical treatment shall be made available, either by the local education authority or otherwise.

(iv) That every child shall be educated in a well-ventilated schoolroom or classroom, or in some form of open-air schoolroom or classroom.

(v) That every child shall have, daily, organised physical exercise of an appropriate character.

(vi) That no child of school age shall be employed for profit except under approved conditions.

(vii) That the school environment and the means of education shall be such as can in no case exert unfavourable or injurious influences upon the health, growth, and development of the child.

Simple in themselves, these propositions collectively constitute a formidable policy of child welfare. Though it may not be possible to realise them all immediately, they deserve careful consideration; for they are put forward as a sort of minimum standard of the physical claim of the individual child—"of the child of the poor equally with the child of the rich."

A merely cursory perusal of the body of the report and of its several appendices cannot fail to impress even the casual reader with the enormous amount of unostentatious work which has been carried out under the Board during the year under review. Nor is there lacking encouraging evidence of good results. In addition to the routine records of the work of the School Medical Service and the administration of the Provision of Meals Acts, there are special sections dealing with nursery schools, with physical training, and with the control of juvenile employment in relation to health. These latter are matters the importance of which it would be difficult to exaggerate. They are essential items in the preventive medicine of the child and the adolescent, illustrating the means by which the normal child—who, after all, is of more value to the nation and to the future than is the deficient child—"may grow strong, healthy, and capable."

Amid all these reports, statistics, and deductions there stands out in dominant proportions the importance of the physical well-being of the child in relation to that life-long "education" which begins before its birth and ends only with the individual's decease. Nor can this be stigmatised as materialistic in the degraded sense of that word. Say what we may, it is by and through the machinery of our bodies, according to its quality and training, that life's work is done. The best results are unobtainable if the material be essentially poor or its development and shaping defective. A few years hence the children of to-day will constitute the nation to which we have bequeathed them. In their hands, then, will lie its destiny and its future, its honour or its shame. But ours is the present responsibility for that near time, and on us lies the plain duty of equipping them, to the best of our ability, for the burdens which they in turn will have to take upon their shoulders. There is nothing either faithless or ignoble in the realisation of how directly success, in its best sense, is linked up with the healthy, well-developed body in which—as with a beautiful and healthy house—is most likely to be found that good tenant, a sound and healthy mind.

PERSONAL PARAGRAPHS.

MR. C. H. BLAKISTON has been appointed warden of Radley College in succession to the Rev. E. G. Selwyn, who has resigned with a view to a chaplaincy in the forces. Mr. Blakiston is a scholar of Christ Church and took a first in Lit., Hum. in 1901. From 1901 to 1903 he held the Craven fellowship, and he was the first student of the British School in Rome. Formerly Sixth Form master at Sherborne, he was in 1904 appointed assistant-master at Eton. As the Eton secretary to the Eton College Mission at Harrow he has taken a keen interest in industrial and social problems.

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MR. G. W. TALLENTS has been elected a governor of Harrow School in succession to Dr. Butler, late Master of Trinity. Mr. Tallents was head of the school in 1874, and two of his sons have since been head boys.

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MISS I. M. DRUMMOND, Oxford Final Honours School of Natural Science, has been appointed to succeed Mrs. Bryant as headmistress of the North London Collegiate School for Girls. Miss Drummond has been headmistress of the Camden School for Girls for some years and now returns to the school at which she was formerly science mistress. She was a member of the British Association Committee on Science Teaching last year and contributed to the report of the committee a syllabus of a science course for a public secondary school for girls.

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MR. FRANK ROSCOE, secretary of the Teachers' Registration Council, has been chosen by the Liberal Party as the prospective candidate for the parliamentary division of Aston Manor, Birmingham. During his thirteen years' tenure as head of the Birmingham Training College for Men, Mr. Roscoe was well known in the district as a public speaker and lecturer, and he has contributed frequently to the Press and educational journals. He was formerly president of the Birmingham and Edgbaston Debating Society, at which institution the late Mr. J. Chamberlain—also a former president—graduated as a public speaker. Mr. Roscoe's main platform at the coming election will be the education question.

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MR. A. C. COFFIN, director of education, Bradford, has tendered his resignation on the ground of ill-health. He was asked by the Education Committee at its last meeting to withhold his resignation for two months and in the meantime to take such rest from his arduous duties as his medical adviser recommends. Mr. Coffin is a native of Dorchester and graduated at the University of London in 1889. After service as a teacher under the London School Board, he became principal of the Normal Department of the Technical and University Extension College, Colchester. His work in this position soon led to an appointment on the Board of Education Inspectorate, and in 1903 he became director of education for Darlington. Three years later he accepted the office of secretary to the Newcastle Education Committee, and in 1911 received his present appointment.

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MR. E. SALTER DAVIES has been appointed to succeed Mr. Francis W. Crook—who resigned for reasons of health—as director of education under the Kent Education Committee. Mr. Davies, who is a native of Pembrokeshire and an exhibitioner of Haverfordwest Grammar School, took his degree in classical honours in 1893. He has had teaching experience at Glasgow and Cheltenham, and is a regular contributor to educational journals. A paper of his on "Higher Education and Advanced Courses" appeared in these columns in February last. Mr. Davies has served under the Kent Education Committee as its first inspector for higher education since 1904, and for the last two years he has also acted as assistant-secretary for higher education.

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MR. HERBERT J. TYRER has been appointed director of education at Farnworth, Bolton. Mr. Tyrer has had considerable experience in elementary education, having held appointments under the London County Council and the Salford Education Committee. He received his early education at the Wigan Grammar School, and in 1911 was appointed first headmaster of Scot Lane Council School, the first council school erected in Wigan.

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THE growing public interest in educational administration is shown by the large candidature list for the post of secretary to the Edmonton Education Committee. The 100 applicants include a brigadier-general and a marquis. The latter, Marquis S. M. E. Roault de Longueville De Bucy, of distinguished French ancestry and a grandee of Spain, is a British subject and has served in the Army for many years.

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THE Lord President of the Council, under the provisions of the Welsh Education Act, has appointed Principal D. R. Harris, Normal College, Bangor, to be a member of the Joint Education Committee of the

County of Carnarvon. Mr. Harris was Prof. Nunn's predecessor at the London Day Training College, and during the twelve years which he has spent at Bangor the college has been extended by the addition of four hostels, providing accommodation for 200 men and women students. Mr. Harris has for many years represented the Guild of Graduates on the Court of the University of Wales, and has lately represented the Court on the Central Welsh Board for Secondary Education. His wide knowledge of the requirements and conditions of education in Wales should be of great service to the Education Committee in the reconsideration of the whole question of education which will arise in the near future.

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Mr. James Ford Smith has resigned the second mastership at Calday Grange Grammar School to take up the headmastership of the Dixie Grammar School, Market Bosworth, where Dr. Samuel Johnson was an usher as a young man.

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The Rev. J. Y. Batley has been appointed headmaster of Hamilton House School, Lansdowne, Bath. Mr. Batley was prizeman at Ridley Hall, Cambridge, and leaves the Grammar School, Stevenage, to take up his new post.

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Major (temporary Lt.-Col.) R. Inglis, King's Royal Rifles, whose name recently appeared in the Honours List as a recipient of the D.S.O., is an assistant-master at St. Dunstan's College, Catford. He has been twice mentioned in dispatches.

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The death of the Ven. Dr. Frederick Brooke Westcott, Archdeacon of Norwich and Chaplain-in-Ordinary to the King, removes a well-known and striking personality from scholastic circles. Dr. Westcott was born at Harrow, where his father, Dr. B. F. Westcott, late Bishop of Durham, was an assistant-master. Educated at Cheltenham College, he became a scholar, and afterwards a fellow, of Trinity College, Cambridge, and graduated as senior classic in 1881. Ordained in 1884, he was appointed to a mastership at Rugby, and in 1892 accepted the headmastership of Sherborne School. On his completion of twenty-four years as a schoolmaster he went to Norwich as canon-residentiary.

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The death is reported of Miss Ethel Garvin, headmistress of Wimbledon High School for Girls. Miss Garvin filled the posts of headmistress of Shrewsbury High School and Notting Hill High School before succeeding Miss Hastings at Wimbledon. She has been headmistress at Wimbledon for nine years, and her recovery from illness in 1917 was gravely prejudiced when part of the school was burned down.

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2nd Lieut. H. A. Dyer, R.F.C., who was previously reported missing while flying over the German lines in December last, is now reported killed. A son of the late Dr. A. E. Dyer, who was for twenty-seven years organist at Cheltenham College, he was a brilliant musician and composer, well known in the provinces and theatrical circles. He graduated in music at Oxford at the early age of twenty-two and held appointments as music- and choirmaster at Rugby School, Abbey School, and Bromsgrove School successively. He joined the Army in 1914 and served at the front for two years as a signaller and dispatch-rider in the M.T. branch of the A.S.C. He obtained his commission in the Royal Flying Corps in 1916.

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Messrs. Hodder and Stoughton announce for early publication a volume entitled "The New Teaching." The editor, Prof. John Adams, has secured the services of a group of specialists for the volume, among whom we note Dr. Rouse, Prof. Nunn, Dr. Keatinge, Dr. Buck, Miss Marsden, and Mr. F. Charles.

Onlooker.

THE MISUSE BY EDUCATION AUTHORITIES OF THE SUPPLEMENTARY GRANT.

The Incorporated Association of Assistant-masters has drawn up a statement of facts dealing with the manner in which the Supplementary (Fisher) Grant has been allocated in the case of secondary schools in England and Wales. We agree with the officials of the association that if it were more generally understood in Parliament and throughout the country how public money voted by Parliament for a specific object is, in some areas, being diverted systematically to other purposes by the authorities whose duty it is to handle it, it would enable the Board of Education to exert its authority and to put an end to what is an abuse of the confidence placed in education authorities by the current regulations for secondary schools.

A renaissance in education has been heralded by the Press and leaders of public opinion as one of the effects of the world war on the national conscience; and the growing enthusiasm for education throughout the land has been indicated as an assurance of the triumphant passage into law of Mr. Fisher's Education Bill. But a study of the temperately worded memorandum of the assistant-masters, with its

record of the way in which education authorities have failed to avail themselves of an easy opportunity of showing their appreciation of the work of the schoolmaster, may well give rise to serious misgivings. Acts of Parliament and skilfully devised administrative schemes have eventually to be interpreted with skill, enthusiasm, and patient persistence by teachers in the classrooms of the country, if we are to secure an efficient and sanely inspired system of national education. To procure an adequate supply of efficient teachers—well educated and properly trained—is to solve most of our educational difficulties; but to expect to secure such an army if we offer schoolmasters and schoolmistresses the remuneration of the labourer is national madness. In all cases where the activities of the worker can be seen at once to affect the progress of the war, his wages have gone up by leaps and bounds; but the schoolmaster, without whose labours the most successful ending to the world conflict will be abortive, is allowed to suffer ever-increasing hardships, and even the help provided by Parliament is being withheld from him.

We shall be convinced that the nation is in earnest about education and really intends that its children shall have educational opportunities equal to those of other great peoples when it is willing to pay properly for them; and this willingness will become apparent when fear of popular indignation will be enough to make it impossible for education authorities either to offer efficient teachers starvation salaries, or to seek to secure the services of incompetents at low wages.

We commend the assistant-masters' memorandum for careful study to all persons who desire the improvement of education.

In the spring of 1917 the President of the Board of Education, in view of the generally recognised fact that the teaching profession was seriously underpaid, announced his intention of asking Parliament to increase the grant to both elementary and secondary schools. The need for the payment of higher salaries was emphasised in several speeches, and the necessary funds voted by Parliament on August 8th, 1917.

In the case of secondary schools, the grants for the year August 1st 1916–July 31st, 1917, were raised by a sum amounting on the average to about £2 per pupil in England, and £2 10*s.* per pupil in Wales (where salaries were very low indeed). The minimum grant to small schools was raised by £50 in England and £100 in Wales. Provision was also made for the payment of grant at the higher rate during 1917–18, and it was intimated that, in the Estimates for the financial year 1918–19, further funds would be asked for. In 1917–18, moreover, there was to be a special grant of not more than £400 for every advanced course approved by the Board.

The Board of Education, in the Regulations for Secondary Schools, 1917, Cd. 8,541 (England) and 8,571 (Wales), stated that the primary object of the new grant was the improvement of teachers' salaries. The Board unfortunately refrained from attaching stringent conditions to the grant, and relied upon the discretion of the local authorities.

The new grant, if devoted entirely to its primary object, would suffice to raise salaries on the average by not much less than £40 per annum in England, and £50 in Wales. Even allowing for the fact that, while the improvement of salaries is the primary object of the grant, it is not necessarily in every case its sole object, we cannot as a rule regard increments of less than £30 (England) and £40 (Wales) as being satisfactory.

Our association maintains that, as the grant was made retrospective to August 1st, 1916, all increments to teachers should operate from that date. For some considerable time the financial embarrassments of teachers have been especially severe. Very few salary scales had been amended since the outbreak of the war, and in none was there an increase in any sense commensurate with the abnormal rise of prices. Moreover, in some cases the ordinary increments of salary which might have been expected in normal times were suspended owing to the war. The teachers thus affected found themselves earning less than peace-time salaries and faced with war-time prices. Such war-bonuses as had been given were as a rule very meagre in amount—£10, £5, and even less. Beginners, and masters who could manage to migrate, usually from permanent to temporary posts, did not perhaps feel so much of the strain; but the burden has been all but intolerable to experienced masters, as a rule men with considerable domestic responsibilities, who have remained at their posts. We know of many university men, some of them with honours degrees, whose remuneration during the period covered by the supplementary grant has ranged from fifty to seventy shillings a week. These sums are, of course, shorn of about one-half of their purchasing power by the fall in the value of money. We contend that the school authorities should have given to these men the last penny from a fund intended primarily for their benefit.

The Board evidently recognises the urgency of the situation, for in Circular 1,008 it recommends that the consideration of scales should be postponed for the moment, and that a substantial proportion of the new money should be distributed among the teachers.

We are glad to record that in some cases this has been done; but in the great majority of those cases which have so far been reported to us, the action of the school authorities has been disappointing. Many of these have, indeed, abused in the most flagrant fashion the trust reposed in them by the Board of Education.

Among the unsatisfactory features to be found in the action of the local authorities we may enumerate the following:—

Delay in Allocation.—The object of the grant is clear, the need for action urgent, and further delay therefore quite inexcusable.

Inadequacy of Amount.—Instead of the £30 or £40 which we should expect in England, and the £40 or

£50 in Wales, we find sums of £20, £10, and even less.

Withdrawal of Existing War Bonus as from Date of Increment.—The war bonus was already a charge upon the rates, to the relief of which the supplementary grant has therefore in such cases been applied.

Lateness of Date.—Many authorities grant increments, not from August 1st, 1916 (the date from which their own finances benefit), but from April 1st, 1917, urging the irrelevant plea that the grant is actually disbursed by the Treasury during the financial year which begins with that date. They thereby deprive their teachers of all benefit for the first eight months of the period covered. And in many cases still later dates have been chosen.

Exclusion from Benefit of Masters who Resign after Working during the Period Covered by the Increment.—Thus, an increment may be retrospective to August 1st, 1916, but with a further stipulation that it shall be paid only to masters who remain on the staff during the first term of the next school year (1917–18). Those who change their posts in July, 1917, or before, lose the increment for the period during which they actually worked in the school.

Use of the 1916–17 Grant to Engage Additional Masters for 1917–18.—This practice is especially objectionable. If the additional appointments are made necessary by an increase in the number of pupils, the grant will also increase, thereby creating a fund to pay the new masters. If, on the other hand, the school was understaffed during the year 1916–17, the men who actually bore the burden imposed by the understaffing should get certainly not less than would otherwise have been given.

Accumulation of the 1916–17 Grant to Provide for the Future Liabilities of New Scales.—The supplementary grant should be regarded as a compensation, incomplete at the best, for the high prices now prevailing. Even if their salaries were raised by the full amount of the grant, teachers would still be suffering a heavier loss of income than almost any other section of the community, and certainly bearing more than their share of the national burden. This state of things is all the more serious when we remember that teachers were admittedly underpaid even before the war. Moreover, the new scales are largely safeguarded by the President's announcement, already referred to, that for 1918–19 Parliament will be asked to grant still further funds. Apart from these considerations, the scales instituted during 1917 are not such as to justify the accumulation of the grant, for their maxima frequently fall short of those used to illustrate the report of the Departmental Committee on Salaries in Elementary Schools. Furthermore, in too many instances the new scales bear very hardly upon non-graduates; and thus many men of long experience, and proven worth in actual teaching, derive no appreciable present relief or prospective advantage from a fund which they should share with their graduate colleagues.

There are about 670 grant-earning secondary schools in England and Wales, controlled by several hundred different authorities, each with its own methods of allocation. We need scarcely do more than refer to the difficulty of collecting the necessary information. From a considerable number of schools we have so far heard nothing, and gather that in not a few cases this is due to the refusal of authorities to allocate. Without undue pessimism we may state that the later allocations are not likely to rise above the low level of the earlier, and that the list of bad cases cannot fail to lengthen.

It should be stated that, owing to the action of our association, an improvement may be expected in some cases. Nevertheless, the information given is of interest as showing what the local authorities will do when left to their own devices. Our individual staffs are sometimes almost powerless, and the burden of contesting hundreds of cases is heavy for our central Salaries Sub-committee. Everything seems to strengthen our long-standing claim for increased centralisation of salary-control; and it is to be hoped that the Board will not only attach in future more stringent conditions to the grant, but also insist upon a retrospective amendment in unsatisfactory cases.

SCIENCE IN SECONDARY SCHOOLS.[1]

Method in Science Teaching.

In recent years more attention has been given to method in science teaching than to substance. One result of this has been to promote the view that all subjects, in different ways and to different degrees, can be made to give a training in scientific method; and that, therefore, instruction in science has no specific educational advantage over that of any other subject in the curriculum taught by methods of deduction and induction. It will be shown later in this respect how science—by which is here meant all departments of natural knowledge which depend for their development upon observation and experiment—differs from other subjects of instruction, but a general statement as to the meaning and application of scientific method in science teaching seems to be necessary.

Ambiguity of "Scientific Method."—It has often been remarked that the adjective "scientific" has a double significance. Sometimes it is used to distinguish one kind of knowledge, such as physics, from another kind, such as history. At other times the distinction it connotes is not between objects of knowledge, but between modes of investigation—between the "conduct of the understanding" which alone leads to certain truth and ways of thought that inevitably end in error. The second sense of the word is evidently much wider than the first; for, while the realm of "scientific knowledge," though vast, is limited, the dominion of "scientific method" is universal, extending wherever there are facts to be determined or general truths to be ascertained

If, however, it is admitted (1) that the chief business

[1] From the Report of a Committee appointed by the British Association to consider and report upon the Method and Substance of Science Teaching in Secondary Schools, with particular reference to the essential place of Science in General Education. The members of the Committee were: Prof. R. A. Gregory (Chairman), Dr. E. H. Tripp (Secretary), Mr. W. Aldridge, Prof. H. E. Armstrong, Mr. D. Berridge, Mr. C. A. Buckmaster, Dr. Lilian J. Clarke, Mr. G. F. Daniell, Miss I. M. Drummond, Mr. G. D. Dunkerley, Miss A. E. Escott, Mr. R. Cary Gilson, Miss C. L. Laurie, Prof. P. P. Nunn, Mr. A. Vassall, and Prof. A. M. Worthington. The Report may be obtained from the Assistant Secretary, British Association, Burlington House, London, W. 1. 1s. net.

of the science teacher is to train in scientific method, and (2) that scientific method is the characteristic, not of science only, but of every properly conducted intellectual inquiry, the science teacher is perilously near to the surrender of his special claim to existence. For does scientific method imply the habits of observing facts with care, of classifying them clearly and exhaustively, of forming hypotheses without bias, of testing them with rigour? Then a good classical teacher may make the study of Latin grammar as "scientific" as the study of chemistry, while, under a bad teacher, work in the laboratory may be as little "scientific" as anything ever done in a Latin lesson. Again, does scientific method imply "respect for fact" and the pursuit of truth in defiance of prejudice? Then it may be maintained that the study of recent history offers a field for its exercise at least as favourable as (say) an inquiry into the composition of water.

Matter and Method not Separable.—This paradoxical conclusion depends upon the assumption that the method of a scientific investigation can be regarded as separable from the matter, which is not correct. In other words, it is not strictly true that scientific method is one and the same wherever it is employed. The physical method and the historical method, for example, have common fundamental features, but cannot be simply identified the one with the other. In short, scientific method is an abstraction which does not exist apart from its concrete embodiments; and the person who desires adequate knowledge of it must study it in all its typical manifestations. No one ought to expect a training in scientific method acquired in one field of inquiry to be transferable to—that is, to guarantee competence in—a field substantially different from the former. This conclusion is illustrated and supported by many recent experimental investigations For instance, Dr. W. G. Sleight[2] has shown conclusively that practice in one form of memorising (*e.g.* the reproduction of the substance of a passage of prose) produces no general improvement of the memory, but may even cause deterioration in the power to memorise material of a different kind. Ability acquired in memory exercises of one type is, in fact, transferable to exercises of another type only if the second contains special elements that are also characteristic of the former, and then only if the learner perceives and deliberately takes advantage of the partial identity. Thus a boy trained in memorising series of numbers shows an improved power to memorise "nonsense-syllables" if, and only if, he has recognised that the use of rhythm is an aid to the mastery of the material in both cases.

It appears, then, that the training received in a specific course of study is an ability acquired in dealing with situations of a certain kind, and is of service outside the boundaries of the study only in situations that can be regarded as substantially identical with those within it. Scientific knowledge and scientific method must not, therefore, be thought of as distinct and separable things, but as things the relation of which is comparable with the relation between a living body and its life. Just as the life of a body consists in its growth and activities, and in nothing else, so the methods of a science are nothing other than the ways in which it grows, reaching ever wider and deeper views of some aspect or department of Nature. The science teacher has not, therefore, to adjust or to choose between the claims of knowledge and of training, for the two are inseparable. Let him give his pupils the knowledge that (in Spencer's classic phrase) is "of most worth"—that is, the knowledge which best expresses the special genius of his science—and he may be confident that he is at the same time giving them the best training the subject can supply It need only be added (for fear of misunderstanding) that this giving of knowledge is not to be confounded with the mere imparting of "facts." It implies in the pupil a genuine *pursuit* of knowledge—an activity, guided by the teacher, but motived from within, which represents, so far as the necessarily artificial conditions of teaching permit, the historic activities of scientific minds working at their best.

Principles and Motives in Teaching.—In selecting what is to be taught the teacher must take account not only of the intrinsic worth of the knowledge, but also of the varying powers and interests of immature minds at different ages. Among the motives which have prompted men to make those persistent attempts to understand Nature which we call science, three have always been especially conspicuous. First, and in a sense foremost, is delight in the intrinsic beauty and charm of natural phenomena—delight in the forms and ways of plants and animals, in the splendour of the heavens, in the surprising behaviour and transformations of matter under certain assignable conditions. To use a familiar phrase, the foundation of science is the love of Nature. Next, we may distinguish the motive that springs from the perception that man can exploit the forces of Nature for his own purposes only if he is prepared to take the trouble to understand them—that man must become the interpreter of Nature if Nature is to become the handmaid of man. This is the motive that has created the vast fabric of "applied science." Lastly, there is the craving for theoretical completeness and unity—the motive that prompts men on one hand to seek "fundamental principles" in Nature, and on the other to organise their ideas about the different aspects or departments of Nature into closely knitted logical systems. These three—which may be called the "wonder motive" (in the absence of a better term), the "utility motive," and the "systematising motive"—are not, of course, to be thought of as working in isolation. In differing degrees all are, no doubt, present in all scientific activity. Nevertheless, they are evidently distinct sources of such activity, the relative predominance of which at different stages in the history of a science, and in minds of differing cast, may vary to a very great extent.

Our question resolves itself, therefore, into the following: Can we count upon the presence and activity of these motives in the minds of boys and girls, and is there any normal order of predominance among them? To the first part of the question, thus expressed, we can give a confident reply. There are few children, if any, who do not feel the charm of natural

[2] Dr. Sleight's book, "Educational Values" (Clarendon Press), gives a critical account of all the more important researches on the transference of acquired abilities.

phenomena and cannot be led by it to pursue inquiries which, however rudimentary they may be, are yet in the direct line of the development of science. The "utility motive," represented by the desire to find out "how it works" or "how it is made," is notoriously conspicuous. The systematising motive, while apparently much more variable in strength, cannot be said to be inoperative in any normal child. With regard to the second and more important part of the question, it may be said (subject to the reservation mentioned above) that, although young minds feel the pressure of all the motives, yet each of the three enjoys its special period of empire. Children before an age which is not far above or below eleven years seem to respond most surely and actively to the direct appeal of striking and beautiful phenomena. From eleven or twelve to (say) fifteen or sixteen the "utility motive" assumes the mastery, and may, at least in boys, reach the force and volume of a passion. With the full advent of adolescence the "systematising motive" has for the first time its opportunity of predominance, but there seem to be many minds in which its full power is never developed.

Practical Conclusions.—The practical bearing of these observations is clear. It is important, in the first place, that the teacher should not fail to give due scope to the "wonder motive." A science lesson should not degenerate into a display of fireworks or into sentimental vapourings about the "marvels of Nature," but it is easy to fall into the opposite error. Science teachers have by no means always avoided it. It must be remembered that teaching which is not founded upon the pupil's direct interest in natural phenomena for their own sake cannot stimulate genuine scientific activity, and that no "scientific training" can be effective which kills instead of fostering the root from which all scientific activity has grown. In addition to this general consideration, applicable to all ages of the pupil, we draw the particular conclusion that the first stage in science teaching should be a stage of "Nature-study," of which the distinctive aim should be, not to establish the logical foundations of any science, but to awaken the pupil's interest in the more attractive and obvious happenings in garden and wood, in pond and field, in sea and sky, and to begin the work of disciplining this interest into scientific inquiry.

Next, it is suggested that to fail to make full use of the "utility motive" is to allow one of the richest sources of intellectual activity to run to waste. Many teachers of science are discovering that for pupils between the ages of twelve and sixteen (or later) the most effective method of instruction takes the form of an analysis directed to the discovery of the principles involved in the typical triumphs of applied science. In this method Archimedes' principle is regarded, not as a "property of fluids," nor as means of determining specific gravities, but as the principle that explains the flotation of ships; the study of the processes by which metals are won from their ores displaces chemical inquiries of academic interest; to study electricity is to analyse the working of the electric bell, the dynamo, the installation for wireless telegraphy. In other words, such topics as these, instead of being regarded as "applications" of scientific principles, to be taught if time and the demands of a public examination allow, are treated as the foci of interest from the study of which the pupil's knowledge of the scientific principles is to emerge.

Lastly, we must recognise that the "systematising motive" is one that has long been worked in our schools beyond its natural strength. Not infrequently teachers of some experience express the doubt whether boys and girls are capable of studying science before the age of fifteen or sixteen. Still more often university professors of science express the wish that their students might come to them with minds unperverted by the teaching of the schools. Whatever truth these pessimistic suggestions contain is probably accounted for by the failure of teachers to mould their instruction in conformity with the natural development of children's minds. The young man (or woman) who teaches science in schools from the point of view of the university often achieves with the best intentions a disastrous amount of harm. The mischief will not be prevented until it is universally recognised that the logical theory of a science should be not the *terminus a quo* of instruction, but the *terminus ad quem.*

Experimental and Descriptive Teaching.

Unique Value of Laboratory Work.—The primary value of laboratory work in schools is that it brings the pupil into direct contact with reality through his own senses and his own manipulation. In this way only can he learn to see things in their right proportions, to distinguish the essentials of an experiment from the non-essentials, and obtain a firm grasp of a scientific subject. Reading about an experiment, or even seeing an experiment performed, cannot give that security of knowledge which practical contact affords.

Experience shows that when scientific knowledge has been secured by practical work it becomes part of the permanent mental equipment of the pupil. The laboratory is, further, the one place where the pupil learns to acquire first-hand evidence, and to distinguish between that and information obtained verbally or by reading; for this reason also it alone fulfils an essential function in an educational course.

It is possible to use scientific method in the study of history, languages, and other literary subjects, but applied in this way the method can never be accepted as providing the same means of training as laboratory experiment.

Distinction between Manual Training and Experiment.—Although the principle of "learning by doing" is followed also in courses of manual instruction in which each pupil is impressed with the necessity of relying upon himself, of arranging and carrying out his work in an orderly manner, and of interpreting instructions accurately, and though other advantages may be justly claimed for such work, yet there is always a decided difference between the best scheme of workshop exercises and the experimental work of a rightly arranged experimental course. In the laboratory the development of dexterity and skill is only a secondary consideration, and the attention is fastened on the answer given by Nature to the question put to it: on the method to be adopted for eliciting the

answer, on its significance when obtained, and on the degree of accuracy with which it can be credited.

Preliminary Work to Systematic Instruction in Science.—It is because of the demand thus made on the reasoning powers that in 1910 a Joint Committee of the Mathematical Association and the Association of Public-School Science Masters expressed the decided opinion that systematic work in science should not be taken at too early a stage; laying down that "it is undesirable that either formal physics or chemistry be taught in preparatory schools," and that "questions should not be set in formal physics or chemistry at the entrance or entrance scholarship examinations to the public schools." The same committee, however, recommended that instruction which could be taken at an early stage in elementary practical measurements of length, area, volume, mass, and density should be given by the mathematical staff and not by the science staff. Such work can be done in an ordinary classroom with the simplest apparatus, and is thus more easily co-ordinated with the mathematical lessons than when carried on in a room specially devoted to it. The course of measurements, including the use of simple balances, need very seldom exceed twenty hours of practical work; and there can be no doubt that it is of the highest value in giving actuality to the mathematical teaching. Unfortunately, mathematical teachers have often been found to have little sympathy with these practical methods of illustration.

Introductory work in science, whether in preparatory schools or in the lower forms of State-aided secondary schools, should consist of such elementary practical measurements as are referred to above, and of a course intended to interest pupils in natural knowledge and to encourage observations of animal and plant life, earth and sky, and of everyday phenomena manifested in them. Such observations provide material for cultivating the art of expression, and with suitable reading or descriptive lessons will create and foster attention to many aspects of Nature.

Laboratory Methods and Scope.—In laboratory courses two methods of instruction may be distinguished—the subject-method and the problem-method—one or both of which may be followed, or, more often, a combination of the two. The subject-method may be described as a system of impressing fundamental properties and principles upon the minds of pupils by means of a graduated course of experimental exercises. The pupils usually work independently or in pairs, but in some schools the same exercises are performed by a whole class simultaneously as a form of drill, in which case they tend to become of the type of cookery-book recipes rather than that of scientific experiment.

The problem-method aims at suggesting a motive and purpose for every experiment, and thus of creating the spirit of experimental scientific inquiry. It consists in facing a problem, and by means of experiment endeavouring to solve it and related questions which arise during the work. The intention is not, as is sometimes supposed, to make pupils discover for themselves laws and principles previously unknown to them, though to some extent this can be done, but rather to provide a continuous thread of reasoning for the practical work and a definite purpose for whatever is undertaken. It is obvious that this method demands much more intensive work on the part of the teacher than is required when a prescribed course of exercises is followed; and on this account varying opinions are held as to its practicability and value. What is wanted for the teacher is a laboratory which he has freedom to use exactly when and for whom the teaching requires it, and independently of syllabuses prescribed by external authorities, whether the subject-method with a definite laboratory course is being followed, or the ancillary method in which the experiment to be undertaken by any pupil may arise from his own demand, or be assigned to him to clear up some observed misapprehension, or as a challenge to test his knowledge of what he has been taught and his resourcefulness, or simply to give the final security of personal practical experience, as already mentioned.

The field which can be surveyed practically in any school course of laboratory work which forms part of a general education is necessarily limited in scope even when the subject-method is followed, and is more so when the object of the work is to encourage the natural spirit of inquiry, and thus to create a perception of the means by which new scientific knowledge is gained. Increased attention to laboratory exercises has, indeed, in recent years often been associated with a very restricted acquaintance with the world of science. The tendency has been to make all the teaching a matter of measurement, to the neglect of the human aspects of the pursuit of natural knowledge. The teaching is, in fact, inclined to be narrow and special rather than broad and catholic. Experimental work should bring appreciation of the precision and methods of scientific inquiry, but, in addition to this instruction, an attempt should be made to cultivate interest in achievements of research outside the school walls.

While, therefore, prime importance must be attached to adequate provision for laboratory work undertaken with the view of imparting a knowledge of experimental methods of inquiry, it is essential that there should also be instruction in the broad principles and results of scientific work which cannot be brought within the limits of a laboratory course. Every pupil should not only receive training in observational and experimental work, but should also be given a view of natural knowledge as a whole. The object should be to evoke interest rather than to impart facts or data of science prescribed by an examination syllabus, or even to systematise their rediscovery. There should be no specialisation before the stage of matriculation has been reached, and whatever instruction is given should be from the point of view of general education.

Human Aspects of Science.—Assuming that laboratory work is commenced at a suitable stage, the question arises as to the best means of presenting the broad view of scientific facts and principles desirable in a modern liberal education. It should not be possible for any pupil to complete a course at any secondary school without a knowledge not only of experimental methods, but also of the meaning of common natural phenomena. Much of this knowledge can be given, and is being given to an increasing extent, in connection with

the teaching of geography; but in any case descriptive lessons are required in which the aim should be to impart broad ideas, and promote interest in Nature, rather than to train in practical methods applied to a limited field.

It is desirable also, by means of general lectures, discussions, or reading, to introduce into the teaching some account of the main achievements of science and of the methods by which they have been attained. Science must not be considered merely as a burden of material fact and precise principle which needs a special type of mind to bear it. There should be more of the spirit, and less of the valley of dry bones, if science is to be of living interest, either during school life or afterwards. Everyone should be given the opportunity of knowing something of the lives and work of such men as Galileo and Newton, Faraday and Kelvin, Pasteur and Lister, Darwin and Mendel, and many other pioneers of science. One way of doing this is by lessons on the history of science, biographies of discoverers, with studies of their successes and failures, and outlines of the main road along which natural knowledge has advanced. It would be far better, from the point of view of general education, to introduce courses of this kind, intended to direct attention and stimulate interest in scientific greatness and its relation to modern life, than to limit the teaching to dehumanised material of physics and chemistry, which leaves but little impression upon the minds of boys if seen only "in disconnection, dull and spiritless."

Under existing conditions, which are largely controlled by prescribed syllabuses and external examinations, there is little opportunity for teachers to direct attention to the useful applications of science on one hand, or on the other to awaken interest in the solution of the mysteries which surround us, though this could be done incidentally in connection with lectures or practical work if the present pressure were removed.

History and biography enable a comprehensive view of science to be constructed which cannot be obtained by laboratory work. They supply a solvent of that artificial barrier between literary studies and science which a school time-table usually sets up. In the study of hydrostatics, heat, current electricity, optics, and inorganic chemistry, the attention which has been given to laboratory work has succeeded in developing the powers of doing and describing. The weak points have been insufficient attention to the broader aspects and to scientific discovery and invention as human achievements, and failure to connect school work with the big applications of science by which mankind is benefiting. The study of optics is seldom pursued to a useful point, and in the teaching of mechanics there are more failures than in other science subjects. The time-table is particularly overcrowded during the last two years in the State-aided secondary schools, the work is over-compressed, and the philosophical aspects cannot, therefore, be presented effectively. The extension of the normal leaving age to seventeen years would have a valuable effect in raising the potential standard of scientific knowledge, and in spreading intelligent appreciation of science throughout the country.

At present, as instruction in science proceeds in the school, there is a tendency for it to become detached from the facts and affairs of life, by which alone stimulus and interest can be secured. It is important that every opportunity should be taken to counteract this tendency by descriptive lessons in which everyday phenomena are explained and the utility of discovery and invention is illustrated.

Domestic science and hygiene are frequently introduced into girls' schools with the object of effecting a link between science and the experience of everyday life. It must be pointed out, however, that such courses are incoherent and of little value unless science or domesticity is the definite objective. If the scientific aim predominates, the course can be made to give a good training in elementary experimental science and should afford a useful background to the later practical study of domestic arts. If domesticity is dominant, the work cannot be accepted as an effective substitute for a proper science course.

Summary.—The observational work by which the study of science should begin opens the eyes of the pupils and may be used to train them in the correct expression of thought and of accurate description. The practical measurements in the classroom have for their object the fixing of ideas met with in the mathematical teaching. Every pupil should undergo a course of training in experimental scientific inquiry as a part of his general education up to a certain stage, after which the laboratory work may become specialised and be used to supply facts which may be a basis for more advanced work or to prepare pupils for scientific or industrial careers.

At suitable stages, when pupils are capable of taking intelligent interest in the knowledge presented, there should be courses of descriptive lessons and reading broad enough to appeal to all minds and to give a general view of natural facts and principles not limited to the range of any laboratory course or detailed lecture instruction, and differing from them by being extensive instead of intensive.

Finally, the aims of the teaching of science may be stated to be:—(1) To train the powers of accurate observation of natural facts and phenomena and of clear description of what is observed; (2) to impart a knowledge of the method of experimental inquiry which distinguishes modern science from the philosophy of earlier times, and by which advance is secured; (3) to provide a broad basis of fact as to man's environment and his relation to it; (4) to give an acquaintance with scientific words and ideas now common in progressive life and thought.

The Poetry Review. February, 1918. 68 pp. (E. Macdonald.) 1s.—The *Review* continues its good work in promoting the speaking of verse. It seems to have extended its area, and some of the schools are being drawn in. So long as a high standard and one sufficiently removed from the stage is maintained, nothing but good can come of the effort. There are in this issue a few short critical articles and one really notable poem, by Norah Richardson, called "Road to Tyburn, 1750."

ITEMS OF INTEREST.

GENERAL.

Mr. Fisher's Education Bill (No. 2) was read a second time in the House of Commons on March 18th. Mr. Peto's motion for the rejection of the Bill, on the ground that the present Parliament had no mandate to deal with the question, and that the Bill would abolish parental authority over children up to the age of eighteen, was negatived without a division. The second-reading debate indicated several directions in which there is likely to be much discussion in Committee, but on the whole the outlook is hopeful so far as the passage into law of the chief provisions of the Bill is concerned. As Mr. Fisher said in his speech during the debate, if the Bill passes into law, the whole spirit and outlook of our elementary schools will be changed for the better. The Bill asserts the principle of the rights of youth. Its object is to provide the greatest possible number of outlets for talents of all descriptions, and education authorities will be compelled to provide secondary education for all children who are fit to receive it. The essential proposals of the Bill involve an eventual expenditure from rates and taxes of about £9,000,000; and if nursery schools are established, another £900,000 will be required.

The Board of Education's Circular 1,032, dated February 28th, 1918, announces a further "combing out" of teachers, educational officials, and college students. Under Circular 983, which is now superseded, such persons might, within certain age limits, claim protection from the Board of Education, provided they were placed in a medical category below B1. The new order provides that those teachers in public educational institutions and those educational officials who had not attained the age of twenty-five on February 25th, 1917, and all full-time students, will, if on their last medical examination they were classified in categories B1 or C1 (or in Grade II.), be called to the colours, or, if classified in lower categories, will be called upon to present themselves for medical re-examination, and, if they are then classified in Grade II., will be called to the colours. The usual right of appeal to a local tribunal will be allowed. The effect of the changes is that the only persons who can in future receive protection are: (1) full-time students classified in Grade III., and (2) teachers and educational officials who are classified in categories B2, B3, C2, or C3 (or Grade III.), or, if classified in categories B1 or C1 (or Grade II.), had attained the age of twenty-five on February 25th, 1917.

The Board of Education announces that the following examinations have been recognised for the calendar years 1918 and 1919 as approved examinations, under their scheme for the better organisation of examinations in secondary schools:—

As First Examinations:—(1) The School Certificate Examination of the Oxford and Cambridge Schools Examination Board; (2) the Senior Local Examination of the Oxford Delegacy for Local Examinations; (3) the Senior Local Examination of the Cambridge Local Examinations and Lectures Syndicate; (4) the School Certificate Examination of the University of Bristol; (5) the First School Certificate Examination of the University of Durham; (6) the General School Examination of the University of London; (7) the School Certificate Examination of the Northern Universities Joint Matriculation Board.

As Second Examinations:—(8) The Higher Certificate Examination of the Oxford and Cambridge Schools Examination Board; (9) The Higher School Certificate Examination of the Oxford Delegacy for Local Examinations; (10) the Higher School Certificate Examination of the Cambridge Local Examinations and Lectures Syndicate; (11) the Higher School Certificate Examination of the University of Bristol (*a*); (12) the Higher Certificate Examination of the University of Durham; (13) the Higher School Certificate Examination of the University of London (*a*); (14) the Higher Certificate Examination of the Northern Universities Joint Matriculation Board. The examinations marked (*a*) will be held for the first time in 1919.

The Board will accordingly pay to each school on the grant list an additional grant not exceeding £2 on each pupil entered for any of the above-named examinations held during the years 1918 and 1919.

For the past five years Cambridge has been considering the alteration of the entrance examination to the University, and all secondary-school masters will read with interest the report just published by the Syndicate, which has been inquiring into the matter, for it is a question of vital concern to them. On the whole, they ought to be well pleased with the proposed changes; the examination is to be brought into line with the newly constituted school certificate examinations, and exemption from it is to be granted on the basis of such certificates. Greek is no longer to be a compulsory subject, and thus that nightmare of science boys is at last to be done away with. Such a reform has been long overdue. For ourselves we never could understand the attitude of those classicists who opposed the "abolition of compulsory Greek" on the ground that it would mean the decline of Greek studies at the universities. Both the members of the present Syndicate and those responsible for a previous report last year have been more enlightened; the latest report quotes with approval from the earlier one: "The Syndicate attach a high value to the study of Greek in the general system of secondary education, and earnestly desire that it shall continue as a medium of intellectual development, but they cannot recommend that Greek should continue to be a compulsory subject in the Previous Examination." The reconstituted examination is to have three parts (which may be taken separately):—(1) Languages—*i.e.* Latin + another; (2) mathematics (two papers) and natural science (four papers), of which a candidate must take one of the mathematical papers and two of the others; (3) English subjects. It will be noted as a sign of the times that science bulks largely, a result, as the report says, of "views now generally held on the importance of natural science as a part of a liberal education." The conditions for exemptions (by school certificates) seem eminently fair and have been carefully drawn up.

A very important report was published in the *Cambridge University Reporter* for March 5th from the Special Board for Classics which has been considering

the reorganisation of both parts of the Classical Tripos. This is not a subject which immediately concerns secondary-school masters in the routine of their daily work; but it is of paramount importance to all such who can look beyond the classroom, and have a care for the advanced education for which it is their business to prepare their pupils. Details will not concern them, but the spirit of the proposed changes does; and we are glad to be able to say that is wide and humane. The reformers "desire to encourage the wide and accurate reading of classical literature, and at the same time to ensure, so far as possible, that the authors shall be read with literary appreciation, with knowledge of their subject-matter, and with some reference to the bearing of their contents on modern thought." Hence an added importance is given to "comment" or "translation with comment" in the papers in part i. (which is no longer to qualify for a degree, and is to be taken not later than the end of the second year of residence, and not earlier than the end of the first year). Alternative papers may be taken in lieu of verse composition, though a lower *maximum* of marks is allotted to them, and this is perhaps as it should be—we cannot all be poets, but we recognise the gift as *θείόν τι* ! Part ii. (the degree examination) is to be the real classical examination—like *Greats* at Oxford—and is to include, as it should, a *viva voce* examination.

The Board of Education has made preliminary arrangements for short courses for teachers in secondary schools to be held next August as follows:—*English*, at Cambridge (Women's Training College) and Oxford (St. Hugh's); *History*, at Eton College and a centre in the North of England; *Geography*, at Aberystwyth (University College of Wales); *French*, at London (Bedford College) and Durham; *Latin*, at a centre to be determined later; *Mathematics*, at London and a centre in the North; *Botany*, at Leeds; *Voice Training*, at Bristol. Details of the various courses will be circulated to all secondary schools recognised by the Board, probably before the end of April, and directions as to the manner of application for admission will be given. It is possible that one or two additional courses may be arranged.

The Salaries Report of the London Education Committee, to which we referred in our last issue, has been subjected to very severe criticism during the intervening weeks, and has in consequence been sent back to the committee by the Council. The scale proposed, regarded simply as a scale, is not seriously objected to, except in so far as it accentuates, at a time when women are doing signal service for education, the existing differences between the pay of men and of women. The fact of such differences is, of course, a very large question, fraught with social issues that go far beyond the controversies of the moment. But what all teachers alike complain of is that they are offered a *future* benefit to meet a *present* need. What is the use, they ask, of telling a man, whose salary has only three-fifths of the purchasing power that it had before the war, that he shall get a larger salary ten or fifteen years hence than he expected to get? The commutation of a war bonus for a future increment does not help him. Then take the case of a woman assistant. The substitution of a £7 for a £4 increment looks excellent, especially when one is told that three increments, amounting to £21, are to be added on April 1st. The other side of the story is that she gives up a war bonus of £20 16*s*., fixed by an impartial arbitrator, after careful consideration of existing conditions; so that on the whole she stands to gain the princely sum of 4*s*. per annum by the committee's scheme. No wonder she rebels, and no wonder teachers are asking what was the real object of the "Fisher grant."

Pamphlet literature connected with the Education Bill is naturally rather abundant just now. We are glad to see that the Oxford Press has issued a shilling reprint of several of Mr. Fisher's speeches, beginning with his memorable utterances in Parliament in April and August last, and ending with his recent address to the Training College Association. Mr. Fisher contributes a preface in which his proposals are eloquently defended. The Workers' Educational Association's pamphlet entitled "The Choice Before the Nation" is a timely text-book for those who, whether in or out of Parliament, wish to see the Bill strengthened in its passage through the anticipated Committee stage. The association's views regarding the age of exemption, the employment of children, secondary-school fees, the hours of continued education, the size of classes, compulsory medical treatment, the distribution of cost between the central and the local authorities, and the representation of teachers and workers on education committees, are well known by this time, and are concisely set forth in the pamphlet. A "Memorandum of the Results of an Inquiry made by Inspectors of the Board of Education in an Urban District," issued by H.M. Stationery Office at a penny, throws a lurid incidental light on the necessity for the employment clauses of the Bill. The extent to which children are employed at unseasonable hours in undesirable occupations is shockingly exemplified in this pamphlet. It is not the manufacturing industries only which, in the expressive language of the W.E.A., have "a vested interest in ignorance."

The annual general meeting of the Association of Technical Institutions was held on February 22nd and 23rd at the Drapers' Hall, London. Among the resolutions passed by the association those dealing with pensions and with salaries may be mentioned. In the case of pensions it was resolved: (*a*) That this association welcomes the announcement that the Government intends shortly to introduce legislation providing for a National Pension Scheme for Teachers in Secondary Schools and other institutions connected with higher education, to be based upon the recommendations of the Departmental Committee on the Superannuation of Teachers, issued in 1914. (*b*) That this association would like to see modifications in the scheme proposed in the following directions:—(i) A more adequate breakdown allowance, especially where a breakdown occurs in an early stage of the teacher's career; (ii) optional retirement, with a due proportion of the

Government pension payable at sixty-five: for men at sixty or after; and for women at fifty-five or after; the insurance benefits contemplated in the report of the Departmental Committee to mature in the case of women at fifty-five, and in the case of men at sixty; (iii) the superannuation for teachers for years of service prior to the passing of the proposed Act to be augmented from a fund created by the State setting aside an amount equivalent to what the State would have contributed, with interest, if the proposed scheme had been in existence for the period of the teacher's recorded service; (iv) the extension of the scheme to part-time teachers whose services are retained by payment of a definite annual salary for a portion of their time. The scheme to apply only to the proportion of the salary which is paid by the education authority.

THE resolutions dealing with salaries were as follows:—That this association urges in the interest of technical education (*a*) that scales of salary providing for adequate increases and reasonable prospects should be adopted for all fully qualified full-time teachers; (*b*) that the system shall be national, and that experience and length of service of a teacher under any one authority shall count equally if a teacher is transferred to another authority; (*c*) that the scales of salary for heads of departments should be such that a man of ability may feel that his future position, if he becomes a teacher in a technical institution, will compare favourably with what he might reasonably have expected to obtain in an industrial career; (*d*) that the Government be requested to make a grant to technical-school teachers as it has done in the case of primary and secondary-school teachers; (*e*) that in the interest of efficiency, education authorities should be able to vary the scales of salary to heads of departments in such a way that those departments or institutions which are doing the most important work and have the largest number of students may be able to command the services of the most able and distinguished men.

IN view of the many complaints made in the police courts and elsewhere regarding the prevailing lack of discipline among the younger classes of the community, the Duty and Discipline Movement, of 117 Victoria Street, Westminster, S.W.1, has started a Parents' Branch and a Children's Branch. Parents and children joining these new branches are not required to become full members of the Duty and Discipline Movement, but the parents will have to sign a card undertaking to carry out the principles of duty and discipline as regards their children, and children will sign a similar card promising to do their best to be dutiful and obedient and to do nothing that may do harm to their country. There is to be no subscription payable by parents or children joining the new branches, beyond the initial charge of one penny for the card. It is hoped by the movement that schoolmasters and schoolmistresses throughout the country will take up this new activity and act as local honorary secretaries.

ENGLISH teachers who wish to find French correspondents for themselves or their pupils may do so by applying to Miss Williams, the International Guild, 6 rue de la Sorbonne, Paris (Ve), who will take the necessary steps for putting them in connection with French schools. To save correspondence, teachers should state the grade of their school and the age and sex of their pupils.

THE annual report of University College, London, shows that in normal times the total number of students, day and evening, amounts to about 2,200, while the number last session was 1,240. This number included 121 members of H.M. Naval and Military Forces, for whom special courses were provided, and 159 who attended special vacation courses, so that the actual number of ordinary students was 960, of whom 547 were women. The normal fee revenue amounts to between £29,000 and £30,000 a year, but the fee revenue last year was only £14,000. Economies of every kind have been introduced, and all expenditure possible has been deferred. It is anticipated that, unless further help from the Treasury is forthcoming, there will be a deficit at the end of the current session of nearly £9,000 on the college establishment account. While the ordinary activities of the college have been maintained to meet the needs of the students actually in attendance, all available energies have been directed towards war purposes, of which the report gives a short account, but obviously details must be held over until the end of the war. Among the developments of the year may be noted the admission of women to the faculty of medical sciences, the reorganisation of the department of Italian, the institution of a department of Scandinavian studies, and a movement for the institution of a department of Dutch studies. The *pro patria* list includes about 2,500 names of past and present members of the college who are taking an active part in one or other of the Services connected with the war. Of these no fewer than 195 have already fallen.

THE Manchester School of Technology has recognised that many of its undergraduates, after completing their course of training by adding practical works experience to academic studies, will, before long, occupy positions as managers. However versed a man may be in technical knowledge, and whatever acumen for research he may possess, he is not necessarily qualified for a managerial position. Short courses of lectures on management, on costing, and on economics have therefore formed part of the university courses taken by candidates for the degree of B.Sc.Tech., whether in engineering, applied chemistry, or textile technology. The science and practice of works management ought to be studied by the works manager of the future as an essential element of his university training; and he should be given the amplest opportunities of acquainting himself with this new science as it continues to develop and to be practised in the industries of this country. With this end in view a group of large firms engaged in the principal industries of the Manchester district have offered to the governing body of the School of Technology the sum of £3,000, spread over a period of five years, towards the cost of establishing a new department of industrial management. It is proposed that a lecturer shall be appointed for this period at a salary of £600 per annum to

conduct research in the subject of industrial management, to organise a new department, to lecture to members of the University and to the public, and to assist industrial concerns in the solution of management problems. A number of managers, directors, scientific experts, and others who have had special experience or are responsible for important innovations will be invited to deliver public lectures to encourage enterprise and experiment in matters connected with management. The suggestion marks a breach with the past secretive tendency of private business—concealing all discoveries—and adopts instead the practice of the man of science of making known.

The Simplified Spelling Society directs our attention to the fact that more than 54 per cent. of the 826 universities, colleges, and normal schools enumerated in the "Educational Directory," issued by the U.S. Bureau of Education, and seven institutions not named permit students to use simplified spellings. The number of institutions using simplified spellings in official publications and correspondence has increased from 146 to 172 in the last twelve months. Only twenty-two were recorded three years ago. Marked progress has been made by newspapers and periodicals using at least twelve simpler spellings or the simpler alternative dictionary spellings.

Mr. Robert Peacock, Chief Constable of Manchester, in an article on "Juvenile Delinquency" in the *Child* for March, reports an increase in the number of juvenile offenders since the outbreak of war. He distinguishes between two kinds of offenders, those who are merely mischievous and high-spirited and get into trouble owing to the lack of parental supervision and those who commit serious offences. Among the latter the boys work in organised bands and consider it an honour to have been before "the beak." Mr. Peacock urges that the kinema has come to stay, and that, therefore, educational and other authorities should arrange to give suitable exhibitions and thereby supplant the usual "pictures" frequented by the children. He suggests that the present juvenile courts fail because they do not treat children as children, and apply judicial procedure and language to immature, non-understanding delinquents; consequently, a specially selected body, consisting of clergymen, schoolmasters, local police officials, and social workers, should be established to try childish offenders.

An account of life on the *Mars*, one of the Home Office training ships, situated in the Tay, opposite Dundee, 300 yards from the Fife shore, is contained in the *Child* for February. The boys collect about 5 cwt. of vegetables and send them to the Grand Fleet in crates, which they themselves make. The boys receive a general training, and special attention is paid to manual work, and the author, Captain-Superintendent A. L. Scott, suggests that nautical continuation classes should be established in all the schools in the country in order that every stay-at-home man should know as much of sea matters as would enable him to appreciate the work of those who hold the narrow seas.

SCOTTISH.

The ordinances governing entrance to the Scottish universities have been under consideration for several years past, but it seemed impossible to arrive at any common agreement in regard to them. Last year provisions were submitted, by a majority vote, to the Privy Council for approval, but so much opposition was raised by teachers and others that the Privy Council refused to pass them, and remitted them back for further consideration. Representatives of the university courts then met Lord Haldane, chairman of the Universities Committee of the Privy Council, and after a series of meetings finally arrived at a concordat which, in the words of Prof. Burnet, "provides a charter of liberty both for universities and schools." The essential feature in the new agreement is that the universities and the Education Department will accept a pupil's school leaving certificate, "based on the observation of his teachers during a full course of studies," as a sufficient guarantee of a liberal education and of maturity for transference to a higher institution. The new revolution—for it is nothing else—has come almost without observation. At the very time when England is preparing to establish and endow a system of external examinations for her higher schools, Scotland sweeps externalism from her schools, and accepts the teachers' opinion as the determining factor in assessing the merits of pupils. Great responsibility is thus placed upon Scottish teachers, but there is no question of their failing to respond to it.

The Scottish School Boards Association, by seventy votes to fifty-seven, has decided to oppose the raising of the school age to fifteen, as proposed in the new Education Bill. It is surely a strange irony that the very body which might be expected to give wholehearted support to such a proposal has been the first to rush in and condemn it. It is safe to assume that the majority of these members will take good care that the education of their own children will extend beyond the modest limits suggested in the Bill. The only other voice that has been raised against this clause is that of the farmers. They declare that the raising of the age will spell ruin to farming. But they have said that of every proposal for reform from time immemorial. They have cried "Wolf!" so often that now no one heeds them. It is high time farmers were giving up their *non possumus* attitude. They ought now to understand that no industry would gain more from intelligent, well-educated labour than farming, and that no industry would gain more from intelligent direction than farming.

An extraordinary situation has arisen in Ayr, where the local School Board, by six votes to three, has resolved to dismiss Mr. Alex Emslie, the rector of the Academy, and to pay his salary in full until June, in order that his dismissal may take place at once. The speeches made in moving and seconding the resolution resembled the preliminaries to an increase of salary rather than a dismissal. Mr. Emslie was a distinguished scholar, an exceptionally efficient teacher, and an able organiser, but——. "'But' is as a gaoler to bring forth some monstrous malefactor," the "male-

factor" in this case being apparently Mr. Emslie for his want of subserviency to the School Board. Mr. Emslie actually thought he knew better how to manage his school than the popularly elected members. He was overbearing, arrogant, autocratic, and did not "wait upon his 'masters' with bated breath and whispering humbleness." Therefore he must go. The teachers of Scotland have taken up the challenge thus thrown down, and are prepared to take the most extreme steps, including the calling out of all the teachers in Ayr, if the whole case is not submitted to arbitration.

The proposal in the new Education Bill to include voluntary schools in the national system proved more than anything else the sincerity and courage of its author, the Secretary for Scotland. He must have known that this was a prickly subject that had in the past injured many reputations and brought to naught many well-intentioned efforts. But having once satisfied himself that this provision was urgently necessary in the interests of the children in these schools, he has very clearly indicated his determination to be satisfied with nothing short of the full reform. At present something like one-seventh of the children of Scotland are being educated in voluntary schools under conditions which, to say the least, do not afford them their birthright of equal opportunity. The new Bill offers fair and reasonable terms for putting an end to these conditions, while at the same time having due regard to the rights of the parents to have a say in the religious upbringing of their children. It is to be hoped that no ancient prejudices and old-time battle cries will on this occasion be allowed to stand in the way of a successful issue.

A scheme of co-operation has just been completed between Edinburgh University and the Heriot-Watt College. This scheme is full of promise for the further development of both bodies, and for the advancement of technical study in the East of Scotland. The college is not to be merged in the University, but joint courses for degrees are established, and academic status is given to large portions of the college teaching. The Heriot Trust is to contribute £5,000 per annum towards the maintenance of the college, and £800 for bursaries, while the University will contribute towards capital and current expenditure. A new governing body is to be constituted representative of the University, the Heriot Trust, the School Board, employers, and workmen.

The sixteenth annual report of the Carnegie Trust for the Universities has just been issued. The war has greatly affected its operations, as all the building schemes have had to be suspended. The research work, however, has been prosecuted vigorously, though mostly directed to problems arising from the war. During the year £5,500 has been expended on this department, and the trustees are satisfied that much national work of the highest value has been accomplished. The trustees fully recognise the financial losses suffered by the universities through the reduction of fees, and indicate that they will be prepared when their full extent is finally known to make material contributions to their liquidation. Repayment of fees by former beneficiaries of the trust has been made to the amount of £1,300 this year, a sum more than double that of any previous year except 1914–15.

IRISH.

Two events of the first importance for secondary education in Ireland have occurred during the past month. Both took place in the first week. The Lord Lieutenant expressed his approval of the rules framed by the Registration Council for a Register of Intermediate Teachers in Ireland, and the House of Commons, after an interesting debate, passed the new vote of £50,000 for intermediate education. These two steps, marking a distinct step forward in intermediate education, are closely connected. The new grant of £50,000 is to be distributed according to prescribed rules, one of which deals with the qualifications of the teachers employed in schools, and states that they must be recognised by the Intermediate Board. This may certainly be taken to mean that the teachers recognised will have to comply with the rules of the register. The register itself will now come into operation almost immediately, and before the summer is over no doubt most of the teachers in Irish intermediate schools who desire to do so will become registered. Registration is made fairly easy for existing teachers, the rules becoming more stringent and fixing a high professional standard when the probationary period has elapsed.

In the debate on the £50,000 grant, the case of the lay teacher was fully represented, and the Government expressed the hope that he would be greatly benefited by it. The lay teacher, disappointed in many instances by what he has received from the Birrell grant, is not at all satisfied that the rules for the new grant will secure him his due share in it, and it is by no means agreed in what way the new rules will really work out. The Government, however, states that they are only provisional, and may be amended from time to time. Two points of importance—they may almost be called concessions—emerged during the debate. In the first place, although everyone deprecated measuring grants for Irish education by equivalent grants based upon the proportion of 9 to 80 of moneys granted by the Treasury to English education, and it was generally admitted that Irish education should receive what was due to it by its own requirements and not according to the requirements of England and Wales, yet it was agreed that, so long as the present arrangement holds, if the Treasury grants to English secondary education should increase (as doubtless they will), then the Irish equivalent grant should not remain fixed at £50,000, but should increase proportionately. This is a concession of importance. It has long been claimed in Ireland, but never previously admitted by the Treasury, and there has resulted a sense of injustice.

In the second place the Government has promised that a committee shall be appointed at once to inquire into the question of teachers' salaries in Irish intermediate schools. A similar committee has been promised for primary education, and there was some inclination to refer the interests of both classes of

teachers to the one committee. Fortunately, it was decided not to do so, but to have a special committee appointed *ad hoc* for intermediate teachers, and it was thought that it would be able to reach a decision in a short time. Such a committee is absolutely essential in Ireland, all the more when the whole question of salaries is being reconsidered everywhere in England. It is here that registration will give intermediate teachers a strong lever. Registration will be a failure unless it can secure a steady influx of well-qualified men and women prepared to devote their lives to education; and, however altruistic teachers may be, the labourer is worthy of his hire, and must be attracted by the hope of a reasonable salary. Moreover, the interests of the country require that its secondary education should be raised to the highest possible plane, and this can be secured only by attracting to it the best and most cultured brains. The expert opinion of teachers will then be able to assert its claim to consideration in discussing and working out all kinds of problems in education.

One of these problems was the subject of the address given by Prof. McClelland at the annual meeting of the Central Association of Irish Schoolmistresses in Alexandra College, Dublin, on March 1st. He spoke on "The Place of Science in Education," and although an interesting discussion took place, it is noteworthy that only one of the speakers was engaged in school teaching, and that one, although a headmaster and sympathetic with the needs of science, was not a teacher of science. The claims of specialists to have their subjects taught in school can, in the long run, be satisfactorily determined, if not solely by teachers, yet only in connection with their expert knowledge.

The Classical Association of Ireland added an extra meeting to its ordinary series of four winter lectures, when on March 13th a lecture was read which had been sent by Prof. B. P. Grenfell, of Queen's College, Oxford, on "New Papyri from Oxyrhynchus."

The Department has issued its programme of summer courses of instruction for teachers for the present year. The number and variety of the courses are a good index of the nature and extent of its work, which is having such a widespread and beneficial influence on the life of the country, and will be so urgently required after the war. The proposed courses are seventeen in all, and are as follows:—(1) Chemistry of engineering materials; (2) economics of grocery commodities; (3) commercial arithmetic and economic geography; (4) furniture design; (5) cabinet-making; (6) painted furniture-making; (7) technology for teachers of introductory English and mathematics in technical schools; (8) lettering and illumination; (9) ornamental leather work; (10) advanced housewifery; (11) advanced dressmaking; (12) hygiene and sick nursing; (13) experimental science; (14) drawing; (15) manual training (woodwork); (16) domestic economy; and (17) rural science (including school gardening). Teachers wishing to participate in these courses should apply to the Department. All of them will be held in July except the last, which begins on August 6th.

WELSH.

The representation of the University of Wales under the new Reform Act, to give it its popular title, is arousing considerable interest, especially in view of the novelty of the voting qualification, which is by no means universally understood as yet. All graduates who have attained the age of twenty-one if men, or of thirty if women, are entitled to a vote, in addition to any other vote that they may have by right of residence in an ordinary—*i.e.* non-university—constituency. Membership of the Guild of Graduates is not necessary, but those who graduated before the passing of the Act are entitled to be registered as voters only on payment of a fee to be fixed by the University, and not to exceed £1. The University does not as yet appear to have decided on the amount, but it is difficult to see why any such charge should be made at all, and last year's graduate be made to pay for a privilege which this year's graduate receives free of expense.

In an address to the Old Students' Associations of the three constituent colleges, Principal Griffiths urged that a member should be selected on non-party grounds lest party politicians should be tempted to take away again the representation they had given. We may say more than this: surely the member should be chosen for his knowledge of all matters educational, from the elementary school to the university, and for his enthusiasm and power in the furthering of their claims. He should belong not merely to the university, but also to Welsh education, and teachers who are graduates should realise the opportunity and the responsibility that now fall to them.

The following gentlemen have been unofficially suggested as suitable candidates:—Sir Henry Jones, professor of philosophy in Glasgow University; Mr. R. Silyn Roberts, of the Welsh Appointments Board; Mr. Llewelyn Williams, K.C., M.P., Recorder of Cardiff; the Rev. F. W. Phillips, of Walton, Liverpool, a writer of verse, who has already contested the Gower constituency; Mr. I. Myrddin Evans, secretary to the Central Welsh Board; Mr. F. Llewellyn Jones, solicitor, of Mold, who purposes to stand as a Labour candidate, and has already served on the Court of the University and on that of Aberystwyth College; Sir John Morris Jones, who is regarded as the greatest living authority on Welsh literature; and Prof. Joseph Jones, a most persuasive speaker, who holds the chair of Greek Testament and literature in Brecon Memorial College. Which of these would be the best friend to Welsh education?

The appointment of a successor to Principal Griffiths has been deferred until after consideration of the report of the University Commission, which has just been published. If all the requirements with regard to the qualities of his successor that have appeared in the local papers are realised, Principal Griffiths may well feel in his retirement at Cambridge that he has left behind him a college to whose postal address might be appended the direction applied by the old Bangor worthy to the rival town of Carnarvon: "Ynagosi'rnefosnadnesaf."

SIR HENRY HADOW, principal of Armstrong College, Newcastle, lecturing on "Music in the Life of the Community" at Cardiff University College, paid a warm tribute to the natural spring of musical appreciation, talent, and ability existing in the Principality, which he had not seen surpassed anywhere; at the same time he commented on the backwardness of Wales in instrumental music, and said that much had yet to be learnt in the direction of musical discretion, high ideals, and patient effort.

SOUTH WALES is likely to give practical effect to the Government suggestions as to the co-operation of domestic subjects teachers in the food campaign. A short course for teachers was recently held at Tonypandy, and Swansea Education Committee has decided to look favourably on any request for the help of its teachers. Teachers have already done a large amount of work in connection with the issue of food cards.

THE list of presidents at the National Eisteddfod to be held in August at Neath has been issued. Mr. Lloyd George will preside on the third day, and be present at the chairing of the bard; he is also to be present at the singing festival, which concludes the Eisteddfod, on the fourth day. Other presidents will be Mr. Herbert Lewis, Sir Henry Jones, Lord Treowen, even yet better known as Sir Ivor Herbert, Sir O. M. Edwards, and Mr. T. J. Williams. Mr. Alderman Hopkin Morgan, the mayor of the town, will preside at the Welsh concert, Mr. J. E. Moore-Gwyn at the "Dream of Gerontius," Mr. Alderman Ben Jones, Mayor of Swansea, at the miscellaneous concert, and Mr. Alderman H. P. Charles, chairman of the General Committee of the Eisteddfod, at the "Messiah."

MR. J. E. EDMUNDS, the teacher whose exclusion from the Library Committee at Cardiff was attributed to his activities as secretary of the Trades and Labour Council, has been nominated by the local branch of the Independent Labour Party to contest one of the three new seats in Parliament assigned to the city.

MEDIEVAL ENGLAND.

Social Life in Britain from the Conquest to the Reformation. Compiled by G. G. Coulton. xvi+540 pp. (Cambridge University Press.) 15*s.* net.

THOSE who have revelled in that marvellous store of good things which Mr. G. G. Coulton has culled from the literature of the Middle Ages and collected in the pages of his "Mediæval Garner" will turn with keen anticipation to this new volume, wherein he does for England in particular that which in the earlier work he did for Christendom in general. They will not be disappointed. Here in this book on "Social Life in Britain" they will find 290 extracts from original sources which reveal in vivid outline and adequate detail every important aspect of the bygone world of the later Middle Ages wherein our ancestors moved and had their being. There could be no more delightful or satisfactory a way of penetrating to the heart of those days so different from our own, and of attaining to an understanding of those modes of thought so alien from those of the present day. As we read, we realise—as no amount of descriptive writing could enable us to realise—that the men of the Middle Ages were in spirit children, immature, credulous, cruel, immoral, and yet immeasurably delightful and with infinite possibilities of development before them. The essays taken from Trevisa's "Bartholomew" on the cat (p. 371) and the crocodile (p. 531) are just such as a precocious babe might write to-day. The latter reminds one of the German Emperor mourning over the fate of Louvain. "If the cocodril findeth a man by the brim of the water or by the cliffe, he slayeth hym if he may, and then he wepeth upon him, and swoloweth hym at the laste."

The excerpts which Mr. Coulton has brought together are obviously the fruit of wide reading in medieval authors and of long study of vanished social conditions. They are grouped under fifteen main headings. First, the land and folk are described. We learn, for example, from a Venetian envoy of A.D. 1500 that "the English are great lovers of themselves and of everything belonging to them," also that "they think that there are no other men than themselves and no other world but England." The second section, dealing with birth and nurture, gives a most interesting glimpse of the educational ideas and scholastic systems current in the days immediately preceding the Renaissance. They were hard days, both for teachers and taught. The teachers were despised and underpaid. The taught were bored by incessant Latin grammar and terrorised by remorseless punishments. One particularly vicious feature of medieval schools and universities was the espionage and tale-telling which were inculcated by the authorities as duties. The third section relates the toils and woes of authors, scribes, and readers in those times when printing was unknown.

The next portion of the book—properly a long one—deals with the Church and Churchmen. Never had religion so much power as it had during the Middle Ages. The bull *Unam Sanctam* (p. 190) reveals papal claims at their highest point. The Church, however, in the fourteenth century, was decadent, and many extracts here given bear witness to that fact. Perhaps, indeed, Mr. Coulton's selection over-emphasises the corruption of pre-Reformation Christendom; for even in those dark days there was an elect of children of the Light. Nevertheless, such a story as that of the fight which Archbishop Boniface of Canterbury had with the Sub-Prior of St. Bartholomew (p. 211) reveals an unfathomable depth of degradation. Later sections, of progressively diminishing length, deal with Court life, camp life, manorial organisation, municipal development, domestic manners, sports and pastimes, travel, art, science, witchcraft, etc. Taken altogether, they provide an invaluable body of first-hand material on which a secure judgment of the later Middle Ages can be based. F. J. C. HEARNSHAW.

EDUCATION FOR ENGINEERING.

The Education of Engineers. By Herbert G. Taylor. vii+64 pp. (Bell.) 2*s.* net.

THE main burden of this little book, as we are told in the preface, is to show that engineers are not educated in the sense that education means that higher perception which enables a man to gauge his own power, and constrains him to direct that power to the ultimate benefit of his fellows. Three of the five chapters deal with such schemes of education as are in vogue in this country, and the author asserts that they show that the university schemes count for naught. "The engineering departments of our universities are completely severed

from the live and active engineering of everyday life; co-operation between the two has never taken place; the universities are harbouring a corpse, which stands between the universities and the affairs of our common life, over which they have so little control." It may be mentioned here that the author is a lecturer in the Engineering Department of King's College, University of London, and that he will probably find a good many people, both in colleges and in works, who do not agree with the above sweeping statements, and will ascribe them to the author's lack of full knowledge of what has been and is now being done in various parts of the country.

We note with interest that the author considers that "the best education for an engineer is found in the natural and instructive pursuit of manual toil accompanied by study at a technical school." This is the case of the young man who serves an apprenticeship and attends evening courses, or part-time day courses on two or three afternoons each week. Mr. Taylor will find many who agree with him on this matter, and he might have added that one of the most valuable points in the London University scheme is that its engineering degrees are open to "internal" evening students. Those students who obtain degrees in this way spend a much longer time in pursuing their courses of study, and are men of wide practical experience when their degrees are attained. They are thus eminently worthy to be designated engineers. The total number of students so qualifying has been comparatively small up to the present, but the quality has been admirable. With a saner type of matriculation examination, many more students would have graduated in this way. The rearrangement of the various school-leaving examinations should add considerably to the ranks of London University evening students, unless the University is ill-advised enough to suppress this part of its activities.

We have read the book with interest; it will probably provoke some discussion, but we lay the volume down with the feeling that the author has damaged his case by exaggeration, and that it would have been well to have postponed its production until his experience had become somewhat wider.

PHYSICS AND ITS APPLICATIONS.

A Text Book of Physics for the Use of Students of Science and Engineering. By J. Duncan and S. G. Starling. xxxiii+1081 pp. (Macmillan.) 15*s*. Also issued in parts: *Dynamics*, 5*s*.; *Heat, Light, and Sound*, 6*s*.; *Magnetism and Electricity*, 4*s*.; *Heat*, 3*s*. 6*d*.; *Light and Sound*, 3*s*. 6*d*.

Although the number of text-books dealing with the general principles of physics is already large, there is room for an up-to-date work such as that given us by Messrs. Duncan and Starling. The combination of the practical engineer and the experienced teacher has proved, in this case, particularly fortunate. Mr. J. Duncan is the author of several books dealing with applied mechanics and heat engines, whilst Mr. Starling has written a very useful text-book on electricity and magnetism. The result is that the present volume is neither purely theoretical on one hand, nor entirely utilitarian on the other. Although it is intended primarily for students, such as those preparing for an Intermediate examination, it may be recommended to the large and increasing class of persons who desire to become familiar with the main principles of physical science and with the applications of those principles in commerce and industry, and also in everyday life.

It is, we venture to think, a happy omen that such a book should be published in the course of the war, having regard to the extent that the country has suffered in the past for lack of scientific training, and to the absolute necessity for employing scientific methods in industry after the war is over. The authors are to be congratulated on the attempt they have made to "connect more intimately than has hitherto been usual the scientific aspects of physics with its modern practical applications." In the opinion of the present reviewer they have succeeded in a marked degree in thus combining the outlooks of the man of science and the engineer. For the teacher their success will prove specially helpful. Very few students in the early stages of their scientific work are interested in principles or pure theory. Their attention must be captured by some important practical application of the theory, or by the novelty of some experimental illustration. It is perhaps too much to say that every schoolboy is a potential engineer; but there must be very few boys who have not some inclination towards "things that work," and amongst these are many who may, with encouragement, seek to find out "how things work."

One feature of the book that requires special commendation is the stress laid on dynamical principles and their experimental treatment. The authors rightly emphasise the fact that the neglect of experimental work in mechanics makes it difficult for a student to secure a thorough and systematic knowledge of physical science. This neglect is very marked in most girls' schools, with the result that women students are severely handicapped when commencing a university course in medicine or in science.

Without detracting seriously from the great value of the text-book a few minor criticisms may be made. It is to be regretted that a short paragraph was not introduced into chap. xvi. dealing with the angular simple harmonic motion of a body oscillating about an axis. This is of more importance to the physicist than the conical pendulum to which three pages are devoted; it is, for example, required later (p. 789) in dealing with the vibration of a suspended magnet. On p. 71 the name of the Cambridge mathematician Atwood is given three times as Attwood. Linde's apparatus for liquefying air is described in detail, but the name of Hampson is never mentioned.

Each chapter is concluded with a number of exercises for the student, and answers have been supplied to the numerical questions. The work is illustrated in the most liberal way, and produced in the manner we have been led to expect from its publishers.

H. S. Allen.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Rapid Method of Simplified French Conversation. By V. F. Hibberd. viii+192 pp. (Pitman.) 2*s*. net. —A very concise "grammatical introduction" is prefixed; the rules are not always well expressed. The early lessons consist largely of questions and answers, such as any capable teacher uses in oral work. The exercises consist exclusively of questions. The subject-matter is confined to material objects in the classroom, which soon becomes monotonous. New words seem to be introduced in somewhat haphazard fashion. Later lessons contain continuous passages, but these also deal with strictly materialistic things. The treatment of grammatical features is by no means systematic. Misprints are far too common: thus, on p. 94, we find "blûlant," "gonttes"; on p. 95, "plait"; on p. 96, "rez du chaussée" and "vaiselle"; on p. 97, "vous avons"; on p. 98, "Le buffet se met-elle . . ."; on

p. 117, "hebdommadaire' occurs twice, and again on pp. 118, 119. Occasionally the French is doubtful (*e.g.* "J'ai des cartes postales dans les mains," "En quoi est votre journal?"); and the answers to the questions are not always obvious, *e.g.* "Quand faut-il dire un mensonge?" "Quelle est la différence entre la laideur et la beauté?" The answers supplied are sometimes a little surprising, *e.g.* "Que dites-vous d'un monsieur qui ne dit pas la vérité?" "Je dis qu'il est fou." On the whole, then, a perusal of this book has not left a favourable impression.

L'Anglais sans Peine. Par Lady Bell. 88 pp. (Hachette.)—The title suggests an English counterpart of the same author's "French without Tears." It is, however, something entirely different. Lady Bell has been struck by the varied meaning given to certain common verbs by the addition of adverbs (up, out, etc.). She has made up short connected narratives introducing a number of these, and the idiomatic French version on the opposite page explains their meaning to the French reader. Lady Bell has a fresh and pleasant manner, and no doubt some benefit can be derived from this slender book, by the English as well as by the French student. But the title is misleading.

Merkbuch of Everyday German Words and Phrases. By B. Readman. 108 pp. (Blackie.) 2*s.* 6*d.* net.—This book contains about twenty-five words or phrases with their English equivalents on each right-hand page, the opposite page being intended for entries by the student. Some sections of the vocabulary are well represented, others poorly or not at all, and there seem to be scarcely any adjectives. The "selections from German poets" consist of half a dozen poems. In a book like this it should surely be possible to eliminate misprints, yet we have found "von nenem," "im allem," "Aussicht" (for "Ansicht"), "Zuchhaus," "Erdberre," "Himberre," "erklimmern," etc. Words in "-in" are given plurals in "-inen," "Zange" is twice treated as a noun in the plural, "Hand" and "Bogensehne" are made masculine. If a book of this kind was wanted, it should have been compiled with more care and better judgment.

Classics.

The First Year of Greek. By J. T. Allen. 375+viii pp. (New York: The Macmillan Co.) 7*s.* 6*d.* net.—In this book the Greek professor of the University of California deals with the problem of the study of Greek in America, where it has come "during the past decade or so to be largely a college subject." There are at the present time about four thousand students each year in the United States who begin to learn Greek after entering college, and Prof. Allen states that the number is certain to increase. The majority do not continue the subject beyond two years, and many are content with but a single year. Clearly these college undergraduates require a different method from schoolboys. "The student must be given the opportunity of reading in their original form choice portions of Greek literature—the finest flower and revealing of the Greek mind. To this end all other subjects are, for the majority, subordinate." So this book offers as a solution to this problem one year's work based upon long experience, and it may be affirmed that the student who works through it will not only know the fundamentals, but also have gained an insight into the meaning to the world of the Greek language. The author does not tell us what knowledge, if any, such students are supposed to have of Latin, a thorough acquaintance with which would make possible a more rapid progress in Greek than is here contemplated, and would enable the learner to dispense with some of the elementary exercises and to hasten more rapidly to the reading of the easier Greek authors. The work consists of reading, exercises, and grammar, arranged for eighty lessons. Redundancies of accidence such as the dual are dispensed with, while the reading selections are proverbs from all sources, passages from the Gospels in Greek, from Euclid, and especially from Plato. Herodotus is used for additional exercises, but no use is made of Xenophon, or the orators, or the tragedians (except for a few apophthegms). To turn to details: λύω is used for the paradigm of the regular verb, but although its quantities are correctly marked in the grammar, the long ῡ is repeatedly left unmarked in other places. The same applies to ἔφῡ (p. 29), φῑ́ω (p. 47), κωλῡ́ω (pp. 52, 53), πᾶσᾶς (p. 63), λάθρᾱ (p. 73). The long ῡ in ψευδομαρτῡρέω (p. 83) is a mistake. The philological explanations are not altogether satisfactory. The genitive singular termination of the second declension ω (p. 233) is not explained. The explanations of the comparative forms (p. 245) require revision, and in classifying the present stems of the thematic verbs (p. 252) the contracted stems (-έω, -άω, -όω) are not mentioned. The augment in ἐώρων, ἀνέῳξα, and ἔᾱξα (p. 251) is also incorrectly explained. The Attic form of the pluperfect second singular was ἐλελύκης, not ἐλελύκεις (p. 263).

Cicero: Pro Lege Manilia. Edited by John R. King. xi+text+55 pp. of notes and vocabulary. (Clarendon Press.) 2*s.* 6*d.*—This is a handy little volume made up from Prof. Clark's Oxford text, and the introduction and notes from the editor's "Select Orations of Cicero," with the addition of a vocabulary compiled by Mr. C. E. Freeman. It is an excellent speech for schoolboys, which cannot be properly understood without a correct appreciation of the political position at Rome at the time. This is well given in the brief introduction, and the notes (whether on historical or grammatical points) are both concise and helpful. A class could not have a better exegesis than this upon the glory of the *nomen Romanum*, and we recommend all schoolmasters who like their boys to have a commentary to adopt this edition.

English.

The Old Country. Edited by Ernest Rhys. 320 pp. (Dent.) 3*s.* 6*d.*—This anthology is published for the Y.M.C.A.; it contains a preface by Sir Arthur Yapp, and it is understood that when the edition is sold the publishers will hand £1,000 to the funds of the Association of the Red Triangle. These facts prepare us for an unlikeness to most anthologies, and the main question is whether the soldier boys to whom, and for whom, it has no doubt been sent in great numbers will appreciate it. There seems to be no doubt on this head; the great writers are well represented, a good deal of modern work not yet available to the general public is included, and the Red Triangle (the Y.M.C.A.) is not alarmingly in evidence. The book is Imperial; but why was not Tagore represented by "The Trumpet," the finest Imperial battle-song that the war has produced? The illustrations are all redolent of this country, the Old Country, and we all know that the editor, even with hands somewhat tied, is skilled in anthologising. Our only trifling doubt is that, notwithstanding the dainty look of it all, the price may possibly prevent the public spirit of the publisher from achieving a laudable aim.

Longfellow Selections. Edited by E. A. Greening Lamborn. 80 pp. (Clarendon Press.) 1*s.*—Mr. Lamborn has already been thanked for other work

and now he puts his views into a preface. It is well to have chosen the poet Longfellow, whom, apparently, the critics have not entirely slain. Yet it is dangerous to hint that Longfellow preached, but Milton did not. Both preached, but in a different manner and to different audiences. Mr. Lamborn is a whole-hearted worshipper of form: will the schools accept this? The selection omits the best parts of "The Wayside Inn"; possibly they are still in copyright; but why not say so? The volume is pocketable, and will, we hope, be received in such a way that the editor may, from the stores of his enthusiasm, edit more.

Harold. By J. F. Waight. 127 pp. (Allen and Unwin.) 2*s*.—This is the third drama of Mr. Waight's trilogy. "Godwyne" was sympathetically noticed last year, and "Swegen," the second of the three, made its appearance earlier. In the present drama, which brings us to the Conquest, we still have the firm, direct writing, but there does not seem to be so much of the fire that was noticeable in "Godwyne." There are certainly fewer archaisms. The three will make excellent parallel readings to history.

Some Nursery Rhymes of Belgium, France, and Russia. By L. E. Walter and L. Broadwood. 42 pp. (Black.) 6*s*.—In this large and handsome book the Belgian songs are taken down from the lips of refugees, and a fighting artist has contributed pictures. There is a mass of material in almost every country, though we doubt if the collectors have here adhered strictly to the "nursery rhyme." It would have been well if the original versions had been printed with the English; sometimes the words are a bit heavy for the nursery. The illustrations to the French section are perhaps the best, but there is little to choose in the musical settings; they are all very satisfactory. But little ones must judge, and their rules of criticism are their own. There is a well-known Russian dodo called a Cossack lullaby, which the authors have attempted, but the refrain, which in the original forms the last line, is omitted. To an English ear it is so mysterious, and mystery counts in the nursery. Rolland's "Rimes et Jeux" might be used for additional matter in another edition.

History.

History: the Supreme Subject in the Instruction of the Young By F. J. Gould. 15 pp. (Watts.) 3*d*. net.—Mr. F. J. Gould, well known as an educational reformer and ethical teacher, has written a pamphlet on history as a subject of instruction which is important out of all proportion to its size. In fifteen pages he covers ground which, as he himself says, might well be utilised for the construction of a book, but he covers it in such lucid outline that the contents of the book can safely be left to be filled in by the imagination of the reader. Mr. Gould advocates a simplified and co-ordinated scheme of education in which history takes the central place. He shows how all the other school subjects—scientific, ethical, æsthetic, intellectual, practical—can be treated historically and brought within the scope of the scheme. He gives a detailed syllabus for the four periods of school life: (1) ages seven to nine; (2) ages nine to twelve; (3) ages twelve to fourteen; and—a supplementary period which he hopes will become normal for all grades of students—(4) ages fourteen to eighteen. The basis of the historical instruction in all grades is an outline, clarified and standardised, of the general history of humanity. This he would have the same for the children of all civilised countries. He would supplement it by a parallel course of national history, *i.e.* by "British history for British children, American for American, and so on." The pamphlet deserves very serious consideration on the part of progressive educationists.

An Admiral's Son and How He Founded Pennsylvania. By E. F. O'Brien. Pp. 176. *The Man who Chose Poverty.* By J. Dykes and C. Standing. Pp. 133. (Headley.) 2*s*. 6*d*. net each.—The anonymous heroes of these two books are, of course, William Penn and St. Francis of Assisi respectively. Their stories are here briefly told from the point of view of the Society of Friends. The writers do not pretend to have made any new discoveries, or to have engaged in original research; they aim merely at presenting a clear and ordered narrative of well-ascertained facts. They have succeeded in producing attractive sketches, and the publishers have issued them in an exceedingly pleasing form. Both volumes are well illustrated, but the illustrations are only fancy pictures. Those, however, which appear in the volume dealing with St. Francis are remarkable for their delicate beauty of drawing and colour. They are from the hand of Miss Daphne Allen.

The History Teacher's Magazine. September-December, 1917. (McKinley Publishing Co., Philadelphia, U.S.A.) 20 cents a copy.—The four parts of the *History Teacher's Magazine* now before us complete the eighth annual volume. Since America's entry into the war the magazine has contained a large number of important articles on matters connected with the causes and the issues of the great struggle. American writers constantly lift the conflict on to the ideal plane, and represent it as essentially a clash of oppugnant principles. This is well illustrated by an admirable discussion of "Democracy and War" in the December issue from the pen of Prof. J. G. Randall, of Roancke College. The November number describes the constitution and functions of a "National Board for Historical Service," which has been spontaneously and voluntarily organised by the leading American teachers of history since the entry of their country into the war. It is a very notable movement, and it shows that the Americans are alive to the importance of the sound historical instruction of the people.

Among the more normal topics of the magazine three may be singled out for special mention. In the September issue Prof. D C. Munro, in some useful "Suggestions upon Medieval History," emphasises the need that Byzantine history should receive its due meed of attention. In the October number Mr. Wuesthoff gives some interesting hints for "Blackboard Work in History Teaching," while in the November part Miss H. E. Purcell describes how she has pleasantly beguiled her pupils into "Learning History by Doing"—*i.e.* by making models of some of the scenes depicted in the text-book.

Now that America is playing so decisive a part in European politics this magazine becomes more and more valuable to European teachers of history, for it treats of an increasingly large number of themes in which they are concerned.

History: the Quarterly Journal of the Historical Association. Vol. ii., No. 8. January, 1918. (Macmillan.) 1*s*. net.—The new issue of *History* contains contributions various and valuable. Prof. C. H. Firth concludes his interesting and important study of the "Expulsion of the Long Parliament." Mr. Previté-Orton provides a most original and illuminating account of an Elizabethan prophecy, based on the legends of Merlin, that predicted woes and calamities none of which were realised by events. "A Symposium on History Examinations," by ten public-school

masters and five Oxford and Cambridge examiners, affords much instruction concerning current ideas of the teaching of history. The series of "Historical Revisions" which the magazine is issuing include this time:—(1) Rome's foreign policy and trade interests, and (2) The meaning of "protectorate." As usual, there are reviews, short notices, and letters to the editor. This number completes vol. ii.

William Caxton. By S. Cunnington. 191 pp. *Cardinal Wolsey.* By R. Francis. 190 pp. *Charles I.* By A. E. McKilliam. 191 pp. (Harrap.) 2*s.* 6*d.* net each.—These three volumes are numbers 25–27 in the series entitled "Heroes of all Time," which Messrs. Harrap have been publishing during the past four or five years. In one respect they differ—and differ advantageously—from their predecessors: they are printed on thicker paper, and consequently they lend themselves to more artistic and impressive binding. They look larger and more considerable books, although, as a matter of fact, they contain almost exactly the same amount of material as their forerunners. They well maintain the good reputation of the series. Miss Cunnington presents an attractive picture of the first great English printer, with the troublous times of the Yorkist kings as a background. Mr. Francis tells in a popular manner the dramatic story of the rise and fall of the last of the powerful ecclesiastical statesmen of England; here the dark background against which the cardinal's scarlet stands in effective relief is the character of Henry VIII. Mr. McKilliam, a skilled and experienced biographer, writes an enthusiastic appreciation of "the White King." Each volume contains nine illustrations. The whole series should be in every school library.

Geography.

Philip's Strategical Maps. (1) *Mesopotamia and Asia Minor.* (2) *Palestine, Syria, and Sinai Peninsula.* (Philip.) 2*s.* 6*d.* net.—We are often exhorted to "look at the map," but much depends on the map one looks at. This map of Mesopotamia is just the map of the Near East that everyone should see. On a scale of forty-eight miles to an inch, from the meridian of Brindisi to that of the head of the Persian Gulf, and from the latitude just south of Cairo to that just north of Odessa, the map shows the eastern end of the Berlin-Bagdad railway, and its connections through Palestine. The map is well contoured on the layer system, and brings out the essential features of Asia Minor, Palestine, Caucasia, and Arabia.

The map of Palestine is politically coloured, and the conventional symbolisation of relief shows indifferently under more than one of the colours. The scale is twelve miles to an inch. There is an inset of the Sinai Peninsula, with the Suez Canal, on a reduced scale.

Science and Technology.

A Text-book of Inorganic Chemistry. By A. F. Holleman. 521 pp. (New York: Wiley; London: Chapman and Hall.) 10*s.* 6*d.* net.—The fact that a fifth English edition of this well-known text-book has been called for is sufficient evidence that Prof. Holleman's work has been recognised as a sound and comprehensive guide to the science. Thirteen years ago the reviewer introduced it to the somewhat heterogeneous classes of a large technical school, and found that it was a most useful adjunct to his lectures. "Holleman" is essentially a "wide" book, in the sense that, wherever possible, the author links the facts of inorganic chemistry with the far-reaching generalisation of the physical side of the science. Therefore, even an average student, using this manual, cannot fail to be impressed with the importance of physical chemistry, and this is all the more valuable where, from lack of time and opportunity, the student cannot take advantage of a course of lectures in this branch of chemistry.

In the new edition many of the descriptive portions have been rewritten, and new material has been incorporated dealing with colloids, noble gases, rare earths, intermetallic compounds, and atomic structure. The chapter on metal-ammonia compounds is reprinted as approved by Werner. The work has been brought well up to date—for example, not only is Haber's synthetic ammonia process described as a practical proposition, but also the theoretical significance of the reaction and the conditions of equilibrium are discussed.

The author is not afraid to introduce mathematics and the calculus into his text; it is, indeed, a matter of astonishment in these days to find so many treatises on chemistry in which the differential sign is banned as being foreign to the subject. The progress of chemistry would be even more rapid than it is were all students impressed with the conviction that a sound mathematical knowledge is of vital importance to them. Such a text-book as "Holleman" renders good service in this respect. The book is excellently printed, bound, and illustrated, and free from such words as "sulfur" and other American spelling.

(1) *Clothing and Health.* By Helen Kinne and Anna M. Cooley. viii+302 pp. (New York: The Macmillan Co.) 3*s.* net.

(2) *The Home and the Family.* By Helen Kinne and Anna M. Cooley. vi+292 pp. (New York: The Macmillan Co.) 3*s.* 6*d.* net.

These two further books in "The Home-making Series," by the authors of "Food and Health," which we have already commended in THE SCHOOL WORLD, maintain the high standard set in the first volume. Clearly printed and lavishly illustrated with clever sketches and well-selected photographs, the books will appeal at once to all girls into whose hands they may come, and the brightly written text will be of no less absorbing interest to the feminine mind. The first-named of these two later volumes treats largely of clothing problems and the elementary work which precedes garment-making. Woven in with the lessons on sewing are accounts of the manufacture of the leading textile materials, and such topics as the hygiene of clothing, the wise buying of materials and garments, the care and repair of clothing, and the artistic utilisation of patterns and colour combinations. The detailed instructions for the making of useful and pretty gifts from scraps of silk, and the hints (illustrated by sketches) on right and wrong ways of wearing a hat, may be mentioned as examples of the refreshing novelties to be found in the book. The second of the books under review deals first with the furnishing and decoration of the home and methods of keeping it clean, and goes on to consider the care of the baby—"the most important member of the family"—and of the sick. A series of lessons on personal efficiency summarises the laws of health and domestic economy very pleasantly, and gives sound reasons for the practice of the virtues inculcated. The treatment of all these questions is thoroughly scientific in principle, and is made attractive by the authors' chatty style of writing. The book is full of useful hints for the wise planning of housework, and describes many labour-saving devices which, unfortunately, are not so well known in this country as they appear to be in America. "The Home-making Series" may be recommended cordially to the attention of teachers in girls' schools.

EDUCATIONAL BOOKS PUBLISHED DURING FEBRUARY, 1918.

(Compiled from information provided by the publishers.)

Modern Languages.

Racine: "Andromaque." Edited by T. B. Rudmose-Brown. 168 pp. (Clarendon Press.) 3*s*.

La Fontaine: "Selected Fables." Edited by C. Hugon. 206 pp. (Clarendon Press.) 3*s*.

Erckmann-Chatrian: "Pourquoi Hunebourg ne fut pas Rendu, La Comète, Le Requiem de Corbeau, Trois Contes." Edited by H. L. Hutton. (Oxford French Plain Texts.) 48 pp. (Clarendon Press.) 6*d*. net.

"Key to Brackenbury's 'Elementary French Exercises.'" By the Rev. B. V. F. Brackenbury and D. M. Low. 88 pp. (Macmillan.) 3*s*. 6*d*. net.

Erckmann-Chatrian: "L'Ami Fritz." Adapted and edited by Otto Siepmann. (Siepmann's Advanced French Series.) xvi+146 pp. 3*s*. Key to the same. 2*s*. 6*d*. net. Word and Phrase Book to the same. 6*d*. (Macmillan.)

"Russian and English Commercial Correspondence." In Russian and Roman Characters. By S. G. Stafford and W. Chevob-Maurice. 128 pp. (Marlborough.) Cloth, 2*s*. 6*d*. net; fawn wrapper, 2*s*. net.

"French Vocabularies and Idiomatic Phrases." By E. J. Kealey. 142 pp. (Pitman.) 1*s*. 6*d*. net.

"A Practical Grammar of the Portuguese Language." By C. A. Toledano and A. Toledano. 330 pp. (Pitman.) 5*s*. net.

Classics.

"The First Year of Greek." By Dr. J. T. Allen. xii+376 pp. (Macmillan.) 7*s*. 6*d*. net.

English: Grammar, Composition, Literature.

"Pride and Prejudice." By Jane Austen. Abridged by H. A. Treble. (English Literature for Secondary Schools.) x+118 pp. (Macmillan.) 1*s*.

Mathematics.

"Mathematics for Engineers." Part i. By W. N. Rose. 524 pp. (Chapman and Hall.) 8*s*. 6*d*. net.

"Mathematical Papers for Admission into the Royal Military Academy and the Royal Military College for the Years 1908–17." Edited by R. M. Milne. (Macmillan.) 7*s*.

Science and Technology.

"Organic Evolution: a Text-book." By Dr. Richard S. Lull. xviii+730 pp. (Macmillan.) 16*s*. net.

"A Short History of Science." By Prof. W. T. Sedgwick and Prof. H. W. Tyler. xvi+474 pp. (Macmillan.) 12*s*. 6*d*. net.

"A Text-book in the Principles of Science Teaching." By Prof. G. R. Twiss. xxviii+486 pp. (Macmillan.) 7*s*. 6*d*. net.

"Text-book of Physics for the Use of Students of Science and Engineering." By J. Duncan and S. G. Starling. xxxiii+1081 pp. (Macmillan.) 15*s*.

"The Boot and Shoe Industry." By J. S. Harding. (Common Commodities and Industries Series.) 130 pp. (Pitman.) 2*s*. net.

"Gums and Resins." By E. J. Parry. (Common Commodities and Industries Series.) 106 pp. (Pitman.) 2*s*. net.

Pedagogy.

"Educational Reform: An Address delivered in the Whitworth Hall of the University of Manchester on September 26th, 1917, to the Associated Educational Societies." By the Rt. Hon. H. A. L. Fisher. 16 pp. (Longmans.) 2*d*. net.

"The Play Movement and its Significance." By Dr. Henry S. Curtis. xvi+346 pp. (Macmillan.) 8*s*. net.

"Groundwork of Logic." By Dr. J. Welton. 356 pp. (University Tutorial Press.) 4*s*.

Miscellaneous.

"The Book of the Prophet Isaiah." Chaps. xl.–lxvi. In the Revised Version. Edited by the Rev. J. Skinner. (Cambridge Bible for Schools and Colleges.) lxxiv+290 pp. (Cambridge University Press.) 3*s*. 6*d*. net.

"University of Cambridge Local Examinations, December, 1917, Class Lists (Boys and Girls, Preliminary, Junior, and Senior)." (Cambridge University Press.) 6*d*. each.

"University of Cambridge Local Examination Papers, December, 1917." xvi+320 pp. (Cambridge University Press.) 2*s*.

"University of Cambridge Higher Local Examination Papers, December, 1917." 88 pp. (Cambridge University Press.) 1*s*.

"Ships and Seafaring." By A. O. Cooke. (Jack.) 2*s*. 6*d*. net.

"The School World." vol. xix. 1917. (Macmillan.) 7*s*. 6*d*. net.

"Fairy Tales for Junior Classes":—"Captain Bluecoat's Tales from Japan." By T. A. Spalding. "The Enchanted Doll." By Mark Lemon. "Rip van Winkle." By Washington Irving. "Old Peter's Russian Tales." Three series, i., ii., iii. By Arthur Ransome. "The Story of Sinbad the Sailor." Retold by T. A. Spalding. (Nelson.) 9*d*. each.

"Fiction for Junior Classes":—"Moufflon." By "Ouida." (Nelson.) 9*d*.

Daniel Defoe: "The Adventures of the Famous Captain Singleton in Africa." "By Desert Ways to Bagdad." By Mrs. Rowland Wilkins. "What I Saw in Finland." By Mrs. Alex. Tweedie. "Romance of the Spanish Armada." By J. R. Hale. (Nelson.) 1*s*. 6*d*. each.

"A Holiday by the Sea." By Edward Step. (Nelson.) 1*s*. 6*d*.

"The Perils of the Bush." (In the elementary style of Pitman's Shorthand.) 56 pp. (Pitman.) 8*d*.

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.*

"Stars and Stripe System of School Marks."

Could you through the columns of The School World get me the address of the inventors and publishers of the "Stars and Stripe System of School Marks"? The usual school bookseller does not know where to obtain it. Bertram Mould.

Ayshford School, Uffculme, Devon.

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.

The School World

A Monthly Magazine of Educational Work and Progress.

No. 233. MAY, 1918. SIXPENCE.

MAN-POWER AND THE SCHOOLS.

THE new arrangements for increasing the number of men in the Army deserve the serious attention of all who care for the welfare of education. Schoolmasters, as a class, have not sought to be excused from military service. Fully a year before the introduction of compulsion a careful inquiry by the Teachers' Registration Council revealed the fact that more than 10,000 men teachers had joined the forces. Since then the number has increased threefold, and the President of the National Union of Teachers recently stated that 20,000 members of the union are on active service. Of this large total, representing, certainly, as great a proportion of the number available as any profession or calling has supplied, many will never return to the schools. Some have found honourable graves in the far-flung battle line, others have been grievously wounded and disabled for teaching, others, again, have determined that if they survive their present perils they will seek work outside school. Meanwhile, there is before the country an Education Bill which contains proposals involving a very large addition to the teaching staff of the schools. In all, some 30,000 new teachers must be employed when the proposals are carried into full effect, and of these at least one-third should be men.

In these circumstances it is somewhat strange to find no mention of teachers in the recently published Order regarding the withdrawal of exemptions. This Order makes some attempt at discrimination as between different occupations and also as between individuals following the same occupation but holding different posts. Thus, all exemptions are cancelled for commercial travellers born since 1874 who are in Medical Grades I. and II. For clerks in factories they are cancelled for those born since 1882. There is no mention of teachers, although the list of callings given in the schedule includes the gypsum industry, monumental masonry, and silk-hat making.

Since teaching is omitted from this extremely detailed schedule, we conclude that occupational exemptions granted to teachers will not be withdrawn at present, but that the few men of military age and fitness left in our schools will be allowed to remain. We hope that this is so, for national education is more than ever important just now. The vast and unexampled effects of this war will be felt most acutely some ten or fifteen years hence, when the thousands of young men who have fallen would have been carrying on the nation's work. Who will take their places? Doubtless, older men will have to extend their working years, but the main replacement must come from the younger men, those who are now boys in our schools. It is of the utmost importance that these boys should not be stinted in their intellectual training any more than they are in their food rations. The burden of the future will fall upon their shoulders far sooner than would have been the case if peace had continued, and for this burden they will need all the training we can give. Already, the work in the schools has been grievously hampered by the withdrawal of the younger and more vigorous members of the staff. There are many cases where more than one-half of the men have joined the Army. Efforts have been made to replace them by women teachers, but there are evident limits to this expedient. The girls' schools need all the women available, and although those who have taken up work in boys' schools are, by common consent, extremely efficient, it is found that with the senior boys they are seldom wholly successful. The Board of Education report shows that the number of pupils in State secondary schools has increased during the war, and this circumstance again enforces our plea that there should be no further inroads upon our teaching power.

The *Times Educational Supplement*, in its issue of April 11th, offers the suggestion that retired teachers should be recalled to serve in the schools in place of those who may be taken

for the Army under the new Act. This suggestion seems to ignore the fact that very few teachers have retired under the age limit since the war began. There has been considerable use made of the power vested in the Board of Education whereby the age limit may be extended on the application of a local education authority, provided that the Board is satisfied that the teacher in question is physically fit. Since the usual limit of age is sixty-five it follows that the practice of extension since the war began has had the result of retaining in the service some men who are now approaching seventy, while of those who retired before the war began almost all will be seventy or more. Of these, very few will be equal to the work of teaching under war conditions.

A better expedient might be found if the authorities would release from the Army those teachers who have been wounded and those who are physically unfit for active service. Many teachers have been kept in the Army long after it was known that their physical condition rendered them unfit for any combatant duty. One instance among many is that of a master in a well-known public school who was kept for some months at the task of tending a grass plot in front of the quarters of his colonel. While he was engaged in this menial form of military service the governors of the school were supplementing his Army pay and the headmaster was vainly trying to find another man to take his form. Absurdities of this kind have been far too common, and they will be repeated and made more frequent still if men above forty-one are taken from the schools into the Army. It is admitted that such men will rarely be of any value in the actual fighting, and our conviction is that the true interests of the nation are best served if they are permitted to remain in the schools where they are engaged in a form of national service second only to that rendered by men in the firing line. It is true that the service is indirect in character, but it must be remembered that whatever may be the outcome of this war we shall have need of the greatest possible number of highly trained men and women. Even in the improbable event of our being driven to sue for terms from Germany, the future of our country would rest with the children now in our schools. A victory of any degree would impose upon these same children the task of maintaining the liberties preserved by the war.

Education is not a luxury trade to be dispensed with in times of national stress and danger. It is as necessary to the life of the community as food to the individual, and wise statesmanship has always recognised that the education of a people becomes more indispensable the more that people's welfare is imperilled. It was this which led Heinrich Stein to elaborate a system of State education for Prussia at the very nadir of that country's fortunes after the Peace of Tilsit. Mr. Fisher is animated by the same thought in bringing forward an Education Bill in these days of stress. The purpose is a wise one, but it cannot be attained unless we have regard to the question of man-power in the schools and agree that while those teachers who are fit for the fighting line may serve their country best by joining the Army, the remainder should be released from secondary employment with the Forces and told that the best service they can render is in the schools.

THE COST OF SCIENCE TEACHING IN SECONDARY SCHOOLS.

By Douglas Berridge, M.A.
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MR. NOWELL C. SMITH, writing in The School World (vol. xix., p. 341) in connection with the British Association Report upon Science Teaching in Secondary Schools, says: "The chief criticism to which the report lies open is on the score of expense. . . . This expensiveness is perhaps often exaggerated in controversy, but it is none the less a real problem." The same point was raised in 1907 by the late headmaster of Eton, who expressed the opinion at a meeting of the British Science Guild that the extension of science teaching in public schools was checked by the heavy expenses attaching to the necessary practical work.

It is obvious that if a knowledge of the elementary facts and methods of science is to be considered an essential part of a general education, and the "public schools" are unable to afford the necessary expense of such teaching, they must abandon their present isolated position and seek aid from the State to enable them to offer to their pupils the same advantages which can be found elsewhere, accepting at the same time the conditions which State control entails. Before advocating such a course it is, however, well to examine carefully how far the allegations of Mr. Nowell Smith and Dr. Lyttelton are justified by facts. Statistics may, of course, be made to prove anything, and in answering a question like the present it is first necessary to decide what items may be fairly included in the expression "expense of scientific teaching." On one hand, classical headmasters would include the salaries paid to their science staff; on the other, science masters are apt to imagine that when the bills of the apparatus dealers have been paid the whole cost of the science teach-

ing has been met. To obtain a just estimate of what this cost is, it is necessary to determine so far as possible what increase in the expenditure of a school council is caused by a certain number of pupils learning science rather than some other subject during each school period.

In the present article only boys' schools are considered; and, since science is a compulsory subject in all State-aided secondary schools, and complaints of the cost of teaching it have come only from the headmasters of schools not receiving such aid, most of the following figures refer to the so-called "public schools," others being referred to simply for the sake of comparison; for, as was pointed out by a committee of the British Science Guild in 1909, there is a very considerable difference in the cost of teaching science in the two classes of schools. In this connection such expressions as "public schools and other secondary schools" or "Conference and non-Conference schools" only lead to confusion; the distinction here drawn is between State-aided schools and non-aided schools.

The following items probably include all that can be fairly or unfairly classed as expenses of science teaching: (*a*) Salaries of science staff; (*b*) cost of apparatus, chemicals, and repairs to apparatus; (*c*) wages of laboratory assistants; (*d*) interest upon capital expenditure in building and fitting laboratories; (*e*) cost of gas, water, and electricity used for teaching purposes; (*f*) rates upon science buildings; (*g*) plumbing and general repairs to the laboratories.

Salaries of Science Staff.

Secondary-school masters may be divided into two groups: (1) those who teach "Form subjects," *i.e.* who take the more elementary pupils in all subjects; and (2) specialists who teach only one subject. Both groups receive, as a rule, salaries on the same scale, and rank as equal to each other in all respects for promotion to housemasterships, qualifications for pensions, etc., and it is generally found economical to include several specialists upon the staff. Since no argument has ever been advanced to prove that the salary of a science master is a greater drain upon the resources of the governing body than is that of his classical or mathematical colleague, no allowance for this charge has been made in the following estimate. Should it happen that a Form-master is unemployed whilst his Form is learning science, this is either due to the "time out" being necessary for the correction of written work, or to the inability of the headmaster to draw up a satisfactory time-table; in neither case can it be fairly claimed that time so "lost" is a necessary result of science being taught.

Cost of Apparatus, etc.

In the report of the committee of the British Science Guild to which reference has already been made, it is stated that "it is widely recognised that simplicity and plainness in apparatus is a positive gain, and that the educational value of the instruction even increases with the bareness of the material by which it is supplied." This is even more true to-day than it was nine years ago, but it must be remembered that (quite apart from glass apparatus and delicate electrical instruments) it is necessary for much of the material used in laboratories to be bought ready-made, unless a considerable portion of the all-too-short periods now allocated to science teaching is to be devoted to workshop practice, or several experienced laboratory assistants are employed; for science masters are already overworked, and it is physically impossible for them to devote much time out of school hours to manufacturing apparatus to be used by their classes. It is a rule, with scarcely an exception, that in those schools which pay good wages to laboratory assistants, and can therefore command the service of experienced men, the bills for apparatus are low, whilst the converse is also true, as is shown by the following table, extracted almost at random from a considerable number of returns received:

TABLE I.

School	No. boys learning science	Annual cost of apparatus	Annual wages of lab. assistants	Total cost per boy
A.	300	£180	£380	£1·87
B.	400	340	163	1·26
C.	200	250	80	1·65
D.	317	279	234	1·61

Taking the average expenditure upon apparatus by fourteen well-known schools, it is found to amount to almost exactly £180 per annum, the average number of science pupils in each school being 315.

Laboratory Assistants.

In no department of school expenditure is economy more foolishly exercised than in the payment of laboratory assistants, for, as is shown above, it is a general rule that money spent in this direction is saved in others. The statistics collected relate to pre-war conditions, for, of course, it is impossible for schools to obtain the services of active men at the present time. The practice of different schools varies to such an extent that it is impossible to strike an average which will not be absurdly below the expenditure of some schools and equally above that of others: the actual figures range from £400 per annum in

one school to £18 in another. One school, which is well known for the attention it pays to science teaching, employs a senior laboratory assistant at £2 10s. a week, a junior laboratory assistant at £1 8s. a week, and a youth at 15s. 6d. a week, making a total of about £243 per annum. This is, however, above the average, which may be given, for what it is worth, at about £150.

Interest upon Capital Expenditure.

It cannot be too strongly urged that science can be taught in buildings which make no pretence to architectural beauty. During the past fifteen years there has been a decided tendency for the more wealthy schools to spend very considerable sums in building large and ornate laboratories, and in at least one case expensive laboratories are to be erected as a memorial to its Old Boys who have fallen in the war. These buildings doubtless conduce to the comfort of the science staff, and afford an excellent advertisement for the schools which own them, and this advertisement may indirectly repay the governing bodies which erect them; but, since the value of the science teaching does not depend upon them, they cannot fairly be described as a necessary part of the expense of teaching the subject.

In calculating the initial cost of the laboratories the proper course is to determine the difference between the expense of fitting up a large and well-ventilated room as a laboratory and as an ordinary classroom, the cost of the necessary apparatus being, of course, added in the former case. There can be no doubt that it is a real economy when fitting up a new laboratory not to stint the plumber's estimate; the waste-pipes should be as large as possible, and both gas and water fittings of the best quality; but under normal conditions it is quite possible to fit up two laboratories, one for chemistry, the other for physics, each capable of accommodating about thirty-five pupils, for a total cost of £500. If to this sum is added another £500 for stocking both laboratories with the necessary apparatus, the total initial cost is found to be about £1,000, which, at 5 per cent., will require £50 per annum for interest. Additions to and replacement of apparatus have been dealt with under "Cost of Apparatus"

The initial cost of fitting a biological or a mathematical laboratory is so small that the interest upon the outlay may be neglected.

Gas, Water, and Electricity.

In determining the cost of gas and electricity it is necessary to distinguish between what is used for lighting (an amount slightly, if at all, greater than that required for a well-lighted classroom) and what is used for heating, charging accumulators, etc. As both gas and electricity are generally taken from the same meter for lighting and other purposes, it is difficult to determine the exact sum which should be charged to the science account. It would have been expected that the quantity of gas consumed in various schools would have differed considerably, since those situated in or near large towns can buy distilled water cheaply, whilst others have to burn large quantities of gas in order to distil their own supplies. There is, however, a very general consensus of opinion that the total cost of gas, water, and electricity is about £35 per annum; and when the cost is worked out per boy, there is a really astonishing agreement, even between schools of very different sizes, that the cost is about 3s. per head per annum.

Rates.

A large number of schools have laboratories within the school buildings, and, of course, in these cases no separate rates are levied. In schools where the laboratories are detached, the rates depend upon the sizes of the buildings, and since these vary so much it has been found impossible to obtain sufficient data from which any general average can be calculated. The actual figures received vary between £350 and £29 per annum.

General Repairs.

The plumber and the gasfitter are naturally required more frequently in laboratories than in ordinary classrooms. The accounts for general repairs are occasionally paid by the senior science master and returned by him at the end of term in his "petty cash" account; but more frequently they are paid by the bursar, and in this case it is impossible to determine how much has been spent in any particular classroom. In a well-built laboratory it is, however, improbable that the annual expenditure under this head exceeds £10.

General Conclusions as to Cost in Schools Receiving no State Aid.

It will be seen from the above that it is a matter of great difficulty to obtain returns relating to all the charges which may be fairly included under the head of science teaching, not because there is any desire on the part of the schools to withhold the information (in fact, the writer of this article wishes to place on record his thanks for the very generous manner in which information has been afforded him), but because many of the smaller items are merged in the general accounts of the schools. In only one case has it been possible to obtain accurate information as to the expense under *each one*

of the above heads. This school is called "A" in Table II., and it will be noticed that the cost per boy-hour is, with one exception, higher in this school than in any other. Since, however, the number of boys learning science there is below the average, it may be considered that the cost per boy-hour given for it is above, rather than below, the average even when every possible item is included.

From the data received it seems that the average annual cost per boy is £1 11*s.* 4*d.*, or, excluding rates and interest upon capital, £1 5*s.* 7*d.*, the corresponding cost per boy-hour being 2·4*d.* and 2·1*d.* respectively. It must, however, be remembered that in the great majority of schools not receiving State aid a charge is made for the use of laboratories; this varies from 5*s.* to £2 per term and *rather more* than covers the total cost of the science teaching, the result being that in scarcely any case does this teaching cost the school authorities anything at all. If the average charge is taken as 15*s.* per term it will be found that in the majority of the schools now under consideration the additional charge to the parent amounts to 1·5 per cent. of the total school bills.

TABLE II.

School	No. boys learning science	No. boy-hours per annum	No allowance for interest on capital, etc.				Allowing for interest on capital, etc.			
			Cost per boy			Cost per boy-hour in pence	Cost per boy			Cost per boy-hour in pence
			£	*s.*	*d.*		£	*s.*	*d.*	
A.	200	30,400	1	19	6	3·1	2	2	6	3·5
B.	300	68,400	2	7	8	2·5	2	11	0	2·7
C.	200	30,400	1	11	0	2·4	1	16	0	2·8
D.	400	89,680	2	2	7	2·3	2	5	1	2·4
E.	250	51,300	0	17	9	0·9	1	2	2	1·2
F.	320	48,200	1	15	0	2·4	1	18	1	2·7
G.	460	61,000	1	8	4	2·5	1	10	6	2·7
H.	70	7,980	2	0	9	5·0	2	12	3	6·5
I.	300	45,600	0	18	7	1·5	1	1	4	1·7
J.	460	69,920	0	11	4	0·9	0	13	6	1·3

COST IN STATE-AIDED SCHOOLS.

In order to compare the cost of science teaching in the two classes of schools a few of the larger schools receiving State aid have been asked for particulars. It appears that in these the cost is very considerably lower than in others. Probably this is due to three distinct causes: (*a*) Wages for laboratory assistants are very much lower; it is the exception for men to be employed, and only one, or possibly two boys are engaged to clean the laboratories; in some cases even these are dispensed with and some of the senior boys do the work in return for their tuition; (*b*) the fact that no laboratory fees are charged, and grants for science teaching are strictly limited, imposes a more rigid economy upon the science staff than is necessary in the so-called "public schools"; whilst (*c*), since the leaving age is generally lower, very few boys stay on after they have either obtained a scholarship or passed the Inter. B.Sc. examination; and it is these advanced pupils who are responsible for a very considerable portion of the expenditure in schools where the leaving age is eighteen years and a half.

No attempt has been made to calculate the cost of science teaching in all the State-aided schools, but from details supplied by those which most resemble the "public schools" in number, etc., it seems that the average cost per boy per annum is 9*s.* 2*d.*, whilst the cost per boy-hour works out at 0.82*d.* In obtaining these figures no account, however, has been taken of the cost of rates or of interest upon capital expenditure, and in only a few cases have returns of the cost of gas, water, and electricity been received.

GRAPHICAL INTERPRETATION.

By R. WYKE BAYLISS, M.A.
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WE do a great deal of graphical work in schools now. Some people think we do too much. There has, in fact, been a tendency to overdo the mechanical labour of plotting curves, without any regard to the connections between the forms of the equations and the forms of their graphs. It has been rather like teaching the use of a vocabulary, without showing how to link the words together to form sentences. Still more does it resemble the gathering of shells from the seashore in a miscellaneous collection, without grouping them together so as to learn how to recognise at a glance to what species any given specimen belongs.

The subject is vast, and endless in its ramifications. But let us here consider a few of the more simple forms, just as we may consider a few typical univalves and bivalves in a museum.

LINEAR EQUATIONS.

Beginning with the linear equation, we show that it may always be reduced to the form

$$Px + Qy + R = 0,$$

and that in its turn this may be written

$$y = mx + b,$$

after transposition, and division by Q.

We must exhibit this concretely. Thus we may take

$$2x - (y - 6) = 3y - 6(x + 1),$$

and make the class reduce it first to

$$8x - 4y + 12 = 0,$$

and then to $y = 2x + 3$.

We must tell the pupils what is meant by the words *slope, gradient,* and *intercept.* Then let the class observe that, whatever the graph of this equation may be, we can at least fore-

tell that its intercept on the axis of y is 3, by putting $x=0$; and, similarly, that its intercept on the axis of x is $-\frac{3}{2}$, by putting $y=0$.

[Ask for these intercepts in the cases of $y=4-3x$, $y=x^2-4$, $3y+x=6$, $Px+Qy+R=0$, etc.]

Next observe that for every unit that we add to the value of x, in the equation $y=2x+3$, we must add two units to the value of y; so that if we plot the points where $x=1$, 2, 3, etc., the values of y, viz. 5, 7, 9, etc., ascend like a straight ladder or flight of steps.

Similarly, show that, in the case of $y=mx+b$, as the value of x increases by one unit, that of y increases by m units; and, if x increases by one-tenth of a unit, y increases by one-tenth of m units, always in the same proportion of m steps vertically upwards for every single step horizontally forwards. This will generally convince a pupil, more quickly than any other reasoning, that the locus of a linear equation is a *straight* line..

At the same time this determines the *gradient* to be 2 in the case of $y=2x+3$, and

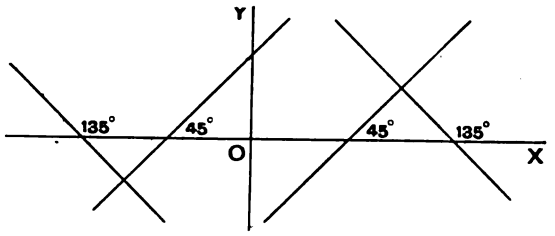

Fig. 1.—Diagram to show lines with slope = 45°, gradient = + 1; and lines with slope = 135°, gradient = − 1.

m in the case of $y=mx+b$; or, more generally, $-P/Q$ in the case of $Px+Qy+R=0$.

We may now ask for the gradients of $y=4-3x$, $3y+x=6$, etc., and find out whether any pupil can say why we cannot see at a glance what the gradient of $y=x^2+1$ is. Exercises may also be set on determining the *slope* of the lines by means of a table of trigonometrical tangents, due attention being paid to the negative sign (Fig. 1).

Make it clear that, with the axes in the usual positions, the slope must always be measured on the *right*-hand side *above* the axis of x, and that then a negative gradient means an obtuse slope.

From this to the immediate detection of *parallel* lines is an obvious step, and the change from a given slope to the *supplementary* slope by merely changing the sign of the gradient —that is, the sign of the coefficient either of x or of y—should present no difficulty.

This leads to the consideration of *complementary* slopes, by inverting the gradient, or by merely interchanging the coefficients of x and y. Get the pupils to point out why the gradient $\frac{1}{2}$ is complementary to the gradient 2. Ask what gradient is complementary to $\frac{3}{4}$, and what is the relation between the lines $y=mx$ and $x=my$.

We thence pass to the more difficult question of *perpendicular* lines. Show that the perpendicular slope is the supplement of the complement, or the complement of the supplement, of the given slope. Hence we must both invert the gradient and change its sign; in other words, both interchange the coefficients of x and y and change the sign of one of them (Fig. 2).

Thus, if $y-mx=0$ be the equation of the line OL, having a slope of 20°, then $m=\tan 20°$. The line OC has the complementary slope of 70°; its equation $x-my=0$ is found either by interchanging x and y or by inverting m. The line OS has the supplementary slope of 160°; its equation $y+mx=0$ is found by changing the sign of the coefficient either of x or of y. The line OP, perpendicular to OL, must have its slope 110°, complementary to that of OS, and supplementary to that

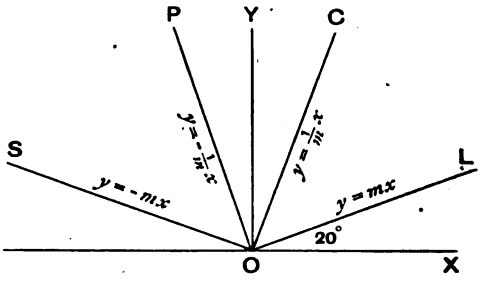

Fig. 2.

of OC; its equation $my+x=0$ is found by making *both* changes, which is equivalent to inverting m and altering its sign.

Make it quite clear that if we treat $ax+by+c=0$ in the same way we produce exactly the same effects upon the slope and the gradient, but that the four lines no longer pass through the same point. In order to make them pass through any given point we must also alter the value of c in each case.

Ask for the lines through the origin having slopes which are (i) complementary, (ii) supplementary, (iii) perpendicular to $ax+by=c$: viz. (i) $bx+ay=0$, (ii) $ax-by=0$, (iii) $bx-ay=0$.

Now we can revise with a set of examples, such as the following:

(i) $y=3x$. (iv) $2y=x+3$.
(ii) $2y=6x+5$. (v) $6x+3y=1$.
(iii) $x+2y=4$. (vi) $9x-3y=2$.

Ask what graph each equation denotes. Thus (ii) denotes a straight line of gradient 3 cutting off an intercept $2\frac{1}{2}$ from the axis of y. Which lines are parallel? *Ans.*: (i), (ii), (vi). Which have supplementary slopes? *Ans.*:

(iii) and (iv). Which complementary? *Ans.*: (iii) and (v). Which are perpendicular? *Ans.*: (iv) and (v).

Since we are here dealing with forms only, and not with potentialities, we need say no more about the linear equation, except perhaps to point out that

$y-k=m(x-h)$ and $a(x-h)+b(y-k)=0$

denote lines passing through the point (h, k).

This might be followed by an exercise on writing down the equations of straight lines passing through a given point and parallel or perpendicular to a given straight line, or having a complementary or supplementary slope. That should be sufficient, since we are not concerned with the formalities of co-ordinate geometry.

QUADRATIC EQUATIONS.

We can now begin to study the quadratic equations, and should concentrate on three forms, viz. $x^2=cy$, $x^2+y^2=c^2$, and $xy=c^2$.

Starting with $x^2=y$, we should, first of all, make the general shape of the graph quite clear, especially near the vertex, where the beginner is apt to make the curve too narrow, or even pointed, instead of gracefully rounded. Ask for the values of y when $x=\frac{1}{2}, \frac{1}{4}, \frac{1}{10}, \frac{1}{100}$, to show how closely the curve lies along the axis of x near the vertex.

The three *obvious* points on the locus, viz. (0, 0), (1, 1), and (−1, 1) should be carefully noted, as well as its symmetry about the axis.

The name "parabola" should be mentioned; and the *latus rectum* may be described as that chord (perpendicular to the axis) the length of which is *four* times its distance from the vertex.

Thus, in the case before us, we want to find where x is *twice* y. Writing $2y$ for x, we get $4y^2=y$, so that $y=\frac{1}{4}$ and $x=\frac{1}{2}$. Hence the length of the *latus rectum* is one unit; so that $x^2=y$ may be called a *parabola of unit size*.

Exercises may be set on finding the dimensions of parabolas such as $y=2x^2$, $3y=x^2$, $y^2=4x$, $5y^2=x$. Thus, taking $x^2=cy$, we write $2y$ for x, and obtain $y=\frac{1}{4}c$, $x=\frac{1}{2}c$, whence the *latus rectum* of the parabola is c. Similarly, $x=ky^2$ is a parabola of size $1/k$, and the distance of its *latus rectum* from the vertex is $1/4k$. We may also note that the *latus rectum* cuts the axis at the focus; so that $1/4k$ is the focal distance of the vertex in the last case.

It should be obvious that $y=x^2+1$ is simply the curve $y=x^2$ translated unit distance parallel to the axis of y. Similarly, $y=kx^2+b$, or $y-b=kx^2$, is simply the parabola of size $1/k$ translated a distance b parallel to the axis of y. Hence changing y into $y-b$ moves the curve *up* a distance b; and changing y into $y+b$ moves the curve *down* a distance b. It is easy to show that this argument applies to *any curve whatever*, and that in the same way changing x into $x-a$ moves the curve to the *right* a distance a, whilst changing x into $x+a$ moves the curve to the *left* a distance a.

Hence $p(x-a)^2=q(y-b)$ is a parabola of size q/p and has its vertex at the point (a, b), the focal distance of which is $q/4p$; so that $\left(a, b+\frac{q}{4p}\right)$ is the focus. A rough sketch will make it clear.

We can now ask for a verbal description of the graphs of such equations as the following:

(i) $y=2x^2+3$.
(ii) $3y+5=-(x-1)^2$.
(iii) $x-3=4y^2-4y$.

Thus (i) is a parabola of size $\frac{1}{2}$ having its axis parallel to the axis of y, and vertex downwards at the point (0, 3).

So also (ii) is a parabola of size 3 having its axis parallel to the axis of y, and vertex upwards at the point $(1, -\frac{5}{3})$.

Again, (iii) can be written $x-2=4(y-\frac{1}{2})^2$; hence it is a parabola of size $\frac{1}{4}$ having its axis parallel to the axis of x, and vertex on the left at the point $(2, \frac{1}{2})$.

Then we may ask for the equation of a parabola of size 3, and vertex upwards at the point $(-1, 2)$. *Ans.*: $(x+1)^2=-3(y-2)$, or $x^2+2x+3y=5$.

We can now treat the circle in the same way, showing that

$$(x-a)^2+(y-b)^2=c^2$$

is merely the curve $x^2+y^2=c^2$ moved a units to the right and b units upwards, so that it represents a circle of radius c having its centre at the point (a, b). Exercises follow, such as transforming

$$x^2+y^2=4x+6y+3$$

into

$$(x-2)^2+(y-3)^2=16$$

by merely completing the squares; so that it represents a circle of radius 4 having its centre at the point (2, 3).

Taking $x^2+y^2=a^2$, and changing y into $2y$, making $x^2+4y^2=a^2$, we obtain a curve in which the ordinates are half the original size. We may define an ellipse as a curve derived from the circle by a projection which reduces all the ordinates in a constant ratio. Thus $x^2+4y^2=a^2$ must be the projection of the above circle at an angle the cosine of which is $\frac{1}{2}$—that is, at 60°.

Similarly, $x^2+n^2y^2=a^2$ is the projection of $x^2+y^2=a^2$ at the angle the cosine of which is $1/n$, so that it is an ellipse of major axis a and minor axis a/n. Writing it in the form

$$\frac{x^2}{a^2}+\frac{n^2y^2}{a^2}=1,$$

and then changing a in n into b, we obtain

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}=1,$$

showing that the latter is an ellipse of axes a and b.

The class should now be able to see that

$$\frac{(x-2)^2}{9}+\frac{(y+1)^2}{25}=1$$

represents an ellipse of axes 3 and 5 having its centre at (2, −1); and that

$$(x+3)^2+4y^2=16$$

represents an ellipse of axes 4 and 2 having its centre at (−3, 0).

In dealing with the rectangular hyperbola $xy=c^2$, its central symmetry and the fact that the axes of reference are asymptotes should be emphasised. Writing it in the form $y=k/x$, we show that it represents *inverse* proportion, just as $y=kx$ represents *direct* proportion.

It will easily be seen that $y=\frac{2}{x-3}$ and $y=\frac{2}{x}-3$ represent rectangular hyperbolas of the same size, the former with its centre at (3, 0), the axis of x being one asymptote, and $x=3$ the other asymptote; the latter with its centre at (0, −3), the asymptotes being the axis of y and $y+3=0$.

More generally, $xy+ax+by=c$, which can be written $(x+a)(y+b)=c-ab$, represents a rectangular hyperbola $\sqrt{c-ab}$ times the size of $xy=1$, having the lines $x+a=0$ and $y+b=0$ as asymptotes; its centre is at $(-a,-b)$; and $(x+a)+(y+b)=0$ and $(x+a)-(y+b)=0$ are its axes of symmetry.

Note the reversed positions of $xy-c^2=0$ and $xy+c^2=0$, and ask what is represented by $kxy+ax+by+c=0$.

Before passing to the cubic equation, we may perhaps deal with the hyperbolas

$$x^2-y^2=c^2 \text{ and } \frac{x^2}{a^2}-\frac{y^2}{b^2}=1$$

in a manner similar to that in which we treated the circle and the ellipse. The reversal of position, by interchanging x and y, or by changing the sign of the independent term on the right-hand side of the equation, should be noted.

THE CUBIC EQUATION.

We may now deal with the cubical parabola $y=x^3$, and the semi-cubical parabola $y^2=x^3$.

In the case of the former we must emphasise its central symmetry, and its flatness near the bend, or turning point, at the origin of co-ordinates. The fact that the x-axis is a tangent which cuts the curve at the point of contact must also be noted.

Questions on transference of the centre to the point (a, b) by changing x into $x-a$, and y into $y-b$, will be treated as before.

It may be pointed out that, to obtain a similar curve k times the size of any given curve, we must change x into x/k and y into y/k. Thus the curve k times the size of $y=x^3$ is $y/k=x^3/k^3$, which reduces to $k^2y=x^3$. Hence $y=cx^3$ is similar to $y=x^3$, but is $1/\sqrt{c}$ times the size.

The pupils should now be able to state that

$$p(x-a)+q(y-b)^3=0$$

represents a cubical parabola $\sqrt{p/q}$ times the size of $y=x^3$, having its centre at (a, b), and the line $x=a$ for its central tangent; that the curve extends to infinity on the right *below* that tangent, and on the left *above* the tangent; and that it has no asymptotes.

The semi-cubical parabola $y^2=x^3$ is interesting on account of the cusp at its vertex. Note that, giving x the successive values $1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64}$, the corresponding value of y are $\pm 1, \pm\frac{1}{8}, \pm\frac{1}{64}, \pm\frac{1}{512}$, showing how closely it lies along the x-axis as we approach the origin; so that it terminates in a sharp point at the vertex, where the y-axis is a cuspidal tangent as well as an axis of symmetry.

The curve $cy^2=x^3$ is c times the size of $y^2=x^3$; so that riders such as those upon the preceding curves can now be set.

The curve $y=1/x^2$ will be a useful exercise for those who are studying physics. It is increased to $\sqrt[3]{c}$ times the size by writing $y=c/x^2$.

Practical illustrations of many of these curves will naturally occur to the teacher. The forces of gravitation, magnetism, and electricity will illustrate the last-mentioned curve. We may take the path of a projectile, or the ratio of the flat side of a coin (of given thickness) to the area of its rim, as illustrations of the common parabola; the ratio of the volume of a terrestrial globe to that of its cylindrical axis (of given diameter), or the weight of a row of cricket-balls compared with the length of the line they occupy, may illustrate the cubical parabola; and a comparison of the air-space in a room of given shape with the floor-space or window-area, or the light required to produce a given illumination upon its walls, may be used to illustrate the semi-cubical parabola.

The Stories of "Macbeth." The Story of "A Midsummer Night's Dream." (Blackie's Smaller English Classics.) 32 pp. each. (Blackie.) 3*d*. each.—Mr. Walter Higgins has with great success interwoven some of the text with a modified version of Lamb. The modification is but slight, and without doubt the new arrangement deserves and will find a welcome. Mary Lamb was answerable for the comedies, and it would be interesting to find out whether school readers endorse the opinion of older critics in regard to her share in this renowned work.

THE DIRECT METHOD OF TEACHING LATIN:

By R. B. APPLETON, M.A.
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IT is more than six years ago[1] that I first wrote to THE SCHOOL WORLD upon this subject, and during the intervening years I have gained more from a further experience of the method than I have lost from a possible diminution—if any such there has been—of youthful ardour. I should be sorry to think that my own methods have not considerably changed during these six years—for the essence of the direct method is its *vitality*, and all that lives changes; but, more than this, I have had a certain amount of experience in the training of students and others who intend to become direct-method teachers. What I have learnt from them has done more than anything else to explain to me the comparatively slow growth of the method. Every one of them was, of course, hampered by a lack of familiarity with Latin as a spoken language. The worst gave lessons in which Latin was indeed spoken, but they were not lessons on the direct method—they were rather the old *construe* lessons conducted in Latin instead of in English; there is, however, no mystical value in asking *Qui casus est?* rather than *What case is it?* The best gave lessons which contained the right idea, but the development of it was hindered, if not prevented, by the teacher's lack of fluency. This is a big difficulty (I had almost said, the chief difficulty), which we must make up our minds to face and to conquer. It will eventually, I hope, be overcome by direct-method pupils returning to our schools in later life as direct-method teachers.

But, meanwhile, we must all make strenuous efforts to increase our fluency; it is part of our *theory* that our pupils should acquire a good deal inductively, if not indeed intuitively, and the theory is sound. If our pupils fail to do this as a matter of fact, in *practice*, then the fault is that of the individual teacher and not of the general method. It matters not how this fluency be developed—by continued classroom practice, personal *sotto voce* exercise, conversation in Latin with colleagues and others, or what not[2]—but developed it must be, if our teaching is to be a success. This is the first, but not the only, difficulty.

The Latin which we wish our pupils to acquire is a literary rather than a colloquial Latin.[3] It is my belief that all boys trained in Latin on the direct method get far more profit, from the vitality and general mental stimulus incidental to the method, than they could possibly do from what we used to call the mental gymnastics of the old gerund-grinding system; but I am thinking now of the comparatively few members of our classes who will some day become classical scholars and must first compete for university entrance scholarships. These need Ciceronian Latin, and therefore we must be equipped to provide it. We cannot hear this spoken as a living language, but we must do the next best thing—we must read it to ourselves and hear it read aloud whenever possible. Everyone knows that the best way to learn a language is to live for a time in the country in which it is spoken; and at the risk of dwelling upon a platitude I should like to recount a recent experience of mine. Some time ago I had a Greek living with me for a few months, during which he learnt—as was, indeed, only natural—far more English than I did modern Greek. When Greece entered the war, in order to "join up" he returned home by way of Italy, where he stayed a few weeks, and wrote to me in English from there. His letter was written in by no means such good English as he had frequently written in essays for me long before he left. The moral is obvious—*he had not heard English spoken for several weeks*—and its application to the present problem is that, as we cannot be *hearing*, we must, at any rate, be continually *reading* classical, and preferably Ciceronian, Latin. I know from my own experience that my class-teaching has suffered whenever I have passed long periods without much reading of my own at home. It is not so much that one can actually bring into class-conversation definite Ciceronian idioms and phrases (though this is, of course, important, of which anon) as that one's Latin is insensibly so much better if one comes fresh from Cicero the night before.

Generalities are of no use, and so I make the practical suggestion that all those who are attempting to teach Latin on the direct method should read a new speech of Cicero at least every month. The speech may—if it be one of the shorter ones—be read through in one night; but it is not then finished with; it should be read again and re-read again, and, as I suggest, provide part of the teacher's mental *pabulum* for a week or even a month. It is not a bad idea to put a little tick or other mark

[1] November, 1911. See also THE SCHOOL WORLD for September, 1912.

[2] Personally I gained much by a fortnight's holiday one summer with a friend, when we both spoke nothing but Latin (or what was meant for Latin!) all the time.

[3] I take it that the direct method has by now sufficiently justified its claims to render it unnecessary for me to defend the latent paradox here. We talk Latin, not as an end in itself, but as the readiest method of *learning the language*; our ultimate object is to read the *literature* with as much ease as possible.

in the margin of one's working edition opposite to all the useful idioms; this can then be taken into class, and by rapidly glancing over a few pages one is in the position to give the boys many *purpurei panni*. I have myself done this with the Fourth Form. It should be explained that the boys had for some years been in the habit of having one period every week (during their year in the Fourth Form[4]) devoted to the making of speeches. They are given a free hand—I merely listen and correct mistakes—and those of them who have any fluency take great delight in preparing their little *oratiunculae* upon all manner of subjects. Last year for the first time I tried the experiment of giving them definite Ciceronian phrases and tags which they incorporate, sometimes with great ingenuity, into their own efforts. I have set aside one period for this, during which I glance down the pages of my Cicero and read out any phrase which strikes me, for the boys to take down in their note-books. I give an idiomatic and free English rendering, which is taken down on one side of the note-book, and the Latin is written opposite. Then a home-work period is given for the learning of them.

Recently, for example, we have had such things as the following, which I select at random:

English.	Latin.
Dear old-fashioned people who judge others by themselves.	Homines antiqui qui ex sua natura ceteros fingunt.
To be busied about trifles.	Reduviam curare.
To waive one's claims.	De suo iure decedere.
To omit.	Missum aliquid facere.
Without dereliction of duty.	Salvo officio.
I beg you to hear me with indulgence and attention.	Quapropter vos oro atque obsecro, iudices, ut attente bonaque cum venia verba mea audiatis.
To some extent.	Aliqua ex parte.
To come to such a pitch that . . .	Eo prorumpere ut . . .
To do away with a person.	De medio tollere aliquem.
It is generally agreed.	Inter omnes constat.
A life given up to debauchery.	Vita vitiis flagitiisque omnibus dedita.
An abandoned wretch.	Perditus.
Imaginary.	Commenticius.
Unless I am mistaken.	Nisi me fallit animus.
Your father told me a very different story.	At hercule longe aliter [atque tu] pater narravit.
To take part in politics.	Rei publicæ interesse; in re publica versari; ad rem publicam accedere.

All this is worth mentioning if only to dispel the idea that the direct method always eschews the use of English. What is to be deprecated is a conglomeration of English and Latin in an ordinary reading lesson, but we must never avoid English for the sake of avoiding it. Such a lesson as I have just described, though not itself an essential part of the direct method, may very well be a most useful preparation for excellent and enjoyable direct-method lessons. For, as I have said, my immediate object was to provide the boys with some stiffening, as it were, for their weekly speeches; and when these are over I always avail myself of any time which may be left to make criticisms—is it necessary to say *in English*?—or offer suggestions about the improvement of the Latin period, etc.

To give a definite example. I remember quite recently using some ten minutes which were left of a "speech lesson" in which to point out the great extent to which the length of an oratorical period often depended upon the use of the inverted relative in various cases, and I illustrated my point by demonstration upon the blackboard with an imaginary period of this sort:

Qui numquam antea in re publica versatus est, *quem* omnes imprudentem iudicant, *cuius* facta ac dicta a persona gravis hominis omnino abhorrent, *cui* nemo umquam impune fidem habuit, *a quo* omnia iura iam violata sunt, ei, patres conscripti, huius rei administrationem tradam?

The sense of power and confidence which quite young boys acquire from this sort of thing reacts upon their whole work, and the direct method provides such splendid opportunities for the display of that power, *which grows by being exercised.* But unless the boys have good tools, they cannot do good work. Let us see to it, then, that we give them good tools, and the lesson in which the tools are given will be conducted in English (it may be as frequent as once a week if the teacher sees fit), for the tools are for the sake of the work, and this English lesson, or, as I should rather say, lesson conducted in English, is for the sake of producing better Latin lessons during other periods.

To make what I mean clear I conclude by quoting a speech prepared—quite voluntarily, in his own time—and delivered in class by a Fourth Form boy who was at the time exactly fourteen years and three months old. It is, of course, entirely his own work and has not been corrected in any way.[5] My object in quoting it is simply to illustrate the freedom and power which the direct method gives a quite young boy in the wielding of the language; and to avoid any possibility of mis-

[4] *I.e.* their third year of studying the language.

[5] Except by the boy himself between his delivery of it and the presenting of the "fair copy" to me. These corrections did not amount to more than the removal of some half-dozen "slips" in all.

apprehension I wish to state quite frankly that few of my pupils are capable of work as good as the speech which follows. Naturally it is only of the good speeches that I have troubled my young orators to furnish me with "fair copies," and it so happens that the one which I have selected to quote—because it illustrates my point better than any of the others which I have had preserved—is by the best boy in my present Fourth Form. So let not other direct-method teachers be discouraged if they fail to get work of this standard from the average boy in their classes (if such a thing were possible, the direct-method teacher would be an even happier mortal than he is—which is saying a great deal!) If any insist upon looking at it as a criterion of what kind of work can be done on the direct method, then they must take it as an example of what the best boys (and not the average boy) can do. But this is not what I want my reader to do. I want him to examine it as a very interesting and—I freely confess—very artificial product. For the psychology of it is, I venture to suggest, of extreme educational importance.

Here we have a young boy attempting to model himself upon the idea of Cicero's style which he has gained from some odd tags and phrases dictated to him.[6] Personally I do not think highly of Cicero as a man, and question whether a less inspiring author ever wrote. What he has left behind him is, as R. L. Stevenson has said, "a poor diet for the mind, a very colourless and toothless 'criticism of life'; but we enjoy the pleasure of a most intricate and dexterous pattern; every stitch a model at once of elegance and of good sense." Not that the boy whose speech follows has attained anything of this elegance; his work is, on the contrary, a very crude and, in some ways, ridiculous patchwork.[7] But the psychological interest is just this: that the attempt to weave into his work the *purpurei panni* given to him has insensibly lifted his *oratiuncula,* both in phraseology and in idea, above the usual sphere of boys' interests into a plane which we generally associate with a more adult mentality. Here is no question of priggishness[8] or precocity, but merely of that development of the mind which is the object of education. Words are a great aid to thought; and just as Stevenson played the "sedulous ape" to his great predecessors in English literature—though only so far as *style* is concerned—so I submit that it is of great educational interest to study what effect upon a boy's habitual mental outlook (though, of course, it is only to a small extent) can be produced by giving him "tags," and often isolated words, such as I have suggested, and then asking him to make a speech upon any subject he likes. But enough of my preamble; I conclude by quoting the speech:

DE DISCRIMINE HIBERNIÆ ORATIO.

Hodie, patres conscripti, ego qui orationes nonnumquam pro amicis, et sæpenumero in adversarios habui, de discrimine Hiberniæ, quod ante bellum, etiamque nunc, apud omnes qui ad rempublicam accedunt, summi momenti est, pauca vobiscum deliberabo; quapropter, vos oro, et obsecro, patres conscripti, ut attente, bonaque cum patientia, omnes rationes audiatis, animisque concipiatis.

Primo autem quod omnes de gestis facinoribusque Hibernorum, quos fideles, constantes, probos antea finximus, non bene intelligunt, qui hora summi discriminis perfidos, ingratos, infideles se præstabant; quibus nos omnia benificia, fas, iura, quibus cives nostri fruuntur, copiose concessimus, vos, patres conscripti, certiores faciam.

Ut iam dixi, Hiberni omnino liberi erant; at, Hercule, longe aliter de libertate ac senatores nostri existimaverunt, quod etsi hæc iura habebant, concionatores, plebicolæque nonnulli, qui apud plebem et rhetorice et astutia semper plurimum poterant, iniurias fictas contumeliasque commenticias, putaverunt se videre, et hoc modo, animos auditorum aliqua ex parte induxerunt, ut et leges, et bellum pacemque constituendi potestatem soli habere cuperent, ut exercitum et classem suam omnino disiunctos esse vellent, et reapse, ut natio separata liberaque fierent; et quo studiosius ad libertatem eos impulerunt, eo magis Hiberni, summo odio commoti, et verbis senatorum, armisque plebis, monstraverunt se sub imperium nostrum diutius manere nolle. Hi autem, qui bellum intestinum commovebant sui quæstus aut commodi causa, plebem modo agitabant, quo facilius, ut ad gubernacula reipublicæ tandem sederent.

At ne quis forte stupefactus sit me tanta vi vehementiaque eos damnare, ne ei, qui ob gravitatem orationis ab Hibernis faciant, et ad misericordiam propensi sint, ne quis putet me facinora gestaque auxisse, eo rem iam adducam ut nihil divinatione opus sit.

Ego, patres conscripti, qui hanc orationem in Hibernos habeo, consuetudine atque amicitia cum eis coniunctus sum, atque ego, qui et cives, sociosque meos vehementer accuso, reprehendo, etiam eis maledico, consiliumque eorum vitupero, Hibernus sum!

At, Hercule, etsi Hibernus, longe aliter de libertate, de fas, ac iuribus, quæ putant se merito habere necesse esse, ac cives popularesque mei existimo; et etsi odio eis forte ero, licet ipsi bellum intestinum contra nos, qui omnia iura, summaque benificia præbuimus, summo odio commoveant, ego cum eis me numquam coniungam, et etsi nomen de perfidia deferant, animum inducere, ut tantam temeritatem, insaniamque præbeam, numquam poterunt.

Nunc, patres conscripti, non multum dicendum est mihi, quod omnia gesta, omnia facinora, quæ ante

[6] It should be mentioned that he has not yet read a single page of Cicero.

[7] In order that the extent of the boy's originality may not be underestimated, I should state that the speech was composed after only *three* (weekly) lessons of the kind described above.

[8] I have never had the pleasure of teaching a more charming pupil than the one in question.

bellum acta sunt, omnes iniurias commenticias, querimoniasque fictas, iam vobis exposui.

Nec levi coniectura penditur res, quod ego, qui vitam gestis Hibernorum e puero dedidi, in republica eorum semper versatus sum.

Qua propter, vos oro, et obsecro, iudices, ut summa cura, maximaque cum sollertia, omnes pactiones eis concedatis, quod tam magni momenti se res habet, ut non oporteat nos leviter transire, ac tantum modo perstringere rem.

Whatever may be thought of the above, it is certainly not "nursery Latin"—the reproach often brought against the direct method—and I recommend any who are teaching Latin on new lines to see what they can themselves do in the way of bringing about a similar "stiffening" in their pupils' work by the simple device of giving them tags and phrases from Cicero—not only, of course, from the orations (the Letters are an excellent hunting-ground), but anywhere from Cicero and perhaps, for colloquial phrases, from Plautus and others.

A NATURE-STUDY MUSEUM IN A RURAL SCHOOL.

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CURIOSITY is one of the important factors in human nature that make education possible. For this reason the teacher who can command the means to excite his pupils' curiosity in any given direction will find the success of his efforts to educate them considerably augmented. Under the name of Nature-study nearly all teachers nowadays make an attempt to bring before the notice of their pupils some of the interesting phenomena that are to be observed in their natural surroundings, and in some cases this work occupies a very prominent place in the curriculum. The object of this article is to show how curiosity in this subject has been first of all roused, and then stimulated, among the children in a rural school by making use of the collecting instinct, which the teacher will find to be existent in nearly all his pupils.

Nature-study is not to be attempted from books, although these must have some place in any scheme. To be of real value it requires that the students should actually possess, handle, and observe for themselves the things which are the objects of their study for the time being. A single specimen, even if it be passed round by the teacher, is insufficient for the purpose, and a lesson in Nature-work taken in this manner is, at the best, only a modified form of lecture. The provision of specimens for the pupils is a necessity if the work is to be as valuable a training as it ought to be.

When a course of work extending over a period, say a month, is entered upon with a class, it becomes necessary to keep specimens in hand during the whole period, because it may well happen that when the course starts the objects required will be plentiful, but they may be entirely unobtainable later in the course. This keeping of temporary collections of specimens may be looked upon as the germ of the school museum. Often enough it remains a germ.

Where the school possesses one of the so-called museum cupboards the matter advances a small stage further. The oddments thus collected are placed on the shelves of the glass-fronted, upper portion of the cupboard. From time to time fresh specimens find their way into it, and the whole affair is then frequently dignified by being called "the museum." In most cases the specimens are, after their admission, severely left alone, and the result, in a year or two, is a chaotic collection of odds and ends that is nearly, if not quite, useless.

About fifteen years ago this distinctly rural school in the West Midlands underwent a change of headmaster. The newcomer soon became ambitious of carrying on Nature-study upon lines different from the mere preparation and delivery of weekly lessons on disconnected aspects of Nature. It was felt that Nature-lessons should be serial in character, and so the need for the preservation of specimens became apparent; there was, however, no place in which to keep them. To remedy this a museum cupboard of the kind mentioned was requisitioned. It consisted of a low, deep cupboard, about 3 ft. 9 in. wide, 1 ft. 6 in. deep, and 2 ft. 9 in. high, with one shelf inside, forming the bottom half, while on the top was fixed a glass-fronted cupboard about half as deep, with four adjustable shelves. The total height of the two parts was about 7 ft.

When the children realised the purpose of the new cupboard natural objects of various kinds speedily turned up. As they came in they were properly labelled, and the bottom shelves of the glass-fronted portion were filled with specimens illustrating the particular course of lessons which was being proceeded with. When the course was finished new objects were naturally required; but, instead of the old objects being thrown aside, they were stored away in cardboard boxes in the bottom cupboard. In this way there came into existence in a few years the nuclei of various collections, illustrating many of the natural features around the school, and the specimens, being easily accessible, frequently proved very useful.

The next step forward became possible through the arrival in the village of a gentle-

man who was a keen naturalist. He came to stay at a local farm for a considerable time, and during the period of his visit he devoted nearly all his time to a study of the natural features of the farm he was on. The large numbers of specimens that he collected were housed in empty sweet-boxes, the separate specimens being placed in small cardboard boxes, pill-boxes, or empty match-boxes. He became greatly interested in the Nature-work in the school, and through his influence the teacher was enabled to get the grant of another cupboard, as well as about two dozen glass-topped specimen cases. In addition, the visitor had made, and presented to the school, a piece of furniture something after the character of a kitchen dresser, but with two shelves only at the top. Before he finally left the village a public exhibition was arranged of his own and the school collections combined, and it resulted in a "crowded house." He left behind, for the use of the school, a great part of his collections, and on the strength of this the authorities allowed the purchase of a large cupboard for storage purposes.

By this time the school, which consisted at this period of three small rooms, began to be inconveniently crowded with museum furniture, and any further expansion seemed out of the question. Soon, however, one of the classrooms was condemned for teaching purposes, and it was ultimately decided to replace it by adding another room to the other end of the school. Here was an opportunity, and it was immediately seized upon by the teacher. As soon as the school was closed for the purpose of extension the museum furniture and collections were transferred bodily to the old classroom, and while the workmen were busy the headmaster also was busily engaged in preparing the room for its new purpose.

To help the reader to grasp the details of the arrangement finally decided upon, a plan of the room is here given (Fig. 1), showing its general shape and the arrangement of the furniture. The room itself is long and narrow (19 ft. 6 in. by 9 ft.). The door, fireplace, and two windows are clearly indicated, and the last-named, it may be mentioned, are high up in the walls, the sills being 6 ft. and 7 ft. high respectively. After much careful measuring-up and consideration it was decided to arrange the furniture as shown. The dresser was placed at A, and the glass-fronted portions of the two cupboards were removed from the bottom sections and placed on an old form against the wall at BB. They were fastened to the wall to keep them in place. The store cupboard was placed at C. Some old desk-tops being available, a breast-high shelf, supported on legs at intervals, was erected and fastened to the wall at the same side as the store cupboard, reaching from it to nearly the other end of the room. Two similar shelves, one over the other, were fixed up at the bottom end. Various other shelves were hung on brackets from the walls of the room. The bottoms of the two museum cupboards, placed back to back at D, provided a sort of table. In this way a large amount of shelf space became available, and the school museum began to deserve its name.

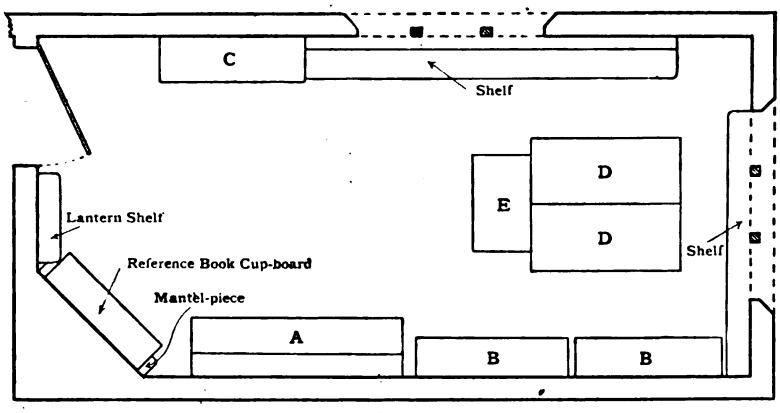

FIG. 1.—Plan of the museum-room.

Since this arrangement of the room was completed, a small table constructed by the headmaster has been placed at E to carry a large glass accumulator tank, which serves the purpose of an aquarium. A small glass-fronted cupboard has also been fixed over the mantelpiece to contain books of reference on Nature-work useful to teachers and pupils, and a substantial shelf has been fixed inside the door to carry the school lantern. The latter can be constantly and effectively employed in teaching if the teacher makes his own slides. The next stage of development naturally arose from a difficulty which increased with the growth in the size of the collections. They began to be unwieldy, and so it became necessary to consider how to standardise the accommodation both of the collections and of individual specimens, that being the method employed in large museums. Two other advantages secured by doing this are that interchange of the specimens is facilitated, and the extension of the collections by the inclusion of new specimens in *their proper places* is made comparatively easy. The first step was made when permission was obtained to requisition a supply of wood ordinarily used for light woodwork, and

from this, when it arrived, about a gross of trays were constructed. Fig. 2 gives a good general idea of the design of these trays. All of them were 1 ft. square, and were made in two depths, some being 1 in. and others 2 in. deep. The deeper had bottoms of wood, but the shallow boxes were bottomed by gluing the frames to squares of millboard. A number of gauges and fitments were made to enable the cutting and nailing of the trays to be carried out more speedily, and the making of them was done in a few evenings with the help of three evening woodwork students.

Thirty-six pieces of glass, each 1 ft. square, were bought to rest on the tops of the trays when they were placed out for exhibition. The specimens were then placed in these trays, and the sweet-boxes and cardboard boxes were dispensed with. By the time the school reassembled everything had been arranged so that the children might visit the museum at any time they felt inclined to use their spare time

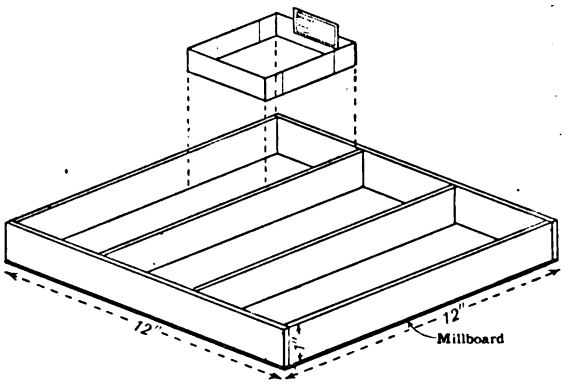

Fig. 2.—Projection of new specimen tray and removable standardised paper tray. Not to scale.

in that manner. Since these trays were completed the work of providing a standard form of accommodation for each individual specimen has been, and still is, going on. Each specimen is being placed by itself in a stout paper or light cardboard tray, and these little trays are made in such sizes that they are readily changed from one position to another in the wooden trays. At the same time new labels with printed headings are replacing the written ones, and the collections are being more systematically classified. Progress in this work is slow, because the headmaster's time is necessarily limited, and also because the specimens themselves are numerous, comprising as they do fairly complete collections of local wild flowers, fossils, rocks, land and freshwater shells, fungi, mosses, lichens, birds' eggs, insects, spiders, fruits, etc.

Two points of importance may be here brought forward. The first is that the specimens are in great proportion purely local, being the outcome of the children's own collecting. Rarities are not sought after, although they are accepted when they are brought in. "Familiarity breeds contempt," and most of the children would pay little heed to the hundreds of common, yet curious, things that exist right in front of their eyes, were it not that their attention is directed to them and to their importance by the fact that they are exhibited in the school. The second point is that under the present system many of the specimens are only occasionally being shown, and that at suitable seasons. This variation of exhibits prevents staleness and stimulates interest.

There are two fairly obvious lines of development along which the future of this school museum lies, one touching upon the collections themselves, and the other upon their increased use for educational purposes. The latter is, of course, the more important of the two, and no one feels this more than the teacher who is responsible for it. Indeed, he would never have given a large amount of his leisure time to the scheme if it had been intended merely to make good collections. The word "museum" means "temple of the Muses," *i.e.* a place for study, and a few experiments are now being made in utilising the collections for individual work. A few selected children are following out, from written instructions and guidance based upon the collections, individual lines of study, and should these prove to be as successful as it is hoped they will be, oral lessons in Nature-study in the upper class of the school will gradually be discontinued, and the pupils will work upon independent lines.

THE SCHOOLS AND EMPIRE DAY.

THE idea of devoting one day in the year to an effort to make our people conscious of their heritage and thoughtful of its destiny is slowly gaining ground. Yet it has still to fire the popular imagination. The average artisan has scarcely heard of it, and the politically active section of working-men scouts it as a token of an effete, but arrogant, imperialism, or of a still more contemptible commercialism which is moved only by the prospect of markets and concessions. They remember the old formula "Trade follows the Flag." To many others empire means emperors, and emperors suggest autocracies. Some day, perhaps, official usage will sanction "British Commonwealth," and we, too, may have a Commonwealth Day, a far happier expression of British ideals than Empire Day.

In the meantime, may not the schools do something to hasten such a change? They have in the past, perhaps, been insensibly affected by the imperialistic note, and though

they have escaped the theatrical manner of Sedan Day in a Prussian school, they might do much to lift the celebration to a higher level by using it to emphasise a great political ideal. Educated men and women need only to picture the present situation in France to become forthwith acutely conscious of all that this unique "Empire" of ours stands for. But many people are not so clear in their minds. "What difference would it make to me if Germany did win the war?" asked the suffering wife of an intelligent artisan of the writer. The question is in the minds of many ill-informed, but cruelly injured, people. Such doubts are not essentially disloyal. They are, if you like, born of ignorance, but they deserve an answer. If the world would not be the poorer for the triumph of a military despotism over an alliance of the free peoples of the world, then, indeed, is our suffering vain. Can the schools not help to bring both knowledge and consolation to those whose agony seems so meaningless to them? An Empire Day, celebrated in this spirit in every school in the land, would lift the whole idea above every suspicion of vulgarity and ostentation. In such an effort the schools might give strong and dignified intellectual direction to what is often little more than instinctive feeling. A vague sense of national danger has hitherto been sufficient to unite us at critical moments, but emotional excitement alone is not a safe foundation for the complex political strueture of which we are the centre. Should we not try to transmute the imperial sentiment from pride of possession into passion for a grand political object?

Politics, in the party sense of the word, cannot, of course, enter the school, but citizenship is not a party question. An Empire Day which does not bring into strong relief the relation of the empire to the daily life of its people is scarcely worth keeping. An empire which is content to leave its citizens, or the vast majority of them, in ignorance, in poverty bordering on indigence, and herded together in insanitary dwellings, is not worth maintaining. Slowly, perhaps, but surely, we are, as a people, realising our corporate responsibilities in these matters. Our own islands offer problems enough in these directions, but the Empire makes them the concern of a quarter of mankind. What have we done in the past? What have our daughter States accomplished? What are our ideals concerning those peoples who are still under our guardianship?

It is, of course, true that the war has made us explicitly aware of much that we previously took for granted and consequently thought little about. Let us take advantage of the time and bring these things before the minds of our older boys and girls by consecrating Empire Day to a consideration of ideals which are endangered almost by the mere prospect of German triumph. Our land is the original home of political freedom. From us it has passed over the whole world. The Hohenzollerns and Hapsburgs are the last resisting bulwarks of medievalism. They, too, are doomed. But political freedom is not an end in itself. We conceive it now as a means to a still higher freedom, to the attainment of which future effort will be directed. The British Empire has to play a part in working out the social and political conditions for the moral freedom of its peoples. Herein lies its ultimate destiny. That, and that alone, can give spiritual value to the celebration of Empire Day, and schoolmasters may surely bend their minds to the problem of how best to give this deeper significance of the celebration explicit recognition.

THE WELSH UNIVERSITY AND THE SECONDARY SCHOOLS.

By A. E. L. HUDSON, B.A.

THE secondary schools of Wales, which provide a large proportion of the students who enter the University, are naturally deeply interested in the findings of the Royal Commission on University Education in Wales, which has recently presented its final report (Cd. 8,991, price 1s. net). Quite naturally, therefore, the Central Welsh Board, the Welsh County Schools Association, the Incorporated Association of Assistant-masters in Secondary Schools, and the National Union of Teachers figure amongst those who gave evidence before the Commission. Some part of their evidence, of course, relates to matters affecting the University only, but the greater part is concerned with the interests of the pupils they send up and with the relation between their own work and that of the teachers under whose charge their pupils pass.

Nominally, the door by which the pupil leaves the school for the university is matriculation, and the schools are equally concerned with the university in the regulations that affect the examination giving the right of passage and the time when the actual passage is made. If the schools were capable only of preparing up to matriculation standard the matter would be quite simple; the work would be in separate water-tight compartments; but the schools can do much more than this. It is by no means uncommon for a pupil to reach matriculation standard long before his character and experience are sufficiently developed to fit him for university life and to give him the proper university outlook. It is natural that the university should wish to capture brilliant students at an early age, with the view of fitting them for

honours degrees and research work; but the schools contend that the pupils who can pass the matriculation examination at sixteen will do better both for themselves and for the university if they remain at school until they are at least eighteen. In the last two years of their school life they can then get a valuable training in the exercise of responsibility, exert a great influence on the tone of the whole school and on future generations of university students, and get a more real and a maturer knowledge of the subjects of their studies.

A student who can just manage to pass matriculation is not at a stage at which he can profit by university training; he has still much to learn of the "grammar" of his subjects, whatever they may be, and it is only when he has obtained a real grip of them, and is conscious that he can do his work with power, that he is fitted to take advantage of the tutorial and lecture system—with which he should, however, have had a gradually increasing acquaintance in the Sixth Form. Naturally, therefore, the students who are best equipped for doing well at the university are those who have reached intermediate standard at school. As both school and university witnesses pointed out, even if such students nominally do the work over again at college, they do it in a different atmosphere and with a sure foundation of familiarity with the elements. They do not "mark time," and unless they have been badly taught, they have not to unlearn what they learnt before, but rather to look at it from a new point of view—a distinct advantage, since all truth has many facets.

Moreover, the effect of taking away the highest work from the schools would be utterly bad for the students directly concerned, for the teachers, and for the rest of the pupils —especially those of them who do not proceed to the university. So the schools demand to keep the pupils for two years after their matriculation and to have the work of those two years recognised, after examination, as an efficient preparation up to university intermediate standard. It was pointed out, during one hearing, that the efficiency of the schools had, in practice, raised the age of actual entrance to the university. No demand was made that the requirement of three years' university residence should be relaxed; but it was suggested that a student who, by reason of efficient preparation, was able to pass his final after two years would have a year left for research work before the degree was actually conferred.

The report does not refer to the demand made by the Assistant-masters' Association for a universal interchangeable matriculation examination, admitting to any university in the kingdom. This may be accounted for by the existence of the Board of Education's scheme for two standard examinations, which, so long as the Welsh Department holds its present position, may be taken to apply also to Wales. But, in case of the institution of a National Council of Education for Wales, this is one of the matters that will require attention. Whatever measure of autonomy may be granted to Wales, no student must be allowed to be placed at a disadvantage on one side of the border because he happens to have been born or to have received his early education on the other; and the like must apply to the migration of teachers to and from Wales.

Many criticisms were aimed at the unnecessary complication of the stages leading up to the bachelor's degree. The assistant-masters pointed out that the terms "ordinary," "intermediate," "special," "final," and "honours" had, especially in the case of the second and third, little meaning, and only puzzled the outsider and bewildered the student. Principal Griffiths went so far as to say that not more than three persons in the University understood the regulations; so it is not strange that the Commissioners recommend the simplification of the system.

The representation of the schools is to be increased. At present three members of the Court of the University are appointed by the headmasters and headmistresses of the intermediate schools; the proposal is that these shall be appointed by the schools recognised as efficient by the Board of Education, thus admitting the municipal and county secondary schools; also there are to be two representatives of the assistant masters and mistresses in the same schools. The Commissioners suggest that the professional associations are the proper bodies to select these representatives.

The professional training of teachers was a very thorny subject, and the report does not venture to make any definite proposals. The teachers themselves, the university colleges, and the training colleges all looked at the matter from their own point of view. The view of the teachers was that the training of a teacher on the academic side should be that of any well-educated person, and that the only difference should be the addition of a year of definite professional training and practice; they looked forward to the time when, as a rule, the qualification for any grade of teaching should be the possession of a degree, and—again backed up by Principal Griffiths—deprecated the segregation of intending teachers from the general body of students, in the interest of the teachers themselves.

Many other matters, on which the report has much to say, will have a marked, though in-

direct, effect on the schools: increased attention to technological studies; the fostering of Celtic studies, of music, and of preparation for agricultural pursuits, for commerce, and for the medical profession—all these are matters which the reconstituted University is asked to take under its wing. If these suggestions prove as fruitful in development as they are in intention the University may be a most potent agent to further alike the intellectual progress and the material prosperity of Wales.

PERSONAL PARAGRAPHS.

THE Council of the Senate of Cambridge University has decided to offer a grace proposing to confer the degree of doctor of laws, *honoris causa*, upon the President of the United States, *in absentia*, and President Wilson has signified his willingness to accept the degree.

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MISS MARY SPALDING WALKER is resigning, on account of ill-health, the headmistress-ship of the Roan Girls' School, Greenwich, which she has held for twenty-three years. Born in Aberdeen, Miss Walker was educated there and at Alexandra College, Dublin, and, after taking her B.A.Lond., she was trained at the Cambridge Training College. As an assistant-mistress at the North London Collegiate School, Miss Walker taught under Miss Buss, and in 1892 was appointed headmistress of the West Ham High School, whence she proceeded to the Roan Girls' School in 1895. At that time this school prepared its senior pupils for the Cambridge Local Examinations and was inspected by the Cambridge Syndicate. From 1895 onwards many and rapid changes took place. The school admitted London County Council scholarship girls in large numbers, and accepted the grants of the Board of Education with all its difficult early conditions. This necessitated the building of science laboratories and the extension of practical teaching in science and domestic economy. A large, new gymnasium and the introduction of net-ball furthered the physical development of the pupils. The London Net-ball Association was started in the school hall. The result of all the new activities has been the foundation of a thoroughly democratic type of school which, in a modest way, has evolved traditions of its own not consciously imitated from existing institutions. Miss Walker is now serving a third period of five years on the executive of the Headmistresses' Association, and is the only woman member on the committee of the Simplified Spelling Society.

SIR HENRY JONES is a candidate for the Parliamentary representation of the Welsh Universities under the new Act. Since 1894 Sir Henry has held the professorship of moral philosophy at Glasgow. Previous to this he held appointments as professor of philosophy and political economy at University College, Bangor, professor of logic and metaphysics at St. Andrews, and Hibbert lecturer on metaphysics at Manchester College, Oxford. He is the author of "Browning as a Religious and Philosophical Teacher" and "The Philosophy of Lotze." Simple and unaffected in manner, and not troubled by conventionalities, Sir Henry embodies the best attributes of Welsh character, and his open disposition and sincerity would make him a valuable addition to the representatives of education in Parliament.

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MR. H. P. LUNN has been appointed headmaster of Yardley Secondary School. Educated at Almondbury Grammar School, Yorkshire College, Leeds, and Owens College, Manchester, Mr. Lunn graduated in science in 1901. After being an assistant-master for more than three years at Llandilo County School, he became research scholar and demonstrator in physics at Owens College. Later he held appointments at Coleraine Academical Institution, Barry County School (second mastership), and is at present senior physics master at Holloway County School. Mr. Lunn has been a prominent member of the Assistant-masters' Association for many years; he was secretary of the association in 1915–16 and chairman in 1917. He has also occupied the chair of the Legal Sub-committee of the I.A.A.M. for nearly four years, and much of the success of the Secondary, Technical, and University Teachers' Insurance Society is due to his indefatigable energy. Tireless in his endeavours on behalf of education and the welfare of secondary-school teachers, Mr. Lunn's well-deserved promotion will be welcomed by all who have been connected with him in his many and varied spheres of activity.

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MR. W. L. GRANT, who was formerly an assistant-master of the school, has returned to Upper Canada College as its headmaster. Mr. Grant was doing excellent work with the Army in France when he was summoned to return to Canada. He returned only when General Turner, his G.O.C., personally ordered him back, telling him that his work in England and France, satisfactory though it had been, was less important to the nation than that which a suitable headmaster could do at Upper Canada College. At his installa-

tion, last December, Mr. Grant delivered a speech, a copy of which has come into my hands. It breathes the highest ideals, and I wish every schoolmaster in England could have heard it. His views of the duty of headmasters to those of their boys who do not go on to the universities deserve special emphasis. "I hope," he said, "to give all lawful help and encouragement to every boy in this school; I shall certainly be proud of all university honours won; but the boy in whom I take the deepest interest is the boy whose formal education ceases with this school. The boy who goes on to the university has another chance; the boy who leaves the school to enter business or industry must henceforward find his way through the woods without a blaze. Woe to us if he leave us unillumined and unquickened! I am convinced that in a proper course, properly taught, in the modern humanities, centring in, though not wholly composed of, instruction in and through the English language and literature, lies the best hope of the education, of the quickening and the illumination, of this very important class of citizens."

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In my note of last month referring to the large candidature list for the post of secretary to the Edmonton Education Committee, I should have said there were 260, and not 100, applicants. Unfortunately, too much confidence in Press-cuttings caused me to state that the Marquis S. M. E. Roault de Longueville De Bucy was a candidate for the vacant position. News has reached me from Edmonton that this was not so, and I must hope the Marquis will forgive my inadvertent mistake.

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It is announced that Mr. C. H. Blakiston, of Eton, has decided, on the advice of his medical attendant, to withdraw his acceptance of the wardenship of Radley College. The appointment was referred to in these columns in the April issue.

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By the will of the late Dr. Butler, Master of Trinity College, Cambridge, several bequests are made to educational institutions. The insignia of the Order of the Crown of Italy are bequeathed to Harrow School. The insignia were presented to Dr. Butler, whilst he was headmaster at Harrow, by the King of Italy, whose nephew received his education at the school. Pictures, seals, biographies, and a silver Declamation Cup, formerly belonging to the late Dr. Whewell, are left to Trinity College. The National Portrait Gallery is to secure the bust of his sister-in-law, the late Josephine Butler, by Alexander Munro, and his portrait, by Herkomer, is to be retained as a family heirloom or hung in Trinity College.

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Sir Swire Smith, M.P. for the Keighley division of the West Riding, died on March 16th in his seventy-seventh year. Few men have done so much, both by example and precept, to encourage the practical side of education. At the age of twenty-five his interest in education was aroused by a lecture delivered at Huddersfield by the late Dr. Samuel Smiles, who declared that Great Britain was in danger of losing her predominance in industry by her neglect of scientific and artistic training. He found that the only educational facilities of Keighley, beyond the elementary schools, were afforded by the Mechanics' Institute, which the late Sir Isaac Holden attended, and from the library of which Charlotte Brontë and her sisters were borrowers. Sir Swire Smith was made secretary of the institute, and thenceforward devoted his life to the promotion of technical education, which had hitherto been completely neglected in the district. It was owing to his endeavours that the Keighley Trade and Grammar School—which has been a model for the country—was opened in 1870. Its day school—organised on scientific lines—attracted the clever boys from the elementary schools by scholarships and sent up such a procession of scholarship holders to the Royal College of Science and the Royal College of Art that Huxley made the interrogation: "Where is this Keighley?" In 1900 Augustus Spencer, a prize student from Keighley to South Kensington, was appointed principal of the Royal College of Art itself. Sir Swire was blessed with an exceptionally strong physique and possessed a very winning and versatile personality. His townsmen honoured him by presenting him with the freedom of the borough and his portrait painted by Solomon J. Solomon, R.A. He was seventy-three years old when he was first elected M.P., and in 1898 his valuable services were recognised by a knighthood.

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The Rev. T. Howey Nichols, headmaster of King's School, Pontefract, who resigned recently owing to advancing years, died suddenly on April 13th. Mr. Nichols was educated at Hartley University College, Southampton, and St. Catharine's College, Cambridge. He was a scholar of his college, taking the Maths. Tripos—senior optime—in 1882. His teaching experience included five years at Bancroft's School, four years at Brighton Grammar School, and eight years at King Edward's School, Birming-

ham. He also acted as inspector of schools in Ireland, and took up his appointment at King's School in 1890. Mr. Nichols had taken a considerable share in the administration of education in Pontefract for many years. He was the hon. secretary of the technical schools for twenty-eight years, chairman of the Evening Schools Committee under the municipality, a member of the Education Committee, and a manager of the Church day schools.

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OFFICIAL information has been received in Nottingham that 2nd Lieut. Reginald C. F. Dolley, of the Sherwood Foresters (T.F.), who was reported missing on July 1st, 1917, is now presumed to have been killed in action. Mr. Dolley was educated at the Watford Grammar School and proceeded to University College, London, graduating with first-class honours in history in 1909. He became history master at West Leeds High School and, whilst there, obtained his M.A.Lond. In recognition of his exceptional merit, he was elected a fellow of University College, London, in 1913. From Leeds he proceeded to take up his appointment as lecturer in—afterwards professor of—history at Nottingham University College, resigning this position in 1915 in order to join the Inns of Court O.T.C. His death is deeply regretted in Nottingham, particularly among the University students.

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MR. J. W. TOWNSEND STORRS, late headmaster of the Grammar School, Doncaster, died on March 8th at Sandown. Mr. Storrs was appointed to Doncaster in 1890 and resigned in 1901, and during his tenure the school became an organised science school. He was well known in the district as an ardent naturalist and an enthusiastic gardener and bee-keeper.

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THE death is announced of Mr. David H. Patrick, science master at Bablake School, Coventry, since 1895. Mr. Patrick was educated at Holy Trinity School, Coventry, and trained at Saltley Training College. His success at the latter institution led to an appointment at the Saltley Practising School, from which he resigned to engage in science teaching at Bablake School and Coventry Technical Institute.

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THE Oxford University Press announces for early publication a volume entitled "The Theory and Practice of Language Teaching." The author, Lieut. E. Creagh Kittson, who is at present serving in France, has been a frequent contributor to THE SCHOOL WORLD.

ONLOOKER.

THE POSITION OF SCIENCE IN SCHOOLS.

THE report of the Committee appointed by the Prime Minister to inquire into the position of natural science in the educational system of Great Britain, of which Sir J. J. Thomson was chairman, has now been issued (Cd. 9,011, price 9*d*. net). So far as the teaching of science in schools is concerned the report has few suggestions of a novel kind to make; but it stresses most of the recommendations with which recent reports drawn up by various committees appointed by scientific bodies and educational associations have familiarised headmasters and governing bodies. The Government Committee makes it quite clear throughout its report that if there is to be satisfactory work in science done in the schools, the career of a science teacher must be made much more attractive both by increased social esteem and by greatly augmented emoluments. Even now there is a serious shortage of science masters and mistresses; and, if the recommendations of the report are to be carried out, a much larger number of teachers will be required. If the schools are to secure teachers with the high qualifications the report lays down as necessary, especially in view of the competing claims of industry, governors of schools must somehow find the money necessary substantially to increase the salaries offered, and to do this further State aid must be forthcoming.

We hope the report will receive the attention its importance deserves. We print below the parts of the summary of the principal conclusions of the Committee which more directly affect the teaching of science in schools.

SUMMARY OF PRINCIPAL CONCLUSIONS.

GENERAL.—Natural science should be included in the general course of education of all up to the age of about sixteen. The tests of such a course, recommended in the report, should with necessary modifications be accepted as the normal qualification for entrance to the universities and professions. Real progress in education depends on a revolution in the public attitude towards the salaries of teachers and the importance of their training. A large increase in the number of scholarships at all stages of education is necessary. Periodical inspection should be compulsory on all schools, and this inspection should be under the direction of the State.

SECONDARY SCHOOLS.—Steps should be taken to secure for all pupils in State-aided secondary schools a school life beginning not later than twelve and extending at least up to sixteen. Science should be included in the general course of education for all pupils in public and other secondary schools up to the age of about sixteen, and this general course should

be followed by more specialised study, whether in science or in other subjects. In all secondary schools for boys the time given to science should be not fewer than four periods in the first year of the course from twelve to sixteen, and not fewer than six periods in the three succeeding years. Increased attention should be given to the teaching of science in girls' schools. In girls' schools with a twenty-four-hour school week, not fewer than three hours per week should be devoted to science in the period twelve to sixteen. A larger number of State-aided schools should be encouraged to provide advanced instruction in science, and those which undertake advanced work should be staffed on a more generous scale. In suitable localities there should be some school or schools where less time should be given to languages and additional time to English, science, mathematics, manual instruction, and drawing. In the curricula of all preparatory schools provision should be made for the teaching of the elements of natural science. The usual age of entry into the public schools should be lowered to thirteen, and this should be the maximum age for entrance scholarship examinations. The elements of natural science should be a necessary subject in the entrance examination of public schools, and due weight should be given to this subject in the entrance scholarship examinations to public schools. General education would be benefited by there being no division of schools into sides at the twelve to sixteen stage.

Science Course Twelve to Sixteen.—The science work for pupils under sixteen should be planned as a self-contained course, and should include, besides physics and chemistry, some study of plant and animal life. More attention should be directed to those aspects of the sciences which bear directly on the objects and experience of everyday life. There should be as close correlation as possible between the teaching of mathematics and science at all stages in school work. The present chaos of English weights and measures causes waste of time and confusion of thought, and there are strong educational reasons for the adoption of the metric system. All through the science course stress should be laid on the accurate use of the English language.

Science Course Sixteen to Eighteen.—The amount of time devoted from sixteen to eighteen to the subject or subjects in which a pupil is specialising should be not less than one-half or more than two-thirds of the school week. Those specialising in science should continue some literary study, and those specialising in literary subjects should give some time to science work of an appropriate kind. Courses in science should be provided for those specialising in subjects other than science. Pupils who do advanced work in science should be enabled to acquire a reading knowledge of French and German. Eighteen should be the normal age of entry from secondary schools to the universities, and the age limit for entrance scholarships at Oxford and Cambridge should be reduced to eighteen.

Examinations.—In the First School Examination all candidates should be required to satisfy the examiners both in mathematics and in natural science. In this examination there should be co-operation between the teachers and examiners, and weight should be attached to the pupil's school record. The examinations in science for the leaving certificate of the Scottish Education Department should include a written test.

Teachers in Secondary Schools.—It is essential that the salaries and prospects of teachers in secondary schools should be substantially improved and a national pension scheme provided. A full year's training shared between school and university is necessary for all teachers in secondary schools. Grants for teachers in training should be available for all suitable inspected secondary schools. Short courses of training of various types should be provided for teachers.

Laboratories.—The teachers in State-aided schools should be given freedom and responsibility in the selection and purchase of laboratory appliances up to a fixed annual amount.

Elementary Schools.—Increased attention should be given to the provision of suitable instruction in science in the upper standards of elementary schools. A larger number of students in training colleges should be encouraged to take advanced courses in science. There should be in every elementary school a room in addition to the ordinary class-room accommodation available for work in science and other practical subjects.

Technical Education.—Greater efforts should be made to develop and increase the provision of instruction in pure and in applied science in technical schools and institutions of all grades. Arrangements should be made for consultation between the various institutions giving secondary and technical instruction within any area. Many more scholarships are needed to enable technical students to pass on to the universities, and also to enable boys from junior technical schools (or their equivalent) and from evening schools to enter senior technical schools. The position of junior technical schools in the educational system should be reconsidered. It is essential that the salaries and prospects of teachers in technical schools should be substantially improved, and a national pension scheme provided for whole-time teachers. In the proposed continuation classes provision should be made for instruction in science both in its general aspects and in its bearing on industry.

Army.—Science should be an obligatory subject in the examination for entrance into the Royal Military College, Sandhurst, and should be included in the course of instruction in the college. Steps should be taken to improve the efficiency of the instruction in science at the Royal Military Academy, Woolwich. More encouragement should be given to officers at later stages of their career to improve their scientific qualifications.

University Education.—The universities should adopt the First School Examination as the normal examination for admission, and should abolish special matriculation examinations for candidates from schools. Greek should not be retained as a necessary subject in Responsions at Oxford or the Previous Examination at Cambridge. The universities should make special arrangements to test the fitness for entrance of candidates who are more than twenty-three years of age.

SCHOLARSHIPS AT SCHOOLS AND UNIVERSITIES.—Scholarships should be considered as distinctions awarded in recognition of intellectual merit and promise. All scholarships should be of nominal value, to be supplemented according to need. Where necessary, the whole cost of a scholar's education and maintenance should be defrayed. Scholarships at the universities should be tenable for at least three years, with a possibility of extension. Those awarded by local education authorities should not be restricted to particular universities. Scholarships at the universities should be awarded on a wider range of subjects than at present. The age limit for scholarships at Oxford and Cambridge should be eighteen rather than nineteen. Scholarships should not be awarded on work done in large pass examinations for schools. Those available at the universities for candidates from technical and evening schools should be awarded without an age limit, and for the present on a limited range of subjects. The number of scholarships at the women's colleges should be increased. Loan funds should be established to enable senior students to obtain professional training.

THE CENTRAL-SCHOOL SYSTEM OF LONDON.[1]

THE central-school system of London dates from the educational year commencing April 1st, 1911. The schools are primary in character, and definite regulations were issued by the authority concerning their conduct and organisation.

OBJECTS OF THE SCHOOLS.—The idea embodied in the formation of the central schools was that they should form the crown of the primary-school system in London. To accomplish this a certain number of the ordinary schools were grouped together and contributed children to the central school. The children were selected for admission who were considered the most suitable intellectually, and they were chosen from those who did best in a competitive examination—the Junior County Scholarship Examination—after the junior county scholars had been drafted to secondary schools.

The education authority was desirous of offering to these specially selected children an opportunity, under the most favourable conditions as regards premises, equipment, and staff, of carrying on their education beyond the standard of the highest classes in the ordinary primary school.

The central schools, therefore, provide to some extent a definite preparation for future employment, both in commerce and industry, without its being vocational in aim or in scope. A circular issued by the L.C.C. states that "the chief objective of the central school is to prepare boys and girls for immediate employment on leaving school, and the instruction should therefore be such that children should be prepared to go into business houses and workshops at the completion of the course, without any intermediate special training."

From this it is clear that the central-school system occupies a position intermediate between the secondary and the trade school. It is distinguished from the former by the leaving age of the children being lower and by the fact that the curriculum is less academic in character; while it differs from the latter by the lower age of admission for children and by the fact that the pupils receive no definite technical training for any specific trade or business. For the education given is vocational only to the extent that it receives a definite "bias," either in the direction of industry or in that of commerce.

A school may have either a commercial or an industrial (*i.e.* technical) bias, while in a few schools the curriculum makes provision for teaching from both points of view, and the bias is then said to be "dual." The bias becomes effective immediately on admission, although the difficulty of judging, at so early an age, the child's "bent" has lately led to some slight modifications in this respect in certain "dual bias" schools.

When the system is fully developed London will have sixty central schools, so distributed that one school at least shall be reasonably accessible to the children from every primary school.

At the present time there are fifty central schools, and, in addition, there are others, still called higher grade schools, which admit children as in the case of central schools, but their curriculum differs somewhat from that of the central schools.

The fifty central schools are classified thus:—

	Boys	Girls	Mixed	Total
With commercial bias ...	5	7	12	24
With industrial bias ...	5	1	3	9
With dual bias	7	7	3	17
	17	15	18	50

To these schools about five thousand children are admitted each year at the beginning of April.

Pupils may be transferred from one central school to another as necessity arises by reason of removal from one district to another, but no new pupils are admitted during the year, except with the express sanction of the authority, after examination by the head teacher of the school at which admission is sought. Thus real continuity of teaching is obtained throughout the yearly periods. Central schools are not handicapped by double or terminal promotions, or by other similar vexatious proceedings; while no class exceeds forty pupils.

SELECTION OF PUPILS.—As has been already stated, the Junior County Scholarship Examination forms the basis of selection. The examination is taken by all pupils in the ordinary schools who are between the ages of eleven and twelve on March 31st of the year of admission, and working in Standard IV. or some higher standard.

The practice generally followed is for the district inspector to select possible candidates for admission from each contributory school according to the attainments of the children as shown by this examination, in which the subjects taken are English and arithmetic. In making the selection the head teachers, both of the central and of the contributory schools, are consulted, and each possible candidate is interviewed by the inspector and the head teacher of the central school. At the interview not only are the marks gained at the

[1] From a paper by Mr. E. J. Sainsbury, B.A., read on April 2nd, 1918, at the Cambridge Conference of the National Union of Teachers.

scholarship examination considered, but also the child's school record, as well as his fitness and suitability for transfer to a central school.

Lately the practice has obtained, with advantage, of giving more weight to the recommendations of the head teacher of the contributory school, and this practice should without doubt be still further extended, for it is obvious that some children well fitted to benefit by more advanced education at a central school do not from various reasons do full justice to their intellectual powers at a set examination restricted to two subjects; and as some children are late in developing their mental powers, the head teacher and his staff are able to judge of their capacity, and of their effective industry, better than can be done by examination. The children admitted to schools with an industrial bias have their special aptitude in drawing and handwork considered with more care than the others.

From the list of "possibles" the district inspector then prepares a list of pupils recommended for transfer, classified according to his estimate of their suitability, and these names are submitted to a special selection committee attached to each central school. This committee then decides upon those who are to be transferred.

Before the child is admitted to the central school, the parent has to signify his assent to the transfer, and is also required to sign an undertaking that the child shall complete the school course. In practice, however, this undertaking does not always prove effective, and many children leave when they have attained the age of fourteen years, or soon after.

On the whole the method of selection works well, although unevenly on occasion, as may be supposed, but the children admitted are generally of a good type intellectually, and capable of deriving real benefit from the advanced teaching. It would, however, be an advantage if all entrants could be medically examined, with the view of finding out their physical fitness and their ability to stand the strain of the somewhat intensive course they have to go through.

The submission of pupils for admission is compulsory in the case of council schools, but voluntary on the part of managers of non-provided schools. The result is that most of those admitted come from the former type of school. The numbers from the latter schools, however, although very small at first, are increasing satisfactorily.

Exhibitions.—As an inducement to parents to retain their children at the central schools as long as possible, a system of exhibitions was established. The exhibitions amount in the aggregate to £7,500 a year. The money is annually divided among the schools according to the number of pupils eligible in that year. With one exception the exhibitions are all of the value of £1 per month—the scheme having been recently revised. The exception is designed to cover travelling expenses only, to and from school, for in London travelling is frequently a not unimportant item of expense. The exhibitions are tenable during attendance at school after the pupil reaches the age of fourteen.

Scope and Aim of the Course.—The period of the central-school course is four years. The aim is to give an extended and practical training to the selected pupils, who can stay at school until they reach the age of "fifteen *plus*," so that they may on leaving school readily adapt themselves, their knowledge, and their skill to the office, the warehouse, or the bench. Suitable training for their future occupations is provided, on one hand by the schools with a commercial bias, and on the other by those with an industrial bias. In addition, the general education of the pupils is advanced, and careful regard is paid to their physical development and to such training as will equip them for life as well as for livelihood. Hence the curriculum includes Scripture, English (comprising also geography and history), mathematics, science, drawing, handicraft, physical exercises (including swimming and games), and singing; also in schools with a commercial bias a foreign language (usually French) and commercial subjects—shorthand, the principles of book-keeping, and typewriting.

No attempt is made on one hand to teach any special trade, or on the other to specialise for any particular branch of office work.

Hours for Teaching Certain Subjects.—Rather stringent regulations were drawn up by the education authority for the allocation of the time to certain subjects in the curriculum, and these are generally still operative; but in the other subjects the head teacher has liberty to arrange his curriculum as he wishes. In schools and classes with a commercial bias, at least four hours per week must be devoted to a modern language throughout the whole school course. Two hours per week must be devoted to drawing (including geometry), and the same time must be given in the first two years to laboratory work in experimental science. This last, however, becomes an optional subject in the third and fourth years as regards both the subject itself and the time allocated to it. For the first two years all boys must attend, for one session per week, instruction in handicraft; and all girls, for a similar time, practical work in domestic subjects for the first three years. Instruction in the definitely technical or specialised subjects is deferred until the third and fourth years, when at least one and a half hours per week must be given to shorthand and at least one hour to the principles of book-keeping. Typewriting is taken outside the ordinary school hours.

In schools with an industrial bias from ten to twelve hours per week are devoted to practical work during the whole of the four years' course. A modern language was not introduced into the curriculum of these schools at first, but now some schools with an industrial bias have included a modern language in their curriculum. The minimum time given to this subject must, under the council's regulations, be three hours per week in such schools.

Prospects of Pupils.—Little difficulty was experienced, even in normal times, in obtaining good employment for all who completed their full course, at wages much in excess of those obtainable by pupils from the ordinary schools, while large numbers of the boys are able to proceed direct from school into the Civil Service by passing the examination for temporary boy clerks.

Pupils trained under the industrial bias are readily accepted as apprentices by good engineering firms, or,

by competitive examination, they frequently pass as trade lads into the Royal Arsenal at Woolwich, or as boy artificers into the Royal Navy.

A very large proportion of the pupils who complete their full course proceed, on leaving school and entering on employment, to the evening commercial institutes or polytechnics, where they continue the specialised work begun in the day school, both commercial and industrial, with the result that their services are in great demand by employers, and it may thus fairly be claimed that the central schools have fully justified the expectations formed of them at their inception.

TEACHERS AND THE FUTURE OF ENGLISH ELEMENTARY EDUCATION.[1]

ENGLISH men and women have to-day to make up their minds what they wish the children to be taught, and then to leave to the members of the teaching profession the carrying out of their ideas. The teaching profession is therefore of paramount importance, and the men and women who belong to it have the great responsibility of guiding and training the young people of this country so that they may be ready for their great task. There is a serious shortage of both masters and mistresses now, and, as it takes at least five years to train a teacher, this shortage is likely to be felt for many years. Mr. Fisher has foreseen this, and has tried to help, by means of special supplementary grants, to make the teaching profession more attractive from the money point of view. Some 20,000 men have been withdrawn, from the total of 36,827, to serve with our armies in the field, more than 1,000 of whom have made the great sacrifice, and it is obvious that it will be many years before the gaps caused by their removal will be filled.

As regards the women, the war has opened out to them many other fields of endeavour than teaching, which was, with the exception of medicine, the only profession which offered a career to women before the war, and thus it attracted many intelligent women who were not particularly fond of teaching, but adopted it as offering a means of livelihood. The status of the teaching profession must be raised if it is now to attract any large number of gifted men and women, and the conditions of work must be of such a character as to offer to them scope for individuality and development. What prospect has it offered in the past? A life of strenuous and exhausting work, in many cases few opportunities of social and intellectual development, and often a meagre salary, together with criticism by all and sundry. We learn from a return published by the Board of Education in November last that, out of 36,827 certificated men teachers, 2,639 receive less than £100 per annum, and twenty-five less than £65 per annum; and out of 77,139 certificated women teachers, 32,314 receive less than £100 per annum and 566 less than £65 per annum.

It is absolutely impossible for teachers receiving such salaries to be contented and happy, and their work must suffer because of the lack of opportunities for development. In "Unto this Last" Ruskin showed how the character of the good employer was reflected in the workpeople, and if the new educational era is to be the success to which we all look forward it is indisputable that the work of teaching must be in the hands of a contented staff of teachers. It should be remembered that Mr. Fisher's dictum is correct: "Education does not raise discontent, it heals it," and the work of teachers, who are dealing with thousands of young people, is of tremendous importance in the formation of the national character. Many of our teacher women, among a large number of others, will have the vote at the next General Election, and when this great achievement is finally gained the nation will realise what a valuable asset women's influence will be in the future development and rebuilding on the ruins of civilisation brought about by this awful war. Women teachers will have a unique opportunity and advantage in helping to show women how to use the vote so as to utilise the brain work, hand work, and devotion of their sex to promote the best interests of the nation as a whole.

In England, there are great opportunities of usefulness unfolding for women of all classes, and particularly with regard to education. Many education committees have had only one, two, or three women as members, though the greater part of their work deals with women. In America, women have, within the last few years, advanced to the highest administrative positions in the educational service, and in 1914 there were more than 500 women county superintendents in the United States, nearly double the number which had been so recognised ten years earlier. Also in some parts of the United States—as in New York—the principle of equal pay has been conceded, but in this country the differentiation between the salaries of men and women has shown a tendency to increase, though that is to some extent counteracted by Mr. Fisher's declaration of minimum salaries, which gives a proportion of nine-tenths to the women. On the Departmental Committee of eighteen set up by the Board of Education to report on the salaries of elementary-school teachers there were only four women members, our own union appointing one of the four representatives. Notwithstanding all this, the professional position of women has improved steadily, though that improvement has not, as a rule, been followed by a corresponding improvement in remuneration. A wider appreciation of their work in an advisory capacity is increasingly apparent, though there are still many people who fail to take them into their councils.

The ideal teacher is rare, and I claim that such a personality is discovered among women in quite as great a proportion as among men. To be able to get inside the mind of every member of her class and to know how to quicken the interest of each child is only attained by men and women possessing a highly developed imaginative faculty, quick instinct, and a sense of subtle atmosphere. A teacher who is a child lover, and instinctively knows as soon as she enters a room the mood of the class before her, will never experience the slightest difficulty in managing children, or in awakening and holding their interest.

[1] From the presidential address delivered by Miss F. R. Conway, M.A., on April 1st, 1918, at the National Union of Teachers Annual Conference at Cambridge.

The supplementary grant—the Fisher money—is actually being used by the authorities in London and some other localities to make the differentiation between the men's and women's salaries greater than in the past, and I tell them plainly that this is a retrograde step and will result in disaster. Surely the supplementary grant should be shared out on an equal basis as between men and women teachers of equal service, and rates of increment in the new salary scales should be equal for men and women. The lower standard of pay means a lower standard of living, and gradually but surely results in many cases in the undermining of the health of the woman teacher.

The day continuation schools for children from fourteen to eighteen contemplated in the Bill will require to be staffed with men and women of broad and sympathetic outlook with a wide academic and professional training. It would be a great gain if these schools could be arranged in connection with the school attended by the pupils up to fourteen years of age, for the teachers have established community of interest with their pupils, and acquired considerable knowledge of the individual characteristics of each, so that they would start with advantage the education for the limited period of 320 hours contemplated in the new Bill. I trust that women teachers will play an active part in this new work, and their beneficent influence over the boys and girls be continued. It is particularly necessary that the girls should come under the influence of capable, cultured women during this period, and it would be helpful if some instruction in domestic subjects were included in the curriculum of all such schools. We, as practical teachers, hope ardently for the passing of the Fisher Bill, which is to free the child slaves in our land and give them a chance of profiting by the education given in the primary schools.

There is a new and refreshing enthusiasm for education observable, and many men—imbued with a spirit of patriotism—are visualising a new England which shall grow triumphantly out of the existing chaos. Many workers will co-operate in this desirable end: the city councillor, who plans a country suburb on the hills round his city with clean, well-planned, convenient houses, with beautiful schools and churches, connected by cheap trams with the centre of the industry, so that the workers may easily get to and from their factories; the large employer of labour, who advocates a six hours' working day, so that the workers may have leisure for self-improvement and rational recreation; and the teachers, who will be in the future the leaders and colleagues of the democracy among whom they live and work. I dream of a good time coming, when all classes in our beloved country will have learnt that it is only by whole-hearted co-operation and enthusiasm for social service that we shall realise our ideals. That co-operation has, on the whole, resulted in our wonderful organisation for this terrible war. Surely it is possible to secure an even more efficient co-operation in the interests of reconstruction when peace smiles upon us once more! Then we shall remember that it is not only in educational efficiency and in commercial and industrial supremacy that we shall maintain the greatness of Britain.

We want our people to realise that if our children are to grow up and be the men and women who are to labour for this ideal, they must be imbued with the spirit of Christianity and know and love their Bibles, realising the lesson voiced by the Psalmist of old:—"O send out Thy light and Thy truth, that they may lead me: and bring me unto Thy holy hill, and to Thy dwelling." We hope that in any scheme of education adopted will be included the training to think on "whatsoever things are true, whatsoever things are honourable, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report." The Sermon on the Mount is a better guide for conduct than any theories of German philosophers, and in the future development of education our England must see that the religious teaching given by teachers who realise their great responsibility is an integral part. There is no religious difficulty inside the schools, and we trust that nothing will be done in the future either to introduce that difficulty or to interfere with the teachers, who are proud of the trust committed to them and are the proper persons to discharge that trust. England will never again allow it to be said that "the theologian blocks the way of progress," and I trust that extremists on all sides will be content to leave this vital matter in our hands. Let us for our part try to deserve the tribute which Matthew Arnold paid to his father, the great schoolmaster:—

"Yes, I believe that there lived
Others like thee in the past,
Not like the men of the crowd,
Who all around me to-day
Bluster and cringe and make life
Hideous and arid and vile,
But souls tempered with fire,
Fervent, heroic, and good,
Helpers and friends of mankind,
Servants of God, or sons
Shall I not call you? because
Not as servants ye knew
Your Father's innermost mind:
His, who unwillingly sees
One of His little ones lost—
Yours is the praise, if mankind
Hath not as yet in its march
Fainted, and fallen, and died!"

THE EASTER CONFERENCE OF THE NATIONAL UNION OF TEACHERS.

Notwithstanding the fact that the shadow of the war lay heavily upon the proceedings of the Cambridge Conference—few members but had the heavy strain of apprehension to bear, and not a few being called away by sad news from the war area—it was one of the most successful in the history of the N.U.T., both in relation to the amount of business negotiated and in the importance of the decisions arrived at. A noteworthy feature of the reception of deputations lay in the fact that for the first time a single representative, Mr. John Strong, president of the Educational Institute of Scotland, was able to speak for all grades of the teaching profession in Scotland by reason of the recent union of the Secondary Education Association, the Educational Institute of Scotland, and the Class

Teachers' Federation. The announcement of Mr. Strong that the union had hitherto proved remarkably successful was greeted with much applause.

THE EDUCATION BILL.—A simple resolution of welcome to the new Bill, and an urgent plea that it should be placed upon the Statute-book during the present session, constituted the contribution of the conference to the efficiency of Mr. Fisher's scheme of reform. Very strong cases were made out for the more generous treatment of necessitous areas, and for compulsory secondary and university education, but the feeling of the members was quite decided as to the inadvisability of adopting amendments, however desirable, which would tend to obstruct the expeditious passage of the Bill in Committee. It was unanimously decided by the conference, however, to urge upon Parliament and public bodies concerned that, in all cases where primary- and secondary-school teachers can be shown to have suffered loss of appointment or salary through legislative or administrative changes, they shall receive proportionate compensation.

EQUAL PAY FOR EQUAL WORK.—The case for equal salaries for men and women teachers possessing equal professional qualifications and performing similar school duties was clearly presented by the Manchester representatives, Miss McCulloch and Miss Sweaney. The amendment moved by Mr. W. H. Young, of Liverpool, stressed the contention that the result of equal salaries would inevitably cause a lowering of the status of men teachers who had greater economic responsibilities to meet. It was pointed out during the debate that the most enthusiastic advocates of the equal payment principle were the young women teachers, and further, that it was unjust to come to a decision upon the matter when so many men teachers were absent on active service. Mr. Young's amendment was carried by a substantial majority, 42,757 votes being cast in its favour and 26,040 against. A proposal to take a referendum upon the question in order to reach a definite decision was finally passed unanimously.

THE UNION AND THE LABOUR PARTY.—The result of the referendum on the proposal for the alliance of the union with the Labour Party showed a majority of 14,309 votes against such a course being taken, the poll giving 29,743 members against and 15,434 in favour. The position has been exhaustively discussed by the local associations during the year, and so strong is the collective feeling of the profession against identification with politics and political parties that proposals to ally with any other such parties would doubtless have been rejected by majorities equally decisive.

THE NEW STANDARD SCALES OF SALARIES.—The new rates of salaries approved by the conference lay down a minimum rate of £100 per annum in the case of provincial class-teachers, and of £120 for teachers working in the metropolitan areas. The annual increment is £12 10*s*., and the maximum in the case of men is £350, and in that of women £300. A strong point in favour of the new scales lies in the fact that for a long series of years, from fourteen to sixteen, equal payments are laid down for men and women, the differentiation in favour of men at the close of these periods being designed to relieve the economic pressure which would normally be imposed by the burden of a growing family. The terms of the new salary scales will presumably have an important influence upon the result of the referendum which is to be taken. The scale of salaries for assistant-masters in secondary schools as formulated by the Secondary-schools Committee of the union is a minimum of £200 per annum, proceeding by annual increments of £20 to a maximum of £500, and in the case of special responsibility to £600. For assistant-mistresses the minimum is fixed at £180 per annum, with annual increments of £15 to a maximum of £400, and in the case of special responsibility to £500.

THE GROWING ASCENDANCY OF THE NORTH.—One of the outstanding features of the conference meetings was the prominent part taken in the various debates by representatives from the North. Lancashire was exceptionally well represented, apart from the fact that two Lancashire teachers, Miss Conway and Mr. H. Pearson, occupy the offices of president and vice-president respectively. The steady growth of unionism in the County Palatine has caused the County Teachers' Association to become the corner-stone of the National Union, and on this account the county will, next year, return an additional member to the Executive Board.

THE INCREASE OF SUBSCRIPTION.—The proposal to increase the annual subscription to the union from 12*s*. to 21*s*. was agreed to without discussion. The major portion of this fee will be devoted to the foundation of a Professional Sustentation Fund, the lack of which has frequently prevented the union from securing full protection for those of its members who have been borne down by insufficient rates of salary and onerous conditions of service.

ITEMS OF INTEREST.

GENERAL.

THE Board of Education's Circular 1,036 bears upon the question of training colleges for teachers in elementary and in secondary schools. The Circular is meant to remove an anomaly in the system of training, but it cannot be said to achieve complete success. Under present regulations a student in an elementary training college, provided his academic qualification is suitable, may, and in a large proportion of cases does, obtain appointment to a secondary school, notwithstanding that his professional training has been entirely on elementary-school lines. The elementary training college thus competes on unequal terms with the secondary training college, which prepares definitely for secondary-school work, but which is at a great disadvantage in the matter of Government grants. The new Circular allows the elementary training college to modify its programme of professional training in the case of individual students who desire to teach in some type of school other than an elementary school, and in the case of students who have obtained an honours degree a specialised course for higher school work is to be allowed. The position of the elementary training college is thus to a certain extent regularised. But unless the finances of secondary colleges and departments are placed on a different

footing, their plight would seem to be worse than ever. The just solution is surely to place all recognised colleges, whether elementary or secondary, in the same position as regards grants from the Board of Education.

The Board of Education's Circular 1,041 will have an important effect upon the finances of training colleges, the rates of grant payable to those institutions having been entirely recast. As regards two-year and three-year students in elementary training colleges, the grant for instruction is raised from £13 to £20, whilst the grant for maintenance in a college or hostel is increased by £3 in the case of women and diminished by £5 in the case of men—an indefensible discrimination against women being thus partly removed. The personal grants for day students are reduced by £5, but on the understanding that the college fee is to be reduced by £5, so that the college retains only £2 out of the £7 increase in respect of these students. The maintenance grants for four-year students are to be raised, with the result that the grants for these students will be identical with the grants for other students in elementary training colleges. The instruction grant for students in secondary training colleges is raised from £18 to £20, and a maintenance grant is to be paid, provided the student has obtained a university degree in honours. As a temporary expedient, subject to revision after the war, the grant for students in training schools of domestic subjects is raised from £9 to £20, and maintenance grants are also to be paid. The Board adds that the college authorities should, in applying the augmented grants, have due regard to the predominant importance of adequate salaries for the teaching staff. It was indeed high time that the salaries of training-college lecturers should receive attention, if the colleges are to attract the right kind of people for the important work they undertake.

Arrangements have now been completed for setting up the register of Parliamentary electors of the University of Cambridge under the provisions of the Franchise Act of 1918. The Registrary of the University desires to make it known to graduates who are not already on the register as members of the Senate, including bachelors (who became full bachelors in the December of the year in which they were admitted to their degrees), that they are entitled to be placed on the register. Forms for making the necessary claim for the purpose will be sent on application to the Registrary at the Registry of the University.

At the annual meeting of the Associated Chambers of Commerce held on April 9th and 10th a motion was passed urging the Government to pass into law the Decimal Coinage Bill prepared by the Executive Council of the Associated Chambers of Commerce in conjunction with the Institute of Bankers and the Decimal Association. It is understood that Lord Southwark will introduce the Bill into Parliament at the earliest possible moment, and it is therefore incumbent upon everyone interested in decimal coinage to strengthen the hands of the Executive Committee in order to demonstrate that the weight of public opinion is behind the movement.

An interesting pamphlet on "Health Essentials for School Children" has been issued by the Joint Committee on Health Problems in Education of the (American) National Education Association and of the American Medical Association—comparable, we suppose, with a joint committee of, say, the Teachers' Guild and the British Medical Association. The remarkable fact is revealed that in America children attending rural schools are, on the average, less healthy, and are handicapped by more physical defects, than the children of the cities, including all the children of the slums. This appears to be generally true of all parts of the United States. A tabulated statement of health work in the city and rural schools of the United States is worth inspection by our own "grousers." It appears, for example, that there is dental inspection of city children only in sixty-nine cities, and that for country children dental inspection is permitted only in two States, but is not yet provided even in them. There are dental clinics in fifty cities and only in one rural county in the whole of the United States. Open-air classes exist in cities only. The rural children appear to lose more by neglect than they gain by the fresh air and other hygienic advantages of country life. The object of the Joint Committee's pamphlet is to press the claims of these children.

We gladly direct attention to the report of the Sixth Annual Conference of Educational Associations, held at University College in January last. The reports of these annual conferences may in future very well be regarded as regular milestones on the educational road, so explicitly do they place on record the ideas and movements which are uppermost in men's minds at the times of their appearance. The present report compares very well with its predecessors in point of interest and importance. Many who were present at the conferences, and perhaps more who were not, will be glad to have in permanent form Sir John McClure's genial and statesmanlike presidential address, Mr. Lowes Dickinson's discourse on "The Educational Basis of Internationalism," Prof. Gilbert Murray's address to the Teachers' Guild on "The Education of a Gentleman," and the Rev. W. Blackshaw's excellent paper on "Universities and Welfare Work"—not to speak of many other valuable contributions. The report is issued at 2*s.*, and can be had for 2*s.* 6*d.* post free from the Hon. Treasurer of the Conference, 9 Brunswick Square, London, W.C.1.

The April issue of the *English Review* gives particulars of a competition for a prize of 100*l.* for an original essay on President Wilson's policy, a League of Nations, treated historically and humanly—human nature being what it is. The essay must be not shorter than 4,000 and not longer than 7,000 words. It must be written in English. Essays should be sent in with as little delay as possible, and not later than June 1st. The award will be announced on July 1st and will be made by a jury including the Master of Balliol, Lord Parmoor, General Sir Ian Hamilton, Mr. John Galsworthy, Mr. H. G. Wells, Prof. C. W. C. Oman, and the Editor of the *English Review*.

IN the *Nineteenth Century and After* for April there appears an able article by Mr. Cloudesley Brereton entitled "A Defence of the Modern Humanities." The essay is substantially a criticism of an article in the same review by Mr. Cyril E. Robinson defending the present system of specialisation in classics at the public schools. Mr. Robinson had laid the main stress on the importance in "training to think," and claims that this is given better by classics than by any other school subject. He rejects the idea that the subject-matter of the classics is of value for boys under seventeen. Mr. Brereton's article is marked by breadth of view and by insight into the real intellectual needs of boys, and supplies on most points a convincing answer to Mr. Robinson's contentions. He scores heavily in replying to the latter's remark that "there are real grounds for doubting whether the requisite standard of literary taste or the adequate form of literary exposition could be at all developed in the normal university student who becomes a public-school master." Mr. Brereton comments thus:—"If this be true, could any more damning indictment be found of the system which Mr. Robinson desires to see maintained?" One point in Mr. Robinson's paper which perhaps needs a fuller reply is the argument that Latin and Greek translation affords the easiest mechanism for ensuring thinking and for checking and correcting it. One would like to see a detailed example by Mr. Brereton showing how this could be done (as surely it could) through the medium of French.

THE results of an inquiry into the favourite books of 840 children between five and twelve years of age are given in the *Parents' Review* for March. The prime favourite, "Robinson Crusoe," received twenty-eight votes—3 per cent. "Black Beauty," "Coral Island," "Little Women," and "Treasure Island" were the next favourites, the last of them receiving fifteen votes. The twenty most popular books only received 237 votes between them—a most surprising result. No. 20, "Tom Brown's School-days," had six votes. Speaking generally, the chief favourites are the older books; "Robinson Crusoe" had more boy readers, and "Black Beauty" was a girls' favourite. A boy of ten described "Treasure Island" as a "McNiversant Book." The author appends in a footnote a list of the first twelve favourites, between the ages of seven and fourteen. "Alice in Wonderland," first on this list, was seventh on the other; "Robinson Crusoe" comes sixth, and "Treasure Island" twelfth on the list for the older children.

IN the *Child* for April is a brief description by "Minobi," the Head Chief of the Camp Fire Girls of Great Britain, of an evening round a camp fire which glowed in a circular clearing in a young larch wood. One of the rites was the acting of a scene from Kipling's "Jungle Book," in which Mowgli, with the Red Flower, leaves the jungle and goes back to his people. The whole episode was a quaint mixture of Red Indian activities with the tribal tattoo and of Eastern customs when the storyteller sat cross-legged on a reed mat. But these trimmings serve to whet the enthusiasm of the girl members for a society of which the members, on initiation, promise "to follow the outdoor trail as long as life lasts." The elder girls of a secondary school, to whom the robuster practices of the Girl Guides do not appeal, might find in the Camp Fire movement a stimulus towards the same ends—*i.e.* to keep physically fit, to help all in need, and to live and think cleanly, etc. The address of the Head Chief is Havenholme, King's Langley, Herts.

MISS G. WILLARD recounts in the *Education Gazette* for New South Wales her experiences in different types of Australian schools, from the point of view of "Home, Environment, School: their Relationship and Interdependence." At Broken Hill, in an environment of sand stretches, dust-coloured streets, lines of dumps and surface works, poor homes and narrow ideas, with an impatience of authority as the prevalent tone of the adult population, the children were regular, punctual, and keen to learn, and the parents were anxious to help. At Mudga, a quiet country school, the children lacked initiative. In dingy city schools it was found that each school had its own particular problem, and as a result of twelve years' experience Miss Willard advocates that teachers should never stay too long at one school. "Sympathy and understanding of child nature are worth more to a teacher than a university degree." The whole article is worth attention, as it shows that the schools "down under" present very much the same sort of problems as those at home.

IT is announced in the *Educational Review* (Madras) that the Government of India has invited the opinions of local Governments with reference to the proposed reorganisation of the Indian Education Department. The immediate aim of the proposals, which are to be reviewed by the provincial authorities, is to carry Indian education over the present transition stage from the past, when education was largely in the hands of Europeans, to the future, when the reverse will be the case. It is desired that the critics should remember that one possible future development is the extension of teaching universities, to which are attached a number of specialist professors who will maintain a high standard of teaching as a result of their scholarship and experience. Many of the details of the proposals deal with the scheme of salaries to be paid to the European and native members of the reorganised service.

THE Cape of Good Hope Education Department used to keep a card index record of the results of the official examinations; in the early 'nineties the cards numbered 400 a year; now the index is growing at the rate of 15,000 cards a year, and the authority proposes to substitute a "loose-leaf" system—one leaf per person. The Department, therefore, desires teachers and others to send in a return of their past examination successes in order that the new scheme may faithfully record the examinations passed by the teachers. In effect, the new proposal is tantamount to a register of teachers, since the Department is the examining body for the Cape, and registers the certificates obtained in other countries by members of the teaching service.

Prof. Paul S. Lomax, who acted as chairman of the Commercial Education Surveys of Missouri and New Mexico, recounts some of the most significant results of the surveys in the *School Review*, of Chicago for February. More than half the teachers were graduates of a normal school, college, or university, and not a single commercial teacher had received a college or university course in the teaching of accounting or stenography, the two traditional commercial subjects. The machinery equipment of the schools consisted almost entirely of typewriters and pencil sharpeners; the school libraries were deplorably weak. The commercial departments of schools were business offices for training pupils in the routine of business rather than classrooms. The schools fail in their first necessity, *i.e.* to teach the principles of business.

SCOTTISH.

Prof. Burnet, St. Andrews University, in the course of an address to the teachers of Perthshire, said that certain bodies had been passing resolutions protesting against the Education Bill as "inopportune during war conditions." He wondered what sort of dreamland these people had been living in during the past four years. War was a harsh but effective schoolmaster. Its fees were high and had to be paid in blood and tears. The lesson it taught during these years was that education was our best defence, both for war and peace. The boys at the front had learned this lesson, and lecturers coming back from the seat of war declared that the young men out there were intensely interested in the education proposals and asked no end of questions regarding them. Yet some Rip van Winkles at home mumble that the Bill is "premature." Prof. Burnet said that his only fear was that it might be too late. They were in danger of being left behind in Scotland. England had been making up on them steadily during the past fifteen years, and was already ahead of Scotland in some fields. There was a tremendous educational ferment going on south of the Tweed, as was evidenced by the reports in every educational journal. Scotland must wake up and put her educational house in order or be content to march in the rear instead of in the van as hitherto.

The Secretary for Scotland during the Easter recess had a busy time listening to various deputations in connection with the Education Bill. Mr. Adam Nimmo, on behalf of the coalmasters, declared it was practically impossible to allow lads to attend part-time day classes without dislocating the whole work of the mines. The Labour members of school boards opposed both the area and the authority proposed in the Bill. The county area, they contended, was much too large and absolutely impossible for democratic control and administration. They suggested that special administrative areas should be delimited round each secondary school. Mr. Munro made short work of this recommendation by pointing out that it would leave large areas of Scotland wholly without educational facilities. He further pointed out that the small representation of Labour on the existing education authorities was not a high tribute to their democratic character.

A bequest has been made to Glasgow University by the late Mr. W. B. Faulds of a sum of money sufficient to provide four research fellowships of the value of £200 each, tenable for three years. They are assigned to the faculties of arts, law, medicine, and theology respectively. In the award of these fellowships it is provided that the following factors will be taken into consideration: academic record, capacity for independent investigation as shown by past record or by published or unpublished works, and, if deemed necessary, examination. The researches must be carried on under the guidance of a professor or lecturer, and, if so required, elsewhere than in Glasgow, during one of the years of tenure. The fellows must not engage in professional work or practice unless approved as expedient in the interests of their researches.

The Department, in response to various inquiries, has issued a memorandum stating that the grant in aid of teachers' salaries will be continued on a scale not less than that of last year. School boards and managers are urged to continue the payment of teachers' salaries at the enhanced rate rendered possible by this year's grant. This reminder is very timely, as some school boards have refused to regard the increased payments that have been made as additions to salary, and have sought to safeguard themselves against future responsibility for them by calling them bonuses. This exhibition of mistrust and small-mindedness is characteristic of the whole outlook of these parochial bodies.

Mr. E. W. Currie, M.P., in a communication to the Leith School Board, states in a fresh and striking manner the case against the *ad hoc* authority for education. The inability of school boards to control the environment of their pupils has led to deplorable and scandalous health conditions in many school children. The bare and discreditable facts revealed in Dr. Leslie Mackenzie's recent report are a disgrace to the nation and a grave reflection on the school-board system, which utterly fails to realise or visualise the situation. Mr. Currie draws a distinction between election *ad hoc* and administration *ad hoc*. The Bill provides for the latter, but not for the former, and if there is any virtue in the principle it should still find plenty of scope for its operations.

The annual report of the Carnegie United Kingdom Trust reveals the ever-widening scope of the committee's activities. The rural library scheme, which is meant to supplement and extend the school and village libraries founded by the late Mr. Coats, is making good progress. Infant welfare centres, play centres, central institutes, and hostels in connection with secondary schools are further beneficent forms of the trust's operations. Stornoway and Portree have been selected as centres for experimental hostels, and certainly no better sites could be selected, as the secondary schools there are largely recruited from the outlying districts. The report gives also interesting particulars of the trust's endeavours to minister to the æsthetic needs of the nation by the encouragement of music and art.

THE School Board of Glasgow has given a splendid lead to the rest of the country on the salary question. By an almost unanimous vote it has accepted the principles of the Craik report and adopted them with some slight modifications for the various grades of teachers in its service. Certificated masters, £110 to £250, by annual increments of £10; second masters, £250 to £300, by £10 increments; headmasters, £350 to £550, by £20 per annum; certificated mistresses, £90 to £180; graduates, £100 to £200, by annual increments of £5 for six years, and thereafter by £10; infant mistresses, £200 to £300; headmasters of intermediate schools, £575 to £625, by £20 annually; headmasters of secondary schools, £575 to £750; headmaster of high school, £800 to £1,000.

IRISH.

THE Department of Agriculture and Technical Instruction has issued its new programme of science, drawing, manual instruction, and domestic economy for day secondary schools for the session 1918–19. This programme marks a new departure in the teaching of these subjects. The work of the Department has, on the whole, proceeded on the same lines for the last seventeen years, ever since it took up the science and drawing instruction in secondary schools. The changes are stated to be due to the need for better courses of science as preparation for the university, to the abolition of the preparatory grade by the Intermediate Board, which thus does away with the necessity for set syllabuses for pupils of the age formerly taking an examination in that grade, and also to a desire to co-ordinate the Department's courses with the Intermediate grades. The new syllabus does effect a complete and adequate change in the preparatory-grade classes and in co-ordinating the Department's work with that of the Intermediate Board, but it has not been so successful in providing what it calls a general course in physical science in place of the former special courses.

THE Department claims to have discussed the syllabuses of instruction fully with representative committees of heads of secondary schools, but, in spite of this, it has not arrived at a satisfactory solution; for in the third and fourth years schools are not allowed to take the whole course unless they give five hours per week to science, but are restricted to one of the two sections, viz. physics or chemistry in physical science, and bôtany or hygiene in natural science. In other words, unless a pupil can give five hours a week to the subject he is restricted to specialisation, when surely it is just this pupil, who is specialising, say, in classics or modern languages, and desirous of learning science but unable to give five hours a week to it, who ought to get a general science course. Here is the weak point of the scheme, and it ought not to be beyond the power of the Department to provide a general course in science for pupils who cannot give more than three hours a week to it. Or does the Department wish such pupils not to learn science?

THE main changes in the programme are the elimination of experimental science as an obligatory subject in the first year; the abolition of special courses and the substitution of a general course either in physical science or in natural science; and the correlation of the courses with the grades of the intermediate programme. Drawing is obligatory in the first year, together with one other of three subjects: elementary science, manual instruction, and domestic economy. The teaching methods become also more elastic, and more demonstration work is encouraged. The rates of payment are changed in form but not largely in amounts, those for first- and second-year science being slightly lessened, and those for drawing slightly increased.

THE new grant of £50,000 was distributed among Irish secondary schools by the Intermediate Board at the end of March. As the distribution was necessarily hurried, there was no time to reconsider the rules which had been laid before Parliament and debated in the House of Commons, but there will probably be little complaint as to this year's actual distribution. Before next year there will be the present year's experience to go upon, and also we may expect the report of the proposed Government inquiry into the salaries of secondary-school teachers. It is to be hoped that this inquiry will be held soon and will report quickly. The Intermediate Board has issued a notice that the next distribution of the teachers' salaries grant (the Birrell Grant) will be in accordance with revised rules designed to carry out the objects for which it was originally voted by Parliament.

THE president of University College, Cork, states in his report that the number of students attending the college during the session 1916–17 was 486, as against 422 in 1915–16. The number of new students was 164. The total number exceeds that of any previous year by sixty, and is more than eighty above the highest total prior to the passing of the Universities Act of 1908. The question has again been raised of constituting the college at Cork a separate university. There is much to be said for this proposal, but it cannot be carried out without an entire modification of the Universities Act, as the University College in Dublin would claim the same treatment and status as that in Cork.

THE Department has published the second number of its *Journal* for this year. It contains a full report of the meeting of the Council of Agriculture last November and the Vice-President's address verbatim. As is to be expected, the volume deals almost entirely with agriculture and food questions.

WELSH.

THE prospects of the Education Bill are being anxiously canvassed at the moment of writing. The military crisis, the Irish question, and other important controversial matters engaging the attention of Parliament give rise to grave fears as to its chances at the Committee stage. Many peculiarly Welsh interests are involved, and a conference of teachers' associations and others concerned with educational matters has been held at Cardiff to arrange for a public meeting to urge on the Government the importance of getting the Bill placed on the Statute-book.

In the debate on the second reading Major David Davies pointed out that Ireland was specifically excluded from the operation of the Bill, while Scotland was promoting a Bill of its own. The differences in the English and Welsh systems of education called for separate provisions for Wales, with a Welsh Education Office dealing with Welsh affairs, as the Scotch Education Department did with Scottish affairs.

The executive of the Welsh National Conference met at Shrewsbury on April 22nd to consider the replies of local education authorities to the proposals of the conference, the University Commission Report, and the Education Bill. In view of the recent progress of movements in favour of devolution, it was decided to hold a further session of the conference to consider the question of a National Council as part of a larger scheme of autonomy for Wales; and sub-committees were appointed to report on the Education Bill and the findings of the University Commission. The proposals of the conference have meanwhile been sent to Major Davies in the form of amendments to the Bill, to be laid before the Welsh Parliamentary Party for their support in the House.

The Glamorgan County Council purposes to do more for the education of the adolescent than is required by Mr. Fisher's Bill. It is proposed to establish about forty "middle schools" in the county to receive such children between the ages of twelve and sixteen as do not go on from the elementary to the present intermediate or other secondary schools, which are to be reserved for those who can take a course of full-time education up to the age of at least eighteen, in preparation for the university or professional life. The new schools are to be secondary in curriculum, in spirit, and in discipline, but the work of the last two years is to have a definitely vocational bias, with a constant view to the development of good citizenship and of the power of orderly self-government; the schools are also to be centres of recreation and of many kinds of out-of-school activities. It is believed that such a scheme, providing full secondary education free of cost up to the age of sixteen, will be both more acceptable to parents whose children must earn their living as soon as possible, and more beneficial educationally than the system of 320 hours' compulsory attendance up to eighteen imposed by the Bill.

It is a most attractive scheme, and is powerfully advocated in a pamphlet on "The Education of the Majority," by Miss E. P. Hughes. There are, however, serious practical difficulties in the way of its adoption in the near future. The children for whom the schools are to be provided number at least 70,000 in Glamorgan—more than three times as many as are in all the present secondary schools of Wales. Land, buildings, equipment, and teachers—especially the last—will be difficult to provide. Authorities are much too fond of imagining that they need only choose their candidates and put them through a definite set of processes in order to turn out any required number of satisfactory teachers. There will have to be a wider field of selection, a more rigid choice, higher standards of aptitude and character, and better inducements for the best people to take up teaching as a career before a force of teachers can be raised capable of doing the work outlined in this scheme.

Inquiries among teachers and Labour leaders in South Wales do not give much encouragement to the proposal that teachers should in their associations affiliate with the Labour Party. The referendum to the members of the N.U.T. resulted in the rejection of the proposal by a large majority, and the like fate seems to await that of the I.A.A.M. The Labour Party wants the help of the "brain-workers," but only on the condition that the latter shall be in entire sympathy with the aims and programme of the party.

In educational matters the teachers are thoroughly democratic; they believe in the best educational advantages being provided for all children who can use them, and in all obstacles being removed from their path. In this they are not prepared to give place to any class of reformers; but they include in their numbers men and women of every political colour, and a large proportion of them, while prepared to work with the Labour Party for educational ends, are decidedly not ready to accept the party's policy and methods in their entirety. They are not prepared to affiliate for the sake of the material advantages they might gain by doing so, and do not care to be treated either as creatures of the majority or as bourgeois spies in the party camp; they believe—with many of the Labour leaders whose opinions have been sought—that they can do the best service both to education and to the working-man by taking an independent stand as a self-respecting and self-governing profession, standing aside as such from party politics, and leaving their members free each to follow his own political convictions.

EDUCATION A WORK OF NATIONAL IMPORTANCE.

Brinsley's Ludus Literarius; or, The Grammar Schoole. Edited by E. T. Campagnac. xxxvii+xxvii+363 pp. (Liverpool: University Press; London: Constable.) 10s. 6d. net.

If everyone who ought to read this book—namely, every schoolmaster in the country—would only do so, its publication would be an event of first-rate national importance. The war has already made us begin to suspect that there has been something wrong in the past, both in our education itself and in the attitude of the country at large towards it. Prof. Campagnac has therefore chosen an opportune moment for this reprint of Brinsley's work as a companion volume to his reprint of Hoole's "Art of Teaching Schoole," published in 1913. The best recognition of Prof. Campagnac's labours that we can make is to insist upon the importance of Brinsley's work; and so we will say no more here about the production of this reprint—which is excellent in every way—except to give a word of commendation to the very useful and careful bibliography which Prof. Campagnac has appended, and to thank him for the mighty, though very sober and

serious, clarion call to the recognition of the high seriousness of the schoolmaster's profession which his introduction contains.

After the revival of learning the greatest men of the day concerned themselves with education; men like Erasmus, Roger Ascham, Melancthon, Vives, Corderius, and Comenius were followed in the sixteenth and seventeenth centuries by a race of humbler but no less earnest schoolmasters, of whom the best representatives were Charles Hoole and John Brinsley. Little is known of the details of the latter's life (he graduated at Cambridge in 1584-85), but we know from this book what sort of man he was. None could have a higher conception of the schoolmaster's calling. To Brinsley the teacher was Μουσων θεραπων και ἀγγελος, as he prints on his title-page, together with the following quotations from Cicero, which we quote because they never needed taking to heart by a nation so much as they do to-day by England:—*Nullum munus reipublicae afferre maius meliusve possumus, quam si doceamus atque erudiamus iuventutem* (Cic. de Divin. 3), and *Quaerendi defatigatio turpis est, cum id quod quaeritur sit pulcherrimum* (de Fin. 2). In the same spirit Brinsley speaks in his introduction of "all good learning" as being the chief glory of a nation. Could there be a greater contrast to the low esteem in which education has been held in England during the last generation? And just as disaster came upon Rome, so it is bound to come upon us, so long as Juvenal's words, "res nulla minoris constabit patri, quam filius," are applicable to us.

So much for the national importance of this reprint. We pass to its practical wisdom for schoolmasters. Brinsley was a man of tremendous patience and ingenuity, and this work (in form a dialogue between Spondeus and Philopomus) contains a full description of his methods from the most elementary details of the teaching of English spelling or the making of a pen (note that each scholar makes his own) up to the writing of Latin and Greek verses, and the sanity of his methods throughout is truly remarkable. Some classical masters to-day tell their pupils to put the verb last in a Latin sentence; Brinsley tells them to put the oblique cases first; and as an instance alike of his thoroughness and of his scholarship we will mention his advice to end up a sentence with a series of trochees. He approves of Roger Ascham's well-known retranslation idea, to which he adds the imitation of short letters of Cicero, which lead on to original Latin themes carefully composed after the model of the five divisions of a Ciceronian speech. Verses, too, must be taught through free composition at first; and all poetry is to be pronounced as prose, "not to be tuned foolishly or childishly after the manner of scanning a verse as the use of some is" (p. 213). Greek is taught on the same lines as Latin—note that accents are taught from the very beginning—*i.e.* on lines which direct-method teachers are to-day attempting to revive. We are inclined to forget that Latin has become a dead language only comparatively recently; our forefathers in the seventeenth century habitually spoke it in school, and when the master wanted his pupils to speak English he had to tell them to do so. "Dic Anglice," he would say, as we find the master doing in the actual examples of lessons which Brinsley gives.

The book contains many other matters—religious and moral training, school management, etc.—right down to the "discouragement of schoolmasters by the unthankfulness of parents"; but nothing is so important, in the practical aspect of the book, as the insistence upon the necessity of the constant oral practice of Latin, if we would have our scholars acquire a ready and lasting command of the language.

BOOKS FOR THE TEACHER'S LIBRARY.

(1) *The Advanced Montessori Method.* By Maria Montessori. Vol. i., *Spontaneous Activity in Education.* 357 pp. Vol. ii., *The Montessori Elementary Material.* 455 pp. (Heinemann.) 8*s.* 6*d.* net and 12*s.* 6*d.* net respectively.

(2) *Self-Reliance.* By Dorothy Canfield Fisher. 243 pp. (Constable.) 4*s.* 6*d.* net.

(3) *An Adventure in Education.* By J. H. Simpson. 207 pp. (Sidgwick and Jackson.) 2*s.* 6*d.* net.

(4) *W. E. Ford: A Biography.* By J. D. Beresford and K. Richmond. 310 pp. (Collins.) 6*s.* net.

(5) *A Beginner's Psychology.* By E. B. Titchener. 362 pp. (New York: The Macmillan Co.) 6*s.* net.

(6) *The Book of School Games.* Edited by C. E. Hodges. 96 pp. (Evans.) 3*s.* 6*d.* net.

(7) *The Making of Women.* By A. Maude Royden and others. 217 pp. (Allen and Unwin.) 4*s.* 6*d.* net.

(8) *The Education of the South African Native.* By C. T. Loram. 340 pp. (Longmans.) 6*s.* 6*d.*

(1) ARDENT Montessorians, and others who wish to read the signs of the times in matters educational, will need no recommendation from us that they should turn to the two new volumes from Dr. Montessori's pen that have just been issued in an English translation. In the earlier books the author confined herself chiefly to the education of young children, but in these she carries on the subject to the education of children between seven and eleven years of age. The first volume is theoretical and the second practical. So far as the first is concerned, even those readers who differ much in principle from Dr. Montessori must needs confess that in many respects she is giving a powerful impetus to desirable reforms. She makes out a strong case for her declaration that the whole subject of school hygiene is in effect the accomplice of a social wrong. Minute directions, for example, about the form and proportions of school desks are designed to cure an evil that ought rather to be prevented. Again, basing herself upon experimental proof that change of work is by no means rest, she effectively denounces the way in which the ordinary time-table chops up a child's activities into half-hour segments. Her defence of her principle of freedom, though ingeniously illustrated by means of a series of charts, and her doctrine of imagination, though it may find some weak points in the Froebelian armour, will not carry such universal conviction. In the second and more practical volume a rather narrow range of subjects is lengthily treated. We have little fault to find with the proposed methods of teaching grammar and "metrics," but the vital question whether these things are worth attempting with children under eleven is left untouched. We suppose the question lies outside the range of "scientific pedagogy." The chapters on arithmetic and geometry are good, but there should be nothing new in them to a trained teacher in this country. A perusal of the volumes leaves us still of opinion that the author's chief title to respectful attention lies (1) in her doctrine of freedom, (2) in all she has to say about the hygiene of child-life, and (3) in her scientific attitude towards the problems that she touches.

(2) In her book on "Self-Reliance" Mrs. D. C. Fisher (very well known to many teachers in this country as "a Montessori mother") gives us what she describes as "a practical and informal discussion of methods of teaching self-reliance, initiative, and responsibility to modern children." Much would be gained, in England not less than in America, by a closer understanding between parents and teachers. Mrs. Fisher writes for teachers about children as she sees them in the home. She is genuinely concerned,

and we think rightly so, about the results, say five-and-twenty years hence, of massing children in hordes and training them on uniform lines. School teachers may find it difficult to cultivate individual responsibility in children, but it will do them good to consider Mrs. Fisher's excellent common sense on this matter, in regard both to their own work and to such influence as they can exert on parents.

(3) Mr. J. H. Simpson's experiment in the effect of self-government upon one of the lower forms of a public school has attracted considerable attention, and he has done well to give a complete account of it in his volume entitled "An Adventure in Education." The book supersedes a pamphlet published in 1916, and includes the substance of an article which appeared in The School World some time ago. Like many others, Mr. Simpson owes much, by way of inspiration, to Mr. Homer Lane. We think it certain that in the vast majority of schools adolescents suffer through too much government from above, and we therefore regard Mr. Simpson's experiment as quite in the right direction. For most people he goes a great deal too far, but we hope that they will not on that account dismiss his experiment as useless. We do not think his ideal of a "complete commonwealth school" psychologically sound, but there can be no question that the "house system in our boarding-schools, and some similar unit in our day schools, might be made the basis of a really educative and democratic type of self-government."

(4) "W. E. Ford" is one of the most remarkable pieces of biographical writing we have encountered for a long time. That the writers have simply adopted the literary form of a biography to express their own views about education and life is suggested by the improbability that a real Ford, however averse he might have been to publicity, could scarcely have lived and died unknown. Still, we have known more than one quiet worker whose career might have suggested that of Ford, but for whom no such talented biographers and idealisers as Messrs. Beresford and Richmond were forthcoming. The facts of Ford's life are absorbingly interesting, especially perhaps his association with Mary Worthington—a case in which a good friendship might have been turned into a bad love affair. But the main purpose of the book is to set forth Ford's position as an educator. His ideas about education take form and shape in connection with a private school which he is enabled to start, and the history and fortunes of which are here traced. This part of the book deserves to be read, if only for its aphorisms, of which we give a few examples: "A boarding-school is just an artificial orphanage"; "For coercion by beating [people] substitute coercion by a mysterious thing called personality, in its essence a kind of hypnotism—a step downward, not upward, from the rod"; "The only real liberty is social liberty—the harmony of freedom with obedience that comes of an understanding consent to the control of a reasonable law"; "One generation takes pains to shape its experience into a ladder by which the next can climb—that's all [that education means]." That such quotations could be multiplied indefinitely is, we think, sufficient evidence that the book is well worth attention.

(5) To English students of psychology few names are better known than that of Prof. E. B. Titchener. His "Primer," published in 1898, has helped many a beginner in the subject, especially in our training colleges. The new volume before us, entitled "A Beginner's Psychology," supersedes the "Primer," which will not be further revised. We have many introductions to psychology, some by masters and some not. But the master of any science, if, like Huxley, he happens to possess the gift of lucid exposition, is at a great advantage even in writing an elementary text-book. The reader of Prof. Titchener's introduction feels himself in safe hands. Beginners in psychology are (p. 34) wisely exhorted to stick to one book at first; and we know of none better to stick to than this. We are glad to see that the questions and exercises, which formed a valuable feature of the older book, are retained in the new.

(6) "The Book of School Games," edited by Mr. C. E. Hodges, will be found useful for the lower and middle forms of secondary, and for the upper departments of elementary, schools. Games for little children are not included in its scope. Besides descriptions of games suitable for the playground, there are sections on classroom games, geographical and historical games, and physical exercises treated as games. The preface states that "all the games that have been chosen for inclusion in this volume can be unreservedly recommended; they have been given fair trial, and have proved eminently successful in use." There are a dozen photographic illustrations, besides a number of diagrams.

(7) "The Oxford Essays in Feminism," issued under the title "The Making of Women," can scarcely be regarded, taken as a whole, as falling within the province of The School World. We have, however, examined other essays contained in the book, besides the one specifically devoted to education, and we are able to recommend them cordially for their sanity of judgment, and for the disposition of the writers to look facts plainly in the face. The question of the remuneration of women, for example, which is of prime interest to an essentially mixed profession like that of teaching, is treated by Miss Rathbone with a just regard for the responsibilities of married men with families. The case for the abstract formula, "Equal pay for equal work," is, however, presented in an appendix. The essay on education shows, as a rule, adequate insight. But it is surely a great exaggeration to say of our elementary schools at the present time that "the children are not to think, but to know; not to reflect, but to repeat."

(8) The first thing that strikes one about Dr. Loram's book on the education of the South African native is the writer's singularly fit qualifications for dealing with his subject. He is a native-born South African, he was brought up and educated in South Africa, and has lived there all his life except seven years, which were spent partly at Cambridge University and partly at Columbia University, where, under the guidance of distinguished American professors, he made a special study of the problem of native education. The result is a volume which breaks new ground, and breaks it with scientific thoroughness and system. Very interesting chapters on the native problem in general, and on the obligation of educating the native, are followed by a series of chapters on the present condition of the various grades of education in South Africa, and another series on reconstruction. A useful bibliography is added. The book, though necessarily not the final word on the subject, is a valuable contribution thereto.

The World's Battle Fronts at a Glance. A series of 32 reference maps illustrating all the spheres of fighting, with notes. (Philip.) 1*s.* 3*d.*—The notes and maps give a precise and accurate picture of the progress of the war up to the middle of last March. For convenience of reference the "fronts" are indicated along the lines that were held on the several critical dates, so that the fluctuations in the successes of the Allies may be distinctly perceived. A useful, though small, reference atlas.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Molière: L'Avare. Edited by A. T. Baker. lxxxvi+119 pp. (Manchester: University Press.) 3s. net.—The professor of French in the University of Sheffield has hitherto published work mainly concerned with the lives of medieval saints—valuable for scholars, if not for schools. His edition of "L'Avare" will at once be welcomed as just the kind of thing we want for the advanced course in modern studies. It is, happily, off the beaten track; it does not confine itself to notes on the text (these have been condensed so far as possible), but gives a most valuable introduction in which Prof. Baker has supplied an eminently readable and interesting account of the life and ways of the society that Molière depicts and derides. A second section deals briefly with Molière's career and writings; another gives a lucid summary of the development of comedy in France before his time; then we have a thoughtful chapter on "Molière and his Art," a good critical treatment of "L'Avare," an account of the sources, and, finally, an estimate of the influence Molière has exerted. The editor's careful work is completed by a bibliography and by some extracts from Plautus, Larivey, and Boisrobert. Taking it altogether, this is the best school edition of any play by Molière that we know of; and even at the university students will learn from it a great deal. We look forward with pleasant anticipation to further work of this excellent kind from Prof. Baker.

Spanish Conversation. Book i. By E. A. Baton. viii+93 pp. (Rivingtons.) 2s. 6d.—Some remarks on pronunciation (in which no use is made of the international symbols) is followed by lists of words, English and Spanish in parallel columns, on the left-hand pages, and "conversation," also in both languages, on the right-hand pages. The words are not very judiciously arranged and the "conversations" are not closely connected with them; they are indeed lists of short sentences rather than actual, living conversations. Thus the conversation (nominally on "The House") runs as follows:—"Open the door. Come in! Push the door. Go upstairs. Go into the study. She is upstairs. He is in the hall. Knock at the door. Who is there?" etc. The "colloquial exercises" appended contain disconnected English sentences for translation into Spanish. It will be seen that the book assumes teaching on old-fashioned lines, by purely translational methods; and even allowing for this, it is not very good of its kind.

V. Hugo: Hernani. Edited by F. W. Odgers. viii+116 pp. (Blackie.) 10d.—A handy, unpretentious edition of this play, which, in spite of its extravagance and absurdities, will continue to be read on account of its lyric qualities and its place in the romantic movement. The editorial apparatus is entirely in French; it comprises a very brief introduction (fourteen lines only on the life and works of V. Hugo), five pages of notes, and five pages of questions on the text, with subjects for free composition based on the subject-matter of each act, but in most cases rather too vague to be really helpful. What, for instance, is one to make of: "Chez quel peuple l'hospitalité est-elle pratiquée actuellement au plus haut point?" Even the addition in brackets of "Yussouf, par Lowel," does not make this a good subject for free composition.

Classics.

M. Tulli Ciceronis, Orationes Pro Milone, Caesarianae, Philippicae, recognovit breviaque adnotatione critica instruxit A. C. Clark. Editio Altera. (Clarendon Press.) Paper, 3s.; cloth, 3s. 6d. We greet with enthusiasm this first volume of Prof. Clark's revision of Cicero for the "Scriptorum Classicorum Bibliotheca Oxoniensis." It is now seventeen years since he brought out the first edition, and the discovery of as many as nine new MSS. in the meantime has rendered necessary a thorough revision of the accepted text, especially for the "Philippics." (In this connection scholars will await with interest Prof. Clark's book on the "Descent of MSS.," which has been in the press for some time, and will, he hopes, be published as soon as men have time once more for considering such things.) This is not the place for a critical appraisement of the treatment of the new MS. evidence, but Prof. Clark's reputation as a palæologist, and his having taken Cicero for many years as his province in knowledge, are sufficient to make this new edition indispensable in our schools. But one may note here the interesting admission that Zielinski's work on the rhythm—especially on the κῶλα—of oratorical prose has led him to be more cautious in suspecting glosses and grammatical interpolations, and Prof. Clark's own researches into the arithmetical composition of a MS. page lead him to a similar caution.

English.

Shakespeare Day. 35 pp. Shakespeare Association. (Chatto and Windus.) 1s.—This is a report of a meeting which took place a year ago; no reason is given for the delay in publication. The speeches contained in the report are good, but not in any way superlative; that of Mr. H. G. Wells is the brightest and most convincing. But this is of little importance. What is important is that there is a proposal to introduce a Shakespeare Day in all the schools of the British Empire and America, and on this day, according to the design of the promoters, the children themselves should act scenes from Shakespeare, and should honour the poet. Before we condemn such a proposal as un-English—which it certainly is—we should remember that, first of all, children can act; next, that Shakespeare (in parts) is almost the only playwright who appeals greatly to children; and also that the introduction of a "Day" is likely to do more for a popularisation of Shakespeare than any number of editions. We may add that, after cricket, Shakespeare and Dickens have been the best olive-branches held out by us to Dominions overseas; and the children's day would be likely to rivet the new-made union between this country and the United States.

All this may sound a trifle sceptical; but it must be remembered that we as a nation are not given to the celebration of days, and that neither the man in the street nor the teacher in the schools pretends to know much about Shakespeare. That a proposal like this has in it great possibilities we do not doubt; but in order to bring about any result worth naming it would be well if a hundred teachers could discuss the matter, and if the necessary funds for a genuine programme could be guaranteed. You cannot do anything in the schools without the help of the teachers, who will have all the hard work and no recognition. The dramatic note was very finely struck when, at the meeting of which this booklet is a report, a copy of the Third Folio was presented to the American Ambassador. This, in our opinion, was a note that will re-echo through the States; and the States have done a great deal for Shakespeare's memory. Probably the inscription on this folio will be printed, read, and known in all the schools of America—as it should be.

The English Journal (80 pp.) for February, 1918, is, as our readers know, published at Chicago. Generally it contains at least one arresting article, and this number deals with the "Improvement of American Speech."

Dr. Krapp, who writes the article, makes no mention of Henry James's rather fierce lecture on the subject, and, moreover, seems not to have any idea of what—at any rate in these islands—we dislike in ultra-American speech. Still, it is something to find an essay on the subject, and it may be that further light will be thrown, not on slang, neologisms, or peculiarities of syntax, but on stridencies, nasalities, and absence of music. We do not yet know the causes of any of these, and how should we know the remedies? But it seems clear, in the first place, that few Americans desire "improvement," and, in the second, that many need none; but *O! si sic omnes.*

The Blessed Birthday. By Florence Converse. 64 pp. (Dent.) 2*s.* 6*d.*—This is a rather remarkable miracle play. It was to be expected that the writer, whose reading and literary work are so various, should depart from the tradition, and on a first reading the work looks crude. But this is only on a first reading, and we can easily imagine that if prepared by a good "company," with appropriate music, the play would be intensely interesting. We would plead for the alteration of a word or two from the lips of the Boy Jesus—but only for a word or two. The illustrations are remarkable, and the last is very beautiful. Probably a curtain or two against which the brilliant dresses would stand out is all that is needed for background. If scenery be asked for, the stage directions supply all hints. Colour streams over the little play.

History.

The Teaching of History and the Use of Local Illustrations. By the late F. Seebohm. 16 pp. (Historical Association, 22 Russell Square, W.C.1.)—This leaflet (No. 45) of the Historical Association consists of a paper read by the late Mr. F. Seebohm at the inaugural meeting of the Hertfordshire Branch of the association in 1910. It is illustrated by three maps and plans taken from Mr. Seebohm's classical work on the "Village Community." So high is Mr. Seebohm's authority on all matters relating to English manorial economy and also on all matters connected with the history of Hitchin and its neighbourhood that this paper will be read with careful and respectful attention by all teachers who wish to know how a master in their craft would use local illustration to elucidate the course of general English history. Though, naturally, much that Mr. Seebohm says applies only to Hertfordshire, yet the principles which he lays down are of universal validity.

The Question of Alsace-Lorraine. Translated from the French of Jules Duhem by Mrs. R. Stawell. 206 pp. (Hodder and Stoughton.) 2*s.* 6*d.* net.—This book gives us, with that admirable lucidity, order, and brevity characteristic of good French writers, a statement of the French case for the restoration of the two lost provinces. It is divided into two parts. The first part shows how the question is regarded in Germany, in France, and in the provinces themselves; it concludes with an examination of the leading proposals which have been made since 1871 for a settlement of the vexed problem raised by the Germanic occupation effected that year. The second part supports the French demand for the return of the provinces by means of three lines of argument—geographical, historical, and political. The whole volume should be carefully studied by any—if such there be—who think that peace with Germany can be made while this crucial question remains unsettled.

Ordeal by Sea. By Archibald Hurd. 227 pp. (Jarrolds.) 5*s.* net.—Mr. Archibald Hurd dedicates this moving book to "the officers and men of the British merchant navy who, exhibiting unsurpassed courage, resource, and loyalty, have stood in the forefront of the war by sea against a ruthless foe." In nine chapters Mr. Hurd tells the story of some of the worst of Germany's innumerable and unspeakable villainies committed on the sea during the course of the present war, such as the sinking of the *Lusitania,* the torpedoing of the *Sussex,* and the violation of the Red Cross. Over against this he sets the heroic endurance and the marvellous resource of the seamen of the island race. This record of the British fight for freedom, with its splendid appeal to all that is best and bravest in the national character, should be widely read. It will materially aid in the maintenance of that resolute spirit in the people which is needed if this struggle is to be pursued until it ends in the cleansing of the earth of the Germanic abomination.

Geography.

Visual Geography. By Agnes Nightingale. Book iii., *Many Lands.* 48 pp. (Black.) 10*d.*—In this little book twenty-four pages of outline diagrams are provided for the young pupil to colour. Opposite each picture the letterpress conveys a little information about the country to which the picture or pictures refer. Instructions are also given as to the colours to be used on the pictures. Asia is represented by ten pages, Africa by three, South America by two, Canada by two, Australia and New Zealand by one each, and Europe by five pages. The pictures make no attempt to cover all the items of interest regarding any area, and the letterpress supplements the information conveyed by the picture with additional facts. In view of the interest shown by young children in Book i. of the series, this addition to it should prove popular.

Frontiers: A Study in Political Geography. By C. B. Fawcett. 107 pp. (Clarendon Press.) 3*s.* net.—Mr. Fawcett has produced within a small compass a readable yet comprehensive account of the geographical aspect of frontiers, a subject which has a fascination of its own as well as considerable practical importance during the present upheaval. He rightly emphasises the fact that a frontier is a zone and not a line, even when the political boundary is defined by a river. Rightly, too, the history necessary to his study is not allowed to obscure the really fundamental geographical nature of the argument. The book will be useful not only in connection with present controversies and future discussions concerning the terms of peace, but also to the teacher for purely pedagogic purposes in the classroom. It ought to find a place in every school library.

Mathematics.

Infinitesimal Calculus. By F. S. Carey Section i., xiii+144+v pp. 6*s.* net. Section ii., x+352+iv pp. 10*s.* net. (Longmans.)—So many treatises on the calculus have appeared in recent years that a fresh one must be regarded as in some sense a challenge to its predecessors. It is to be presumed that the author of such a book considers either that he has discovered something which has escaped the notice of previous workers in the same field, or that he has reached some new viewpoint which presents familiar objects under a clearer aspect. In the case of the book before us the second of these grounds is without doubt the justification for its existence. The results of the critical examination of the foundations of mathematical analysis, at first accessible only to advanced students, are now filtering down to the level of workers in the more elementary branches. This book is designed for use in schools, but at the very beginning we meet with *class, sequence, arithmetical continuum, Cantor-Dedekind postulate, open and closed*

range, terms which connote ideas almost quite unknown to a generation of mathematicians not yet passed away. Prof. Carey's long experience as a teacher has doubtless proved that these ideas can be presented in such a way as to be understood by the beginner, and that they lead to a much firmer grasp of the fundamental principles of the subject than was attainable when the underlying difficulties were ignored. As a particularly happy instance of the excellent way in which these matters are handled, we would instance the discussion of the necessary conditions for convergence to a limit. In this connection also a distinct contribution to the improvement of mathematical notation is made by the use of single-barbed arrows to indicate the upward or downward character of the convergence, the credit for suggesting this device being given to Dr. Mercer.

Naturally, the greater part of the ground traversed is familiar, but the final chapter on graphics and nomography introduces readers to a subject which, although cultivated in France and by engineers in this country, has hitherto been neglected by makers of academic text-books. Teachers may be assured that they could not desire a better introduction to the calculus.

Science and Technology.

The Exploitation of Plants. Edited by F. W. Oliver. viii+170 pp. (Dent.) 2*s.* 6*d.* net.—This collection of ten lectures, delivered at University College, London, by various authors, will no doubt appeal with the greatest force to students of botany (and geography), who will find it in the highest degree suggestive and stimulating. It ought, however, to reach a much wider public, for it shows in the clearest possible manner that almost unlimited scope for the development of our plant resources still exists, in spite of the work which has already been done in this direction. Prof. Oliver's introductory lecture is an admirable general survey of the field, and he also writes on the possibilities of utilising various types of waste lands. Prof. W. B. Bottomley treats of plant food and soil problems, and describes the remarkable results he has obtained with bacterised peat as a manure. Dr. E. J. Salisbury's lecture on timber production in Britain shows conclusively the importance of ecological research to practical forestry. Tropical exploitation is dealt with by Dr. J. C. Willis (who pays special attention to rubber cultivation), and the cotton plant by Dr. W. Laurence Balls. Lectures on vegetable dyes, teamaking, medicinal plants, and coal, by other specialists (three of them women), complete a volume of quite unusual interest and value.

British Grasses and their Employment in Agriculture. By S. F. Armstrong. viii+199 pp. (Cambridge University Press.) 6*s.* net.—The enormous economic importance to British agriculture of the family Graminaceæ—both cereals and forage grasses—is obvious to anyone who gives the subject a moment's thought, but there has hitherto been no text-book dealing adequately with British grasses from the point of view of the farmer. Students of agriculture will therefore welcome Mr. Armstrong's authoritative manual, which fills the gap. It must not be supposed, however, that the book is of merely technical interest. Part i., including two-thirds of the whole, will be invaluable as a reference book for senior students of botany, who will find in it not only admirable chapters on the morphology, general biology, and ecology of grasses, but also useful keys to identification of the plants and their "seeds," as well as botanical descriptions of the species. Part ii. considers the actual work of valuing, purchasing, and compounding seeds, the characteristics of the various grasses grown on the farm, and the general treatment of grassland. A word of special praise must be given to the 175 illustrations, which, with few exceptions, are new. The rival claims of pasturage and arable cultivation have been much discussed lately, and it is interesting to note that the author strongly advocates that much less land should be under permanent grass, and a much larger area devoted to alternate husbandry.

EDUCATIONAL BOOKS PUBLISHED DURING MARCH, 1918.

(Compiled from information provided by the publishers.)

Modern Languages.

"Modern Language Teaching." Vol. xiv., No. 2. Edited by J. G. Anderson. 32 pp. (Black.) 8*d.* net.

"Handbook of Russian." By Michael V. Trofimov. 142 pp. (Constable.) 3*s.* 6*d.* net.

"First Spanish Course." By E. C. Hills and G. D. M. Ford. 340 pp. (Harrap.) 4*s.* net.

English: Grammar, Composition, Literature.

"Johnson and Goldsmith and their Poetry." By Wm. H. Hudson. 160 pp. (Harrap.) 1*s.* 6*d.* net.

"Shakespeare's Sonnets and 'A Lover's Complaint.'" (Arden Shakespeare.) Edited by C. Knox Pooler. 161 pp. (Methuen.) 3*s.* net.

"Wordsworth: Select Poems." Edited by S. G. Dunn. 154 pp. (Oxford University Press.) 1*s.* 6*d.* net.

"Coleridge: Select Poems." Edited by S. G. Dunn. 152 pp. (Oxford University Press.) 1*s.* 6*d.* net.

History.

"The State and the Child." A record of the legislation affecting the criminal child, industrial schools, and prison treatment of children. By W. Clarke Hall (Old Street Magistrate). 196 pp. (Headley.) Cloth, 3*s.* 6*d.* net; paper boards, 2*s.* 6*d.* net.

Geography.

"Introductory Geography." By H. Clive Barnard. 154 pp. (Black.) 1*s.* 8*d.*

"A Geography of the British Empire." By A. J. Herbertson and R. L. Thompson. Third edition, revised by O. J. R. Howarth. 256 pp. (Clarendon Press.) 3*s.*

"Contour Atlas of the British Isles." 16 pp. (McDougall.) 6*d.* net.

Mathematics.

"Theory of Functions of a Complex Variable." By A. R. Forsyth. Third edition. xxiv+856 pp. (Cambridge University Press.) 30*s.* net.

Science and Technology.

"Aeronautics in Theory and Experiment." By W. L. Cowley and H. Levy. xii+284 pp. (Edward Arnold.) 16*s.* net

"The Theory of Electricity." By G. H. Livens. viii+718 pp. (Cambridge University Press.) 30*s.* net.

"Handbook to the Natural History of Cambridgeshire." (Re-issue in paper covers.) By J. E. Marr and A. E. Shipley. viii+200 pp. (Cambridge University Press.) 1*s.* net.

"What Industry Owes to Chemical Science." By Richard B. Pilcher and Frank Butler-Jones. With an introduction by Sir George Beilby. 150 pp. (Constable.) 3*s.* net.

"A Text-book of Physics for the Use of Students of Science and Engineering." By J. Duncan and S. G. Starling. Illustrated. In five parts. "Dynamics," 5*s.*; "Heat, Light, and Sound," 6*s.*; "Magnetism and Electricity," 4*s.*; "Heat," 3*s.* 6*d.*; "Light and Sound," 3*s.* 6*d.* Complete 15*s.* (Macmillan.)

Miscellaneous.

"The Book of Joshua." In the Revised Version. By the Rev. G. A. Cooke. (Cambridge Bible for Schools and Colleges.) xxxvi+232 pp. (Cambridge University Press.) 2s. 3d. net.

"The Public Schools Year Book, 1918." The official book of reference of the Headmasters' Conference. xxxii+818 pp. (Deane, The Year Book Press.) 6s. net.

"Tinker Tailor." By S. B. Pearse. 8 pp. (Harrap.) 1s. 3d. net.

"More Mother Stories." By Maud Lindsay. 192 pp. (Harrap.) 4s. 6d. net.

"The Price of Freedom." By F. Melian Stawell. 168 pp. (Headley.) 3s. 6d.

"The Tower." By "Watchman." (Headley.) 2s.

"Junior Scholarship Questions." By H. Smith. Teachers' edition. 48 pp. 1s. 6d. net. Pupils' edition. 48 pp. 6d. net. (McDougall.)

"Educational Handwork." By S. Taylor. 156 pp. (McDougall.) 6s. net.

"Play Drill and Singing Games." Words by Miss L. M. Sidnell. Music by Miss A. M. Gibbon. 32 pp. (McDougall.) 1s. 6d. net.

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.*

Bolshevik Multiplication.

CERTAIN South Russian peasants are able to multiply together figures no matter how large, and yet do so while *unable to do anything more than double, halve, add, or subtract,* and not understanding fractions; any such arising have to be ignored.

The *modus operandi* is as shown in four examples:—

No. 1. Multiply (say) 40 × 25—

(i) Put 40 at the top of the left-hand column (or *vice versa*).
(ii) Put 25 at the top of the right-hand column to match.
(iii) Go on halving the left hand.
(iv) Go on doubling the right hand.
Ignore left hand. Total up right hand (*except* where left-hand figures are even).

L.		R.
40	...	25
20	...	50
10	...	100
5	...	200
2	...	400
1	...	800
		1000

No. 2. Say 28 × 10—

L.		R.	
28	...	10	Not added, 28 even
14	...	20	" 14 "
7	...	40	½ of 7 = 3½. The ½ ignored
3	...	80	½ of 3 = 1½. The ½ ignored
1	...	160	
		280	

No. 3. Say 9 × 6—

L.		R.	
9	...	6	½ of 9 = 4½. The ½ ignored
4	...	12	(4 is even)
2	...	24	(2 ")
1	...	48	
		54	

No. 4. Say 28 × 19—

L.		R.
28	...	19
14	...	38
7	...	76
3	...	152
1	...	304
		532

Correct every time!

Can any readers of THE SCHOOL WORLD explain the principle involved in these operations or throw any light upon its origin? H. J. R. TWIGG.

Arundel.

Economy in Laboratory Material.

IN these days economy of laboratory material is not only desirable, but also necessary, and therefore the following suggestions as to the use to which the fittings of broken, inverted, incandescent mantles may be put may be of some interest to teachers of science:—

(1) The fitting (Figs. 1 and 2) makes a satisfactory crucible rest.

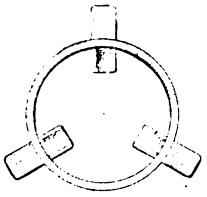

FIG. 1.

FIG. 2.

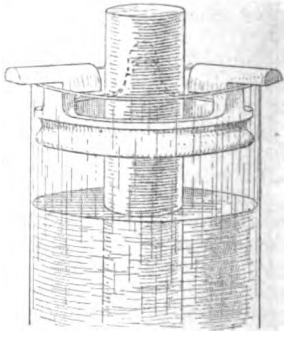

FIG. 3.

(2) Inverted, so as to fit the top of a cylindrical glass vessel, such as an ordinary graduated jar, the fitting may be used to keep a wooden rod floating in an upright position when flotation experiments are being performed (Fig. 3). NORMAN M. JOHNSON.

Kirkcaldy High School, Kirkcaldy, N.B.

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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OUR ALLIANCE WITH THE *JOURNAL OF EDUCATION*.

WITH the present issue, THE SCHOOL WORLD ceases as a separate publication and joins forces with its friendly contemporary the *Journal of Education*. It is not without regret that we make this announcement; for during the twenty years of our existence we have enjoyed close association with contributors and readers in all departments of educational work over a large part of the world; and it is not easy to contemplate a change which may disturb this relationship. For the valuable assistance which has been afforded us by practical teachers and other writers from the beginning we are very grateful.

THE SCHOOL WORLD has occupied a distinctive place among educational periodicals, and many tributes have been paid to the service it has rendered to men and women engaged in school work throughout the Empire and beyond. Our main aim has been to present the results of experience of the principles and methods of teaching; and while we have not neglected administrative and other aspects of education, we have always felt that these were sufficiently represented in periodicals like the *Journal of Education*, with which we shall in future be incorporated.

There is no reason, however, why this amalgamation should signify loss of the individual characters of either journal. A certain amount of inevitable overlapping will be avoided, and the best features of each magazine will be preserved in the combined issues of both.

For fifty years the clear waters of the *Journal of Education* have distributed rich cargoes of educational thought and work to the new cities which have grown up along their banks. THE SCHOOL WORLD, during nearly half that period, has turned the mills of its own fertile region, providing stimulus and enlightenment for the daily round and common task. The confluence of the two streams has now been reached, and a broad river is before us in which the onward flow of the separate currents is united. We are uplifted by the prospect presented by this increased capacity and strength, and, with these as inspiration, we look with confidence to the appearance of the argosies to be entrusted to the intermingled waters.

MATRICULATION EXAMINATIONS FOR GIRLS.

By C. LINKLATER THOMSON.

OF late years there has been much discussion as to whether the secondary-school course for girls should not be modified in such a manner as to approximate less closely to that of boys, and to correspond more nearly with feminine idiosyncrasies and with the probable requirements of the future careers of the pupils. It has been argued by some of those chiefly concerned with the education of girls that because many of them possess little aptitude for mathematics or natural science they should be allowed, in their matriculation or school-leaving examination, to substitute some other subject for the former, and be required to pass a test in the latter based mainly on its application to domestic economy. It is clear that to allow such options would affect the whole curriculum of girls' schools; lower standards would prevail in mathematics and natural science, and less time would be given to these subjects.

The movement is probably a reaction from the severe tests to which girls of the last generation were subjected, and can be more easily understood if one is old enough to remember the reforms that took place in their education between 1870 and 1885, when many of the women's colleges and the first of the girls' high schools were established. The services rendered by the pioneers of women's education can never be sufficiently acknowledged; yet it cannot be denied that in their revolt against the superficiality and sentimentality prevailing in most of the girls' schools of the time (private day- and boarding-schools) these reformers swung the balance too far in the opposite direction, and, giving undue weight to what had hitherto been regarded as exclusively masculine studies, tended to regard ability in these as the chief indication of superior intellectual power, and to depreciate the type of mind which preferred the humanities.

In those days the teaching of science, even in boys' schools, was in its infancy; and in many of the most advanced of the girls' high schools there were no laboratories. Attention, therefore, was chiefly concentrated on mathematics, and I think I am correct in saying that a higher standard was then exacted in the ordinary school examinations than is required now. To reach this standard was certainly an effort for the ordinary girl, especially if she had distinct preferences for other subjects. My mind goes back to days spent in the 'eighties in one of the most famous of the early high schools, where, in the Sixth Form, one was compelled to devote five periods a week to mathematics against two to English, no English essay being ever required. How well I remember the lessons in algebra given by a specialist to whom the subject had never presented any difficulties, who worked through problems on the board with lightning speed, and never stopped to explain anything. The sun streamed through the open window, the branches of the trees swayed just outside, the light reflected from the board prevented one from seeing the figures; one became more and more hopelessly confused, and at last from sheer boredom began drawing pictures in one's notebook. Worse still was the lonely struggle with the home work and the helpless effort to work out by the directions given in the text-book the problems set in school. Three hours' labour often produced nothing but several pages of incorrect working, which were returned at the next lesson with the cutting comment, "Careless and untidy." Wiser teaching would, no doubt, have discerned the effort behind those futile results, but the effect of constant discouragement in the subject which was supposed to be the supreme test of ability was to induce extreme self-distrust of one's intellectual power.

The memory of those youthful trials is still so vivid that after the lapse of thirty years I should be inclined to throw in my lot with those who argue that mathematics should not be a compulsory subject for girls in the matriculation examination, were it not for several weighty considerations on the other side. In the first place, I am bound to admit that there was a considerable proportion of my schoolfellows for whom the subject, in spite of bad teaching, had no terrors, and the number of women taking mathematical degrees has always been considerable. Some of these pupils, exceptionally strong in mathematics, may quite possibly have shown some deficiency on the literary side; to them the effort of composing a good essay may have been quite as great as that of solving a mathematical problem to another; yet no one, so far as I am aware, suggests that the test of the English essay should be made optional. As an examiner in English, I have sometimes found that a pupil who had distinguished herself in the essay had failed to reach the necessary standard in mathematics; it may be that the examiner in mathematics was equally disappointed to find that a candidate who had done brilliantly in that branch had been ploughed in English. As a rule, however, such disasters do not happen, the candidate who is sufficiently able to reach a high mark in one being generally competent, by making an effort, to reach at least a pass standard in the other.

Again, it cannot be disputed that some boys are as little gifted in mathematics as most girls; and the mathematically gifted girl will find less difficulty in the subject than the boy with a literary bent. Are we, therefore, to extend the option to this type of boy? If we do not, are we not guilty of injustice towards him? I remember hearing—I forget on what authority—that the late Andrew Lang failed three times in the mathematical group of Responsions before he finally satisfied the examiners. It may be that there are other similar cases, and that by insistence on this preliminary test some exceptionally endowed men may be deprived of the opportunity for a university career. In any case, the hardship as regards the unmathematical pupil tells equally on the individual of both sexes.

Further, it cannot be disputed that the minds most averse to mathematical study are generally those to which the discipline bestowed by it is most necessary. If it be true that most girls possess the "literary" type of

mind (by which I understand a preference for the humanities and a distaste for abstract studies), this is the very reason why the particular bent of their mentality should be balanced by attention to an exact science. Have we not all suffered from books which, though possessing undeniable literary power, were yet marred by bad reasoning, want of precision in the use of words, lack of references, and inaccurate quotation? Of course, I do not maintain that the successful mathematician is always a good reasoner on other topics; but mathematics does hold up a standard of accurate thinking which is an excellent corrective to the literary mind. The patience in following up the steps of a proof and the careful attention to detail which are especially cultivated by mathematics are equally essential to success as a writer on literary or historical subjects. The value of English literary criticism has, indeed, been much impaired because it has too often been confined to the statement of personal impressions, and because the writers have taken little pains to develop an argument which would convince their readers of the justice of those impressions. Vagueness and superficiality, the cardinal vices of those who feel rather than reason, are best counteracted by the discipline given by mathematics.

A third consideration which may be mentioned is that by improved methods of teaching elementary mathematics has become a far less formidable subject than of old. In the days to which I have referred, when it seemed to be the aim of headmistresses to vindicate the competence of the feminine intellect by requiring it to perform difficult tasks in the most difficult ways, to solve problems in arithmetic by algebraical formulæ was regarded as a heinous offence, only to be committed surreptitiously by the most reckless among us; and in geometry we were expected to adhere strictly to Euclid's proofs, though we could have probably followed the reasoning much better if it had been presented in some other way. The only thing to do then, until light dawned on the struggling brain, was to learn the proofs by heart without understanding them; and probably many a candidate has "got through" the first university examination by a mechanical effort of memory. But now that reformed methods are universally approved and adopted, much less time need be given to the subject, and there are few girls who are entirely incapable of making progress in it. Those who are are probably too weak all round to reach the matriculation standard in other subjects, and for them some less severe test might be substituted. Such girls will probably not desire to take a university course or to enter a "learned" profession. They will content themselves with the lower branches of the Civil Service, become clerks, shop-assistants, or nurses, or adopt some trade in which manual dexterity is of more importance than intellectual brilliance. In the years immediately before us women will be required for many kinds of routine work, formerly reserved for men, in which diligence and docility in following the directions of others are more important than initiative or high mental attainment.

Some of the advocates for differentiation between boys and girls in the study of elementary mathematics also recommend that the teaching of natural science in girls' schools should be conditioned by its bearing on domestic economy, and that in lessons in the subject its application to "home-making" should be especially emphasised. Even in the next generation, it is argued, when women will be compelled to undertake work hitherto done by men, the majority will still become wives and mothers, and by arranging that their course in science shall be organised with a view to their duties in these capacities we shall be giving them two benefits at once—a scientific training and special preparation for their supreme business in life. In my opinion such arguments have little weight. In giving elementary lessons in chemistry or physics to boys no one thinks of considering their future vocation; they may become brewers, or dyers, or doctors, or engineers, or they may become lawyers, or merchants, or bank managers; in any case, the subject will have had its disciplinary value, and the knowledge gained will help to make the world a more interesting place and aid in the comprehension and management of the simple machinery with which everyone has to deal at some time or other. In the case of boys it would be obviously unfair to arrange that chemistry should be taught with a view to its special application to dyeing, for instance; for possibly none or only one of the class would become a dyer.

But is it less unfair to oblige all girls, of whose future career we must be quite uncertain, to follow a course organised with especial reference to domestic science? Although by the law of chances more than half of the class might be destined for domestic life, such premature specialisation would be a distinct handicap to those who had to follow other careers, and a serious injury is done to scientific teaching when, in its earlier stages, its application is narrowed to some particular industry. The true test of the value of any subject in the school curriculum is the intellectual discipline it gives and the "culture" that it can afford; and if by "culture" we understand the widen-

ing of horizon and the revelation of new interests, it is clear that each subject must be treated from the point of view that affords the widest survey of its possibilities. To teach it for immediately utilitarian ends is a mistake in the case of girls as much as in that of boys.

Nor, indeed, should such a policy be necessary, even in the interests of domestic economy. What our grandmothers and mothers did with very fair success even in the days when, judging from contemporary novels, the average woman was a more dependent and less capable human being than her descendant of the present age, their representatives, with the intelligence and self-control developed by better education, can surely accomplish equally well. The faculties trained by other exercises may, without much difficulty, be brought to bear on domestic problems, and the educated woman will very quickly master the mysteries of cooking, of laundry, and of household hygiene, naturally and almost automatically applying her general knowledge of science to these arts.

During the last three or four years there have been many instances of women graduates who, having had no domestic experience before, have qualified as, and become excellent, hospital nurses, run canteens, undertaken the management of hostels, and done the cooking for large hospitals. Among my own Oxford friends there are two women, both of whom obtained a first class in a final honours school, who are now successfully working in domestic capacities and have taken quite kindly to the preparation of fairly elaborate meals; and I appeal to any woman who in recent days has had to dispense with the services to which she has all her life been accustomed, to decide whether domestic duties are not on the whole easy of performance. To those who had no other resources the constant repetition of mechanical processes might, indeed, become monotonous; but such processes are welcome to those whose minds are able to expatiate in realms of their own, because their performance becomes so automatic that it makes small demands on the attention, and the brain is thus set free to work on its own lines. And the way to make domestic life attractive to our girls is not, in my opinion, to educate them especially for it, but so to develop their powers that their interests in every direction may be extended. Such women, even though they are wives and mothers, will escape the narrowing influence of the home circle; they will not talk perpetually of their children or their servants, but will be as detached as a man out of office hours from his business, and equally interested in public affairs and social and political movements.

THE HOUSE *VERSUS* THE HOSTEL SYSTEM AT BOARDING SCHOOLS.

By W. F Bushell, M.A.
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STEREOTYPED systems are dear to the minds of Englishmen, but fortunately, although public schools have laws and customs not easily broken, the system under which boys live is far more varied. And this variability is valuable in affording an opportunity for comparison. Generally speaking, the public is apt to divide schools into day and boarding schools, and each system has its advocates whose enthusiasm is flattering to the institutions concerned and a measure of their success; but to many schoolmasters the large non-local boarding schools give scope and opportunity denied by their rivals, the day schools, and it is of these that this article proposes to treat. At first sight, it might appear that the systems under which the large boarding schools are worked do not admit of many differences; nothing, however, could be further from the truth; and while each school is justly proud of its own method, and tends to regard it as the best, yet it is not unfair to examine, with an attempt at impartiality, the merits and demerits of their claims

Among the older schools the house system is almost universal; that is to say, the housemaster is generally responsible for the moral care, discipline, and catering of his boys, subject, of course; to those general school rules that may be laid down; but many modern schools, some of them dating from early Victorian times, have adopted the so-called hostel system, where the boys are housed round the sides of a large, central court (or on some similar plan) and have their meals together in a common dining-hall. It is to be presumed that this method was adopted for the sake of economy among other things, as it should be cheaper to employ one matron, to take an example, than many matrons. But that the house system has stood the test of time is evidenced by the fact that, in many cases, even under the hostel system, the boys are classified into houses, or similar units, each under the charge of a housemaster, whose general responsibility includes the moral care and discipline of the boys, but does not, commonly, involve catering for them, nor does he, in general, accept any financial responsibility in the matter. So successful has the house system been that, even in these cases, there are usually one or more outhouses as well where parents can, for a small extra fee, send their boys if they should so desire. In considering these systems it must be remembered that while some schools are entirely run on the

house system, and others entirely on the hostel, yet there are many which combine the two, their preponderating tendency being either in one direction or the other.

For the sake of comparison it is, however, the two extreme types that are most worth considering, and it will not be until a later paragraph that the inside architecture and domestic comfort of a house itself will be alluded to in any detail. The basis of school life, under either system, is generally the house. Whether the school is a good or bad one is, of course, an important point, but the nature of the house and the characteristics of the housemaster are probably far more important. An inquiry as to which is the best house at any school is often heard, and is proof of a recognition of this fact, though it is not without interest that so many parents are sufficiently foolish as to take their house on trust. Assuming, then, that a school has a sufficient number of competent housemasters, under which system is it likely to prosper most? The arguments for the *house* system are, perhaps, as follows:—

(*a*) The housemaster retains a greater control over the boys he has to train, especially as regards their manners and the decent arrangement of their meals. In short, he has a greater chance of exerting his individuality in insisting on ordinary manners and courtesy.

(*b*) The housemaster can alter the internal arrangements of the house without reference to penurious bursars or other cautious school officials.

(*c*) The housemaster has a definite home which he will not easily want to desert for service at another school. He will have opportunities of offering hospitality to colleagues, parents, and boys, in a manner which would be impossible under the hostel system; and, above all, he can easily put up old boys when they come down.

(*d*) Masters are not herded together in a common room to the derangement of their temper and the discomfort of their life.

(*e*) There is a greater chance of marriage if a master wishes it; the hostel system is almost anti-social in putting difficulties in the way of its staff, who are, after all, reasonably intelligent and useful members of the community, whom the State should encourage to marry.

In favour of the *hostel* system it may be fairly urged:—

(*a*) It is cheaper, and hence there is more money available for masters' salaries and reduction of fees.

(*b*) It is all to the good that a housemaster should not send in bills for boarding to the parents of his boys; his relations can, in short, be of a more intimate and personal nature, and his living does not depend upon his profits as caterer.

(*c*) The housemaster need not waste his time inquiring why the beef is bad and quarrelling with the butcher. He can accept such things, like his boys, as an act of bursarial improvidence.

(*d*) The green-baize door between the private and boys' side of a house is generally non-existent, and a more natural and friendly relationship can exist between the boy and his master.

(*e*) House feeling does not predominate unduly over school feeling, and the boy has a better chance of feeling he is a member of a great school and not only of a great house. In short, the solidarity of the school has a greater chance of asserting itself.

(*f*) It is easier to pass over the master who would make an incompetent housemaster, as the emoluments for house service are under this system far less.

These arguments are by no means inclusive, and are merely intended to represent the more standardised opinions which are commonly put forward. But while the arguments for the hostel can, in the main, be dealt with easily, it is far less easy to deal with those advanced on the side of the house system.

Taking those for the hostel system, it is not proposed to examine the germs of truth contained in the first three, as, no doubt, they are arguments of some value. But it is easy to exaggerate the economy effected. It is true that the sum-total of servants employed is likely to be less, but in a large centralised institution waste must inevitably occur. It is not to the interest of anyone to economise fuel, light, or food, whereas if the housemaster himself pays for these he is unlikely to permit waste. Proper supervision of servants is also more difficult, and a real attempt to insist on economy all round generally causes friction. The fourth point is probably immaterial, as the green-baize door of the house system is now, metaphorically, rarely shut, and the bolts and bars, which school fiction of fifty years ago put on it, have long been obsolete.

The fifth argument requires more examination, for the point it raises is more subtle. It is true that the detractors of the house system are fond of urging it, but surely daily gatherings at chapel can do far more for this essentially spiritual feeling than a daily gathering in hall for dinner? It is incredible that so much insistence should be placed on the most trivial act of meeting at dinner, when the incomparably greater advantages of meeting together in chapel are always at hand.

The sixth argument is of some value, but now that seniority plays a less important part than

it did in the selection of housemasters, an arrangement, under the house system, whereby the rejected candidate receives an increased emolument in lieu of a house should not be impossible. In such cases soreness may often be unavoidable, and some such plan would help to mitigate it.

Perhaps the really serious point in these arguments is the indignity felt by some men in having to make a profit out of boarding fees. But, under whichever system the school is run, such a profit is made, or was made in pre-war days, and whether such profits accrue to the housemaster or school seems immaterial so far as dignity is concerned.

On the other hand, the arguments for the house system are far harder to deal with. There are few enthusiastic housemasters who would dispute the first two. Each housemaster has, happily enough, his own individuality, and it is far better he should exercise it to the full than be deterred by innumerable school regulations, which are often far too numerous and unnecessary under the hostel system. There are many such who are only too conscious of the lack of opportunity which they are afforded; of the difficulty of enforcing much which they know to be for the best welfare of their boys, and of the difficulty of maintaining their house, of which they are not the master, in a state of cleanliness and order, when they have no power of appointing or dismissing the house servants. All this must naturally react upon their work. It is only the most complete enthusiast who can maintain his idealism amidst conditions which may approach little to the ideals which he has set himself, and his zeal will soon vanish in surroundings of which he disapproves, but which he cannot alter. We are, many of us, too familiar with the *non possumus* of governing bodies and other functionaries, but they are apt to forget that this non-sympathetic attitude may waste, rather than gain, by sending useful material elsewhere.

There is no reason at all why a greater standard, not necessarily of comfort, but rather of external surroundings, should not be aimed at than is often the case, and from the force of circumstances the housemaster will often show greater anxiety for this than the school. An old schoolmaster, who started his work in the 'sixties at a famous public school, once told the story of how he conducted an inquiring American into his classroom, which happened to be one of those redolent of memories, but ancient, dirty, and ill-ventilated. The American lifted up his hands in astonishment. "Think," he said, "that many a famous man was educated in this room, where I should scarcely like to keep a pig." No doubt this referred to a classroom, and matters are better now, but it is open to doubt whether the idea that external beauty and decency are among the main and decisive factors in education has taken real root.

It is generally the influence of the few that will lead the many, and it is under the house system that the few can set an example in their houses greater than that set by the dead level of mediocrity which they would have to endure under the hostel system. No doubt money is a factor, and it may be an expense to maintain the structure and decoration of a house at a high level; but the educative results of good surroundings are so great, and are so often reflected in the demeanour of the boys, that it should be possible for the enthusiast to make what attempt he wishes. But, comes the answer, it is equally easy to beautify a house under whatever system it is conducted. Such a statement is true. In practice, however, there is little doubt that the separate house system, for some reason, leads to better results. Perhaps mutual competition among housemasters is sufficient to account for it, and though the poor man with a large family might complain that such competition was wrong, yet, from the broader aspect, anything that tends to the improvement of the educational atmosphere surrounding a school cannot be out of place.

The third argument in favour of the house system is very strong. An ability to extend hospitality to old boys is of paramount importance in helping to foster the spirit of loyalty which is the pride of all good schools. The ability to entertain parents, colleagues, and boys is equally important, and although such entertainment is not impossible under the hostel system, yet everyone who has experienced the two must recognise that while it is easy in one case it is often most difficult in the other, and can even then be carried out only to a limited extent. Such hospitality, especially to old boys, is one of the pleasantest of duties, and every housemaster knows how much it is appreciated. But, under the hostel system, he may possess only one living-room, and, with a visitor, may have to interview boys in the passage, or his bedroom. The common-room may be crowded, and, at the best, admit only one or two guests, and the inability to offer the midday meal to all comers is a real hardship.

And, then, as to the common-room life. Nearly every school has some form of common-room, but, whereas in the house system it is usually a room which can be visited or not, just as the master wishes—in fact, a kind of club—under the hostel system it is usually a place where he has all his meals, though the actual living-rooms may be situated in the school

buildings at some distance off. Thus, in practice, the common-room life is confined to schools under the hostel system. In some cases all meals may be taken with the boys, but generally this happens only in the case of the midday meal.

Now many men are gregarious, and schoolmasters, perforce, have to be. But the nature of their work, involving, as it does, continual contact with different people, such as headmasters, colleagues, boys, and others, is a perpetual strain, and even the most equable temperament sometimes desires privacy. In a long day there is little leisure except at mealtimes, and it is a doubtful advantage to compel masters to meet one another at these hours day by day. Continual contact with one's colleagues is admirable, but human nature has its limitations, and at least one unfortunate and overdrawn school story harps on this theme. It is far better to allow members of a staff to choose their own homes; such a course will tend to greater forbearance and esteem. At the end of a hard term it is easy to comment unfavourably on A's method of eating his porridge, or B's method of drinking his coffee, and the merest triviality assumes an importance which, in an easier system of living, would never even appear. It has been argued that this system of living together causes close friendships, which allows A to gain something from the point of view of B, while B gains similarly from A; but surely it is incredible that such gains are not equally easy of accomplishment if A does not always drink his coffee in B's presence. Actual friction may often arise, but such a gain is negative rather than positive.

The fifth point is marriage. It is notorious, and, in fact, inevitable, that under the hostel system the majority of the men must remain unmarried. If the masters live in the midst of the boys, scarcely any other plan is possible. The question whether the married or unmarried man makes the better schoolmaster cannot be discussed here; but it is not good that a man who desires to marry should have to leave for another school or another profession. Such a situation directly clashes with the interests of the country. Enforced celibacy has never been dear to Englishmen.

Apart, then, from the question of expense, the house system seems to have irresistible advantages, and it is not without interest to note that it is well-nigh universal in those schools that have stood the test of time. Statistics of actual expense would be difficult to classify and difficult to obtain, but it is not inconceivable that partisans have been led into an undue estimate of the relative difference, in this respect, between the two systems. If, after the war, the age of economy begins, perhaps the house system will suffer in repute, but the awakened interest in education leads to the hope that real efficiency may be maintained as a form of national insurance, if for no other reason.

As regards the internal structure and arrangement of a house only a few remarks can be made here; for the ideal system of studies and dormitories, though very far from universal, is not uncommon. The great advantage of the study system is the sense of privacy it gives. In some schools few studies exist, and it is probable that even for the boys "the common-room life" has its drawbacks. Everyone, whether boy or master, likes his own home, and the publicity of life without studies is only one degree more attractive than the lack of comforts it affords. Some schools, on the hostel system, have studies outside their houses, but this may easily tend to be antagonistic to the house spirit, which, after all, in whatever form it has been adopted, has been productive of much that is good. Others have small compartments partially boarded off in the common-room for each boy. Other schools use classrooms as living-rooms, and though all such plans are better than the system which compels boys to do everything—working, living, and eating—in one room, yet to many a boy they cannot give the same opportunity of privacy which the study system affords.

It is easier, too, for the housemaster to pay friendly visits during evening preparation. Mr. Benson lays great stress upon the advantage to be derived from such friendly calls, which he always carried out from the social, rather than the magisterial, point of view, a chance question on a book or picture eliciting interests and evoking sympathy which should be the basis of the relations between housemaster and boy.

The great majority of the public schools have a good many years behind them, and the system on which they are run is the doing of the past, rather than of the present, generation. It will not be without interest to see how future generations regard the rival systems in any foundations that are yet to come.

The Student's Handbook to Cambridge, 1917–18. vi+703 pp. (Cambridge University Press.) 6s. net.—This is the sixteenth edition (revised to June 30th, 1917) of this indispensable little treasure-house of information. The most important additions are the regulations for the new English Tripos, and the new regulations for the Modern and Medieval Languages Tripos. There is also an account of such parts as concern undergraduates of the temporary emergency legislation which has been occasioned by the war. Every reference library in the country needs this book, but we should also like to suggest that it be found in every masters' common-room.

ADVANCED COURSES ON COMMERCIAL SUBJECTS.

By FRED CHARLES, B.A.
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COMMERCIAL subjects have not, so far as can be gathered from official reports, yet found a place among those in which advanced courses have been recognised. What are the reasons? Are they sentimental? Are they historical? Or are commercial subjects wholly unsuitable for inclusion in advanced courses for secondary schools?

The innate conservatism of an education largely controlled by the ancient universities will undoubtedly fight against the recognition of a utilitarian curriculum; men brought up on the language and literature of the ancient civilisations look askance at a curriculum based on "humanities" represented by the affairs of to-day and the history of the last hundred or hundred and fifty years.

Commercial education is in bad repute; its reputation is due, not to its own shortcomings, but to the very narrow and inefficient preparation for office boys and junior clerks which was formerly—and not so very long ago—dignified by the name of commercial education. Elementary technical commercial subjects, shorthand and bookkeeping, were admitted to the schools on sufferance owing to the demands of parents; the time allowed was inadequate and badly distributed; the teachers were often ill qualified; and the result was that both subjects and teachers were looked down upon, sometimes deservedly, by the regular staff. In these circumstances no satisfactory progress was made; and no wonder! The lack of success was due not to the subjects, or their unsuitability for admission to the school curriculum, but to the conditions under which they were introduced.

One cause is deeper still: the attitude of the average educated Englishman towards trade goes far to prevent the recognition of anything commercial; the professional man considers himself socially a cut above the commercial man; the commercial man, himself, in his private life, adopts an attitude almost apologetic for his occupation; no one recognises him as the great and patriotic benefactor to mankind that he could reasonably be held to be. These considerations may be thought irrelevant, but commercial education will not become really effective until commerce has taken its place in the ranks of the professions. It is gradually, but surely, winning recognition.

The inclusion of commercial subjects in advanced courses is likely for some time to be opposed by established authority, central, local, and professional. But are the subjects wholly unsuitable? Or are some suitable, others unsuitable? And, if so, where is the line to be drawn? If commercial education is defined as the development of character, the training of faculties, and of the power of acquisition of knowledge—all of them, character, faculties, knowledge, being important in commercial life—by the study of subjects that are useful in commercial life, then, undoubtedly, some of these subjects will be held by most educationists to be suitable and some unsuitable for inclusion in the school curriculum, and some will draw the line in one place and some in another.

Among the commercial subjects that would probably be most readily recognised as suitable for advanced courses are history, geography, and modern languages. These subjects, it must be remembered, are the commercial subjects known by these names, and since they may differ from the customary school conceptions of them it may be well to particularise. The history of the commercial curriculum is to be mainly the history of the last hundred, or hundred and fifty, years, the growth of the Empire, the building up of modern Europe and of the commercial relations of the peoples contained therein; it must be a subject also such as is able to bridge the gap between the history of the schoolboy and the politics of the man.

The geography of the commercial curriculum must lead from climate and configuration to products, distribution, communications, and transport. The study of a modern language for commerce must enable the pupils to understand and to speak, read, and write the language correctly; to know the customs, habits, thoughts of the people speaking the language, their products and their wants; a "modern language" in a commercial curriculum, in fact, implies the study not only of the language itself, but also of the people speaking it, and of the places where it is spoken. The language is learnt, not as an end in itself, but as a means to an end [1]—that is, to enable a man to communicate with and to understand the people speaking it.

These subjects, so understood, would be both commercial and educative; they would be a part of commercial education; and the strictest educationist might reasonably assent to admit them as suitable for advanced courses.

Some time ago the University of London established examinations for a degree in economics. It is fair to assume that subjects selected by the university authorities for this

[1] This was written before the publication of the Report of the Committee to inquire into the position of Modern Languages—*which see.*

intermediate examination for a degree are equally suitable for pupils of from sixteen to eighteen years of age attending secondary schools. Some of these selected subjects—economics, economic history, bookkeeping, banking—rightly have a place in good schemes of commercial education. In the latter case the point of view may be different; the university naturally regards the subject from an academic point of view, which, unfortunately, is by no means always practical. The university professor may treat his subject in such a way that it has no apparent relation to practice; and here is a real difficulty. The man who continually teaches a subject is apt to evolve theories, he is liable to lose touch with practice, even if he ever had it, and from this separation of theory and practice arises the dissatisfaction of commercial men with academic education for business.

The University of London is proposing to extend further recognition to commerce by instituting a degree, or diploma, in commerce. A degree as a test of commercial education can be considered satisfactory only if the syllabus of subjects satisfies those who are engaged in commerce, and if among the revisers to whom the papers are submitted are practical men still engaged in commerce. This demand really means that commercial education is satisfactory only when it is sufficiently practical to satisfy men engaged in commerce, and sufficiently educational to satisfy the reasonable educationist.

Technical commercial subjects[2] can scarcely be considered suitable for advanced courses in secondary schools, and this seems to indicate a rough-and-ready position in which to draw the line between the suitable and the unsuitable. Subjects taught for their educational value alone will readily be recognised as subjects suitable for these new advanced courses in secondary schools, but subjects taught for their utility have yet to win their way. Commercial subjects that are theoretical in character will probably secure recognition, while commercial subjects that are of a practical nature will for some time be left severely alone.

The same line of division should probably be drawn with regard to education for industry. Science for advanced courses will probably be quite general in character, while science especially designed for an engineering course, or science suitable for the dyeing trade, would not meet with recognition.

Technical subjects should, in fact, be taught in separate institutions, the governors, staff, and equipment of which are all specially adapted to their work; and technical commercial subjects are no exception to this wholesome rule. Commercial men as governors know, or should know, exactly what they wish taught, and they should know where to find the men to teach it; or, if there are none ready—and this is now the case with regard to several subjects which form an essential part of a commercial course—they should, with expert assistance, prepare well-qualified teachers as soon as men of teachable age are again available.

The secondary schools are concerned with the broad basis of a general education common to all the professions and the occupations bordering on them. Of these occupations there are now many connected with commercial life. This, however, does not preclude the secondary schools from getting much nearer to the needs of the everyday life that their pupils will have to lead after leaving school. They could well be at least as educative as they now are while yet dealing with matters of present-day interest, and this could be secured by teaching the history, the languages, and the customs of the peoples of to-day, and the geography and science needed to understand the life of to-day. By schools at which the leaving age is sixteen to seventeen years, and these include a large part of the secondary schools of the country, this could be done, even though the older universities should refuse to move. But to discuss the matter would be to travel away from the subject in hand.

An advanced course, thoroughly sound educationally, the subject-matter of which would be of great use to boys or girls entering commercial life, could undoubtedly be drawn up without including technical commercial subjects, and such would be the better plan—whether it would secure recognition by the Board of Education is another question. Its recognition may probably be delayed, but not for long.

Can a subject be both educational and utilitarian? Undoubtedly, for the different results lie, not in the subject, but rather in the method of approach to them. The separation of education from commerce and industry has been a mistake. Both education and commerce and industry have suffered. Yet to establish a spurious commercial education out of touch with business, guided by men whose business experience is long past, who are becoming academical, and whose commercial ideas belong to a past age, would be useless and a disservice to both education and commerce. Life is not divided into water-tight compartments. School life merges gradually into business life. The abrupt break between one and the other has been responsible for much difficulty in the past. Home, school, and future employers must all work together in unity to bring up a race of

[2] See "Shorthand and Typewriting in Secondary Schools," THE SCHOOL WORLD, September, 1913.

capable, patriotic, and responsible business men, and it would seem that their work would be lightened if in all our great centres of industry there were secondary schools providing suitable advanced courses in commercial subjects for those of our youth who aspire to distinguish themselves in the fields of commerce and industry.

SCHOOL LECTURES.

By Ernest Young, B.Sc.
Headmaster of the County School for Boys, Harrow.

THE Editors of The School World have asked me to give an account of the series of school lectures held during the winter at the County School, Harrow. We have had seven series, each, if possible, more successful than its predecessor. There is nothing very original about their organisation, but the results are interesting, and may be of some value to those who may not yet have embarked on any such enterprise.

There are six lectures to a series, one for each month of the winter and spring terms. They begin at 6.30 and end about 7.30, so that they fit in with the mealtimes both of those who dine and those who sup. Further, train boys and young boys get home at a reasonable hour. The lectures begin promptly, the speaker entering the room at the tick of half-past six. They close, not quite so promptly, but the proceedings are never prolonged by votes of thanks and their wearisome futile accompaniments. Moreover, in the case of paid lecturers there is no chairman: the lecturer just goes into the room, does his work without any preliminaries, and retires at his own good time. When the lecturer is unpaid, a few words of welcome are given. The appropriate thanks, in all cases, are three hearty cheers, called for by the captain of the school. Some variation from this simple plan occurs when there are scout badges or other small rewards to be distributed. These are given away by the visitor at the close of his lecture.

The reason for the institution of the lectures was to raise money. All other results are incidental, but the incidental results shall be mentioned first. When the custom of a monthly lecture was inaugurated, the school was only nine months old and not well known, even locally. The sale of the tickets, to all and sundry, brought many people to our hall who would, otherwise, never have entered it. In this way a strong local support was created for the new institution, a support which has since been extended in other directions and has proved of great value. The lectures have been a most valuable local advertising medium. They have also provided a rallying point for old boys, for whom special seats are reserved. These reserved seats are sold at reduced prices to all members of the Old Boys' Association, and the privilege thus accorded has helped to popularise that institution. The old boys usually arrange a "social" to follow the lecture, and they linger in the hall for coffee, music, whist, and games, when the ordinary audience has departed.

The many distinguished men who have occupied the platform have done something to give the school a local prestige, and they have done much more for the boys themselves. They have given these boys a kind of pride in their school as a place honoured by many famous men of the day; portraits of these men are afterwards framed and placed in the dining-room with the date and occasion of their visits. These portraits lose nothing in interest from the fact that they are *Vanity Fair* cartoons. An interest has also been awakened in the personalities of a number of leading men, and a kind of link created with some of the main lines of public thought or activity of the moment. Something has been gained also in the extension of general knowledge and consequent breadth of view. The boys have learned "how to behave" at a public meeting, how and when it is desirable to express applause, how to seize a point and appreciate a subtlety. Men of all kinds testify to the excellence of the audience from a speaker's point of view.

But, as already remarked, it was chiefly for financial reasons that the lectures were started. We have made a rule in this school never to ask parents, boys, or governors for subscriptions for anything. It is understood that all incidental expenses are to be met out of the profits on the lectures, and that energy spent in support of the series will bring absolute relief from any further financial demands.

The hall holds about 400 people, and we reckon to sell 450 tickets for each lecture, thus allowing for absentees and yet ensuring a full hall in each case. When most of the purchasers arrive—and that happens sometimes—there is an uncomfortable crush and the boys perch themselves on the window-sills. The tickets cost 1*s*. for reserved and numbered seats and 6*d*. for unreserved seats, and there are no "dead heads." Even the governors pay—but, then, they do not suffer from any other financial requests, so that the burden is not very great. We soon found, however, that it was a bit of a nuisance to try to sell 450 tickets six times a year. We seemed to be always asking for money, so we adopted the plan of putting bigger prices, say 3*s*. or 2*s*. for reserved seats and 2*s*. or 1*s*. for un-

reserved seats, on all the most popular lectures, but of selling the whole set of six for the old price of 6*s*. or 3*s*. respectively. (At the present time the war tax is added.) By making the cost of, say, three of the most popular lectures 2*s*. each, but of selling a set of six for 6*s*., the public has been persuaded into buying "seasons," and now practically no separate tickets are sold at all. In 1917 the whole of the 2,700 tickets were disposed of in five days and realised about £90.

The expenses are the printing of tickets and of a preliminary syllabus—there are no advertisements or posters—the cost of the gas for lantern lectures, the hire of a few extra chairs, and the fees of those lecturers who are paid. These fees may amount to a considerable sum. We paid one man £27; but we sold tickets to the value of £35. An average of five guineas a lecturer is a fair estimate as to fees. One man will cost more, another less, and perhaps a third nothing at all. The best agency for professional lecturers is the Lecture Agency, Ltd. (Gerald Christy), Outer Temple, Strand. Where the names of the people on the published lists are unknown to the school authority, the advice of the agency may safely be relied on. I shall be willing to help anyone with suggestions as to names. It is often possible to get lecturers at reduced rates if dates are chosen when they have other engagements in the same neighbourhood.

Obviously, the more unpaid lecturers one gets, the larger the contribution to the school funds. Where there are really first-class local men, these may be drawn upon. Distinguished public men are not to be had for the asking. They can be obtained only through the services of friends, and they cannot be paid—that is to say, they either come for nothing or not at all. This last term we have had the brilliant help of Mr. Hall Caine ("The Spirit of France"), Mr. Charles Garvice ("The Use and Abuse of Fiction"), Sir George Riddell ("The Making of a Newspaper"), and Mr. J. L. Garvin ("Francis Thompson"). During the previous season there came to our assistance Sir James Yoxall ("On Collecting Old Furniture"), Bishop Frodsham ("In the Never, Never Land"), and Mr. F. Wile, formerly Berlin correspondent of the *Daily Mail* ("Germany To-day and To-morrow"). During the past seven years we have welcomed many men of note, but we owe most of them to a devoted friend of the school whose life-work brings him in touch with many of the leaders of modern thought and action.

The subjects of the lectures do not matter much. It may be laid down, as a fairly good rule for the making of an attractive programme —attractive, that is, from the point of view of ticket-selling to the general public—that either the subject or the man must be popular. For instance, Mr. Garvin lectured to us on "Francis Thompson." It is questionable whether the subject would have packed the hall from end to end; but the distinguished editor of the *Observer* did. In other cases it is the subject that attracts, and, provided that the lecturer can be recommended, the fact that he is unknown to fame is no drawback. But a high standard has to be set up and maintained. The lecturers supplied gratuitously by various Colonial and other agencies are, as a rule, to be avoided, for they are generally rather poor stuff, and people will not continue to patronise a lecture course unless it can compete with other local attractions. As a matter of fact, the critical faculty of the boys is so developed by a sustained diet of really good things that they soon disapprove of mediocre people or ineffective treatment. It is worth while, in this connection, to record a thoroughly appreciative remark of a twelve-year-old member of one of our audiences. He had listened to a very brilliant intellectual performance, far beyond his comprehension, and on his return home greeted his father with, "I wish *you* had been there. It was a magnificent lecture, and I only wish I had been old enough to understand it." How the feeling of appreciation grows, even in the days of the "pictures," may be gathered from the following incident. Mr. Hall Caine had lectured to us on "The Spirit of France" and given us one of the most moving and dramatic addresses I have ever heard. The address was followed by an exhibition of some of the French Official War Films. (Incidentally, I may mention that the loan of these may be obtained for nothing, and would prove a great draw.) A small boy, on being asked how he had enjoyed the lecture, replied, "Topping! *But what did they want the pictures for?*"

A few more words as to organisation: the first few rows of seats are given up entirely to the boys, chiefly the younger ones. These are followed by the reserved and numbered seats. Behind these are the rows specially kept for the Old Boys, and finally come the unreserved seats. After the lecture has once begun the numbers on the tickets are not adhered to. Late comers have to get in where they can and receive no assistance from us. Punctuality is an extra-special virtue on these occasions.

A staff of boys is trained to take tickets, to act as barriers between the various rows of seats, to show people who arrive in time where their seats are, and to keep a look-out for odd empty seats so that all may listen without the discomfort of standing provided they come in time. The school staff is unemployed. The boys take

entire charge of the arrangements under the direction of the captain of the school. As one boy leaves school, another is appointed to fill the office he has vacated. Each boy, during his school career, keeps the same duty, so that there is never any confusion, and the machinery works with uniform success and absence of friction.

The funds are kept entirely under our own control, but a balance-sheet is presented to the governors when the money has been spent. We have bought a £100 grand piano, financed all the school societies and the scout troop, paid for legal and other advice for boys, helped poor ones to a holiday or another term at school, assisted the Old Boys' Association in times of distress, contributed to sundry charities, and added to the school collections of books, pictures, and lantern-slides.

With the profits on the school sports and one or two other little things, we have raised and spent on various school activities about £1,100 in the seven years we have been in existence. The parents, it is certain, very much appreciate the bargain made with them—support our public functions and no other requests for financial assistance will be made.

EXAMINATION ERRORS IN GEOGRAPHY.

By B. C. Wallis, B.Sc., F.R.G.S. etc.

As long ago as 1901, Mr. G. G. Chisholm[1] commented upon prevalent misconceptions in geography as a result of his experiences as an examiner. It would seem advisable to repeat his comments at frequent intervals, since the faulty ideas he noted still prevail. Typical errors of those days were: "Mountains *attract* rain," "The Rhine flows to the Alps, *giving off* different tributaries by the way," "Montreal is on the St. Lawrence *below* Quebec," "*All* the trade of Germany passes through Hamburg." Such errors still recur, though possibly with less frequency than seventeen years ago. But the content of school geography has so increased in quantity and so changed in character that another group of misconceptions has arisen, and it is the purpose of these notes to direct attention to these unfortunate developments.

Probably the most frequent source of error occurs in the use of technical terms. Such a term is a convenient phrase which has come into general use to summarise a definite set of facts, and the pupil should pay close attention to the facts which are excluded, as well as to those which are included in the term used. For example, "winter rains" do not mean the rains which fall during the months from September through January to March. They signify the rainfall which occurs during the cool months of the year, provided that there is little or no rain during the hot months; the term is an abbreviation for "winter rains and summer droughts," and its applicability depends upon the absence of rain during the hot season.

In similar fashion the term "forest" excludes grass country and woodland. It is well to distinguish clearly between the forest with its tall trees growing so closely together that there are few branches, and the stems are straight, and the overhead canopy of foliage is almost continuous, and the woodland, mistakenly called forest in Epping Forest, where the trees grow with extensive lower branches, crooked stems, and sufficiently far apart to permit the growth of grass at intervals. True forest has no grassy glades. The "prairie" and the "steppe" are terms which imply the presence of grass, but they also imply the absence of trees. Prairie and forest imply types of vegetation which are in sharp contrast; between them lie the intermediate types to which the terms "park land," "savannah," "mixed woodland and grassland" are applied.

This idea suggests another potent cause of misconception. For the sake of clearness in exposition various factors are isolated from their true surroundings, and the pupil is apt to consider the artificially isolated factor entirely by itself. But Nature is continuous, there are no sudden breaks or jumps, and the pupil should be guided first and last by this principle of continuity. For example, it is usual to describe a cyclone as if it were an independent phenomenon; but for every area of low pressure there is a neighbouring area of higher pressure, and the results of the storm depend on the whole of the conditions, the "high" as well as the "low." Consequently, in an examination or in a classroom answer to a question concerning a type of pressure distribution the whole of the conditions should receive treatment, and in the diagram which illustrates the answer areas of both high and low pressure should be indicated. The two should never be separated in the discussion of a practical question which approximates in any degree to real conditions. The whole idea is summarised in the use of the term "barometric gradient," which should provide the dominant note in any description of the results which accompany any type of pressure distribution.

A second instance of this kind of error

[1] "Common Examination Errors." III. Geography. By Geo. G. Chisholm, M.A., B.Sc. The School World, February, 1901. Pp. 49-51.

occurs in the drawing of contoured diagrams to suit an area described verbally in the examination paper. In the case where the candidate is asked to draw a representation of a ridge with a culminating point on the western end, a steep scarp along the northern face of the ridge, and spurs leading south-east and south-west from the western end, the usual drawing submitted to the examiner attempts to indicate these items more or less successfully as separate units, but the diagram as a whole lacks harmony, and the parts are frequently inconsistent with each other. In the above illustration the peak and its two spurs are drawn, but no care is taken to connect the spurs with the peak or to make the valley formation between the spurs consistent with the general appearance of that part of the map.

In addition to this fundamental error in a contoured map, candidates should be warned against showing a mountain with a maximum height of 550 ft., or an inland area of land below sea level far removed from the coast. Contour intervals should be regular; for example, the sequence 100, 300, 600, 1,000, 1,500 ft. is bad; while the sequence 100, 500, 1,000, 1,500 ft. is admissible, if the 100-ft. contour is essential to the map. It is not unnecessary, even, to remind the candidate that contour lines should not cut each other and should have the same number throughout; and also that rivers bear some relation to the V-shaped bends on the contour lines.

A misconception of considerable importance frequently arises from the careless use of technical terms; for example, it is a common error to say that the Trent or Mersey is a navigable river. The term "navigable" should never be used alone, since the word may apply to the use of a rowing-boat or an ocean greyhound. But the error is considerably aggravated when the candidate adds that the navigability of the Mersey is a cause of the importance of Manchester. This question of navigability is so important that it merits considerable attention.

In the first place, it may be laid down for the sake of definiteness that no British river is navigable. Many of the big estuaries are navigable, some of them with considerable difficulty, so that, for example, the Hull pilot meets his ship far from Hull in order to guide the vessel through a difficult and tortuous channel. The term "navigable" is used for the moment with reference solely to ships that carry on the foreign trade of Britain—ocean-going vessels. The choice of this interpretation is deliberate, because it is a matter of prime importance that the pupil should distinguish between the broad estuaries of Britain and the comparatively insignificant streams which flow into them; it is not the rivers that make the estuaries—the latter are due to the relief of the land, and their usefulness depends almost entirely upon the scour of the tides. What would be the value of Liverpool as a harbour, although it is at the mouth of the estuary, without the tidal scour and the continuous work of some of the most powerful dredgers in the world?

The Thames has been said to be navigable to Lechlade. Consider the river at London Bridge, Reading, and Oxford. East of London Bridge small boats in the Continental trade, such as the Batavier liners which go to Rotterdam, and coasting vessels for Cork and Leith, manage to reach a wharf within sight of the bridge. West of the bridge the traffic is by barge and lighter. Deep-sea ships stop lower down the estuary; nothing of any size passes the bridge up-stream. What of the river at Reading? Small-sized passenger steamers travel up-stream to Reading, a slow, toilsome journey from the numbers of locks to be negotiated. At Oxford small toy steamers carry passengers during the summer season. At Reading and Oxford the Thames is a "playground" and little else.

Turn from Britain to the Continent and consider the Seine and the Rhine. Paris is a river port, *for barges*. The Seine forms a pleasant summer highway for the Parisian, but its usefulness is strictly limited. At Rouen only comparatively small ships can reach the wharves, and it were wiser to say that the Seine is not a navigable river. The Rhine makes such an imposing display upon the map that it is surely a navigable river. The Germans have spent considerable sums upon improvements in the river, and to what end? Merely to make it into a rather large-sized canal. Stand anywhere on the river bank between Cologne and Mainz and pay attention to the character of the traffic. It is limited to two classes of vessels, passenger steamers, comparable in size with those which serve the summer traffic to the Isle of Man, and steam-tugs with an attendant string of barges. The Rhine is a navigable canal, not a navigable river. It must be noted, however, that the Rhine is useful; the Thames is of slight importance to Reading, but the Rhine contributes to the trade of Coblenz, Mannheim, Mainz, and Strasburg.

The Congo is navigable for ocean-going ships from the sea to Matadi, a distance of 100 miles. Then rapids intervene for 200 miles, and navigation becomes possible from Stanley Pool to Stanley Falls for about 1,600 miles. But the boats are merely river steamers, small in size and of light draught, usually propelled by paddle-wheels in the stern. The tributaries

of the Congo are said to be navigable for considerable distances. But the vessels must be small, and the Congo rivers are used not because of their navigability, but because the absence of other means of transport forces Europeans to navigate the rivers and to maintain frequently a constant struggle in order to transport heavy goods with very considerable difficulty. A trip on a Congolese river frequently means using a boat which is overcrowded when it has four passengers and which is tied up to the bank during the hours of darkness, partly owing to difficulties of navigation, but chiefly in order to allow the traveller to pitch a camp for the night, as there is no room to sleep on board.

Under modern conditions it is not the rivers which are useful, but the valleys which they have made. Everywhere railways follow such valleys, and wherever they compete for traffic the railways beat the natural waterways. Rivers lack the modern essential, mobility.

There are the constantly recurring misconceptions regarding ports and their importance. "Liverpool is important because it is *opposite* America." "Glasgow owes its importance to its *good estuary.*" "London is important as a port because of its *hinderland,* the Eastern Counties provide it with grain to export, and Kent supplies much fruit for the jam which is exported." The fundamental fact of importance about ports in general is that in most countries there are not more than two great ports, and, therefore, in discussing the importance of a port the best form which the answer would take is a comparative statement of the facilities which one port has with reference to the other ports of the country; for example, the importance of Havre can be well brought out by a comparison between Havre and Rouen, Dunkirk, Dieppe, Cherbourg, St. Malo, and Brest respectively.

In connection with the use of the word *opposite,* a few facts about ocean freights may be examined. The freight on cotton from New Orleans per 100 lb. averaged 1*s.* 4*d.* to Liverpool and 1*s.* 4½*d.* to Bremen, while from Savannah the charges were 1*s.* 2¼*d.* and 1*s.* 1¾*d.* respectively. Similarly the freights on 100 lb. of provisions from Chicago were 1*s.* 10½*d.* to Liverpool, 2*s.* 2*d.* to Glasgow, 2*s.* 1*d.* to London, 2*s.* 2*d.* to Antwerp, and 2*s.* 2*d.* to Hamburg. The use of the word "opposite" implies that Liverpool gains because the distance to America is shorter from Liverpool than from London; but the difference in distance is less than 300 miles in a journey which exceeds 3,000 miles, and ocean freights, unlike railway freights, do not depend mainly upon the miles which the goods are carried. They depend much more upon competition between steamship companies which wish to secure the freight.

Some errors are due largely to an attempt on the part of the candidate to tackle a question that is beyond his powers. The first subject in which this difficulty arises is in connection with ocean currents. Candidates frequently explain the surface currents of the ocean in terms of the convection current experiment which may be made in a laboratory with a piece of ice at one end of a tank and a Bunsen burner at the other. This attempt indicates inability to grasp the subject at issue. Erroneous ideas are, further, introduced by those candidates who attempt to explain the influence of the earth's rotation, and yet are unacquainted with the mechanical laws governing motions in fluids. Such candidates would be better advised, if they *must* attempt such a question, to describe not only the facts regarding ocean currents as they may be examined in the monthly charts published by the Meteorological Office, but also the correlated facts concerning wind velocities and directions which are indicated in the same charts. School candidates should rarely deal with theoretical explanations of ocean currents; such work rather belongs to a post-school course. The ever-recurrent difficulty in relation to the Gulf Stream and the Gulf Stream Drift illustrates this dictum excellently. For years teachers have attempted to deal adequately with the question of the Gulf Stream, and the examination answers show similar misconceptions year after year. It is but fair to conclude that the question is too difficult for school geography, which should be content, in this case, to indicate certain sets of observed facts and to stop at that point.

A similar difficulty due to inability to grasp the principles of the mechanics of fluids arises in connection with the barometer. Candidates fail to grasp pressure distribution as a whole. This matter was considered above from another point of view.

A second series of misconceptions arises in connection with the term "region." The world may be divided into rainfall regions, regions of natural vegetation, natural regions, and general regions. The rainfall and natural vegetation regions are fairly simple and serve excellently to introduce ideas about the continuity over the earth's surface of various types of natural phenomena. The natural regions are based upon climatic and vegetation factors in combination and are therefore more elaborate, so that the pupil frequently learns a set

of technical terms such as the "China type," which he usually uses incorrectly in an examination answer. Such a division of the world into units is a great strain upon the analytical powers of school students of geography.

Erroneous ideas are presented very commonly in connection with questions which deal with history and geography in combination. Candidates may be asked to account for the importance of Manchester as the centre of the cotton industry, or of London as a capital. It is not sufficient to write that Manchester is in Lancashire, where the climate is suitable to the spinning of cotton, or that it is in the west of England, which is the side nearer to North America, whence comes the raw cotton, or that the salt mines of Cheshire and the coal mines of its own district contribute largely to the efficiency of its machinery and its bleaching works; or to write that London is at the head of a large estuary on which the English railways concentrate, or that it has a large trade because it is near the Continent, or that it contains the Houses of Parliament. Such remarks have little value, since they betray a misconception of the question set.

Moderately good answers might be written on what is called the comparative method. It might be indicated how Manchester excels the cotton centres of Scotland, France, Germany, and New England; or how London differs from Edinburgh, Paris, Berlin, or Washington. Such a method necessarily would involve historical references and might yield good results.

Equally good answers might be obtained by what may be termed the inductive method. General principles might be enunciated regarding the best qualities which are required for a centre of the cotton trade, or for a capital. Candidates who use this method, however, are usually too immature to make an adequate analysis before enunciating general principles, and commit themselves to such statements as "Centres of cotton manufacture must be near to large supplies of raw material," or "Capitals should be situated in the midst of a dense population," or "Capitals should be on the sea coast." The result usually develops into an excellent example of special pleading.

Neither of these methods can be considered as satisfactory, since the main emphasis in the answer should be historical. In the case of Manchester the answer should begin with the Industrial Revolution and show how the city has emerged as "Cottonopolis" as a consequence of a century and a half's progress which has seen the change from a provincial town of small importance and a small population to the centre of one of the densest populations in the world, because it has attracted human beings in thousands to its factories and warehouses. Attention should be directed to the history of cotton manufacture in such a way as to show that Manchester has benefited by, if it has not inaugurated, each stage of development. The physical environments of the city—the relief of the land, the coal mines—should be mentioned in relation to their effect upon the processes of manufacture and of marketing cotton in the periods of pack horses, of canal traffic, and of railways, while the energy of the Mancunians in their support of the first barge canal, the first railway, and the first great ship canal in Britain should receive attention.

Similarly, the case of London as a capital involves an epitome of the history of England and of the British Empire. The candidate should present a vision of the great European plain with the situations of London, Paris, and Cologne in relation to it and to each other; of the traffic routes by the Rhine and Seine valleys and the effect of the "silver streak"; of the Low Countries and their relation to East Anglia. Such a vision should dominate the epitome of history until the days of Cromwell. Then comes the later vision, that of sea power and colonial expansion and the position of London on the west coast of Europe, whence the great sailors all departed to explore and colonise the world; London in Europe, but not on the Continent; London a port and a great market, free from the land rivalries and without a great army, but with the stimulating influence of a great merchant fleet.

Finally, the principle of persistence should be applied—every great progress in traffic facilities tends to concentrate population and power more and more at the traffic centres which previously existed. Progress in locomotion tends to augment congestion rather than to relieve it. Consequently, London was able to retain its power and position as a centre of national life in the face of industrial development and commercial progress in the North of England.

The above ideas imply a treatment of the question which exceeds the possibilities of the examination room both in the time available for the answer and in the calibre of the candidates. Such a difficulty must be recognised, but it may still be urged that candidates should not attempt questions of this character unless they are prepared to suggest in their answers some of the main lines of historical development. It is possible for a candidate to imply, within the limits of one page of foolscap, that he is familiar with the main features

of the outlook down the main vistas of history. Questions of this kind appear in examination papers and examiners expect that candidates will not misconceive their purport. Geography implies outlook not only over the wide spaces of the world of to-day, but also over the spacious times of bygone ages.

THE NOTE-BOOK IN MODERN LANGUAGE TEACHING.

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THE intermediate period in the evolution of the direct method of language teaching is now drawing to a close. The wild enthusiasms of the earliest days, when conversation was held to be everything, have been succeeded by a far too considerable rebound in the direction of study of grammar, elucidation of every difficulty, etc., in the mother-tongue. To-day it is perceived by many earnest and thoughtful teachers that to understudy Mr. Facing-Both-Ways is to court disaster. A half-hearted use of "direct method" principles results in failure in every direction. The boy who is allowed to lapse into mother-tongue once will do so increasingly, and will soon be unable to do anything else. Diligent experiments, also, are being made to ascertain whether it be not possible, solely in the language concerned, to teach French or German, Spanish or Russian, and that in such fashion as to gain accuracy and understanding in reading, hearing, writing, and speaking.

In these experiments one all-important adjunct is the note-book. So much is this recognised to be the case that various publishing houses have placed upon the market note-books of differing arrangement and size. Some of them are divided into nicely calculated tiers of pigeon-holes or boxes, wherein to imprison a word immediately after capture. In others, words already imprisoned are shown peeping expectantly from their little cells as though to invite others to walk in and share their particular "parlour." Undoubtedly some scheme of arrangement is a necessity, if one is to avoid hopeless confusion and to use the note-books for that repetition which alone can ensure a good vocabulary. The present writer has found the simplest plan to be that of having nouns written on the right-hand pages, adjectives and adverbs on the upper, and verbs and idioms on the lower, left-hand pages. In practice this works out at a reasonable division of space.

As soon, however, as some general scheme of entries has been adopted the difficulty arises as to how the entries are to be made. If one is to write down simply that *le réverbère* = gas-lamp, and every fresh word on similar lines, a great deal of the lesson will evidently consist of exercises in translation, and constant use of the mother-tongue be entailed. If, on the other hand, the note-book is filled with long strings of words, like *le réverbère, l'hypothèque, la citrouille, quêter, cramponner, rutiler,* then revision will become an impossibility, for each time such columns are revised the meaning will need to be re-ascertained—a sinful waste of valuable time. It is in face of such a dilemma that the method of entry by definition is here commended.

By this method entries of the kind illustrated below would be gradually accumulated. One may add that not only have those given been excerpted from note-books in actual class use, but also that they were in every case invented by pupils and approved of by the class, as giving help adequate to all future identification of the word

FROM RIGHT-HAND PAGE.

le fourgon = le wagon dans un train où nous plaçons nos bagages.
la bêche = outil avec lequel nous préparons le sol pour recevoir nos pommes de terre.
das Schaltjahr = Jahr von 366 Tagen.
die Erziehung = was ich von meinen Lehrern und von dieser Schule bekomme
un centauro = monstruo antiguo, mitad caballo, mitad hombre.
una cuna = cama para un nene.

FROM LEFT-HAND PAGE.

tâter = toucher avec le bout des doigts.
entscheiden = von zwei Dingen sagen, welches das Richtige sei.
eifersüchtig = wer besseres Lob als sein Nachbar haben will.
apear = desmontar de caballo ò de vehículo.
à ma guise = en toute liberté = comme je veux.

It were an easy task to pick holes in many of the foregoing as definitions, to discourse learnedly indeed concerning the extreme difficulty of all definition, and particularly of definition in a foreign, imperfectly understood, language. On the other hand, the method of entry by definition comprises so many distinct advantages that it is able not merely to justify its existence and use, but even to claim a place as an indispensable ally in the operations of the Modern classroom.

In the first place, it ensures the constant retention of the foreign language. The frequently voiced objection that some explanations *must* be given in English has been shown to have no solid foundation. All depends on

the work in the earliest Forms. If in Forms II. and III. every unfamiliar concept be explained by an English equivalent, it will clearly be impossible in Forms IV. and V. to teach the use of German attributive adjectives or the subtleties of French pronominal verbs in any other language than the mother-tongue. The only case in which English in any shape or form might be permissible in the note-book would be in those rare words (names of trees, animals, flowers, and the like) which are not capable of definition or exact description. So we find:

érable = arbre du Canada (*maple*).
la grive = oiseau qui chante dans nos jardins (*thrush*).

And in these cases the word in brackets is written very small, so as not to "jump to the eye" during rapid revision.

Almost equally important is the way in which such note-book work helps in solving the problem of accidence, one ever-recurrent, at any rate, as far as the end of the Fifths. It is of no small assistance in this direction to be constantly drafting and jotting down phrases like

l'homonyme = deux mots qui sont épelés différemment, mais qui sont prononcés de même; or
la herse = instrument à dents qu'on tire à travers les champs après que ceux-ci ont été labourés.

And the many attempts to give the best definition (as, *e.g., la grêle = petites pièces de glace qui tombent du ciel; de la pluie gelée; sorte de neige, mais plus gelée et plus dure*) are all gain so far as accidence is concerned. In fact, our whole reading is thus accompanied, if one may so speak, by an undercurrent of *dictée*. Yet this is in many respects better than the *dictée* proper, for, whereas the latter is often but a sequence of unknowns, the note-book method necessitates a constant linking on of knowns to unknowns.

Another and most patent advantage is the impetus that is given to conversation. How difficult it is to educe real conversation—not the brainless dissection of language so often fostered by the vaunted *questionnaire*, but conversation which shall correspond with real thought-processes. Animated discussion concerning the merits of varying definitions, however, is a natural outcome of the method now advocated. One cannot easily forget the heat which sprang up among our would-be men of science anent *l'éclair* and *le résultat électrique de la rencontre de deux nuages dans le ciel*, or *die Ehre*, which was finally set down (a wholly inadequate definition, but one never to be forgotten by that class) as *die Eigenschaft, die man nie entbehren muss.*

Frequently two birds may be killed with one stone, and that without altogether incurring the reproach of *obscurum per obscurius*. Thus by means of a definition like

le paillasson = la natte = sorte de tapis au vestibule pour essuyer les pieds dessus,

both *paillasson* and *natte* are annexed. Similarly,

toutefois = pourtant = cependant,
daher = darum = deshalb,

and even

der Zwist = der Hader = der Zank = der Streit,

where, by the help of one known *Streit*, three wholly new words are taken over, along with their allied verbs and adjectives.

Every language learnt can be commandeered in case of need, particularly where rapidity is desired or where definition is difficult, *e.g.*

wählen = choisir.
avertir = monēre.
der Pfirsich = la pêche.
geschickt = wenn man ein Ding gut tun kann = habile.
la nutria = la loutre = die Otter.

Nor is an entry to be refused because of its oddity. On the contrary, many of the words best gripped have been learnt because of some whimsicality of expression used in writing them down; for once get an appreciation of humour into a class and half your battle is won. A few recent curios run as follows:

die Angst = was mein Lehrer über mein Deutsch fühlt.
das Gemüt = die Atmosphäre des Herzens.
la tige = le tronc mince d'une fleur.
die Träne = Salzwasser aus den Augen.
le tourteau = gâteau "à huile" que mangent les bestiaux.
neugierig = wenn man die Nase in alles stecken will.

The method of note-book entry by definition has come to stay. To a remarkable extent it preserves in a class the constant atmosphere of the language which is being learnt, since every single definition coined means greater familiarity with that language; and it secures that by the time a pupil has reached the Sixth he shall be ready to use intelligently the Petit Larousse or Toro y Gomez,[1] and with them to enter into all those realms of gold which they are eager to reveal to the enthusiastic word-hunter.

[1] Unfortunately, no equally handy and cheap German dictionary seems to be obtainable.

PERSONAL PARAGRAPHS.

THE appointment of Dr. Arthur Caley Headlam, as Canon Scott Holland's successor, to be Canon of Christ Church, Oxford, and Regius professor of divinity at the University of Oxford, will be cordially welcomed. Dr. Headlam is widely known as an eloquent and learned theologian, and, as principal of King's College, London, from 1903-12, and a member of the Senate of London University from 1903-13, he has rendered invaluable service to the college and the cause of higher education. During his ten years at King's the college was incorporated in the University of London, the scheme for its reorganisation was carried out, and its finances were put on a more satisfactory basis.

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THE Rev. E. G. Selwyn, the retiring warden of Radley College, has been presented by the boys with a handsome silver bowl. In making the presentation, H. G. Selous—the senior prefect, and son of the late Capt. Selous—referred to the important alterations in the life of the school carried out by the warden, particularly the introduction of Rugby football. In replying, the warden thanked the boys for the token of their affection, and expressed the hope that the increase in numbers which the school had made during the last few years would continue, and that its high reputation would be maintained in every way.

* * *

THE Lancashire Education Committee has decided not to proceed with the appointment of a new director of education for the present. The committee was unanimously of opinion that the services of Dr. Snape would be invaluable in connection with the new conditions and changes arising under the clauses of the Education Bill. Dr. Snape has consented to continue in office for a time provided arrangements were made to relieve him of some of the routine work and attendance at meetings which had overtaxed his strength in the past.

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ADMINISTRATIVE circles will warmly welcome the news of the withdrawal of the resignation of Mr. A. C. Coffin from his position as director of education at Bradford. The resignation was referred to in these columns in the April issue. The Bradford Education Committee passed the following resolution at its meeting on May 7th last:—"That the committee has heard with pleasure of Mr. Coffin's restoration to health and of his offer to withdraw his resignation, which is gladly accepted by the committee."

MR. E. O. TAYLOR, inspector and assistant to the St. Helens Education Committee, has been appointed secretary to the Edmonton Education Committee. Educated at Longwood Grammar School, Borough Road Training College, and the Technical College, Huddersfield, Mr. Taylor graduated in Arts in 1898 and in Science in 1902 at London University. He was formerly headmaster of the Higher Grade School, North Road, St. Helens, and is the author of "An Introduction to Geometry" (Clarendon Press).

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A FUND is being raised for the placing of an organ in the hall of the Mary Datchelor School, Camberwell, to commemorate Miss Riggs's forty-one years' work as headmistress.

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MR. H. NORMAN RAE has presented the sum of £10,000 as a fund for the provision of scholarships for girls in the West Riding of Yorkshire. Mr. Rae's gift was actuated by his pronounced opinion that girls have not—under present conditions—the same opportunities as boys for acquiring education, and by his intense desire to improve educational facilities in his native district.

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MR. E. T. GRIFFITHS, modern language master at Newport Intermediate School, has been appointed headmaster of Llanfyllin County School, Montgomeryshire. Mr. Griffiths has had considerable experience as a member of examining bodies, including the Joint Matriculation Board for the Northern Universities and Birmingham, the panel of examiners for degrees at London University, and the examiners for degrees at Manchester University. He had also acted as senior lecturer in French at Manchester University.

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MR. WILSON JAGGER, associate of the Royal College of Art, has been appointed headmaster of the School of Art at the Technical College, Cardiff, in succession to Mr. James Bush, who recently resigned. Mr. Jagger has been chief assistant at the school for twenty-one years, and received his early training at Bradford Technical College.

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THE Rev. Adam Fox, late of Lancing College, has been appointed warden of Radley College. Mr. Fox was educated at Winchester College and was an exhibitioner of University College, Oxford. Appointed to take the Sixth Form at Lancing in 1906, he became a housemaster in 1913, and during the last few years has been in command of the college O.T.C.

He was ordained in 1911, and had recently accepted a mastership at Winchester. Mr. Fox will take up his work at Radley after the summer holidays.

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THE council of the Girls' Public Day School Trust has appointed Miss Mabel E. Lewis, Class I., Classical Tripos (Newnham), to be headmistress of Wimbledon Hill High School for Girls, and Miss Dorothy L. Walker, Class II., Part I., and Class I., Part II., Classical Tripos (Girton), to be headmistress of South Hampstead High School for Girls in succession to Miss Benton, who is retiring. Miss Lewis is at present headmistress of Southend High School and was formerly headmistress's deputy at the school to which she now returns as headmistress in succession to the late Miss Gavin. Miss Walker is on the staff of the Leeds High School for Girls.

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THE death is reported, at the age of eighty years, of Dr. John Rundle Cornish, Bishop Suffragan of St. Germans, in the diocese of Truro, for the past thirteen years. Born at Tavistock and educated at Bideford Grammar School and Sidney Sussex College, Cambridge, he was fourteenth wrangler in 1859. He became fellow, dean, and Taylor lecturer in mathematics of Sidney Sussex, and took Orders in 1863. He was afterwards appointed principal of Truro Diocesan Training College and acted as examining chaplain for many years to the Bishops of Truro.

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DR. IVOR THOMAS, H.M. Inspector of Schools for the district of Swansea, died on March 30th, in his forty-fifth year, after a very brief illness. Dr. Thomas was a native of Glamorganshire and, after training as a pupil teacher, became an assistant-master at Brynmawr County School. He then attended Marburg University and obtained his Ph.D., returning to England to join the Geological Survey in London. For his valuable research work in this connection the University of Wales conferred upon him the degree of D.Sc., and in 1912 he was appointed to the inspectorate. He was characterised by a modest and sympathetic nature, and his death is deeply regretted in educational circles in Swansea.

* * *

THE death is announced from India of Prof. James N. Fraser, principal of the Training College for Teachers in Government Secondary Schools, Bombay. Educated at Rossall School and Balliol College, Oxford, he was appointed professor of English literature in the Deccan College, Poona, in 1896. A traveller and a linguist, he acquired an extensive knowledge of the educational system of foreign countries. He made considerable researches into the fields of Oriental lore, and his contributions to literature include many studies and translations of the saints and poets of the Deccan.

* * *

THE educational work of Nottingham has sustained a great loss in the death of Mr. Edward Francis, who for thirty-five years has held the position of headmaster of the High Pavement Secondary School. At the last meeting of the Secondary Schools Sub-committee, the chairman, Mr. W. E. Morris, paid a high tribute to the work of Mr. Francis as a prominent member of a small band of pioneers, fighting for many years for the needs of higher education and secondary schools and as a capable and loving teacher. Mr. Francis was educated at the Bristol Trade and Mining School, the Royal College of Chemistry, and Cheltenham Training College. He was appointed principal of the People's College, Nottingham, in 1883, and he had completed nine years' service as headmaster at High Pavement School. He was the author of "A Laboratory Note-book" and "Chemical Diagrams," and his many papers on original researches include "Boiler Incrustations," "Furnace Residues," "Bacteria Counting," "Discrimination of Starches," and "Estimation of Small Amounts of Iron in Natural Waters."

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THE technical world has suffered a great loss in the sudden death of Mr. C. E. Handy, principal of the Darlington Technical College. Mr. Handy was formerly principal of Elswick Technical College and previously head of the engineering department at Portsmouth Technical College. He was an active member of the Association of Teachers in Technical Institutes, having been a member of the council of that body for several years. A man of keen energy and much promise, Mr. Handy has been a strenuous worker in the interests of technical education for many years.

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MAJOR H. P. B. GOUGH, M.C., Welsh Regiment, who died on April 22nd from shell wounds received on April 13th, was science master at Oakham College on the outbreak of war. He was gazetted to a Welsh regiment early in 1915, went to France in 1916, and was awarded the Military Cross in August, 1917, followed by a bar in November of the same year. He received his early education at Llandovery College and became a scholar of Sidney Sussex, Cambridge, obtaining a first

class in the Natural Science Tripos in 1902. He formerly held teaching appointments at Neuenheim College, Heidelberg, and Lancaster Grammar School.

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Capt. M. W. C. Sprott, son of the Bishop of Wellington, New Zealand, who was killed on March 21st, was a master at Victoria College, Jersey, when war was declared. He received his commission in 1914 and had since served continuously on the Western front. He was severely wounded in the Somme offensive and his gallantry was mentioned in dispatches. In March, 1917, he was awarded the Military Cross and promoted captain and adjutant. His C.O. writes that he was one of the bravest and best officers in the regiment and a real friend to all. He was an assistant-master at Wakefield Grammar School in 1910–11 and had been on the teaching staff of Victoria College since April, 1911.

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Lt.-Col. A. R. Haig-Brown, D.S.O., Middlesex Regiment, who fell on March 25th, was the youngest son of the late Canon Haig-Brown, Master of Charterhouse. A scholar of Charterhouse, he graduated at Cambridge. He took his "Blue" for Association football and represented his college at cricket and running, winning many prizes on the track. He was one of the keenest in sports—an angler, a game shot, and a rider. The author of "Sporting Sonnets," "My Game Book," and "The O.T.C. and the Great War," he contributed many poems and articles to the Press.

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Another schoolmaster who has sacrificed himself for his country is Major Sydney H. Baker, senior science master at Abingdon School, whose death on March 23rd is reported. Educated at Bristol Grammar School, he gained an open science scholarship at Jesus College, Oxford, and graduated with third-class honours in natural science in 1903. He studied chemistry at Charlottenburg for a year, and after a short period as science master at Loretto he took charge of the science at Abingdon. Gazetted in 1915, he was soon promoted captain and became intelligence officer in France and major in Salonika in 1916. Invalided home, he passed through the senior officers' course at Aldershot and returned to the front, taking part in strenuous fighting.

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2nd Lieut. R. B. Sanderson, R.G.A., who died of wounds on April 17th, was the son of Mr. F. W. Sanderson, headmaster of Oundle School. Educated at Oundle, he gained a scholarship at Queens' College, Cambridge, and graduated in the Mathematical and Mechanical Science Tripos. He became a pupil under Mr. Trench, the chief engineer of the L. and N.W.R., and was afterwards appointed to the staff of the Royal Naval College, Osborne. Given leave of absence by the Admiralty, he was gazetted in the R.G.A. and went on active service. He had been invalided home for a year, and had just returned to the front when he fell.

* * *

Friends of the Central Foundation Girls' School will be interested to hear that Miss S. D. Machell is severing her long connection with it at the end of this term. Miss Machell has been second mistress for twenty years, and her work in the school as girl and mistress has lasted for forty years, thereby forming a link between the old history of the school as the Bishopsgate Ward School, and its new life as the Central Foundation School belonging to the Dulwich Foundations. Miss Machell's friends wish to offer her on her retirement some tangible mark of their appreciation of her work. Mrs. Gourvitch Blom, secretary of the Presentation Committee, Central Foundation School, Spital Square, E.1, will gladly give fuller information to anyone who cares to write to her.

Onlooker.

POSITION OF MODERN LANGUAGES IN OUR EDUCATIONAL SYSTEM.

By Walter Ripman, M.A.

The Committee appointed by the Government in August, 1916, to inquire into the position of modern languages in the educational system of Great Britain has now issued its report (Cd. 9,036, price 9*d.* net). The space at my disposal will not allow of any exhaustive discussion of it; nor is this necessary. In the first place, it should be read and taken to heart not only by everyone actively concerned in education, but, indeed, by every thinking person that loves his country; and in passing I may be allowed to express my regret that Government publications are issued in such an extremely unattractive and inconvenient form:[1] could we not have a library edition of this report, say at half-a-crown, that could be placed on an ordinary bookshelf? In the second place, I should be rather at a loss to criticise, for the views expressed seem to me thoroughly sound.

When the constitution of this Committee was announced I welcomed it as likely to carry out its difficult task in a broadminded, unbiased, and businesslike fashion; my objection that women were inadequately represented was expressed by others as well, and

[1] Since the above was written it has been announced that the Report will shortly be issued by the Stationery Office as an octavo volume.

the subsequent appointment of Miss Gilliland was undoubtedly wise. Others complained that no modern language teachers were on the Committee; I regarded this as an advantage. The Committee has worked extremely hard, and the work it has done is an enduring monument to its conscientious efforts and good judgment. It has earned the gratitude of all teachers and students of modern languages, and of the community at large.

The arrangement of the report is admirable and the style clear and convincing; at times it rises to real eloquence. The historical account of the study of modern languages in Great Britain makes interesting reading, and the chapter on the neglect of modern studies should distress and arouse, as it is meant to do. The value of modern studies is stated soberly and without exaggeration; the importance of making the public appreciate their value is vigorously emphasised. The means of instruction are then reviewed, with careful detail in the case of the schools and of the universities; far-reaching proposals for improvement are made which deserve, and will doubtless receive, the fullest consideration. That very serious question, the supply and training of modern language teachers, is adequately discussed. There is a relatively brief, but none the less helpful, chapter on method; and finally there are some valuable suggestions for the conduct of examinations. The views of the Committee are summed up in a series of conclusions; these are followed by their recommendations, printed in full below.

To the report are added "reservations" by four members of the Committee who disagree with some of the views expressed in the report as regards the treatment of modern languages in schools. Appendix I. is a list of witnesses examined by the Committee; Appendix II., a letter and *questionnaire* (has our language no term for this?) sent out to business men and others; Appendix III., tables showing the hours of work, salaries, and pensions of teachers in Austria, Denmark, France, Germany, Norway, and Sweden; Appendix IV., a letter received from thirty-one university professors and readers.

It is possible here to dwell only on a few of the points which the Committee seems to me justified in emphasising; and I shall confine myself to those which are of direct interest to teachers in schools.

Perhaps the most valuable feature of the treatment of modern languages in schools is that the Committee realises that languages are not the only subjects or even the main subjects that must be learnt, and that we must use school time to the best advantage. Pupils represent many types of linguistic ability; some can learn several languages with profit, but many cannot hope to learn more than one language well, and it is a grievous waste of time to learn several badly. The teaching should be intensive; there must be a daily lesson, at least during the first two years. The pupil must be linguistically ripe for the first foreign language—that is, he must have a good grounding in English. The Committee, after stating the pros and cons with great fairness, arrives at the conclusion that for the average pupil the age of eleven or twelve represents the best time for starting the first foreign language; and I believe this to be a very important educational reform. The minority of four do not agree with this; but they utterly fail to show—as they should have done—that it is possible to give a daily lesson in French to the average child under eleven without an undesirable extension of the teaching hours or the serious neglect of other subjects. A great deal of the time given to languages in our schools has been grossly wasted—and nowhere more than in the "junior departments," with their two or three periods a week for French.

As regards method, I note with pleasure that the Committee has arrived at this conclusion: "We regard the principles of the 'Direct Method' as sound, although liable to misapplication by unskilful or ill-qualified teachers. The importance of mere fluency of speech should not be overrated. Grammatical accuracy and scholarship should be demanded. Pupils should be encouraged to read for themselves and to co-operate actively in their own instruction. A main object of language teaching should be to fit the pupils to learn languages for themselves. The work in schools should be carefully planned, and, so far as possible, a consistent method should be followed throughout each school."

Particularly valuable are the sections devoted to advanced studies in secondary schools. Here, and elsewhere, the Committee sets up an ideal of humane learning which marks a great advance on the narrowly philological tendency that has so long prevailed. Reference is made to the regulations of the Board of Education, and the Committee is in accord with the widely expressed opinion that English should be regarded as a main subject in the modern studies course. As regards Latin, the Committee considers its position under the scheme of the Board of Education as "somewhat anomalous, and the Board has found some difficulty in furnishing a logical justification for its inclusion among modern studies."

Phoneticians have every reason to be satisfied with the ample recognition which their subject receives. It is true that the Committee

does not go so far as the letter from the thirty-one, in which it is suggested that a lecturer in linguistic pedagogy "might be attached to a Department of Phonetics," one of the few touches of unconscious humour in these pages. As if methods of teaching modern languages were concerned only with acquiring proficiency in talking!

There is a great deal more in the report that I cannot even touch upon; it is not because I do not appreciate it or because I deem it less important than what I have been able to refer to. The whole report repays careful study from beginning to end. Personally, I thank the Committee for it most warmly, and I offer my special congratulations to the chairman, Mr. Stanley Leathes, and to the secretary, Mr. A. E. Twentyman.

Recommendations.

The Committee recommends that:—

(1) Modern studies be energetically fostered by all public and local authorities concerned with education and with public and private business.

(2) Means be taken to bring the business world into closer touch with education.

(3) An Advisory Committee be set up for the purposes mentioned in recommendations 17 and 41–45.

For the Public Service.

(4) The scheme of the Treasury Committee on the examination for Class I. of the Home Civil Service be adopted in its essentials so far as modern studies are concerned.

(5) The systematic and scientific study of foreign countries be encouraged by the Foreign Office.

(6) A higher language qualification be required for the general Consular service and for student interpreters for the Far East.

(7) Before going out, student interpreters receive an intensive training at home in the language and the phonetics of the country to which they are allotted.

(8) More opportunity be given to officers of the Army and Navy to acquire knowledge of modern foreign languages.

(9) A better and fuller use should be made of women trained in modern languages.

(10) Phonetics form part of the training of all entrants to the public service whose duty will lie in foreign countries, and, with this in view, special assistance should be given to institutions for phonetic research.

(11) The Government should undertake a survey of African languages.

For the Business Community.

(12) The business community in every considerable centre of foreign trade or of manufacture for foreign markets should take steps, in conjunction with the education authorities, to further the formation of institutes of languages, both for full-time and for part-time study.

(13) Business men should individually and collectively encourage the study of foreign languages by those members of their staff who, possessing good business ability, have shown capacity for such study by arranging for their full-time attendance at an institute of languages either at home or abroad.

(14) Industrial and commercial organisations dealing with foreign countries should make a fuller and more adequate use of the supply of women of trained intelligence now proceeding from our universities and the upper forms of secondary schools with an adequate knowledge of foreign languages.

(15) Commercial houses and industrial firms should bring to the knowledge of the school authorities the opportunities which present themselves from time to time for those who have special aptitude for foreign languages.

For the Universities.

(16) Neither Latin nor Greek be compulsory for an arts degree in any of our universities.

(17) A scheme be prepared and sanctioned by legislation for the gradual increase within ten years from the end of the war of the staff for modern studies in the universities. The new professorships and lectureships should be some of language and philology, some of literature, some of the history and institutions, some of the economics of the five principal European countries. The number suggested is fifty-five professorships and 110 lectureships, the allowance for French being half as much again as for each of the other four languages. The allotment of these posts and first appointments to them should be entrusted to the Advisory Committee mentioned in recommendation 3 above.

(18) Modern studies at the universities comprehend for each of the five principal European countries, language, history economics, literature, and philology, as an interdependent whole, with a good general basis of scholarship and knowledge, but considerable latitude of specialisation in one direction or another. Recent and present-day conditions of each country studied be included so far as possible.

(19) Spanish, Italian, and Russian studies receive attention at the universities commensurate with that given to German.

(20) Interchange of professors with foreign countries be arranged whenever possible.

(21) The proposals of the Committee of the Garton Foundation (1916) receive the careful attention of the proper authorities with a view to suitable action.

(22) Encouragement be given to research in little-known foreign languages.

For Secondary Schools.

(23) School teachers of modern studies should be encouraged to qualify themselves for university posts.

(24) Secondary schools in any school area should be differentiated according to the type of instruction, higher or lower, that they aim at providing.

(25) Secondary schools in any school area should be graded according as they are equipped to supply higher instruction in one or more of the main subjects of school instruction or in none.

(26) Transfer from one school to another after the

First School Examination should be facilitated when the needs of the pupil demand it.

(27) The authorities should take measures to diminish the evils arising from late entry, from irregular entry, and from early and irregular leaving, especially in those secondary schools where the average school-life is shortest.

(28) Facilities be given for the study of Spanish, Italian, and Russian in schools, so far as can conveniently be arranged.

(29) In every school giving instruction in modern foreign languages a good reference and lending library of books be built up.

(30) Teachers of modern languages be granted facilities to visit foreign countries from time to time, and periodical leave of absence on full pay with an allowance for expenses be given for this purpose.

(31) The system of interchange of assistants between British and foreign schools be largely extended and so developed as to include other languages than French and German.

(32) Classes for modern languages should not be unduly large.

(33) The hours of teachers using the direct method should not be too long.

(34) Means be taken to encourage visits of school children in foreign countries, the interchange of children between foreign homes and British, and, if possible, the interchange of school children between Britain and friendly neighbouring countries.

FOR SPECIAL INSTITUTIONS OF MODERN STUDY.

(35) The London School of Oriental Studies receive the continuous and liberal support of Government without detriment to other existing schools for Oriental study.

(36) An institution be established in London, similar to the School of Oriental Studies, for the intensive study of the greatest possible number of European tongues, with the geography, resources, industries, and all valuable information concerning the minor countries.

(37) In the several great centres of population opportunities should be given for the intensive study of the languages most important in the district, with phonetic instruction and the aid of foreign assistants.

(38) The London School of Economics be a centre for the study of the products, the industry, the trade, and the economic conditions of the chief European countries, and also of North and South America, Asia, and Africa.

FOR PART-TIME INSTRUCTION.

(39) The existing system of evening and other part-time classes in modern languages for seniors and adults be further developed, and continuity through the summer months be maintained so far as possible, allowing for a reasonable holiday.

(40) It should be made worth the while of the teachers for such classes to undergo some training if they have not already had sufficient.

FOR SCHOLARSHIPS, ETC.

(41) Subventions be granted to enable students at the universities to pass their long vacations abroad and, if possible, some period of their course at a foreign university.

(42) Studentships be granted to enable promising students to spend a year in study abroad after graduation; and for students of exceptional merit this subvention be continued for a further period.

(43) Students who, in the course of their preparation to become teachers in elementary schools, show high ability for modern studies be given studentships to enable them to carry their study further after their training is completed.

(44) Scholarships should be provided from a Parliamentary grant to maintain throughout an honours course in modern studies at a university those who before entry show high excellence in modern European languages with their history and literature.

(45) The regulation and allotment between the various universities and university colleges of the above scholarships, subventions, and studentships be entrusted to the Advisory Committee mentioned in recommendation 3.

FOR THE TRAINING OF TEACHERS.

(46) Teachers of modern languages for secondary schools should be practically trained in schools authorised for the purpose, and should receive systematic instruction in phonetics.

(47) A test of qualification for teaching modern languages in secondary schools should be set up by Government and a certificate granted, and it should be made worth the while of teachers to obtain this certificate.

(48) After, say, five years' experience in teaching, a higher certificate should also be awarded to teachers as the result of a searching test.

FOR EXAMINATIONS.

(49) The Secondary-School Examinations Council and the Civil Service Commissioners give their attention to the improvement and development of examination tests in modern subjects.

(50) In examinations oral as well as written tests should be used wherever possible, and not only pronunciation, speech, etc., but also the benefit derived by the candidate from his study should be thereby tested, at least at the later stages of education.

(51) In the Second School Examination classical, mathematical, and scientific candidates be encouraged to pass a translation test in one or more modern languages, and those who pass or pass with distinction in such tests receive a corresponding endorsement on their certificates.

(52) At the earliest suitable opportunity after the close of the war the Board of Education, the Scotch Education Department, and the Civil Service Commissioners should jointly undertake an inquiry into the methods employed in French State and university examinations such as those for the *Agrégation* and the *Licence*.

ARTIFICIAL LANGUAGES.

(53) A Committee be appointed to inquire into the potentialities of artificial languages and the desirability of encouraging the development and use of one.

THE EDUCATION BILL IN COMMITTEE.

THE long-anticipated Committee stage of Mr. Fisher's Education Bill, deferred by reason of a great national exigency, began on May 7th. Up to the time at which we write only the first four clauses of the Bill have been considered in Committee. Clause 1, dealing with the general educational duties of counties and county boroughs, was added to the Bill unaltered, though not until some interesting objections had been raised. The phrase used regarding public education, that it is to be available "for all persons capable of profiting thereby," was held by some to savour of a narrowly vocational ideal, by which a boy's whole career might be prejudged; and it was pointed out that the phrase might actually be read so as to exclude defective children from the benefits of public education. This matter will come up again later. A proposal that free secondary education should be made available for all persons desirous of such education was negatived, but Mr. Fisher undertook to insert words directing local authorities to ensure that poverty should not debar from secondary education any child for whom it was desired.

Clause 2, which provides for the further development of elementary education by means of central schools or classes, and advanced instruction in ordinary schools, was strengthened by an amendment proposed by Mr. Fisher himself. An attempt to safeguard the position of non-provided schools by inserting the words "unless adequate provision is otherwise made" was defeated, Mr. Fisher pointing out that these schools are safeguarded by Clause 29. Sensitiveness on the question of vocational instruction was again shown by a proposal to omit the paragraph relating to practical instruction suitable to the "ages, capacities and circumstances of the children," and the words "abilities and requirements" were therefore substituted for "capacities and circumstances." A useful amendment providing that the advanced instruction is to be for the more intelligent as well as for the older children was agreed to.

A good deal of discussion naturally arose on Clause 3, which provides for the establishment of continuation schools. Mr. Fisher withstood proposals to entrust the development of these schools to Part III. authorities within their areas. Another proposal was to substitute the phrase "courses of education" for "courses of instruction" as the expressed purpose of these schools. Here again the Committee showed itself sensitive on the question of vocational instruction, for it was held that "courses of instruction" might be construed narrowly. A somewhat amateurish discussion ensued upon the difference between education and instruction, but Mr. Fisher pointed out that, though vocational instruction might certainly be illiberally conceived, there is no necessary antagonism between liberal and vocational instruction. When the Committee resumed next day, Sir James Yoxall's suggestion that "study and instruction" should be substituted for "instruction" was adopted. We hope the change will prove worth the time that was spent upon evolving it. The next problem was that of freeing the phrase "physical training" from any possible military bias, but the phrase was finally upheld as it stood. The question of the position of boys training for sea service, in whose case the general provision for continued education obviously needs modification, was next raised, but Mr. Fisher here gave an undertaking that the point would be dealt with later. An amendment to the effect that Part III. authorities should so far as possible be associated with Part II. authorities in the management of continuation schools was accepted, and the clause was then added to the Bill.

Clause 4 provides for the consultation of Part III. authorities by county councils in the working out of schemes. An amendment was agreed to providing that the councils should also have regard to the existing and prospective supply of non-provided schools and colleges. Another amendment, of considerable interest, providing that the local authority, before submitting schemes, should consider any representations made by parents, or other persons or bodies interested, had not been disposed of at the time at which we write.

It seems obvious that every atom of outside influence will be needed in order to strengthen Mr. Fisher's Parliamentary position with reference to securing the necessary time for getting on with the Bill.

AMERICA AND THE WAR.

NO country in the world has been more consistently and honourably pacific than America, but in no country are pacifists so reasonable, or so ready to accommodate their theories to palpable facts. Ardently as Mr. Bryan strove to keep America out of the war, he now declares that the best way out is to go straight through; lavish as was Mr. Ford in equipping missions of conciliation, he is now concentrating his enormous energies and vast resources on all sorts of military appliances;

zealous as were the Trustees of the Carnegie Endowment for International Peace, they now pass unanimously the following motion, which is a delightful example of the adaptation of unexpected means to an end persistently pursued: "Resolved: That the Trustees of the Carnegie Endowment for International Peace, assembled for their annual meeting, declare hereby their belief that the most effectual means of promoting durable international peace is to prosecute the war against the Imperial German Government to final victory for democracy, in accordance with the policy declared by the President of the United States."

Although, no doubt, there are in America some "hyphenated" Germans who are disloyal to the country of their adoption, there are others who, though they retain an affection for the old Germany which existed before the canker of Prussianism destroyed the German soul, are entirely devoted to the cause of the Allies. Among these, Mr. Otto H. Kahn, of New York, holds a prominent and distinguished place. Born in Germany and trained in the German Army, he went to America while yet the old Emperor lived, and while yet German policy showed some respect for conscience. From time to time he visited Germany and noted how it was rapidly being corrupted by militarism and materialism. He has described the process in a vigorous pamphlet entitled "The Poison Growth of Prussianism," which he is distributing widely among his fellow-Teutons in the States and elsewhere. The indictment of Prussia is calm, but conclusive; it is made from a wealth of intimate knowledge.

The "American Association for International Conciliation" is another converted, or, at any rate, semi-converted, pacifist organisation. It publishes a monthly bulletin entitled *International Conciliation,* of which No. 123 lies before us, together with a list of the contents of the previous two dozen issues. The contents of Nos. 1–97 (April, 1907, to January, 1916) are veiled in a decent obscurity; they presumably are not suited to present-day circumstances. The leading feature of Nos. 98 to 123 is the publication of a large and valuable collection of documents relating to the war. The complete set provides a fine selection of sources. No. 123, for instance, gives the texts of: (1) Mr. Lloyd George's speeches on December 14th, 1917, and January 5th, 1918; (2) Mr. A. Henderson's Statement on Labour's After-War Economic Policy; (3) British Labour's War Aims; (4) British Labour's Address to the Russian People; and (5) President Wilson's Address to Congress on January 8th, 1918, on America's Terms of Settlement.

TEACHERS REGISTRATION COUNCIL AND THE EDUCATION BILL.

THE Teachers Registration Council has given careful consideration to the Education Bill, and has authorised the following statement:—

(1) The Council is in cordial agreement with the main purpose of the measure, namely, to extend the scope of educational facilities, especially with regard to the better care of children under school age, the prevention of child labour for profit, the abolition of half-time employment before the age of fourteen, and the training of young persons between the ages of fourteen and eighteen in day continuation schools.

On educational grounds the Council welcomes the proposal to include in the curriculum of public elementary schools, at appropriate stages, practical instruction suitable to the ages, capacities, and circumstances of the children. It also approves of the proposal to make special provision for the older children of such schools, and will welcome any feature of the curriculum of the proposed day continuation schools which may be introduced for the purpose of awakening the interest of pupils in matters relating to their daily work.

While holding the view that practical subjects may thus be introduced on educational grounds, the Council would deplore any attempt to introduce an exclusively vocational element into the curriculum of the public elementary, central, or day continuation schools. All these institutions, together with secondary schools and universities, will render the best possible service to industry and commerce by imparting principles rather than the technique of a workshop or business. The schools of the country cannot provide for their pupils that technical training which is to be gained only by actual experience in offices and workshops. Moreover, the aim of a national system of education includes a preparation for the right use of leisure as well as for efficient work. To this end educational institutions of every type must seek to promote the physical, intellectual, and moral welfare of their pupils so that they may be fitted to enter, as fully as their circumstances permit, upon the heritage of the life and thought of humanity. Since this training is most fruitful during the years of adolescence, the Council welcomes the proposal to maintain regular educational supervision over young persons up to the age of eighteen, with the added opportunity for preparation which will result from the abolition of child employment for wages under twelve, the enforcement of whole-time attendance at school up to fourteen, and the systematic care of infants below school age.

(2) The Council further approves the effort to harmonise the work of the local authorities which were set up under the Education Act of 1902. Experience has shown that, while the independence of these authorities should be maintained, there should be some adequate means for securing a national standard of efficiency, though not of detailed uniformity, in educational work. Such means may be found in the proposal to call upon authorities to submit schemes for the approval of the central body, and also in the development of voluntary co-operation between authorities for special purposes, such as the provision of

means of higher education and funds for scholarships. In this connection the Council welcomes the abolition of the limit hitherto prescribed in regard to the money raised by a council for purposes of higher education, and hopes that the practice will be encouraged of giving grants from the rates to universities and other institutions for higher education and research. The Council would welcome also a higher and more uniform standard in the salaries paid to teachers of the same status in different areas, since the national supply of teachers is adversely affected by a low rate of payment in any district such as tends to diminish the general repute and prospects of the work and to discourage many young persons of ability from entering upon it. As the supply of teachers is a national concern, vital to the success of any education measure, the Council expresses the hope that there may be required as a necessary part of every scheme submitted by a local authority some evidence of proper provision for the maintenance of a supply of qualified teachers, and that proper provision shall be held to include an adequate scale of salaries and such other conditions as will encourage young persons of ability to regard teaching as a form of service worthy of their powers.

(3) The Council approves the proposal to call for information respecting schools and educational institutions not liable to inspection by any Government department. Such a survey it holds to be desirable, not only in the interests of national education in general, but also in those of many schools and institutions which are performing valuable, though officially unrecognised, service to the community. While it has no wish to see inefficient schools continued out of regard for private interests, the Council hopes that every encouragement may be given to schools which are found to be doing satisfactory work, although they are not controlled or aided by the central or local education authority. Such schools form a valuable part of our national educational facilities and provide that variety of opportunity and of method which has always distinguished English education from the formal schemes of more rigidly organised States.

ITEMS OF INTEREST.

GENERAL.

The President of the Board of Education has received from the King's private secretary, Lord Stamfordham, the following letter, which will, Mr. Fisher is sure, be a source of pride and encouragement to school authorities, teachers, and pupils alike:—"It has given the King and Queen much pleasure to visit recently schools of various types, and thus gain an insight into the daily life of the rising generation at work and at play. Their Majesties are aware of the magnificent response which the educational service throughout the country has made to the demands of the present time, not only in its contribution to the fighting forces, but also in the assistance which it has rendered in many kinds of important war work. Above all, they wish to express their admiration of the self-denial and devotion of the teachers, who, it is evident, while training the mind and body of their pupils, recognise the importance of the formation of character. These visits have brought home to the King and Queen the keenness and patriotism of the youth of the country. They realise the unselfish and hearty manner in which boys and girls, inspired by the example of their teachers, have formed War Savings Associations, subscribed money for charitable purposes, and by their handiwork contributed to the personal needs and comforts of the troops. Their Majesties feel that the nation can be proud of its young sons and daughters, whose example during this great war augurs well for the future of our race. I am commanded to request you to convey to the school authorities and teachers the hearty congratulations of the King and Queen upon the admirable manner in which the public service of education is being maintained, the progress of which their Majesties will ever watch with interest and sympathy."

The Board of Education has issued new Circulars (1,046 and 1,047) showing how the Military Service Act recently passed modifies the protection afforded to teachers and educational officials under the terms of Circular 1,032 of February last. Men who were liable to military service before the new Act was passed are, with certain special exceptions, to be called up forthwith if they are in Grade I., or if they are in Grade II. and were under thirty-two years of age on January 1st, 1918. The Minister of National Service will consider recommendations of the Board of Education regarding men whose retention in the education service is deemed vitally important; and with a view to such consideration men up to the age of forty-three who were liable to military service before the new Act was passed are to be summoned for immediate medical examination. It is stated that the Board of Education will not feel justified in recommending a man's retention in the education service unless satisfied that he is absolutely essential. Men who are now liable to military service for the first time by the raising of the age limit under the new Act will be called up for medical examination and grading in the ordinary course as and when their age-groups are summoned. Those who are placed in Grade III. or Grade II. will be entitled to the same protection as the younger men; those who are placed in Grade I. will be called up, subject to the provisions as to exceptional retention on the recommendation of the Board.

The Board of Education has issued a revised edition, dated April 19th, 1918, of the regulations under which Supplementary Grant will be paid to local education authorities for elementary education. The substance of the regulations is still, of course, the well-known formula: (36*s.* × average attendance) + $\frac{3}{5}$ of teachers' salaries + $\frac{1}{3}$ of remaining expenditure — produce of 7*d.* rate. If the ordinary grants normally payable do not amount to the sum represented by this formula, a supplementary grant is given to make it up to that amount. The alterations in the regulations are nearly all verbal. None of them, except one relating to fractions of a pound, introduces any change in the calculation of the amount of the grant. A schedule has, however, been added to the

regulations giving the text of the Board's minute of January 18th, 1918, prescribing minimum salaries, and of an explanatory circular issued therewith, and a reference to this schedule has been inserted in one of the regulations.

THE council of the Teachers' Guild has passed the following resolution:—"That this council expresses the strong hope that the Government will find it possible to proceed with the Education Bill No. 2 at the earliest possible moment, and to pass it into law without substantial amendment. In particular, the council hopes that Clause No. 10 will be approved in its present form."

A SUMMER school of speech training at Stratford-on-Avon is to be held again this summer. The course will open on August 3rd and last until August 17th. Prof. Walter Ripman is giving special courses of English and French phonetics. Miss Fogerty is taking the voice production, diction, and dramatic courses. There will be short courses of afternoon lectures on metrics, on the history of dramatic representation, and on the psychology of expression.

A SUMMER vacation course for students and teachers of French will be held at University College, London, from August 2nd to 18th inclusive. Supplementary courses for the more advanced study of methods of language-teaching and of phonetics will be held. Particulars of all courses may be obtained by sending a stamped addressed foolscap envelope to the Secretary, University College, London (Gower Street, W.C.1).

THE "Report of an Inquiry by Inspectors of the Board of Education into the Teaching of French in London Secondary Schools," to which we directed attention in our issues for January and February last, has been reprinted. Copies are obtainable either through any bookseller or direct from H.M. Stationery Office at Imperial House, Kingsway, London, W.C.2; 37 Peter Street, Manchester; or 1 St. Andrew's Crescent, Cardiff, price 3*d*., or by post 4*d*.

THE Bill introduced by Lord Southwark in the House of Lords to sanction a decimal system of coinage marks a minimum demand. Nobody who believes in reform at all could ask for less. Weights and measures are untouched, the pound sterling is to remain the unit, and there is only one new term—the "mil." The four denominations are thus pound, florin, ten mils, and mil; and the proposal is to replace the existing silver and bronze coins by four silver coins (double florin, florin, half florin, and quarter florin), two nickel coins (ten-mil piece and five-mil piece), and four bronze coins (four-mil piece, three-mil piece, two-mil piece, and mil piece). If the Bill ever becomes law, its effect upon the teaching of arithmetic will be distinctly beneficial, for it will simplify the earlier stages, enable the pupil to pass more quickly into the more advanced stages, and, by giving him a better grasp of decimal fractions, help him to a better understanding of higher arithmetic. It will, in fact, save time and facilitate study. It will save time in two ways. The time required to extend the four simple rules so as to embrace notation below unity will be much less than the time now spent in mastering the money tables, the compound rules, reduction, and practice; and, as a general rule, the examples worked will involve a smaller number of processes and figures. A distinction must, however, be made here between written arithmetic and mental arithmetic. As Sir Frederick Bramwell pointed out in letters to the *Times* in March, 1899, there is every reason for thinking that the mental arithmetic involved in simple shopping and travelling would be more difficult under the new system. Everything taken together, the amount of time saved will clearly depend on the extent to which money enters into the course of study. It will affect the younger pupils more than the older, and girls more than boys; for girls, as a rule, do more household accounts and less algebra and geometry than boys. The general opinion seems to be that a year's work will be saved. The passing of the Bill would mean the slaughter of innumerable text-books. But this would not be widely regretted.

A COMMITTEE composed of delegates from organisations of salaried and professional women workers and representatives of groups of women not yet organised has been formed to consider the best means of promoting co-operation between the several vocations and the different grades of workers within each calling. A public meeting is to be held at the Small Queen's Hall, Langham Place, London, on June 6th, at 7 p.m. The main subject for discussion will be the importance of promoting efficiency and securing for professional women workers the due material recognition of trained efficiency. Miss Haldane, who will take the chair, will speak on the general position.

THE Western Australian report for the year 1915 on education has reached us. There were approximately 600 Government schools, with an average attendance of sixty-five scholars per school and an average staff of a head-teacher and an assistant, and the cost per head was £6 0s. 5*d*. Fifteen years ago there were 240 similar schools with a similar enrolment at a cost of £4 9s. per head. In 1915 there were 124 private schools, 83 of which were Roman Catholic and 26 undenominational. Perth Modern School, with 254 pupils, and Goldfields High School, with 169 pupils, with eight technical schools for about 2,000 students, represent secondary education. The University, which was founded in 1911, with a staff of eight professors, four lecturers, and six demonstrators, had more than 200 students, of whom 40 per cent. had not matriculated.

MISS MARGARET MEREDYLL has achieved a noteworthy success at the London School for the Blind, Swiss Cottage, we learn from the *Child*. She has been able to bring much joy into the lives of blind children by a course in eurythmics, so that they express all the pleasures of anticipation when the music for the exercises begins. The entirely blind have in many cases no natural sense of balance, some of them cannot even stand on one foot. They experience fear at unaccustomed movements. One class began work in September, 1916; a year later a second class for older patients was commenced.

The experiment indicates that eurythmics is of value to the blind in the systematic development of hearing, touch, and movement, and in an acquisition of the feeling of balance as well as some appreciation of the beauty of form.

MISS E. L. HEWLETT conducted an investigation upon "Children's Interest in Daylight Saving" in four boys' and five girls' elementary schools in Swansea. The children (543 boys and 672 girls) were required to write an unprepared essay upon the subject. Three-quarters of them mentioned as an advantage the saving of illuminants, only a fifth referred to the saving of money. No other advantage was mentioned by a fifth of the writers. The boys mentioned the increased time for play, for work, and for walks more often than the girls; and the girls noted that the arrangement is healthy more often than the boys. Among the disadvantages mentioned the first place was given to the fact that children go to bed late; this was noted by nearly a quarter of the boys and more than two-fifths of the girls. The other disadvantages were insufficient rest, inability to sleep at night, and lateness at school, all of which were mentioned more frequently by girls than boys. Some children approved the action of the Swansea Education Authority in beginning the school-day at 9.30 instead of 9, for "we get less late girls and we can sleep longer."

PHYSICAL chemistry is to the fore in the April issue of *Science Progress*. Sir Edward Thorpe, in an account of Prof. Arrhenius's recent work on the viscosity of pure liquids, gives an admirable *résumé* of present knowledge of the manner in which the viscosity of liquids is related to their other physical properties and to their chemical nature. Prof. W. C. McC. Lewis contributes part ii. of a useful "popular science" article on "The Structure of Matter," which deals with the structure of the atom according to the theories of Sir J. J. Thomson and Sir E. Rutherford, and with the Braggs's researches on the inner structure of crystalline solids. In an article on "The Electro-culture of Crops" Messrs. I. Jörgensen and W. Stiles state that all workers on this subject have failed to realise (1) the need for quantitative measurement of the electric discharge; (2) that a stimulus may act differently on the plant at different stages of its life; and (3) that the effect of a stimulus depends on its intensity and on the time for which it is applied, and may appear a considerable time after it is applied. Mr. Stiles has also an article on "Permeability" in relation to plant physiology. Major R. A. Marriott writes on "The Geological History of the Downs and the Escarpments of the Weald," and maintains that there is no real evidence that a continuous dome of chalk ever covered the Weald. On the contrary, he suggests that the sandstones, sands, clays, etc., of the Weald "once formed an island or bank, laved by the sea in the depths of which the chalk was being deposited," so that when the Wealden strata were gradually forced up to form the present anticlinal, the chalk fringing it was uplifted at the same time. The article, which is illustrated by a good photograph of Ditchling Beacon and by sketch-maps and sections, should provoke an animated retort from upholders of the orthodox view.

THE New South Wales *Education Gazette* for January contains the announcement that future issues will be limited, in view of war conditions, practically to Departmental notices and instructions. The issue contains ten photographs illustrating various forms of school activity "down under." Two schools united in a geographical excursion to the top of a hill for a lesson in physical geography. Other schools use the spinning-wheel and locally invented accessories for the spinning of yarn and the knitting of soldiers' socks. One school maintains a lawn in the playground, while another has an extensive front garden for flowers and fruits. In one case the picture shows hats and garments made as a part of the course in domestic science.

THE Osmania University of Hyderabad was established as a vernacular University, we learn from *Indian Education* for January, 1918. Urdu has been selected as the medium of instruction, not only because it is the official language of the State, but also because it is the only language more or less understood throughout the dominions, especially in those urban areas from which most of the students will be drawn. English is to be a compulsory study. The new University is an experiment. If it succeeds in imparting modern knowledge with greater facility than the other universities, while giving its students a no less practical command of the English language, universities using the other principal vernaculars of India will probably be established. As a first step, a translation bureau has been established to render into Urdu works on physical science, mathematics, philosophy, political science, economics, history, and law. Draft curricula are in preparation.

THE problem of corporal punishment has not been solved in the schools of India, says the Madras *Educational Review*. The darkness of illiteracy prevails all over India, and home influences are, in general, of little value in the training of the characters of the boys. Classes are large, and some pupils have to be driven to exert their powers, and corporal punishment is the goad. Indian conditions do not favour detention, since the school hours do not fit in with the traditional meal-times, and so frequent detention leads to underfeeding and ill-health. A system of fines is in vogue in some schools, but this punishment falls on the parent and the family, since the fine may be equivalent to the cost of the food for two days. Corporal punishments are, therefore, frequently used, and have been found to be effective. On the other hand, it is hoped that this form of chastisement will be gradually abolished when the Indian educational system has been improved by a more careful selection of teachers, the reduction in the size of classes, and the application of the principle, "Boys are not for examinations, but examinations for boys."

STAMMERING is not very prevalent in English secondary schools, but pupils who stammer under the stress of class-room strain and do not stammer in the freer intercourse of the playground are sufficiently numerous to present one of the minor difficulties of

school-life. *Indian Education* for February contains a brief account of the work of the late Mr. Izawa, of Japan, whose curative course lasted about three weeks, and was, as a rule, completely successful. The cure begins with training in deep diaphragmatic breathing, accompanied by a mouth exercise and voiceless practice of the *ha he ho* vocal formations. After a day or so voice is added to the exercises. The purport of this work is to train the breathing, vocal and abdominal muscles, and to begin the formulation of a habit of co-ordinating out-breathing with sound production.

THE Gary system of continuous use of school buildings has been the subject of heated controversy. The *School Review* of Chicago announces the fate of the system in New York City thus:—"In administering the oath of office to the Board of Education's seven members, Mayor Hylan pronounced the doom of the Gary system: 'In appointing you to the Board of Education I have neither asked nor have I expected any pledge to do or not to do any particular thing, nor to favour any particular plan or device of school administration except the elimination of the so-called Gary system and the erection of new schools as soon as possible, all of which was pledged in the platform upon which I was elected, which is a mandate to carry out this pledge. The people of this city elected a new administration to do three things for the schools—eliminate the Gary plan, build more schoolhouses, so that every child might properly be accommodated, and reduce part time. Betterment of the schooling of our children underlies all three.' Of the £3,800,000 set aside for the extension of the Gary plan, about £1,200,000 is as yet unexpended. All contracts not actually entered into are stopped. No more money will go into the system, and schools are being 'de-Garyised.'"

MR. F. E. MOODY contributes to the Chicago *School Review* for March an article on the "Correlation of Professional Training with Teaching Success." The test of professional training was average marks during the normal school course, that of teaching success the average salary of the teachers. The general conclusions drawn from the investigation tend to confirm the prevalent impressions about the possibilities of teaching success. Poor work in the normal schools generally leads to poor success as a teacher, and professional success usually follows successful work during training; yet there is a large proportion of the teachers who do not fall into either the lower or the higher categories. Some teachers achieve success during their training and fail later; others are successful teachers, but mediocre students. The author concludes that more notice should be taken of personality, tact, professional interest, co-operation, and loyalty during the training course, so that students may be advised with a greater degree of accuracy as to their probable chances of success as teachers. In our view personality is probably the most important item in the equipment of the teacher. Lack of it is a constant and continually increasing hindrance to success, especially in the case of the form teacher as opposed to the specialist.

SCOTTISH.

THE question of higher education for those who aspire to be leaders in commerce continues to receive attention both from the business side and the academic or professional side. The leading Chambers of Commerce have had the matter under consideration, but the published reports of their discussions show no clear appreciation of the national position. There is still too much talk of the practical resource, the flexibility, and the sound common-sense of the Britisher, as if Providence had dowered us with these qualities to save us hard and sustained and scientifically directed effort. It is tragic that all the lessons of the war have failed to rouse the nation to the after-war task that lies before it. Our commercial men have failed to realise that our main opponents will put their last ounce of co-operative, scientifically directed effort into this campaign for the markets of the world, as they have done and are doing into their great offensive. There are, however, hopeful signs. Academic opinion has, on the whole, taken a truer measure of the situation, and Aberdeen and Edinburgh University authorities have resolved to establish a degree in commerce. Glasgow University, on the other hand, influenced by the *laissez-faire* attitude of the commercial community, has failed to visualise the situation. It is still seeking for some compromise within the limits of the present M.A. degree. Business men have some excuse for their attitude of mistrust towards university education, which has remained too much isolated from the stream of practical life. But if they are convinced this tendency cannot be cured, their proper course is to set up great institutions on the model of the *Handelschule* at Cologne, Hamburg, and Leipzig. German commercial magnates found the universities too academic for their purpose, and, instead of sitting still, they established and endowed these great commercial colleges at their own expense, and have refused to accept any Government aid because it meant paralysing Government interference. It is these institutions, and not the universities, that are responsible for most of the "peaceful penetration" of Germany.

SIR JOHN STRUTHERS has issued a circular to teachers and managers informing them that, in consequence of the military situation, still further demands must be made upon the man-power in the schools. All teachers up to the age of forty-three, unless they have already been certified as unfit for military service, will shortly be called up for medical examination, and all who are placed in Grade I., or who, being under the age of thirty-two, are placed in Grade II., will be called up for military service. Provision is made for an appeal in certain cases to the Director of National Service if the calling up would, in the opinion of the managers, seriously cripple the school. The great majority of teachers will be prepared to give a loyal response to this call. At a crisis like this there should be few, if any, indispensables. The schools can without men carry on with difficulty and with loss, but without their help in the Army the nation may go under.

THE Council of Edinburgh University has inaugurated a campaign for the "putting down" of old men. In order that "the University Court should become, and remain, a really live institution," it has decreed that the assessors on the Court of the Chancellor, Senatus, and Council should retire on reaching the age of sixty-five, and that no assessor should serve for longer than two consecutive terms of four years each. It recommends also that the Chancellor shall not hold office longer than twenty years in all, nor after the age of seventy. Professors and lecturers are also required to retire on reaching the age of sixty-five, and the Principal is not to hold office for more than twenty years in all. These proposals are generally in the right direction, but the members of the Council must be very simple if they think "a live university" is conditioned by the age of its governors and teachers. It is personality that counts, not age. Deadheads are as common among the young as among the aged.

THE *Educational News*, after a long and honourable though somewhat chequered history, has been merged together with the *Class Teacher* and the *Secondary Education Journal* in the new *Scottish Educational Journal*. The new journal will be the official organ of the United Educational Institute, and will endeavour to voice the opinion of all grades and classes of teachers. The first number opens well. The paragraphs are bright and appetising, the leading article is dignified without being either ponderous or pontifical, and the other contributions are selected with true journalistic instinct for questions of the hour. The retention of "The London Letter" will please old readers, as the writer of it has a never-failing *flair* for the interesting and piquant. Our best wishes go with the new venture.

MR. MUNRO, Secretary for Scotland, in a letter to the Scottish Trade Union Congress, places the position of the Education Bill fairly and squarely before the nation. It is impossible to proceed, he declares, unless the Bill is an agreed-upon measure. To endeavour to secure that, he is prepared to give way on the question of a *non ad hoc* authority, though still profoundly convinced that it is in the ultimate interests of education. He indicates that he is prepared to introduce a new Bill embodying the *ad hoc* principle provided he receives assurances of support for the county area and for the educational provisions now before the country. Teachers will heartily support the Secretary for Scotland's attempt at compromise. They are whole-hearted supporters of the *non ad hoc* authority, but they are not prepared to sacrifice the educational provisions in order to retain it. They will have no compromise on the area. The county or nothing is their policy, because without that the educational provisions would be mere eye-wash, and as futile as German peace treaties.

THE University Courts of St. Andrews and Glasgow have resolved to oppose the ordinance promoted by Aberdeen University to set up a degree in education (M.Ed.). Their reasons for this course were that it was undesirable to set up a degree in one university to be known as Master of Education, while in the other universities it was entitled Bachelor of Education. There is some force in this contention, yet the general tendency of Scottish universities which it exemplifies, namely, to look with a critical and envious eye on every forward step of each individual university, is thoroughly bad. It paralyses action, stops progress, and results in endless friction. The unity of action required for all advances in the Scottish universities is a very real bar to national efficiency.

IRISH.

AN advertisement appeared in the Press on May 11th announcing that applications for registration by intermediate teachers could now be made to the Assistant Commissioners of Intermediate Education. The regulations for the register, which will come into force on July 31st, have been published by His Majesty's Stationery Office, and can be obtained for 1*d*.

THE register will consist of five columns. Column 1 will state the register number; column 2 the teacher's name and date of original registration; column 3 his university degree or its equivalent, as provided in the regulations, and in the case of an honours degree the subject and class in which the honours were obtained; column 4 will state his university diploma (or its equivalent) in the theory and practice of education, and column 5 the institution or school in which he has obtained his qualifying experience. The length of qualifying experience is to be three years.

FOR the next seven years, however, there will be transitional conditions of registration, and a teacher may be registered if he has attained the age of twenty-four and can produce satisfactory evidence of teaching for five years. Up to 1920 three years' teaching will be sufficient, but in both cases the time will be reduced by one year if the applicant has a university degree or its equivalent, and by another year if he has an approved diploma in the theory and practice of education. The teaching must have been in an Irish intermediate school and in intermediate classes. The registration fee is one guinea.

SUCH is a brief summary of the requirements for registration. All Irish intermediate teachers should carefully study the official document drawn up by the Registration Council and issued by the Government. It completes the work of framing rules for a register as provided by Mr. Birrell's Act of 1914, which clearly contemplated this register as a basis for the distribution of the £40,000 grant.

THE rules and schedule containing the programme of examinations for 1919 of the Intermediate Education Board were laid on the table of the House of Commons early in May. They lie there for forty days, and after that time, unless Parliament objects to them, they become binding for the year. The chief alterations for 1919 are concerned with mathematics and experimental science. The latter are due to the revised rules and syllabus of the Department of Technical Instruction. The former are designed to meet objections that have been raised to the conditions of passing in mathematics. Arithmetic, which was previously coupled with algebra, is made a separate and

compulsory subject. For boys, algebra and geometry are coupled together, and, in the senior grade, algebra and trigonometry. To pass in mathematics all candidates must pass in arithmetic, and boys must also pass in algebra with geometry or (in the senior grade only) in algebra with trigonometry; girls must pass in algebra or geometry. In algebra with geometry and in algebra with trigonometry, candidates to pass must obtain at least 30 per cent. of the aggregate pass-marks, and not less than 20 per cent. of the pass-marks allotted to each of the two subjects; for the purpose of this rule twenty honour marks shall be taken as equivalent to thirty pass-marks. The changes in science are more elaborate. The chief point seems to be that in physical and natural science candidates may pass in one section, and may also, under special conditions, obtain an exhibition or prize by taking only one section. The pass-student must have at least seventy hours' instruction in the science course selected, and the honour-student 100 hours in the junior grade and 120 hours in the middle and senior grades.

OTHER important changes are as follows:—Drawing is a separate pass subject; music is an honour as well as a pass subject; in mathematical subjects in the senior grade all marks above 15 per cent. will count for prizes and exhibitions; the rules about a bonus school grant are omitted, and schools which meet only five days per week will be allowed to increase the number of pupils' attendances for the purposes of the inspection grant by one-fifth. In the programme we note an alteration in the periods for Roman history, which will now date from the foundation of the city in the junior grade to A.D. 70 in the senior grade; in English and Irish history the junior-grade period is extended to 1600 instead of 1603; the scale of marks is changed in English, fewer being given to literature and more to history and geography (which is now to include physical geography); in modern language honours in the middle grade, more marks are given for composition and fewer for translation into English, and the courses in practical mathematics, manual instruction, and drawing are altered.

THE Department of Agriculture and Technical Instruction has issued (1) regulations for scholarships in agriculture, horticulture, forestry, and creamery management to be competed for in August; (2) rules and syllabus for the session 1918–19 of the Albert Agricultural College, Glasnevin; (3) the programme of the Irish Training School of Domestic Economy, St. Kevin's Park, Kilmacud, Stillorgan, Co. Dublin; (4) rules for trade scholarships to be awarded this summer, and (5) the second number for this year of its Journal, with interesting articles on various Irish industries.

WELSH.

THE Report of the Board of Education under the Intermediate Education Act for the year 1917 indicates no changes of method or developments of plan in the work of the schools during the year. It pays tribute to the way in which the schools "carry on" in increasingly difficult circumstances, with a deepening sense of responsibility and of duty to the nation. Teachers will recognise the description as correct if applied to the upper part of the school, on which the possible imminence of active service casts a new and real dignity; but the report fails to do justice to the other side of the picture—the lack of tone, the absence of careful home training, and the increased self-assertion and unruliness of many who enter the lower Forms. Probably this is found in different measure in different places; in some it is certainly present to a marked degree.

THE Board's advocacy of the system of only two external examinations, one at about sixteen years of age for matriculation and leaving-certificate purposes, and one two years later to test post-matriculation work, leads it to attribute to the present "excessive external examination" most of the defects that can be found in the Welsh secondary-school system. It may, however, be doubted whether even a yearly external examination is an unmixed evil. If the examination is free from "catch" questions, and aims at finding out rather what the pupil does know than what he does not, a wide choice of subjects being allowed in the questions; and if, above all, the teachers will resolutely decline to "prepare for" specified examinations, while teaching the subject to a level above the standard of the examination syllabus, then the external examination need have no terrors for the pupil, and will give him an opportunity of showing that he possesses a most valuable faculty—that of tackling and dealing with an "unseen" problem within his range by the aid merely of what he has remembered and what he can think out at the moment. The curse of external examinations is not that they may be annual, but that it is often necessary either to choose between several at the same stage or to prepare for two or more of them.

THE claims of domestic subjects, music, and Welsh on the time available for teaching are strongly urged, and a call is made for more elasticity in the time-table, some subjects being taught for fewer periods in a week, and without regard to examination requirements. But the teacher in charge of a subject is entitled to ask how he can be expected to plan a consistent course of instruction throughout the school if in some of the classes the subject may be relegated to a position of comparative unimportance. There is a certain minimum number of subjects and a certain minimum standard of attainment in them which must be included in a secondary education that can be called satisfactory.

THE case of languages is mentioned, and complaint is made that Welsh suffers. The old English grammar-school standard was two ancient languages, Latin and Greek, and two modern, say French and German. The practice in Wales now is: Latin, together with either French or Welsh; Greek and German are rarities. The sentence, "It is somewhat difficult to explain why in Wales, where the Sunday school forms such an important part of the lives of thoughtful young men and women, the study of Greek has declined in recent years," needs explaining, especially as it refers to the absence of Greek as an obstacle to the establishment of advanced courses. A

young men's or young women's class in a Sunday school, presumably interested in Hellenistic Greek, and either prepared throughout to read, say, the Gospel of John, or exercising any influence on the advanced courses of the neighbouring intermediate schools, would be a development worth seeing.

IT is satisfactory to note that all the schools under the Intermediate Education Act were so carried on as to fulfil the conditions for grants under the Act. The number of pupils in all Wales rose to 16,955 from 16,100 in the previous year. Girls are in the majority, numbering 9,404; their superiority in numbers has been maintained and progressively increased since 1904, when they first outnumbered the boys.

THERE are still ten headmasters and eleven headmistresses receiving salaries of less than £300 a year. The average salary of a headmaster is £397, of a headmistress £360, of an assistant-master £163, and of an assistant-mistress £125. Three assistant-masters and seventy-four assistant-mistresses received the scandalous salaries of less than £100 a year. These figures do not include the "Fisher grants," which have been administered in some cases strictly according to their intended purpose, in others, it is not too much to say, deliberately diverted therefrom. In any case, the whole of the supplementary grants would not nearly balance the increased cost of living caused by the war and the events of the years previous to it. Wales is getting its secondary education cheaply—at the cost of the teachers.

IN the Chancery Division Mr. Justice Eve has authorised the trustees of the estate of the late Richard Beaumont Thomas to pay out of the residuary estate the sum of one thousand guineas for the laboratory fund of South Wales University College, in fulfilment of the testator's promise of a donation of this amount.

IT was announced early in May that the special committee set up to deal with the appointment of a successor to Principal Griffiths had decided to postpone the appointment for a year, one of the professors being chosen as acting principal in the meantime. A choice from a wider field was expected to be possible after the war. But a week later it was said that the vacancy was to be filled at once, and the *Western Mail* asked, "What's in the wind?" The salary attached to the post is to be raised from £1,000 to £1,500.

THE list of prospective candidates for the Welsh University seat continues to grow. The latest additions are the names of Lieut. Ernest Evans, of Aberystwyth, and Dr. Fisher, who, it is said, is to have one of the University seats secured for him, the Welsh seat being suggested as suitable.

THE Welsh Members of Parliament adopted in April the proposals of the Executive Committee of the Llandrindod Conference for the establishment of a National Council of Education, but in view of the lack of support for the scheme from the local education authorities, and the opinion of Alderman D. H. Williams and Mr. E. T. John that a demand for Welsh Home Rule was likely, in the present state of public opinion, to receive favourable consideration, the Executive decided to report that the objects of the conference would best be promoted by an agitation for a measure conferring complete autonomy on Wales, whereupon the M.P.s followed suit in May. The plain English of this resolution is that the zeal for education in Wales cannot of itself carry on the movement, and that once more education is to be dragged at the tail of politics. It is significant that a parallel movement is concerned with the development of a demand for a Welsh Ministry of Health into one for complete Home Rule. Place beside these facts the article by the Rev. D. S. Jones on Welsh Nonconformity in the *Dysgedydd*, in which he says: "Many people believe that Nonconformity is gradually losing its hold on the life of the nation, and I see no hope of its recruiting its strength until it throws over the yoke of the politician." There are those who would apply the last sentence to education also.

THE HISTORY OF SCIENTIFIC THOUGHT.

A Short History of Science. By W. T. Sedgwick, professor of biology, and H. W. Tyler, professor of mathematics, Massachusetts Institute of Technology, Cambridge, U.S.A. xvi+474 pp. (New York: The Macmillan Co.) 12*s.* 6*d.* net.

THIS admirable work is a sign of the generally awakening desire for a more humanistic education of those undergoing technical training. In the process of reconstruction we have to look forward to a large increase in the number of those entering industrial and civic life with a basic education in science rather than in the humane studies, and the question will thus become more urgent how a suitable training in the humanities can be imparted to the student of science. This problem has long been before American educationists, and has been approached by including in scientific training courses in the history of science. A very large number of these courses are now being delivered in the universities, medical schools, and technical colleges of the United States, and the volume before us is the outcome of one of these courses.

Profs. Sedgwick and Tyler themselves would probably be the last to claim such courses as a complete solution of this difficult educational problem. But systematic instruction in the history, and perhaps even more in the method, of science will go far to remove the reproach against the man of science of indifference to the wider fields of human activity and incapacity to form a dispassionate estimate of the place of his own studies in the history of thought.

The authors have produced a scholarly and well-written account of the history of elementary and applied mathematics and astronomy from the earliest times. The biological and medical sciences are scarcely touched upon, and the history of chemical and geological science but lightly sketched. The work is thus perhaps most likely to appeal to students of engineering, though it will be welcomed in the library of every serious student of the history of science. Profs. Sedgwick and Tyler have scarcely done their own excellent narrative style full justice by including a large amount of quoted matter. We suggest that in a subsequent edition this material might be restricted to first-hand authorities.

We have to make two minor criticisms of the method adopted. First, the work, along with nearly every modern history of science, has devoted consider-

able space to Oriental scientific thought. Now, it is the special business of the historian to demonstrate continuity, and most Oriental systems, however interesting to the specialist, are not as yet sufficiently explored to make their inclusion in a general narrative profitable to the reader. To attempt to include them is but to withdraw attention from the main plan. The second defect which, again, the book shares with most others on the subject, is the practical silence in which a thousand years of the "Middle Ages" are passed over. We hold no brief for the study of medieval science, and it is true that during all those centuries there were few or no contributions to scientific thought. But an ideal history of science should trace the course of scientific thought as a continuous whole. The deterioration of the human mind during certain ages is a phenomenon of immense importance, and the nature and causes of that deterioration are by no means without their lesson for our time and circumstances.

These are, however, but very minor defects in a valuable and useful book, which will immediately take its place among the small list of first-class works on the subject of which it treats, and will form an incentive to a wider study of the history of science. Profs. Sedgwick and Tyler are to be heartily congratulated on its appearance. CHARLES SINGER.

A PHILOSOPHICAL FARRAGO.

Plutarch: Select Essays. Vol. i. Translated, with introduction, by T. E. Tucker. 296 pp. Vol. ii. Translated by A. O. Prickard. xix+336 pp. (Oxford Library of Translations.) (Clarendon Press.) 3*s.* 6*d.* net each.

FEW classical schoolmasters have either the leisure or the inclination for reading Plutarch in the original, and the massive volume of Philemon Holland's translation of the "Moralia" is inclined to deter the most dauntless of readers. The present translations are therefore very welcome; that by Prof. Tucker appeared in 1913, and contains an excellent introduction, in which Plutarch is compared with writers of the so-called "Augustan" age of English literature such as Pope, Addison, or Steele. Mr. Prickard's selection is very similar to that made by C. W. King in 1882, but his translation is far more elegant and readable than King's. And classical scholars ought to read Plutarch—not on end, but to "dip into him," as Montaigne advised—for he is a storehouse of much curious information, and serves to throw sidelights upon many subjects of intimate concern to the classical scholar. When we listen, for example, as we do in these essays, to men like Cebes and Simmias discussing in the cultured home of Epaminondas, we remember that Pindar was a Theban, and that our conventional idea of Bœotian stupidity is a little unkind.

The essays chosen by Mr. Prickard are "On the Genius of Socrates," "The Pythian Dialogues," "Delay in Divine Punishment," "On the Soul," "On Superstition," and "On the Face on the Orb of the Moon," and they vary from the nature of garrulous *obiter dicta* to the grave treatment of a grave subject. When added to such things as the "Advice to Married Couples," "On Bringing up a Boy," "On the Student at Lectures"—to quote at random from Prof. Tucker's volume—they certainly form a very representative selection of Plutarch's style. Some will be inclined to say that they contain much interesting matter mixed up with a deal of nonsense; and it must be admitted that Plutarch shows a lack of artistic restraint both in the bewildering number of his interlocutors and in the profusion of their remarks; but to the scholar everything is interesting, and he will be very grateful to the translators for these two volumes.

THE TEACHING OF HANDWRITING.

Cremer's Unit System of Teaching Handwriting. By P. T. Cremer. 49 pp., with 18 plates and illustrations. (Dublin: Browne and Nolan, Ltd.) 3*s.* 6*d.* net.

THE unit which gives its name to the Cremer system is not a unit of construction—an element of form—but a unit of distance, being, in fact, one-fourth of the slant height of such small letters as *a* or *i*. Using this unit, the author provides a framework of lines which standardises the proportions of the letters and their connecting links. He compares and contrasts his system with that of Mulhaüser—a system very popular about the middle of the nineteenth century. Discarding Mulhaüser's "pothooks and hangers," Mr. Cremer has made finer and more precise the network of rhombuses within which the Mulhaüser script was written. The actual network need not, however, be drawn, though it is assumed to be present to fix the unit and the slope, and to enable geometrical skeletons of the letters to be built up. It is, in fact, in reducing the script alphabet to four fundamental types of letters, and devising four groups of guiding lines, that the most original part of the system consists.

The system therefore stands or falls with its principle of guiding lines. If fixed lines to regulate the writing are expedient at all, either for the beginner or the advanced pupil, and especially if they are needed to determine the width as well as the height of the letters, then Mr. Cremer has devised a valuable system. But the use of guiding lines of any kind other than a single horizontal base line is opposed to modern professional opinion. School medical officers tell us that it is injurious for young children in the infant school to write between lines. The numerous experiments in handwriting that have been carried out in England and America point to the conclusion that the fewer the guiding lines the better. A single horizontal line is apparently the best of all. Here modern research supports the practice of the scribes of the Middle Ages, who, in writing their beautiful scripts, used but one guiding line, not necessarily to write upon, but to secure a good horizontal alignment. Mr. Cremer is aware of the existence of the modern tendency to revert to that period of fine penmanship, for he devotes about two pages to it under the title of "Print-Script," but the very example he gives—a degraded form of print—shows that he has missed the spirit of the movement. That spirit, which really springs from William Morris, is best seen embodied in the work of such modern masters of the craft as Mr. Edward Johnston and Mr. Graily Hewitt.

If therefore the current belief in the necessity for freedom in handwriting be sound, the teacher would be unwise to adopt the Cremer system for teaching purposes. The book might, however, enable him to analyse and standardise for himself the style of handwriting he proposes to teach.

RECENT SCHOOL BOOKS AND APPARATUS.

English.

Coleridge: Select Poems. Edited by S. G. Dunn. 127 pp. (Oxford University Press.) 1*s.*—The considerable part of Coleridge's poetry printed in this volume is preceded by a preface so modern that it discusses the light thrown by the war on our views. The war indeed will light up many an old favourite, and probably Coleridge's verse, which is more universal than that of most poets, will be read with deeper attention. For the output of the poet, like that of Francis

Thompson, was small, and in a few years the glory had departed. A very few notes are added, and a modicum of criticism, and this is well, for the reader's voice supplies to Coleridge, as to Spenser, the best criticism. It is curious that a poet's own sense of his degradation should be one of his claims to recognition; but the young speedily recognise in literature the *longum intervallum* between the human penitent and the preacher. Coleridge preached, but he also despaired, and "The Ancient Mariner" and "Dejection" cannot die. He dreamed also.

Mackay of the Great Lake. By C. E. Padwick. 144 pp. (H. Milford.) 3*s.*—This is a bright and clear account, helped out by pictures and maps, of the life of a great missionary. Apart from the religious intention of the book, the narrative will hold a boy's interest, for the story, as befits its subject, is manly all through. And if a boy be led to read a few more missionary stories, he will but be learning more of British grit and dauntlessness in face of immense difficulties. The missionary note is always present, but it is not unduly pressed, and this, considering the book is for the young, is as it should be.

History.

The Expansion of British India, 1818–1858. By G. Anderson and M. Subedar. xii+196 pp. (Bell.) 4*s.* 6*d.*—This volume is "a source book of Indian history," and it is the first of a set of three, all dealing with the period 1818–58. The other two are intended to treat of native politics and the East India Company's commerce respectively. The book is interesting and valuable to students of Indian history. It ought to be preceded, however, by a similarly documented study of the period 1756–1818, when the really crucial expansion took place. The term "source" is interpreted by the compilers with unusual and regrettable laxity. The first "source" quoted—on the need of a frontier policy as first revealed by Napoleon's projects—is Sir Alfred Lyall's "British Dominion in India," published in 1893! If this is a "source," what is a secondary authority? A large part of this book is devoted to the Indian Mutiny, but with "references to unpleasant happenings intentionally omitted." It might be objected, first, that the Indian Mutiny does not properly come within the scope of the volume as indicated by its title, and, secondly, that the Indian Mutiny with the unpleasant happenings left out is an episode unknown to history altogether.

The Beginnings of Modern Europe, A.D. 1250–1450. By Ephraim Emerton. xiv+550 pp. (Ginn.) 7*s.* 6*d.* net.—It is thirty years since Prof. Emerton, of Harvard University, published his remarkable "Introduction to the History of the Middle Ages." The book met with an immediate and great success, because it combined profound scholarship with unusual simplicity of treatment, and at the same time showed a rare comprehension of the spirit of the period with which it dealt. The appreciative welcome which this preliminary sketch received encouraged Prof. Emerton to continue his history, with rather fuller detail and for a distinctly more advanced class of students, for the central period of the Middle Ages, viz. A.D. 800–1250. This volume provides one of the very best of available surveys of the important epoch in question. Now at last this third volume brings the study down to the dawn of modern times. It will be hailed with enthusiasm by Prof. Emerton's disciples on both sides of the Atlantic. It manifests the same high qualities as its predecessors. Like them, it is topical rather than chronological in its mode of treatment. It deals with such themes as the rise of the modern State, the decline of the Empire and the Papacy, the evolution of a middle class, and the Renaissance in Italy and in Northern Europe. We unreservedly commend this masterly work to all students of the period of transition from medieval to modern times.

Geography.

The Oxford Geographies. The British Empire. New illustrated edition. By A. J. Herbertson, R. L. Thompson, and O. J. R. Howarth. 112 figures, 14 pages of photographs, 256 pp. (Clarendon Press.) 2*s.* 6*d.*—Teachers will welcome the improvements introduced into this new edition, as into reprints of the other Oxford Geographies, by Mr. O. J. R. Howarth. Nearly half the book is devoted to the British Isles; the African parts of the Empire are introduced by a general discussion of the whole continent, but British North America is not related to the rest of the American continent. In the treatment of India, in the chapter headed "Provinces and Towns," Kashmir receives a longer notice than Bengal. That the book contains these and other instances of inequality of treatment at the hands of such experienced writers merely indicates how difficult it is to write a book on the geography of the British Empire.

Mathematics.

Mathematics for Engineers. Part i. By W. N. Rose. xiv+510 pp. (Chapman and Hall.) 8*s.* 6*d.* net.—This is the first part of a treatise which is intended to embrace all the mathematical work needed by engineers in their practice and by students in all branches of engineering science. The present volume deals with algebra, mensuration, graphs, and plane trigonometry, and an examination shows that on the whole little within the range of these subjects which is likely to be of use to the engineer has been omitted. A very large part of the book is devoted, and rightly so, to graphs. All equations can be solved more or less accurately by graphical methods, and these are described in detail. There is, however, no reference to the solution by the aid of the templates of standard curves which are now procurable. A useful chapter is that on the construction of the practical charts and nomograms which figure so largely in recent technical literature. The numerous examples are in almost all cases of a practical character, and in every respect the book is one likely to prove useful to the class of students for whose benefit it has been produced.

EDUCATIONAL BOOKS PUBLISHED DURING APRIL, 1918.

(Compiled from information provided by the publishers.)

Modern Languages.

"Selections of Russian Poetry." Edited, with notes, etc., by B. A. Rudzinsky, assisted by Stella Gardiner. With an introduction by Sir Donald Macalister, K.C.B. 108 pp. (Blackie.) 2*s.* 6*d.* net.

Goncharóv: "Men-servants of Other Days." Edited by Nevill Forbes. (Oxford Russian Plain Texts.) 80 pp. (Clarendon Press.) 1*s.* 6*d.* net.

Korolénko: "In the Night, Easter Eve." Edited by Nevill Forbes. (Oxford Russian Plain Texts.) 96 pp. (Clarendon Press.) 1*s.* 6*d.* net.

Krilóv: "Select Fables." Edited by E. G. Underwood. (Oxford Russian Plain Texts.) 64 pp. (Clarendon Press.) 1*s.* 3*d.* net.

"Serbian Grammar." By Dragutin Subotić and Nevill Forbes. 244 pp. (Clarendon Press.) 7*s.* 6*d.* net.

"Capítulos Escogidos de V. Blasco Ibáñez." By E. Alec Woolfe. 188 pp. (Harrap.) 2s. net.

"A First Spanish Course." By Profs. E. C. Hills and J. D. M. Ford. 340 pp. (Harrap.) 4s. net.

"La Vida de Vasco Núñez de Balboa." By M. J. Quintana. 116 pp. (Harrap.) 1s. 6d. net.

Jean-Jacques Rousseau: "Du Contrat Social; ou, Principes du Droit Politique." Edited by Prof. C. E. Vaughan. (Manchester University Press Publications: Modern Language Texts.) 260 pp. (Longmans.) 5s. net.

Siepmann's French Series for Rapid Reading (new volumes):—De Bréhat: "Les Ravageurs de Plounéal"; "Une Main d'Enfant" (adapted). Eyma: "Pontiac; Le Roi Philippe" (adapted). Mace: "La Hache et le Pot-au-feu; Friquet et Friquette; Mademoiselle Sans-Soin" (adapted). Töpffer: "La Vallée de Trient; Le Grand Saint-Bernard" (adapted). Erckmann-Chatrian: "Le Trésor du Vieux Seigneur" (adapted). Prosper Mérimée: "Les Mécontents" (adapted). (Macmillan.) 6d. each.

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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.*

Bolshevik Multiplication.

THE system of multiplication, described by Mr. Twigg in the May number of THE SCHOOL WORLD, used by peasants in some districts of Russia is fairly well known. The exposition of the method is best set out by a concrete instance, and I take for this purpose one of Mr. Twigg's examples, namely, finding the product of 28 and 19.

To effect the multiplication two columns of numbers are written down, the numbers in one column being got by the repeated halving of one factor (say 28), omitting all remainders, and those in the other column by the repeated doubling of the other factor (19). Then the sum of those numbers in the second column which are opposite the *odd* numbers in the first column give the required product. The result reads thus:—

28	[19]
14	[38]
7	76
3	152
1	304

And the required product is $76+152+304$.

The explanation is that the halving of the numbers in the left-hand column serves to express it in the binary notation, and the repeated doublings of the other number provide a series from which the sum of the selected terms gives the required product. Thus from the first column we have

$$28 = 0+0+2^2+2^3+2^4.$$

$$\therefore 28\times 19 = (0\times 19)+(0\times 19)+(2^2\times 19)+(2^3\times 19)+(2^4\times 19)$$
$$= 76+152+304 = 532.$$

In this way multiplication is reduced to addition.

W. W. ROUSE BALL.

THE principle involved in the method of multiplication used by certain Russian peasants is that if a number be expressed as the sum of powers of 2—*i.e.* in the binary scale—the only multipliers of the different powers which can appear are either 0 or 1. Thus:—

$$40 = 0+0\times 2+0\times 2^2+1\times 2^3+0\times 2^4+1\times 2^5.$$
$$28 = 0+0\times 2+1\times 2^2+1\times 2^3+1\times 2^4.$$
$$9 = 1+0\times 2+0\times 2^2+1\times 2^3.$$

If, then, we wish to multiply any number, such as 25 by 40, we have

$$\begin{aligned} 25\times 40 &= 25\times 0 &&= 25\times 0 = 1000\\ &\quad +25\times 2\times 0 &&+ 50\times 0\\ &\quad +25\times 2^2\times 0 &&+100\times 0\\ &\quad +25\times 2^3\times 1 &&+200\times 1\\ &\quad +25\times 2^4\times 0 &&+400\times 0\\ &\quad +25\times 2^5\times 1 &&+800\times 1 \end{aligned}$$

When the multiplication is exhibited in this way we see at once why in performing the addition some of the multiples of 25 are ignored. J. B. DALE.

THE interesting method of multiplication given by Mr. Twigg in the May issue of THE SCHOOL WORLD depends upon the fact that any number may be resolved into a series of powers of 2. Thus:—

$$57 = 32+16+8+1 = 2^5+2^4+2^3+2^0;\quad 26 = 2^4+2^3+2^1.$$

Example 1. Multiply x by $2^a+2^b+2^c+1$, a, b, and c being in descending order.

(i) Place $2^a+2^b+2^c+1$ at the head of the left-hand, and x at the head of the right-hand, column.

(ii) Halve the left-hand number, omitting any fraction, and double the right-hand number.

(iii) Repeat the halving and doubling until the number on the left is unity.

(iv) The required product is obtained by adding all the numbers on the right except where the corresponding left-hand number is even.

L.	R.
$2^a+2^b+2^c+1$	x
$2^{a-1}+2^{b-1}+2^{c-1}$	$2x$
. . . . .	. . .
. . . . .	. . .
$2^{a-c}+2^{b-c}+1$	$2^c x$
. . . . .	. . .
. . . . .	. . .
$2^{a-b}+1$	$2^b x$
. . . . .	. . .
. . . . .	. . .
1	$2^a x$

Product: $(2^a+2^b+2^c+1)x$

Example 2. Multiply x by 2^a+2^b, a being greater than b.

L.	R.
2^a+2^b	x
. . . .	. . .
. . . .	. . .
$2^{a-b}+1$	$2^b x$
. . . . .	. . .
. . . . .	. . .
1	$2^a x$

Product: $(2^a+2^b)x$

W. E. HARRISON.

Handsworth Technical School, Birmingham,
May 4.

[Other correspondents have replied to Mr. Twigg, but the letters printed above explain sufficiently the Russian system of multiplication.—EDS.]

The Education of Engineers.

IN the review of my book on "The Education of Engineers" you appreciate my remark that "the best education for an engineer is found in the natural and instinctive pursuit of manual toil accompanied by study at a technical school." What university educational authority would make "manual toil" the basis of its policy? None, and you partly give the reason.

While in agreement with what you say on the subject of London University internal evening students, I feel that it is not my duty to direct attention to these "valuable points" in a scheme which, on your own showing, is not a success. The matriculation, you imply, is insane. I agree. Wherever the university idea opens its avenues, it places at the portal two lions—classics and science—one or other of which must be appeased before matriculation can be passed. Now, I ask you, what is the objection to killing one of these brutes, and by this means so opening out the road to realities that the other may be left to die? In order not to be misunderstood, I would conclude the allegory with a quotation: "Out of the eater came forth meat, and out of the strong came forth sweetness."

H. G. TAYLOR.

Munition Training Dept., King's College,
Strand, W.C.2.

MR. TAYLOR appears to have omitted the principal point in the review, viz. that he had damaged his case by exaggeration, and, in the writer's opinion, this exaggeration is confirmed by his letter. There will also be many people who will decline to accept as their guide in any reconstruction scheme one who does not feel that it is his duty to direct attention to valuable points in our present educational system, since such points must obviously form the basis of future progress in education. THE REVIEWER.

Schoolboy Labour on the Land: Appeal to Parents, Headmasters, and Boys.

THE military situation has necessitated calling up a large number of agricultural labourers, which will seriously deplete the available labour during the coming hay, corn, and potato harvests. It is of vital importance that the harvest of these crops should be successfully secured this year. This success will depend largely upon boys at public and secondary schools who have reached an age that will enable them to do useful work on the land.

The extent to which farmers are counting on their help is shown by the fact that demands for over 17,000 boys have already been received at this Ministry, and there is no doubt that these numbers will be largely increased when the full effect of the calling-up for military service has been appreciated by the farmers. Of these numbers not fewer than 3,000 will be required during June and July, and a further 3,500 are needed for October for potato-lifting if suitable accommodation can be arranged.

In view of the above facts, I am reluctantly compelled to appeal to schools to release during term-time such groups of boys as may be necessary for getting in the harvest. This is a time of national crisis, and the ordinary considerations of education have not the same force as in normal times. As I have pointed out, it is necessary to provide men for the Army and it is necessary to provide labour to take their places on the farms, and I must urgently appeal to parents, headmasters, and boys to give all the help they can.

In view of my representations as to the urgency of the national need, the President of the Board of Education concurs in this appeal, and is issuing a circular on the subject to secondary schools in England and Wales.

All offers of service must be made through the headmasters of the schools. Headmasters who have not already received the regulations, and who can offer boys of sixteen and over, should communicate with this Ministry.

A. C. GEDDES.

Ministry of National Service, Westminster, S.W.1, May 20th.

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