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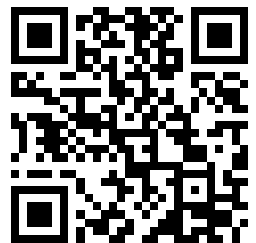
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SIXPENCE.

SCHOOL PRAYERS.

By J. L. PATON, M.A.

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"RELIGION," says Mr. Holmes, "is man's instinctive effort to bring a central aim into his life." That is why at Rugby and Eton the chapel stands in the centre. It means that all the activities of the school—its instruction, its games, its friendships, its common life are built round the religion of Christ—that they exist *in maiorem Dei gloriam*, and by that purpose are hallowed. When the old boy comes back, he always makes a point of going to chapel. It may be that he is not at home a regular worshipper, and has made the compulsory attendance at school chapel his excuse, but he won't pay a visit to the old school without finding his way to the chapel. It is there that the memories of his school days come flooding back upon his mind. Even though he regarded chapel as a bore when he had to go as a boy; even though he never listened in those days to what was said from the pulpit, yet he is conscious that all the time the motive, the "unspoken premiss" of all that was done at the school was religious; that there could not be either "good learning" or, for the matter of that, good playing or good living of any sort without godliness.

The question is: Can there be in the new day-schools anything analogous? Can there be with us something of the same hallowing of work and play? Is there anything in our school life which will touch the deeper springs and inspire, if not such poems as Rugby chapel and Clifton chapel, at any rate the feeling which prompted them?

In the first place, we have no chapel and we have no Sunday service. Is this fatal? I do not think so. The separate place set apart for religious services is apt to suggest that religion is a separate thing, detachable from the rest of life. We assemble in the school hall,

in the room where immediately after prayers ordinary lessons are going on. In our boys, at any rate, there cannot be instilled the idea that religion is something apart from life's commonplace routine. Family prayers are held in the family parlour, and just as family prayers hallow the life of the home, so school prayers, held in the school hall, should hallow the life of the school. Arnold always began the day's work in his classroom with a prayer.

Nor is the lack of Sunday service without its compensation. The day-boy learns very early to take some part in the life of his church. At the age of fourteen many of them are beginning to help in the Sunday-school; they play the piano, keep the registers, act as librarians, and help as teachers, especially in the "primary department" in its new form, or they act as servers at Holy Communion. From these things the boarding-school boy is cut off to his great detriment, for in religion, as in other things, we "learn by doing." Also, the day-boy is realising what religion is in its normal relations with the body of believers and in its ministrations to the community of neighbours.

The function of prayers in the day-school is therefore both smaller and simpler—it is to link on the ordinary daily work of the school to the higher spiritual motive, and give some expression on the spiritual side to the corporate consciousness of the school community.

If school-prayers are to be the expression of a corporate feeling, it follows that there must be an assembly of the whole school. In many schools, in Scotland as well as England, the classes assemble at 9 a.m. in their various classrooms and the class-teacher begins the day's work with a short prayer. This is, in my judgment, a mistake. Everyone knows the power of numbers in an act of worship. It is strongly brought out by Tolstoi in his "Confessions." The very fact that the school as a whole presents itself before God day by day to sing His praise and seek strength for His

service counts for more than we know. There must be, of course, exceptions made for conscientious objectors, but these in practice are found to be few. The chief difficulty is with Jewish boys, and the way to meet it is to set apart a room for them, to provide an instrument of worship for them, and leave it in the hands of the senior boys. When I approached the late Chief Rabbi on the point, I found that he was ready to fall in with the suggestion at once, and further it in every way. He recommended to me a manual of devotion by C. G. Montefiore, and bade me select freely whatever prayers were most suitable in that book. When in September, 1914, I wanted some form of prayer suitable for time of war, one of our Manchester Rabbis at once drew up for me some prayers, which I have used also at the general school prayers. I may say also that at camp when I have had Jewish boys with me I have constantly used the prayers of the Prayer Book, merely substituting at the end of the prayer such words as "Through Thy infinite goodness and mercy revealed unto mankind"—a formula which suggested to Christian boys exactly the same as the original words, but without offence to those who could not have accepted the customary words. Above all, let religion be a power which unites, which is common to us all. "He that gathereth not with me, scattereth abroad." Too often, especially in matters educational, religion is made the party cry which sets us all by the ears.

School prayers must be short. In most cases the boys will be standing all the time. Ten minutes, in that case, is long enough. For some few boys even ten minutes is too long, but it ought to be part of a boy's education to train him to stand for a few minutes without flopping. Shortness is not a drawback; anyone who speaks to boys knows that to be short and simple is the only effective way. Granted shortness of time, the great essentials are four—reverence, heartiness, actuality, and getting the boys themselves to take part in the act of worship.

Reverence, as Archbishop Laud knew, is very largely a matter of attitude. A boy who stands with his hands in his pockets is irreverent, and irreverence is the beginning of all spiritual and moral corruption. Reverence is not hard to secure. Boys are naturally reverent. A sharp word of reprimand to any boy who talks, or looks at his lesson-book, or gapes, may be needed now and again, but not often. One word of warning. It is in many schools the custom for class-masters to tick off the lists during prayers, noting who is present and who is absent. This spoils the whole value of school-prayers, both for master and boy,

because it introduces the disturbing factor, and is inconsistent with reverence.

Nothing helps heartiness more than the singing of a hymn. All boys like to sing hymns. No act of worship is more in the line of their nature. Old boys with whom I have discussed the question of school prayers all agree that what appealed to them most was the hymn-singing, and when I have been with boys on trek or in camp, I have always found them ready to join in hymn-singing. We have a little collection of our own, and it has kept us going over many miles of a tramp which would otherwise have been very weary. Boys no more tire of hymns than they tire of "Hearts of Oak" or "The Boys of the Old Brigade." I have heard at Rugby that morning chapel was a very dead-alive thing until, I believe at Mr. Arthur Sidgwick's suggestion, the hymn was introduced. "With regard to the hymns," writes a boy who left school a few years ago, "I always enjoyed them. They appeal to boys because they can let some of their spirits go, and can take an active part in the service." Happily there are several good hymn-books for school use—the crown is awarded by common consent to that of St. Olave's, Southwark. Happily, also, most school hymn-books contain some psalms for chanting, for chanting can easily be made as effective and as well-liked as hymn-singing. But there are gaps in all hymn-books. One misses what may be called the "civic" hymn, expressing love of city and pride in her progress and welfare, a hymn which ought to be sung each Lord Mayor's day. There is no good hymn I have ever met on animals. Most of us in this last year have been printing and using occasional special war-hymns, like those by John Oxenham and Bishop Boyd Carpenter, and that truly noble hymn, the Russian National Anthem.

The next requisite is actuality. Nothing is so deadly to attention as sameness of repetition. Directly a boy begins to take the prayers for granted because he has heard them so often before, his mind goes off to something else, he begins wondering whether he knows his Latin grammar and English repetition, or plays over again his last game at football. If you use the same form of prayer daily, prayers will become to the great majority a dull school ceremony, a boring mechanical business that has to be gone through and the quicker the better. You will have the same thing happening as happened at College Hall, where they used to time the scholars who read the long Latin grace, and that scholar was most popular who gabbled it off in record quick time. Talking over the matter with old boys, I find the prayers which they remember as meaning

most for them were prayers used on special occasions, the prayer for honesty in examinations on the day the school examinations began, the prayer for "the High Court of Parliament at this time assembled" on the day that Parliament was opened, the special prayer for old boys of the school beginning their work at the universities (a prayer we have regularly in the first week of October), the prayer for boys leaving on his own last day at school, the prayer after the death of a schoolfellow or a master—the prayer, in fact, that finds him in an impressive state of mind, or that wakes him up to some new aspect of his duty or some national need, and makes him feel that his school, and he as a member of the school, have a relation to that need and a duty to pray. The S.P.G. ask us year by year on St. Andrew's Day to pray for Christian missions. There are some colleagues who think this request only concerns such schools as have regular chapel services. I cannot accept that view. I would keep St. Andrew and all the saints in the Calendar. I would recognise the great national events. As it is the secondary school's duty to expand a boy's mind, so it is its duty to give a broader scope and sympathy to his prayers.

"The prayers did not 'get at' the boys," says one of my candid friends; "they were too vague, too far above the heads of the boys, and did not deal sufficiently with school-life generally." As a rule, when one hears the complaint that the preaching is "above the heads" of the congregation, the best advice to the congregation is "Raise your heads." But in this case there is real force in the criticism. Unequaled as they are in majesty of diction, most of the prayers in the Prayer Book are too periodic in structure and too literary in form to "get at" the average boy below the Fifth Form. Besides, they have nothing about examinations, holidays, games, boys leaving, and such things. This is the justification for the special volume of school prayers, and happily there are such volumes to be had. But even so a master will not hesitate to write his own collect, whenever he feels the need.

Another mistake we make with school prayers is for the masters to do it all. Boys ought not in prayers, any more than in lessons, to be passive recipients. There should be, of course, heartiness of response. That goes without saying. But boys can also play the organ or piano for the hymn, and a senior boy can read the lesson. Reading the lesson is a part of his school-training on which many a man looks back most gratefully. Reading before the small world at school has saved him from self-consciousness on the larger occasions of public life. I not only get my prefects

to read the lesson, but allow them frequently to fix the lectionary. In this connection I may be allowed to narrate an experience of my own which may save a colleague from committing a similar mistake. On one occasion when a prefect made some slip in the reading, I noticed two senior boys laughing. After prayers I told them that they would be put on to read the next two days at prayers. "This in some measure counteracts all the best memories I have of prayers," says the candid friend aforesaid. "I was positively ashamed; it may have been a lesson to them never to be forgotten, but it was making a mockery of prayers." For that criticism I am more grateful than any other, because it shows how much a boy really thinks of school prayers, when he resents any light treatment of them or what appears to him as such.

School-prayers are naturally the time when the Head can speak to the school on matters which are of interest and importance to the school as a whole. On the first day of term and on the last he will have a few appropriate words. Notice can be given of any special lectures or functions, and instructions can be made clear. Prizes are announced. Certificates for life-saving or ambulance or scout badges can be distributed. Well-doers may receive a word of commendation, shirkers may be pilloried. "Prayers are good for teaching you public spirit," says a youngster. The name of an old boy who has been killed in action—a boy who this time twelve months ago was standing in the hall—a few words as to how he fell—any honour won at the university—any old boy of the school who has done some good piece of work—any master who has received some honour—all these diverse items serve wonderfully to hold together and make real the meaning of the school life and the continuity of its tradition. If I am told that these things are quite secular and have nothing to do with religious exercises, I answer in the words of Bishop Phillips Brooks, "Religion has been treated as if it were a special exercise of a special power, not as if it were the possible loftiness of everything that a man could think or be or do."

A Book of English Poetry. Chosen and edited by G. Beaumont. 560 pp. (Jack.) 3s. 6d.—This bulky but handy volume should be an excellent accompaniment to class work which is on the look-out for illustrative matter; it is a library *in petto*. It begins with Barbour and ends with Thomas Sturge Moore, and in its long and varied course manages to include a good deal that is not found without much seeking. One may quarrel with omissions, but, remembering that the book is probably intended for the school, we welcome it gladly, especially as at least ninety pages are allowed to quite modern work. It is unnecessary to say that the book is a marvel of cheapness.

TEACHING THE CALCULUS IN SECONDARY SCHOOLS.

By R. WYKE BAYLISS, M.A.
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IN a discussion upon the teaching of the calculus to schoolboys below the mathematical scholarship class, the first and most obvious question that arises is: "Ought we to teach it at all to boys who do not intend to become mathematicians?" Less than a quarter of a century ago we should have unhesitatingly answered: "Certainly *not*! No boy can possibly even begin to understand the calculus until he has learnt the elements of trigonometry, as well as the binomial theorem, the exponential theorem, and a certain amount of analytical geometry."

If you asked for more definite information as to the "quantity" or "quality" of the knowledge required, you would have been presented with a syllabus including proofs of some score or so of trigonometrical formulæ, Euler's proof of the B. T., a learned disquisition on the exponential and logarithmic series, and a nice fat treatise on analytical conic sections, with a recommendation to study the latter for a year or two in the more academic light of geometric synthesis!

At this stage—if you had any taste for classics or history, any leanings towards biological or metaphysical research, or had no burning desire to be initiated into the mysteries discovered by the genius of Newton—then you immediately forswore any intentions you might have had to become acquainted with the differential and integral calculus. But if you were devoted to the study of engineering, economics, shipbuilding, chemistry, or any of the numerous branches of physics—if, in short, you were engaged in research on behalf of any industry—then you soon found yourself confronted by a problem for the solution of which you had to consult a mathematician—and then you found that he could not understand your technicalities! If you were very enterprising you tried to study by yourself the mathematics required for the purpose—and wasted much time. Next you came across books written by pioneers in your branch of study. These merely "dodged" the calculus by cumbrous methods most irritating to the mathematician—but they taught him a lesson, viz., that the *ideas* involved were well within the range of the non-mathematician, and that therefore it must be possible to present these ideas in a still more simple manner.

At last you went to a mathematical man who possessed the two qualities of knowing how to teach and also of being more interested in the applications of mathematics than in its

pure essence. To him you explained your difficulties; and he, being sympathetic, made remarks to the following effect: "What you want to begin with is an elementary knowledge of the differential and integral calculus. You do not require to learn a score of trigonometrical formulæ by heart; a mere nodding acquaintance with a few of them will be amply sufficient. As to the binomial and other expansions, you may regard Euler's proof and these interminable disquisitions as mere curiosities of less interest than the Egyptian "Book of the Dead"—for you can take all these formulæ in your stride when you have once started the calculus. And as to conic sections (*per se*)—away with them all, both geometrical and analytical, as useless lumber, unless you are pursuing certain very special lines of investigation. You need nothing more except an intelligent grasp of the meaning of a graph.

Your friend, being a mathematician, asked for a few days in order to draw up a scheme for your study. Also, being a teacher, he was immediately struck by the remarkable simplicity of the knowledge required, and saw that it was well within the reach not only of men engaged in industrial research, but also of boys at school, even of those on the classical side. Thus, at various important and progressive schools throughout the country, were sown the seeds of modern school mathematics. Instead of "Certainly not," we now say "Certainly." We are ready to teach the first elementary ideas of the calculus to any boys who have a fair grounding in arithmetic, algebra, and geometry (including graphs and the use of tables). In this connection, perhaps, I may be pardoned for making, from the preface of my "First School Calculus" (Arnold), the ensuing quotation:—

An acquaintance with the following is essential:—

Arithmetic.—The main principles; the metric system; proportion; compound interest; and the use of mathematical tables.

Geometry.—The simplest properties of the straight line and circle; graphs of the straight line and parabola; and elementary ideas of area and volume.

Algebra.—The use of formulæ; simple and quadratic equations; fractions; elementary ideas of indices and surds; and the definition and use of a logarithm.

Trigonometry.—Circular and sexagesimal measures; definitions of the six functions; and some idea of the notation—sufficient, for example, to distinguish the meanings of $\sin^2 A$, $\sin 2A$, and $2 \sin A$.

Even of the above rudiments only a small portion is needed at the outset; and any further knowledge required is introduced into the questions themselves, either by suggestion, or by actual statement.

It is clear, then, that we may begin teaching the calculus in the lower fifth forms—or even

to smart boys in the removes. The earlier we begin (within reasonable limits) the better; since no branch of mathematics is at once so interesting, so instructive, so comprehensive, and so stimulating to the mental vision. Since we are to teach it to *all* the boys we must not do so with the idea of making them mathematicians. Whatever portion of the subject we teach, the mathematical boys will lose nothing by learning it, because they will require it all and more. As to the classical boys, it matters little so long as it broadens their vision and gives them some insight into the nature of mathematical research. But with regard to the science boys, we must on no account waste their time over purely mathematical proofs, nor must we omit anything we can help if it may afterwards be required to assist their laboratory work. Hence we ought frankly to base our syllabus upon the requirements of the science masters. They will probably suggest to us a perfectly impossible course—but we can select from it those items which we find practicable and capable of being taught to a mixed class within the time at our disposal.

Now, amongst the requirements of the student of science are methods for calculating areas, volumes, pressures, centres of pressure or mass, velocity, acceleration, work, energy, moments of inertia, etc. Most of these are within the comprehension of the classical set. They all require the integral calculus, or its equivalent, at any rate when deducing area from variable length, velocity from variable acceleration, work from variable force, etc. Nearly all these can be made to depend upon the integration of simple powers, roots, and reciprocals, or combinations of these functions. By expanding the functions in powers of x , when possible, we can make the integration depend upon that of x^n . In other cases we may be able to perform the integration by means of logarithms or circular functions. But all this integration depends upon *differentiation*. Hence our aim must be to teach differentiation of x^n (for all values of n); and then follow with logarithms (obviously preceded by the exponential function) and the trigonometrical ratios, concluding with the inverse circular functions.

Having thus outlined our syllabus, we see that we must first differentiate x^n . Partly because we are not at liberty to assume the binomial theorem, and partly because our pupils' minds are as yet quite unfit to cope with more than one difficulty at a time, we divide this into the following cases:—(i) when n is a positive integer; (ii) when n is a negative integer; (iii) when n is a fraction.

We soon find that even this is too difficult

for beginners; and so we first consider in order the following functions:— x , x^2 , x^3 , x^4 , $1/x$, $1/x^2$, $1/x^3$, etc. We also find that *no time is wasted* by this apparent chopping up of the single idea of an integral exponent into several chapters. For, whilst we are discussing these, we can introduce at the same time the fundamental principles concerning the following:—Rates of various kinds (speed, interest, price, growth, etc.); adequate notions of a limit (without even troubling the pupil with the word itself); differential coefficient; use of functional notation; graphic illustrations; tangents and equations of tangent; stationary values (maxima and minima); and functions of a function (both by substitution and at sight). All this can be done in a few weeks—in fact, a sharp boy who devotes his whole time to mathematics will master it in a few days.

The interest should be sustained (i) by introducing every fresh idea by means of some actual concrete example within the range of each boy's experience; (ii) by setting a few exercises on each separate algebraic result; (iii) by showing how their new knowledge can be applied to the solution of problems which arise naturally out of the surrounding phenomena of everyday life.

For this purpose a notebook or other collection of problems is absolutely essential, since it is often impossible at a moment's notice to invent a problem which will not only perfectly illustrate the principle in view, but will also present no difficulties of manipulation or technique. Even a notebook I found quite inadequate—so much time was wasted in writing the problems on the board, or in dictating them to the class. Besides, I so often had pupils working independently, instead of in a class, that I could not possibly carry out the scheme fully until I had a printed book which would ask each boy separately the very questions which I myself would naturally put to him if I could stand by his side and watch him do his work. Nothing less will suffice.

Let me give a short example of the kind of question to which I refer. Suppose that, the pupil having learnt how to differentiate x^n and e^x , you want him to discover the differential coefficient of $\log x$. You have a choice of the *ground* upon which your teaching is based, and a choice of the *means* through which it is developed. The original ground, according to our text-books, was the expansion of $\log(1+x)$ in powers of x ; obviously this method of approach must now be ruled out. The ground which I prefer is the differential coefficient of e^x .

The means formerly employed was that of setting out the proof in a formal manner which

the pupil either learnt by rote or was asked to admire as a model of style. The means I prefer is the still more ancient method of question and answer—beloved by Socrates—and claimed by the “Heuristic” enthusiasts as a discovery of their own at the beginning of this century.

Hence I should proceed on the following lines:—We know that the rate of increase of e^x is equal to itself: we want to find the rate of increase of $\log_e x$.

(i) Putting $y = \log_e x$, find x in terms of y . What is the equation?

(ii) Write down the value of dx/dy in terms of x . What do you get?

(iii) Hence find dy/dx in terms of x . What is the rate of increase of $\log_e x$?

By means of these three simple questions the pupil can be induced to pass from the premiss $D e^x = e^x$ to the conclusion $D \log_e x = 1/x$.

An adverse critic calls this “spoon-feeding”; and remarks that boys who are *sufficiently advanced to do the calculus* are superior to such methods. The latter remark simply begs the whole question as to the stage at which the calculus should be introduced. The term “spoon-feeding” is either the highest commendation or sheer nonsense in this connection. If it means that the calculus is thereby made so easy that it is no longer a mental gymnastic, what higher praise could be desired? For surely the ultimate aim of *all* mathematics is to make calculations easy which were formerly difficult and to render possible investigations which were once impracticable. We say the “ultimate aim,” because the intermediate object of training the mind can be equally well accomplished by almost any other branch of science, however simply it may be introduced.

But if the critic means that the above method is merely “cramming” knowledge into a boy’s cranium without allowing him to develop his brain-power by helping himself—treating him as the producers of *pâté de foie gras* treat their wretched victims—then our critic states that which is the direct opposite of fact. If the criticism means anything at all, it means that the above investigation should be set out formally as follows:—

Let $y = \log_e x$
 $\therefore x = e^y$
 $\therefore dx/dy = e^y = x$
 $\therefore dy/dx = 1/x$, since $dy/dx \times dx/dy = 1$
 $\therefore D \log_e x = 1/x$. Q.E.D.!

Surely this latter method is the method of “cramming”—unless we call it the method of “chucking the stuff at the boy’s head”—as we throw a bone to a dog! (Very useful at times.)

The other method, on the contrary, compels the boy to think, to meditate on each step, and to draw his own conclusions—not by a parasitical feeding upon the brains of his master, nor upon those of the writer of his text-book. Another advantage of the method here indicated is that a large proportion of the work can be conducted orally—with a considerable saving in time.

At the stage we have now reached we can either next consider the trigonometrical functions, or we can proceed at once to the converse process of integration, introduced by means of simple differential equations, such as $dy/dx = 3x^2$. In so doing great attention must be paid to the arbitrary constant, the neglect of which breeds a fatal carelessness and confusion.

When we deal with the trigonometrical ratios we find that the function $\tan x$ forms a convenient excuse for the introduction of products and quotients, the differentiation of which we may avoid up to this point, since such expressions as $x\sqrt{1+x^2}$ and $\sqrt{1+x^2}/x$ can be written $\sqrt{x^2+x^4}$ and $\sqrt{1/x^2+1}$ respectively.

The step from differential equations to integration can be bridged by a few exercises on summation. We can show how the Σ sign may be applied successively to the sum of a series of whole numbers, a series of fractions, an infinite series proceeding by finite intervals, and an infinite series proceeding by indefinitely small intervals—whereupon we change the Σ sign into the \int sign; but it will be convenient to precede this by explaining the meaning and use of *differentials*.

By this time our pupils will have constructed a table of standard forms, and we are ready to show them a few of the tricks by which integration may be effected, such as transformation and integration by parts. The science boys will then possess a tool for immediate use in the laboratory, and all will have received a grounding which should enable those who choose to take up the study of any formal branch of elementary mathematics, whether pure or applied. Either later or earlier we may give them an outline of Taylor’s theorem, which (by mere integration of x^n) will enable them to cope with the integration of many functions which are usually relegated to the domain of higher branches of mathematics hitherto studied only by specialists.

The objects to be kept in view throughout such a course are:—

(1) To show that each proposed investigation leads to something of real use in the world.

(2) To introduce new ideas as simply as possible, assuming nothing that has not been

already proved, except such intuitive ideas as the nature of a limit.

(3) To prepare the way for each intuitive idea; so that, if not already intuitive in the mind of any particular pupil, it may become so after studying a few examples.

(4) To assume as little as possible of the technique of other branches of mathematics, or of science, so that classical, science, modern, and mathematical boys may all work together and benefit equally.

(5) To forge a weapon by means of which the budding student of science may conquer difficulties he meets with in the laboratory, more especially for the calculation of areas, volumes, pressures, and centres of all kinds.

(6) To enable every intelligent learner to understand some of the mysteries of various magnitudes around him, by discovering that each quantity may have its own definite rate of growth, which we call its differential coefficient; whilst each by its growth may produce a definite sum or amount, which we call its integral; and further that the growth of any one magnitude may take place in various media, so that in one comprehensive science we may study the growth of a mushroom or a constellation, in length or area, in space or time, in mass or velocity; and apply our knowledge equally to finding the total amount of an invisible chemical reaction, or to the summation of the energy acquired by a falling star.

ORAL COMPOSITION.

By CLOUDESLEY BRERETON.

WHEN should oral composition be begun? is a question that is not infrequently asked. For my part, I have no doubt whatever that it should be begun long before school or even kindergarten is thought of. It should start at the mother's knee in the form of song and nursery rhyme, which in turn should develop into regular story-telling by mother or nurse. At first assuming the form of mere verbal repetition by the child of nursery quips and jingles, it should, as the story-telling is gradually introduced, pass insensibly into the reproductive stage, in which the child not merely repeats, but alters, modifies, and even invents. No more accursed doctrine was ever propounded than that of little children being seen and not heard. Everyone who knows the A B C of childhood knows that the average child has to talk itself into correct speech. Only incessant practice enables it ultimately to express itself correctly and grammatically. To attempt to prevent a child talking is as deadly a sin as to try to prevent him growing. It is, in

fact, part of his growth. The average child wants to talk. It is the average parent who has not the patience to listen. The story-telling instinct seems natural to most children. When words fail, they fall back on the more primitive and fundamental language of gesture. I was never more surprised than when a child of mine at the age of two, while repeating a story of a little boy who tried to hide from the inconvenient attentions of a bad lion, of his own accord in the course of the tale took cover behind sundry tables and chairs, in order to illustrate what happened in the story. I realised in a flash, as I never had before, how fundamental a thing acting is, and how much more advantage we might derive from it in school than we generally do.

Gesture is, in fact, but one degree removed from reality, while speech is action two degrees removed. Gesture is, so to say, the coin, and speech the paper money of action. Words are from one point of view the promissory notes of actions which we may or may not perform. If the Bergsonian theory be right that our lives are mainly shaped for action, then gestures, language, and acting are doubly justified.

That is, however, by the way. Story-telling possesses the twofold advantage of conveying much informal instruction in ideas and also of increasing the child's vocabulary. Many people discourage questions from a child during the telling of the story. But if the audience be an audience of one, or even if there be only one or two other listeners, I think such discouragement is a mistake. The child who questions is filling up thereby the gaps in his own knowledge, gaps which otherwise we might never discover. And the aim in view is not our telling the story as perfectly as possible, but the amount that he can assimilate. On the other hand, questions for the mere sake of questioning should be discouraged. They rather resemble those questions in reported speech in Latin, which not being asked for information are described as "oratorical." Questions, again, on our part are not essential, and if too freely applied rend asunder the flimsy fabric of notions that the child has formed of the story. For children grasp this synthetically through their feelings and emotions quite as much as through their intelligence. They absorb them as wholes, not as mosaics. We all know the child who said it understood the poem until it was explained to it, *i.e.*, analysed and taken to pieces, until, in fact, the poem as a whole had disappeared. What the child seems to do on those occasions when it hears a story is unconsciously to symbolise what it does not understand, prepared subsequently to replace its

symbols with mental images or pictorial representations. This power of symbolising is retained even by adults to some extent. If, for instance, I am told an okapi has been brought to England, I may not have the slightest idea what an okapi is, but I make a sort of mental hieroglyphic of it, ready at some subsequent date, when I come across the picture of the actual animal, to replace my symbol by the real picture. What the child does, in fact, in relation to its imperfectly apprehended ideas of things is what Mary did when she treasured in her heart, in the hope of having an explanation later, the mysterious events that at the time were too high for her. Through our desire to get knowledge as speedily as possible aboard our children, we compel them to substitute for this system of mental picturing that of unintelligent memorising. The child himself speedily adopts this mechanical method of patter as the line of least resistance and we destroy his imagination in the end.

The period of story-telling roughly falls into three stages. In the first the child is encouraged to repeat, with or without variation, some simple tale or episode we have told him. In the second, which develops out of the first, he may be led on largely to invent for himself. In the third stage, which is in its turn an extension of the second, one child may be asked to begin a story, and a second and yet a third to continue or complete it. Incidentally such a procedure often gives us a real insight into the likes and dislikes and the peculiar idiosyncrasies of the children themselves. I remember a tale of three children, not the biblical tale, in which one of the narrators, who possessed a really remarkable faculty for getting out of scrapes, transformed the commonplace hero into a veritable Arsène Lupin. Of course, story-telling includes descriptions of the child's own experiences, a party, a day's outing, or anything else which has interested him.

But one must cease to play the *école buissonnière* in the nursery and come to the school proper, though probably enough has been said to indicate that the nursery itself should act as a sort of *Vorschule* to the school. In the latter written composition of a kind will begin. Letter-writing may well supply one of the forms of transition from the spoken to the written word. But it cannot be too strongly emphasised once for all, that written and oral work are but twin branches of one and the same art—that of self-expression, and to keep them completely apart is about as sensible as to try to isolate the spoken from the written work in modern languages. Moreover, after all, English is a modern language, though the

teaching of it in the past, when based on classical methods, has succeeded in disguising the fact from a good many of the pupils of an older day.

The sense of form and structure should be cultivated quite early, even if our teaching in this respect be informal and incidental. We must, in fact, seek to develop a feeling for *chronological* and for *logical* order, *i.e.*, time order and thought order. This is easy to do if we avoid such comparatively "crack-jaw" expressions with small pupils and use terms within their ken. Thus, suppose a boy begins his description of a day's pleasure by recounting what he had for supper and ending up with the bill of fare for lunch. Such mental indigestion can be cured once for all by quoting to him the well-known rhyme in the "Hunting of the Snark"—

They had breakfast at afternoon tea,
And dined on the following day,

and telling him to look out for snarks.

A propos of meals it is curious to note that in small boys' essays of (say) from nine to fourteen the description of the meals and the food eaten often occupy a Gargantuan proportion of the essay. With the girls, on the other hand, there may be a distant allusion to the thin bread and butter at afternoon tea, but the rest of the essay is usually devoted to more æsthetic and æthieral topics.

To cultivate a sense of logical order in the pupil, it is no bad practice to read the pupil's composition aloud, or get him to read it, and to ask him and his fellows to look out for instances of the cart before the horse. In fact, the more you can make a game or adventure of each lesson, the more seriously will the pupils take to it. Perhaps it was precisely the opposite motive that inclined the Romans to christen their school a "*ludus*," though standing up to Orbilius must have been saddening work. Personally, one feels that the correction of the class by the class is going to be a much more prominent feature in our teaching than in the past. Not only does such a practice save the teacher, but a sort of co-operative spirit is engendered among the pupils themselves. The great advantage is that the possibility of being commandeered to correct compels universal attention, and thus that congregational attitude of repose which indicates a very low pressure of attention is effectually dispelled. One further great advantage is that a genuine communal "team" interest is created. The whole art of the teacher lies in the distribution of the *corrigenda*, giving the easy mistakes to the duller pupils to correct, and the more difficult to the cleverer ones. Even the duffers can be compelled to attend by being

called on to repeat the question if they are unable to furnish an answer, and if they get into the habit of listening for the question they are more likely to listen for the answers.

This feeling for chronological and logical order should finally be crystallised into the practice of drawing up regular *plans* or *skeletons* alike for oral as for written work. Not only French, but English experience shows this is feasible.

The inability of English children to express themselves orally is not infrequently due to the inability of the teacher. A river cannot rise above its source.

My own case is a striking instance of how an English pupil can go through a public school and a university, winning a certain number of prizes for essay-writing, yet totally ignorant of the *architectonics* of composition. At school we never composed. We spent our time in translating Greek and Latin into passable English, or English into something that passed for Greek and Latin! There was an endless analysis and criticism of details, but we were never taught to see things in wholes—only holes in things! Whereas a work of art is a whole, self-consistent, and duly proportioned. Again, we wrote on what I would call the inspiration theory, with no predigested plan, but one spawned until one ran dry. No wonder our essays were usually members of the Invertebrate and even the Mollusc family. Post-impressionism in painting may be a novelty in this country, but until recently it has been pretty freely practised in English schools as far as essay-writing goes.

It is a commonplace that composition, whether oral or written, must deal with the pupil's actual experience or what he has read. But this again implies the necessity of extensive reading, extensive and cursory, if you will, as against careful and intensive, and above all, of reading by the pupil for his *pleasure*, in school as well as out. Not a little has been done in this way in London schools. A suggested list of books is kept for each class and a register of those which are read under the heading, not of books, but of pupils, for in this way a record is kept of those who might otherwise escape. In one school I visited by chance I came before a class in no way composed of unexceptionable boys engaged on story-telling. Some seven or eight members of the class were called upon to relate any episode that had struck them particularly in one of the books they had read during the term. All chose a different episode, and I was greatly struck by their extraordinary grip of the story, their extensive vocabulary, and their command of sentence-making. The "and so"

or "annular" style was conspicuous by its absence; and lastly, their observance of time-sequence and logical order was particularly good. Yet some of the boys were of foreign extraction, and there were others to whom literary English was almost a foreign language.

One improvement seemed possible. In order to increase the co-operative element such a lesson might be turned into a criticism lesson, or rather a *praise and criticism* lesson combined, *i.e.*, each boy should be encouraged to note down during the relation of the story his opinion of it as a whole, whether it was well told, whether the time-order was satisfactory, whether there were faults of grammar, of expression, and possibly of pronunciation. The chief point is that praise should go hand in hand with criticism. The lesson should be one not merely in criticism, but in *appreciation*, a stirring up not merely of their reason, but of their emotions. English criticism today has grown far too meticulous and devotes itself entirely to the quest of missing commas and misprints. It is well to remember that even the weakest composition may have something creditable about it, and on the principle that carrots are more effective than cart-whips, you will find even the biggest duffer will try if encouraged.

Again, it is well to suggest the law rather than lay it down. The aim and object is to get a tradition of literary taste into your class, as far as possible of their own making. For this will best ensure its permanency. The thing is no more difficult than to get a tradition of honour or of cricket-playing into a school. One well remembers a school very good at cricket which once could not afford a professional for a year or two. During those two years the seniors coached the juniors and the school cricket certainly did not deteriorate. It had become a tradition.

This training of the critical and appreciative spirit is done on a large scale in France. The two books of M. Bezard on the subject, published by Vuibert, should be the *vade mecum* of every English teacher. In two bulky volumes of 520 and 760 pages he describes *in extenso* a year's work with boys of 15-16 and 16-17 respectively. He gives us the subject selected for composition, taken as often as not from the literature period studied by the class. He summarises the talk over it with the class and their suggestions. He indicates the books to be read or consulted, gives specimen fair copies and the class criticisms on them. Among other things he shows what an excellent oral test is furnished by the analyses made in class of passages taken from standard authors. These analyses deal with the effects

(logical or æsthetic) attempted by the authors, of the means they adopted to obtain them, of the thought-content, or the thought links or transitions. Much is naturally made of independent reading. The class, when discussing such topics, really act as a seminar engaged on a piece of simple research, not of the dry-as-dust, fact-grubbing German type, but following out a training in reasoning and æsthetics. In all cases, whether the composition be written or oral, adequate preparation beforehand is insisted on. This practice is followed in several of our London schools, where a subject is given out a week before for the pupils to think it over and let it ripen in their minds.

Yet another point noted by M. Bezar is the practice of getting pupils to *résumé* what they read. This is one which should be practised from the bottom to the top of every school. Even with the smallest children one can read a poem on a cat and ask for the title. Then one can pass to others, where titles are less obvious; but all approximate guesses to the title should be commended. Again, the pupils should be called upon to summarise verses or paragraphs, and thus be taught to think in headlines.

This is the chief merit of the French *lecture expliquée*. The pupil is trained to *résumé* the thought-content of an author, a much superior practice to paraphrase, which generally results in the transformation of artistic into shoddy English. At its best it is merely synonym-hunting; at its worst it is a dull, mechanical, word for word form of translation, where the substitution of word for word takes the place of what ought to be the substitution of thought for thought. It therefore too often results in the negation of everything artistic, and is perhaps best represented by the parody of "Twinkle, twinkle little star" as "Coruscate, oh coruscate, minute constellation in the Emyrean." It is probably the most successful device for killing any sense of style in the pupil. Only a race of Philistine grammarians, totally devoid of any artistic sense, could have devised it.

This practice of making a *résumé* of the thought-content is successfully carried out in some of our schools. I recently, in a class of girls of sixteen and over, heard a running analysis, prepared at home, of the "Laodamia" of Wordsworth. It was astonishingly well done and brought out the main points and arguments. It showed that, given the right teachers, our so-called tongue-tied pupils could, even in oral composition, produce results that in critical appreciation and in the art of expression compared not unfavourably with the work of French pupils.

THE CO-OPERATION OF SCHOOL-MASTERS AND ARCHITECTS IN THE DESIGN OF SCHOOL-BUILDINGS.

DURING the last ten or fifteen years education authorities in England have been most zealous in the erection of secondary schools. All over the country, but more conspicuously in some counties than in others, schools have been planted in the centre of districts more or less symmetrically arranged according to population. And there the schools stand, a new architectural feature in the landscape, warranted to cost between £10,000 and £40,000. No master or mistress who has had the privilege of working in one of these schools, after experiencing the obvious shortcomings of older foundations, particularly as regards light, ventilation, and cubic content, would wish to be churlish in praise of the marked advance in educational enthusiasm that these buildings represent. And yet this forward movement in the erection of school premises, accompanied, unhappily, by only the tardiest advance in any genuine recognition of the importance of the teaching profession and the necessity for the thorough training of every teacher, suggests a somewhat mechanical conception of education. As though the boys and girls who enter the gates of sufficiently elaborate school buildings must perforce issue thence a few years later fully equipped for England's need! Let us hope that this English love of the tangible may soon blossom into a recognition that education is more a matter of the spirit, and that the complete efficiency of the teaching profession may then become the *first* charge on the thought and resources of education authorities.

The subject of this article, however, is restricted to the severely practical inquiry whether in the erection of new schools education authorities take the necessary precautions to secure the fullest possible value for the lavish expenditure they usually incur. Let us forget, as possibly authorities and architects often do, that education is a matter of the spirit, and think only of school buildings in terms of accommodation and equipment for the necessary activities of a secondary school. And how great an advantage it is to have both accommodation and equipment suited to the multifarious needs of school life, no reader of THE SCHOOL WORLD will be disposed to question. But this brings us to the point at issue: whether masters and mistresses find the new schools, in which their lot is cast, as well suited to the general and special purposes for which they were designed as might reasonably be expected. Or does it often happen that

mistakes have been made which might have been avoided had greater care been taken by education authorities to secure the opinion of practical teachers *before it was too late?* An inquiry such as this keeps us along the sober levels of business common-sense. Assume, for example, that a secondary school has been built at a capital charge of £20,000. In all probability the majority of the ratepayers for whose benefit it is erected will deny the utility of such expenditure, and decry its extravagance; a minority who "believe in education" (and hope, in some cases, to send one or more children to the school) will be loud in praise of the new premises, being greatly impressed by the number and variety of the rooms and the completeness of their equipment. But there still remains the opinion of educational experts, who are alone competent to give a well-considered judgment. The school is intended to meet the educational requirements of a locality for at least two or three generations; it will probably be sixty years before the debt incurred on the building is repaid. Is the school *now* as good as the educational experience and knowledge of *to-day* can make it? and, further, as there is no such thing as finality in either educational theories or schemes, is the building designed so as readily to submit to expansion or alteration (should future needs require it) without scrapping the present structure? The present inquiry will be limited to the suitability of the school for *present* needs.

At the outset it may savour of impertinence to suggest that any recently built secondary school could be other than perfect, when we call to mind the rigour of the initial stages in the process of erection. An education authority (with the consent of the Board) decides to build a school; a site is secured, and plans are prepared. In some cases competitive plans are obtained; in others—perhaps less wisely—the authority's architect alone is ordered to submit plans and prepare estimates. The sanction of various authorities to the scheme presented must first be obtained, then the approval of the Board, and finally, if only for the purpose of raising a loan, the sanction of the L.G.B. Surely what further remains to be done except to appoint an efficient clerk of works! Nevertheless, experience has repeatedly shown that school-buildings might have been improved, and even money saved, if only the judgment of competent schoolmasters had been obtained and had then been followed.

Let us see in what ways a schoolmaster may hope to be useful in the erection of a secondary school. There are three main points that need consideration in any school: first, the

land on which the school is built; second, the building itself; third, the equipment. We will take each of these points in order.

LAND.—Usually education authorities have to pay a high price for any land they acquire; hence the utmost possible use should be made of the *whole* of it. Waste space on land should be deprecated as strongly as waste space in a building. It follows, therefore, that land acquired for school purposes should be plotted, and its levels arranged, not only with regard to the erection of school buildings, but also with reference to the maximum school advantage to be derived from the land that is left. School buildings may be unnecessarily big, if an architect's predilection for the grandiose or for some arbitrary symmetry of design gets the better of him. And too large a building is doubly expensive; first, by reason of its extra bricks and mortar; second, because of the diminished possibilities of the adjacent ground. Ideally, provision is needed for a football (or hockey) field, a cricket pitch, tennis and fives courts, and school gardens, as well as for a school yard with necessary outbuildings. The more of these requirements that can be provided on land adjoining the school the better for all school activities, and the greater is the annual return on the cost of the land.

Hence in the best interests of the life of the school, and as a business precaution, I would urge that the schoolmaster should be consulted *before the preliminaries are settled* with regard to the exact site of the school buildings, and the use to which the remainder of the ground may be put. It might make just all the difference as to the size of a playing field; in some cases it might be possible to consider boundary walls in relation to fives courts, or tennis courts in spar might be arranged at a trifling additional cost when the playground is being asphalted. Considerations such as these are more likely to occur to a headmaster keen on school games than to an architect preoccupied with the general elevation and appearance of the school premises.

BUILDINGS.—The Board of Education has issued regulations with regard to the building of secondary schools, which education authorities are required to observe. Within these limits, it need scarcely be said, there is ample room for the display of individual preferences on the part of authorities and architects, both with regard to the general style of the building and the consequent arrangement of assembly hall, classrooms, and laboratories. Architects, however, are more alive to purely "architectural" considerations than to the precise

fitness of each room for its particular purpose. And naturally so. Architects deal from their youth up with materials and quantities, plans and elevations and sections, with specifications and the structural requirements of all kinds of buildings; their training is necessarily unconcerned with the practical details of a schoolmaster's profession. Hence, just as a lawyer is needed for the niceties of the law, so for the interpretation of the Board's regulations a schoolmaster's help should not be deemed superfluous. His experience should be invaluable in ensuring a more sympathetic adaptation of an architect's plans to the practical everyday requirements of school life. It follows, therefore, that the well-considered judgment of one or more schoolmasters should be regarded as an *essential* element in the *preliminary* criticism to which school plans are subjected. I do not mean a schoolmaster's general impression given after a cursory glance at the plans when a final decision has already been reached; but a deliberate judgment, rendered possible by careful and detailed examination of the plans, and given with a sense of responsibility, because the opinions expressed will be carefully considered by the education authority *before* matters are finally settled. And surely, such a procedure is reasonable if it secures a better value for an outlay of £20,000.

The above are general considerations. The following examples will serve to illustrate some of the points on which schoolmasters might with advantage be consulted, and not one of the instances is given at random. The *position* of laboratories, workshops, common rooms, kitchen, and dining-room; the *size* of laboratories, art rooms, and workshops; the provision of *storerooms*, including their number, size, and position; the problem of a gymnasium and adjoining changing room; the uniformity or otherwise in the size of classrooms; special arrangements for lantern work in both assembly hall and classrooms; the provision of dark blinds; the disposition of blackboard surfaces. Mistakes (which are difficult or impossible to rectify) are often made in one or other of the points enumerated. For example, in a school in a large town the physics laboratory may be (quite unnecessarily) on the side of the school close to a railway, so that balance work is almost impossible; in another school the kitchen may be so situated that the smell of cooking pervades a large part of the school every morning; a similar criticism may often be applied to the odours from chemical laboratories.

Moreover, the dimensions of special rooms require careful consideration. Unless an architect is familiar with the details of furni-

ture and equipment and with the kind of work to be done, it is extremely difficult for him to assess the requisite size of a laboratory or workshop. Three instances, from three different schools, may be given of mistakes of this kind: first, of a wood-workshop so small that there is scarcely elbow-room between the benches; second, of an art room so narrow that model drawing can only be managed with difficulty—a difficulty none the less irksome because it recurs with every junior form; third, of a physics laboratory so big that laboratory tables of unusually large size were put in presumably to fill the floor space. In the last case, one can readily imagine the joy with which a physics master would have planned an elementary laboratory, and then from the surplus space would have designed a separate room for optical, electrical, or other work, as well as for store purposes.

As for storerooms and cupboard accommodation, it is seldom one comes across a school with enough of either. The instances given might be indefinitely multiplied from the experience of other schoolmasters. They witness, however, to the fact that in the building of secondary schools, carefully designed though they are for the most part, there is room for the criticism and help of schoolmasters, who have to work in the schools and have often also to harmonise, in the interests of discipline and efficiency, many inconvenient structural details.

EQUIPMENT.—School furniture and equipment mark the last stage in the mechanical preliminaries of school education, and in some cases their character depends upon the methods of instruction employed. Schoolmasters, therefore, are closely concerned with the suitability or otherwise of the equipment provided, and they should be given considerable opportunities of choice. Equipment is not primarily a matter for architects, nor is it wise to leave the arrangement of laboratories to the firms to whom furnishing contracts are given. As regards laboratories, the suggestions of specialist teachers should be obtained in time for the necessary arrangements to be made for the provision of light and heat, for ventilation and drainage, as well as for the disposition of special benches and appliances. In fact, the plans and specifications of the furniture and equipment of every room in a new school ought to pass through the hands of the headmaster, either for his own personal consideration or for the criticism of masters in whose experience he has confidence. No headmaster is a specialist in every branch of instruction, but every headmaster is within easy reach of expert opinion on all matters pertaining to school life: the opinion of men who are

sympathetic towards a master's point of view and cognisant of a master's requirements.

But headmasters can only act in the way suggested if they have been appointed before the school premises are built. And it is an interesting question whether head teachers would prefer to enter immediately into a new and completed building or would rather submit to the inconvenience of temporary premises in order to have some share in the arrangement and equipment of the new school. In some of the most conveniently arranged and well equipped secondary schools known to the writer the buildings were not completed until at least twelve months after the schools had been opened in temporary premises. In each case several important changes in detail were made in the plans, with the architect's approval, and considerable improvements were effected.

Finally, I would suggest that when a new school is to be built and a headmaster's help is not available, the education authority should obtain the help of a small advisory sub-committee of experienced schoolmasters for the express purpose of criticising the plans submitted by the architect. If the plans are open to serious criticism from a schoolmaster's point of view it will be better to know it before the preliminaries are settled, when the necessary alterations can still be made, rather than after the building has been erected and the mischief has been done.

EXPERIENTIA.

SCIENTIFIC DISCOVERY.

By R. A. GREGORY.

I. INSECT LIFE.

IT is to be regretted that the exigencies of the school time-table do not permit much attention to be given in the science periods to the human aspects of scientific discovery. This neglect is responsible for much misconception as to the nature and meaning of scientific work. It is not every mind that can appreciate the necessity for precision which laboratory exercises are designed to cultivate, or be impressed by the instruments and apparatus of minute measurement. Human endeavour and achievement make a much wider appeal in whatever realm of activity they may be engaged; and to disregard them in the study of science is to deprive the subject of its very life-blood and reduce it to a material and formal task. Wherever purposeful inquiry is carried on in the field of Nature, there the spirit of science is manifest, and we learn that worthy intention defines its shape as much as brilliant achievement. For science is not to be measured by practical service alone, though it may contribute to material

prosperity; it is an intellectual outlook, a standard of truth and a gospel of righteousness. When this is understood, science will not be assigned as a suitable study for few, but as an ennobling influence in the education of all. It is the object of the series of papers here begun to promote this wider interest by providing a few glimpses at the work of great scientific discoverers, which may perhaps be of service in supplementing the usual science lesson.

If there is one branch of science more than another in which the infinite patience of genius is required, it is that of the study of insects—not of insects pinned in boxes or arranged in cabinets, but of the living creatures—with the view of discovering something of their life-history or of understanding a type of mental life on lines different from ours. It is much more exciting to catch insects and to kill them with cyanide or chloroform, so as to convert them into specimens for a collection, than it is to watch their individual characteristics as living things, unravel the complicated thread of changes they undergo, and observe their domestic economy. On this account there are many insect-hunters and collectors, but few who have an intimate acquaintance with the habits of insects in the life. One such open-eyed naturalist was R. A. F. de Réaumur, born at La Rochelle in 1683, and as diligent and accurate an observer as ever lived. Réaumur's "History of Insects" occupies six large volumes, and though issued so long ago as between 1734 and 1742 they are still a rich mine of information upon all aspects of insect-life observable with the naked eye or a simple lens. Referring to his accounts of the change from a caterpillar into a chrysalis, and of the chrysalis into a moth, Prof. Miall says in his "Early Naturalists," to which we are largely indebted:—

These luminous descriptions are now reproduced with cruel abridgment in all popular works which treat of insect-transformations. . . . The only important additions which naturalists have made to Réaumur's account of the transformations of Lepidoptera relate to the internal changes, and these demand a minute acquaintance with insect anatomy."

An accurate observation remains unaltered throughout the ages. Its scientific value is determined by its truth to Nature; and the more complete the testimony, the less room is there for elaboration by investigators in succeeding generations. Whatever precise knowledge exists of natural things and operations has been obtained by patient labour. It is so much easier to accept traditional views upon the structure, habits, and functions of the various forms of life around us than it is to inquire minutely into them by personal ob-

ervation, that mistaken ideas often pass currency for hundreds of years before they are detected. Aristotle in his natural history makes a king-bee the governor of a hive, and this view is reflected in Shakespeare's lines :—

For so work the honey-bees,
Creatures that by a rule in nature teach
The act of order to a peopled kingdom,
They have a king and officers of sorts.

KING HENRY V.

It was a country parson, Charles Butler, who in the early years of the seventeenth century took the trouble to study bees themselves instead of reading books about them; and he found that the queen-bee was the dominant factor in the hive community. Milton possibly knew of Butler's work when he wrote in "Paradise Lost," published half a century later, of "The female bee, that feeds her husband drone deliciously, and builds her waxen cells with honey stored."

J. J. Swammerdam, son of an apothecary at Amsterdam, carried the investigation of the hive-bee much further than any naturalist before him, though he did not exhaust it. He proved definitely that the so-called "king of the bees" was really a queen, and the only effective female in a hive. The chief part of his work was done in 1673 when the dykes were cut to save Amsterdam from the French invasion, so that the hives in Holland were ruined, and scarcely any queens could be procured. Swammerdam spent many months upon the investigation of bees, and took scrupulous pains in examining their structure and habits. His "Biblia Natura," in which the hive bee is described, is referred to by Prof. L. C. Miall in the following words :—

The life-history, the anatomy of the male, female and neuter bees in every stage, and the whole economy of the hive, are carefully described. . . . The engraved figures would do credit to the most skilful anatomists of any age. This, the first extensive and truly scientific memoir on the hive and its inhabitants, carries the exploration a long way at a single bound, and biology can hardly produce a second example of a research so comprehensive and disfigured by so few faults.

Réaumur (1683-1757) extended the knowledge of the honey-bee still further by studies of the living insect in observation hives; Schirach in 1771 proved that worker-bees are imperfect females, and the history of the wedding-flight was first correctly described by Huber in 1814. Finally, Dzierzon, in the middle of the nineteenth century, showed that the eggs laid by unwedded queens give birth to drones; that the fertilisation of the queen takes place within a few days of her quitting her cell, and lasts for life; and that female bees

(queens and workers) proceed only from eggs fertilised by drones. Queens and workers are respectively produced from female bees by being fed on different foods while in their larval state. The future queen is fed on "chyle food" by the nurses until it assumes the chrysalis change, from which it emerges a perfect female. The future worker is weaned upon the fourth day, and fed henceforth on honey and digested pollen, with the result that it remains an undeveloped female.

This wonderful history of the hive-bee represents the results of work done by naturalists of many countries and at different times. There have been thousands of practical beekeepers from ancient to modern times, but they have contributed almost nothing to this knowledge of the structure and functions of the complicated social community of a hive; and for the actual fact we have to go to Butler, Bonnet, Swammerdam, Réaumur, Huber, Dzierzon, and other inquiring naturalists whose names are unfamiliar, not only to general readers, but also to a large part of the scientific world.

Three hundred years ago little was known of the transformations which insects undergo from the egg to the fly emerging from the larval skin. Harvey, the discoverer of the circulation of the blood, was so far mistaken as to teach that insects were generated by chance, and that the change from a pupa to the winged form was a transmutation like that of a base metal into gold or the flying nymph of Ovid into a laurel tree. He regarded the pupa as an egg; and even now the pupæ of ants are popularly called ants' "eggs." Swammerdam (1666) persistently pointed out the errors of this belief, and by his studies disposed of it completely. He proved that all the parts of an insect are beneath the larval skin long before the insect emerges; that, in fact, the larva or pupa is not transmuted into a butterfly, but is the butterfly itself in another form.

By his laborious studies in the latter half of the seventeenth century, Swammerdam worked out the complete transformation of insects, and recognised the chief types of development. For his facts he went direct to Nature, and he was rarely deceived by her. Upon most of the subjects studied by him, philosophers and the schoolmen had been content to pass on fantastic ideas without inquiry into their veracity. Aristotle, Vergil, Pliny, and other early writers all agreed that certain bees, which may sometimes be seen carrying small stones as they fly, do so to prevent being blown out of their course in windy weather. The conclusion was childish, but it was sufficient for writers who had not watched the habits of this insect, the mason-bee. When actual observation was

made by Swammerdam, nearly two thousand years later, he found that the stones were used by the bee to strengthen its hive.

Aphids, or plant-lice, are familiar to every gardener, yet how few know anything of their life-history or of the patient work of investigators who revealed it. When towards the end of the seventeenth century the ever-curious naturalist, Antony van Leeuwenhoek, began to study the insects, he sought for their eggs, but found none. Later, he made the surprising discovery that aphids brought forth their young alive, and upon opening an aphid only a fortnight old he found no fewer than sixty young ones in it. Réaumur extended Leeuwenhoek's observations, and showed that both the winged and wingless aphids could produce living young. He tried to isolate aphids from birth to see if they would still continue to increase their kind, but was prevented by accidents from concluding his observations. When, therefore, Charles Bonnet (1720-1793) asked him to suggest a subject of investigation, the unfinished experiment was proposed as one likely to lead to interesting results. Bonnet was only twenty years of age when he undertook this task.

He filled a flower-pot with earth, and plunged it into a phial of water, intended to supply the food-plant. A new-born aphid, whose birth had been observed, was placed on the plant, and all was covered up by a bell-jar, which was pressed into the earth, so as to exclude other insects. An aphid found upon the spindle-tree was selected for the first trial, which began on May 20, 1740. Bonnet kept an exact diary of his observations, which were made hourly or oftener during the day; a good lens was continually employed. The aphid changed its skin four times, and came to maturity on June 1, when the first young one was born. By June 21, the unfertilised female had produced 95 aphids, all born alive.—*Prof. L. C. Miall.*

A similar result was obtained the next year, when two new-born aphids, isolated in the same way, produced respectively ninety and forty-nine young. Five successive generations of aphids were then bred without the participation of a male insect, and the result, which was contrary to all that was then known of reproduction in nature, was received with lively interest, not unmixed with incredulity. The life-history of these insects differs, indeed, from all preconceived ideas. Bonnet's observations established it to be as follows: both winged and wingless aphids produce young alive while food is plentiful, but as the winter approaches this mode of reproduction ceases; small winged males then appear, and the females lay fertilised eggs, from which young aphids emerge in the following spring. Aphids are thus born without the participation of the male

insect during mild weather, and their race is carried on from one year to another by the eggs laid by fertile females near the end of the season.

The discovery of this intricate course of events is far more wonderful than the achievement of any Arsène Lupin or Sherlock Holmes of fiction. There are winged and wingless females both producing live young without any eggs, or the intervention of the male, winged insects which produce no young, and eggs from which young emerge; and the problem was to find the clue which connected these various threads into a skein of evidence. Leeuwenhoek, Réaumur, and Bonnet were the chief detectives in this case, and their work, though unknown to the world at large, claims the admiration of all who will consider it.

The mantle of the French naturalist, Réaumur, fell upon J. H. Fabre, whose long life devoted to patient observation and brilliant description of insect habits came to a close in October last. As a naturalist he sacrificed everything to his work, and gained a knowledge of insect life unequalled by any other observer; as a writer he possessed a style that enabled him to disclose convincingly to others the scenes enacted before his eyes, and commands the admiration of masters of literature. In an age of haste and money-making, when few will devote time to studies which offer little prospect of direct or indirect reward, Fabre quietly continued his observations of Nature's ways with the sole object of becoming intimately acquainted with them. So long as the world shall last his works will be an inspiration to naturalists, and an exemplar of what can be accomplished by the observer, however limited his worldly means may be, who seeks for knowledge in the spirit of humility and truth.

TRAINING CLASSES FOR TEMPORARY WAR SERVICE.

IN the middle of October the Home Office appointed a committee "to consider the conditions of clerical and commercial employment with a view to advising what steps should be taken, by the employment of women or otherwise, to replace men wanted for service in the military forces." The committee issued its first report on November 9th, in which it estimated that the number of men of military age in England and Wales engaged in these occupations is over three hundred thousand. A number of these will not be able to join the forces, but it is not improbable that one-half the total number and possibly more will be available for military service.

"The only classes from whom a supply of substitutes can be drawn are:—

"1. Men above military age, and women, already trained in clerical work and unemployed. These have already been extensively drawn upon as men have left for military service, and the number remaining is now very small.

"2. Lads under military age. These can be and are being utilised to a considerable extent, but there is the serious disadvantage that if they are near the military age their employers are likely to lose them just at the time when they are becoming useful. The available supply of lads of this age is also becoming very short in many districts.

"3. Sailors and soldiers previously employed in these occupations who are invalided out of the Services.

"4. Women without clerical experience and not at present employed."

The majority of the substitutes will of necessity come from the last group, and the committee finds that the view generally expressed by employers is that in all cases some training is desirable, but no elaborate commercial training is possible. The committee, therefore, recommends the local education authorities throughout England and Wales to set on foot a special scheme of training. The education authority is asked:—

"1. To ascertain the present and prospective requirements of employers in the locality, both as to the number of substitutes and the kind of training.

"2. To organise training classes of an emergency character for giving a general groundwork in commercial knowledge and office routine. The needs of any important class of business carried on in the locality will no doubt receive special consideration.

"3. To take steps to attract women of sufficient education to this class of work.

"4. To compile a register of those who pass through the emergency classes with a view to getting them placed in employment."

The committee suggests that the emergency courses should be of two types: a full-time day course of about six hours a day extending over three or four weeks in preparation for general clerical work; and a full-time day course extending over eight or ten weeks for shorthand typists. The object of the former course is to familiarise the student with the technique of clerical work, and to cultivate, as far as time permits, habits of accuracy and order. It should be of a severely practical character. The suggested scheme of work includes arithmetic, bookkeeping, and office routine.

The London County Council at once made arrangements to train for an insurance company a large number of women of good education, and the first classes were held at the Fulham Training College. This first group has already completed its training, and the result of the experiment is most satisfactory; the employers are more than satisfied.

Short courses—half-time day courses—are now being held to prepare women for employment in the offices of approved societies, of insurance companies, and in banks; in similar courses women are being trained for general commercial work. The hours of attendance are from 10 to 1 or 2 to 5 each day, and the fee is in all cases half a guinea. The classes in London are at four centres: in the City, at the City of London College; in the west, at the Fulham Training College; in the south-east, at the Goldsmiths' Institute, New Cross; and at Pitman's.

Other courses are contemplated, for instance, a short specialised course for shipping, a full-time three weeks' course for general commercial work, and a course for shorthand typists.

A certificate will be issued to those who satisfactorily complete the course; it is signed by the education officer and countersigned by the director in charge of the centre.

The scheme, it must be clearly understood, is not an educational experiment; it is a purely temporary expedient for supplying clerical labour where it is most needed. Organisers, teachers, taught, all are actuated by the one motive—patriotism; the whole is a patriotic endeavour to meet a national emergency.

Another interesting scheme of training for women is that now in operation at Harrod's. That enterprising firm has offered to give a six weeks' course of training to a number of women; the number has not been specified, but an indication of it was given in the original announcement by calling attention to the fact that the lecture hall will accommodate 300. The conditions of the offer were such that within two days 1100 applications had been received and the total number reached more than 3000. The students are to receive 7s. 6d. a week and lunch and tea. Each is to be attached to a department and placed under the direction of the senior assistant; she will thus have insight into the practical working of the department; instruction will be given in English, arithmetic, and business routine, and lectures will be given by experts in various branches. The opportunity is unique, combining as it does the advantages of theoretical training with those of the apprenticeship system.

PERSONAL PARAGRAPHS.

DR. GARNETT, the Educational Adviser to the London County Council, retired at the end of the year just closed. To trace his relation with, and influence upon, London education would be to write the history of the introduction and extension of technical education in London, of the changes and development of education—elementary, secondary, technical, and university—in London due to the passing of the Act which made the London County Council the local education authority of the metropolis. The post from which he is retiring is rightly called that of Educational Adviser. Since he has held it he has had no executive function, but has advised the Education Committee on practically every important step taken. His reports have been among the masterpieces presented to the Authority.

* * *

ABOUT few men connected with education are there more stories than about Dr. Garnett; his power of concentration, his independence, his energy, his skill in repartee, his directness, and his consideration have all formed the subject of personal anecdotes which show the hold he has upon, and the appreciation in which he is held by, those who have come in contact with him. Despite his retiring age he is still full of energy, and is seeking work in munitions factory or elsewhere where he can place his engineering skill and knowledge at the disposal of the country; his one fear is that age may be considered a bar even to voluntary work. So passes into retirement, but not into inactivity, a man, a strong man, who has done immense service to the education of London.

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MAJOR JOHN LLEWELYN DAVIES, 11th Essex Regiment, has died in the hospital at Wesel from wounds received near Loos-Hulloch on September 26th. Mr. Davies was born in 1879, and was educated at Alderman Davies' School, Neath, Glamorgan, and the University College of Wales, Aberystwyth. He afterwards became a scholar of Emmanuel College, Cambridge, where he graduated in First Class Natural Science Tripos in 1904, and M.A. in 1908. He was for seven years a lieutenant in the O.T.C. At the outbreak of the war he gave up his appointment at the Perse School, Cambridge, to join the 11th Essex Regiment as Captain, and was gazetted Major in April, 1915. In May last he was appointed headmaster of the Cardiff High School, with permission to commence duty at the close of the war.

CAPTAIN D. R. TOWNSHEND, 11th Royal North Lancashire Regiment, attached to the First Lancashire Fusiliers, died on August 21st of wounds received at Suvla Bay. Capt. Townshend was educated at King's College School, London, and at Worcester College, Oxford. Whilst at Oxford he took the Teacher's Diploma. He then became a master at Seascale Preparatory School, going from there to Leamington College. He was a master at the United Service College, Harpenden, from 1902 until 1905, when he became mathematics master at Rossall School.

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SECOND LIEUTENANT L. A. VIDAL was killed on September 25th, aged twenty-eight. He was educated at Malvern, where he was a scholar, and at Brasenose College, Oxford. In 1909 he went as a master to Radley, where he had just become a tutor at the outbreak of the war. He was a keen football player, having played Rugby for the Harlequins and Association for the Old Malvernians and for the Corinthians. At Oxford he was a member of the O.T.C., and obtained a commission for service with Radley College contingent in 1909. In September, 1914, he was gazetted to a special commission in the Oxford and Bucks Light Infantry. After working for six months at Portsmouth he was drafted over to France and rejoined his own regiment as machine-gun officer. After the big attack in September he was reported "missing," and it has since been learnt that he was killed by a shell while pushing forward with his section in the early morning on September 25th.

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MR. R. H. OWEN, Fellow, Tutor and Dean of Worcester College, Oxford, has been appointed headmaster of Uppingham School. Mr. Owen was educated at Dulwich College and Wadham College, Oxford. For two years he was a master at Clifton College, and in 1912 became a Fellow of Worcester. He was appointed Joint Secretary of the Oxford and Cambridge Schools Examination Board in 1913.

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MR. OWEN is succeeding the Rev. H. W. McKenzie. Mr. McKenzie on leaving Oxford became Chaplain and then Sub-Warden of St. Paul's School, Stony Stratford. He was at Wellington College from 1879 to 1880, and again from 1884 to 1889. He became headmaster of Lancing in 1889, and left to become second master at Durham School. He was promoted to be headmaster of Durham School in 1905.

c

MISS CLARIBEL SPURLING, second mistress at Green's School, Chester, has been appointed headmistress of Birkenhead High School, in succession to Miss Johnston, who is retiring. Miss Spurling took Final Honours in the School of Modern History at Oxford. The Birkenhead High School is one of the schools of the Girls' Public Day School Trust.

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MR. C. F. REA has resigned the headmastership of King Edward VI. School, Totnes, after twenty years' service. Mr. Rea was educated at Owens College, Manchester, and King's College, London.

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MR. F. G. HANKS, second and housemaster of King Edward VI. School, Totnes, has been appointed headmaster in succession to Mr. C. F. Rea. Mr. Hanks was educated at Cheltenham Grammar School. He became a master at Burford Grammar School in 1897. In 1906 and 1907 he was at the Ecole Nationale Professionnelle at Armentières. On his return he went to Huish Grammar School, Taunton, where he remained until he was appointed to Totnes in 1912.

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THE Education Committee of the L.C.C. is now utilising the services of its inspectors as acting headmasters. Mr. Branford is at Strand School during the absence of Mr. Henderson on war service, and Mr. Law is acting as director of the Training Classes for Temporary War Service now being held at Fulham.

ONLOOKER.

NEW REGULATIONS FOR UNIVERSITY LOCAL EXAMINATIONS.

I. UNIVERSITY OF OXFORD.

THE Regulations for the Oxford Local Examinations to be held in the years 1917 and 1918 have now been published. Important changes, designed to meet the suggestions made in the Board of Education Circular, 849, have been introduced. For the benefit of those of our readers who are proposing to make use in their schools of the examinations in 1917 and 1918 conducted by the University of Oxford, and as showing the way in which one of the great universities is proposing to carry out the scheme of Circular 849, if it is eventually adopted by the Board of Education, we here summarise the chief changes introduced.

The subjects of the Senior Examination will be grouped in four divisions, and the conditions for the award of a certificate will be modified. The twenty-four main subjects in which senior candidates may be examined are arranged in four divisions, as follows:—

English Subjects, Languages, Science and Mathematics, and Other Subjects. No candidate may offer more than eight of the main subjects or enter for more than nine papers under English Subjects.

Every candidate for a Senior certificate must pass in English and in at least three of the subjects included in the first three main groups, of which one must be a language and one a subject of Division III. In other words, a certificate can be obtained on four subjects.

New experimental financial arrangements are announced, which are intended to encourage schools to submit syllabuses of their own.

Heads of schools who enter a sufficient number of candidates to make it worth while for the school estimate of the relative merits of the candidates to be of assistance to the University, will be invited to submit the school records of the candidates to the University for consideration in the award of certificates.

It is contemplated that the occasional and informal consultations between representatives of the University and teachers which have taken place in the past shall be supplemented by a system of formal conferences to be held at stated periods.

Order of merit in the Honours and Distinction lists are to be discontinued.

It should be noted, also, that the University fee payable by Senior candidates has been altered; that new, experimental arrangements have been made for the provision of alternative papers on subjects proposed by Heads of schools in substitution for those arranged by the University; and that the quality of the handwriting and of the spelling, and the style of the composition, will be taken into account throughout the examination.

In addition to these changes in the character of the Senior examination, the University of Oxford proposes in 1918 to institute an examination of a higher character, viz., the Higher School Certificate Examination, which will follow very closely in its main principles the scheme contained in Circular 849. The subjects of the examination are arranged in four groups:—I. Classics and Ancient History; II. Modern Studies; III. Mathematics; and IV. Science. There are, besides, thirty subsidiary subjects. To obtain a certificate, a candidate must pass in a group and in at least one subsidiary subject, but two subsidiary subjects are required of candidates who take up the Science group.

SET SUBJECTS FOR 1917.

Preliminary (July and December).

English.—(c) Kingsley, "Water Babies"; (d) Scott, "Talisman"; (e) "A Book of Verse for Boys and Girls," parts ii., iii., compiled by J. C. Smith (Claren-

don Press); (f) "Poems of Action," ed. Collins (Clarendon Press).

History.—(a) Ancient History as treated in "Outlines of Greek and Roman History," by M. A. Hamilton, pp. 1-133 (Clarendon Press); (b) English History, either (A) the Outlines from 55 B.C. to 1399 A.D., or (B) the Outlines from 1399 to 1714, or (C) the Outlines from 1689 to 1837.

Geography.—(iii) The geography of one of the following: (A) England and Wales, (B) India.

Religious Knowledge.—(a) Ezra; (b) St. Luke vi.-end; (c) Acts i.-xv.; (d) the Church Catechism.

Latin.—"Lives from Cornelius Nepos," by J. B. Allen (Clarendon Press).

Greek.—"First Greek Reading Book," by A. Sidgwick (ed. iii.), Ex. 31-69 (Rivingtons).

French.—"Marie-Claire à Villevielle," ed. Philip (Clarendon Press).

German.—Niebuhr, "Heroengeschichten" (Clarendon Press).

Junior (March, July, and December).

English.—(c) Scott, "Marmion," "Old Mortality," and "Legend of Montrose"; (d) either Shakespeare, "Julius Cæsar" and "Richard II.," or Shakespeare, "Henry V.," or Shakespeare, "King John"; (e) Scott, "Fortunes of Nigel," with Weyman, "House of the Wolf"; (f) Southey, "Life of Nelson"; (g) Dickens, "David Copperfield"; (h) Tennyson, "Marriage of Geraint," "Geraint and Enid," "Coming of Arthur," and "Passing of Arthur"; (i) Morris, "The Story of Sigurd the Volsung," ed. W. Turner and H. Scott (Longmans); (j) Stevenson, "Treasure Island," with Swift, "Gulliver's Travels," ed. Gough (Clarendon Press); (k) Napier, Peninsular War, and Walpole's Letters, in Select English Classics, ed. by A. Quiller-Couch (Clarendon Press), with "Poems of Action," ed. Collins (Clarendon Press); (l) "The Call of the Homeland," ed. R. P. Scott and K. Wallas (Blackie).

History.—(a) English History. Either (i) or (ii). (i) Either (A) from 55 B.C. to 1485; or (B) from 1485 to 1714; or (C) from 1689 to 1837. (ii) General Outlines from 1603 to 1901; (b) General History from 410 to 1215; (c) Foreign History. The Outlines of General European History, from 1095 to 1254.

Geography.—(iii) One of (A) Central Europe, (B) Monsoon Region of Asia, (C) the Mississippi Basin.

Religious Knowledge.—(a) Old Testament History, the History of the Kingdoms of Israel and Judah from the Disruption to the Captivity; (b) Ezra, Nehemiah, Haggai; (c) St. Luke; (d) Acts i.-xv.; (e) Prayer Book.

Latin.—Cæsar, De Bello Gallico, IV.; Ovid, Metamorphoses, XI. (Clarendon Press Selection).

Greek.—Xenophon, Anabasis I., i.-vii.; together with Plutarch, Life of Julius Cæsar, ed. du Pontet (Clarendon Press).

French.—Verne, "Le Tour du monde en 80 jours"; Feuillet, "Roman d'un jeune homme pauvre."

German.—Raabe, "Else von der Taune" (Clarendon Press).

Senior (March, July, and December).

English.—(d) Either Hakluyt, "Voyages of Drake and Gilbert" (Clarendon Press), with Scott, "Kenil-

worth," Southey, "Life of Nelson," and "Lyra Historica," parts i., ii. (Clarendon Press), or Shakespeare, "Macbeth," "Richard II.," and "Julius Cæsar," or Shakespeare, "Tempest," "As You Like It," and "Midsummer Night's Dream"; (e) either Chaucer, "Prologue" and "The Tale of the Man of Lawe," or Shakespeare, "Hamlet," with Pope, "Essay on Man," or Shakespeare, "King John," with Milton, "Samson Agonistes," or Wordsworth, Selections, ed. Arnold (Macmillan), with Matthew Arnold, "Sohrab and Rustum," or Browning, "Strafford" and "Saul," or Palgrave's "Golden Treasury," ed. Wheeler (Clarendon Press); (f) either More, "Utopia," or Sheridan, "The Rivals," with Goldsmith, "The Good Natur'd Man," or Scott, "Quentin Durward" and "Marmion," or Gaskell, "Cranford," with Eliot, "Scenes of Clerical Life," or Lamb, "Essays of Elia" (First Series), with Hazlitt and Coleridge in "Select English Classics," ed. A. Quiller-Couch (Clarendon Press), or Eliot, "Romola," or Stevenson, "Kidnapped," with Scott, "Waverley."

History.—(a) Either Greek History, the Outlines from 510 to 323 B.C., or Roman History, the Outlines from 509 to 268 B.C.; (b) English History, either (i) or (ii). (i) Either (A) from 55 B.C. to 1485, or (B) from 1399 to 1714, or (C) from 1603 to 1815, or (D) from 1689 to 1880. (ii) Outlines of English History from the Anglo-Saxon Conquest to 1837. (c) General History, either from 410 to 1215, or from 1503 to 1715. (d) Foreign History, either Outlines of General European History from 1095 to 1254, or Outlines of French History from 1789 to 1910.

Geography.—(iii) One of the following: (A) Europe, (B) Africa, (C) North America (including the West Indies).

Religious Knowledge.—(a) Old Testament History, from the descent of Jacob into Egypt to the death of Saul; (b) Ezra, Nehemiah, Haggai; (c) St. Luke; (d) Acts i.-xv.; (e) Greek Testament, Acts xiii.-end, including the subject-matter; (f) the First Epistle to the Corinthians; (g) Prayer Book (the Church Catechism, full text and explanations, with Morning and Evening Prayer).

Latin.—Virgil, Aeneid III. (289-end), IV.; Cæsar, De Bello Gallico, III., IV.; Cicero, de Senectute.

Greek.—Xenophon, Anabasis, I.; Sophocles, Scenes from Antigone, ed. Laurence (Clarendon Press).

II. UNIVERSITY OF CAMBRIDGE.

THE Local Examinations and Lectures Syndicate of the University of Cambridge has decided to establish two examinations, (a) the Higher School Certificate Examination, (b) the Senior Examination, in place of the existing Senior Examination, which will be discontinued after December, 1916.

THE HIGHER SCHOOL CERTIFICATE EXAMINATION will be held for the first time in July, 1918. The general regulations for this examination will be published later, but it may be stated that it will be designed to test the

work of students whose age is about 18, and who will as a rule have given about two years' study mainly, but not exclusively, to some definite group of subjects.

THE SENIOR EXAMINATION will be held in July and December of each year, beginning in July, 1917. This examination is intended to be a test of general education for pupils in a form of the average age of 16-16½ years before they begin to specialise in any particular branch of study. It is hoped that, for the examination as designed, whole forms may be sent in rather than selected candidates.

The certificates awarded to candidates who are successful in the Senior Examination will be of two kinds. Certificate "A" will be granted only to those who have been in attendance for at least three years at one or more approved schools. To be approved, a school must be inspected by the syndicate, or by the Board of Education, or by some other inspecting body under conditions accepted by the syndicate; and the report of such an inspection must be approved by the syndicate as satisfactory. Candidates for this certificate will be allowed to enter for the examination after they have been at such a school for one year; the certificate will be issued through the principal of the school when the candidate has completed three school years from the time of entering an approved school. The certificate will set forth the result of the examination, and will also contain a statement to the effect that the successful candidate has pursued for three years at an approved school or schools a course of study in specified groups of subjects.

Candidates entering for the examination who do not satisfy the above conditions as to attendance at approved schools will receive, if successful, Certificate "B." This certificate will contain a statement of the result of the examination, but no information as to the general education or school record of the successful candidate.

The subjects in the Senior Examination will be arranged in groups as follows:—

Group I. will contain English subjects: English composition, English literature, history, geography, and religious knowledge. In order to pass in this group, a candidate must satisfy the examiners in English composition and in at least one other subject.

Group II. will contain Latin, Greek, French, German, and any other language accepted by the syndicate as a subject of examination. In order to pass in this group, a candidate must satisfy the examiners in at least one language.

Group III. will consist of mathematical and scientific subjects: (1) geometry and algebra (including arithmetic), (2) trigonometry and

either analytical geometry or calculus, (3) applied mathematics, (4) chemistry (including a practical examination), (5) physics¹ (including a practical examination), (6) experimental science (including a practical examination), (7) botany (including a practical examination), (8) natural history of animals (including a practical examination), (9) physical geography, (10) agricultural science. In order to pass in this group, a candidate must satisfy the examiners in one of the subjects 1-6, or in one of the subjects 7-10 together with arithmetic.

Group IV. will contain such subjects as are not included in Groups I.-III., but are nevertheless recognised by the syndicate as subjects of examination. At present the following subjects are so recognised: book-keeping, mensuration and surveying, shorthand, drawing, and music.

In order to obtain a certificate in the Senior Examination, a candidate must satisfy the examiners in each of the three groups I., II., and III., and in one extra subject taken from these groups, and must also attain a satisfactory standard in the examination as a whole. Marks obtained for subjects in Group IV. will, if a satisfactory standard in them be attained, be counted towards the total necessary for the obtaining of a certificate.

The minimum standard accepted in the individual subjects included in each *group* will be somewhat lower than that at present required in the subjects of the existing Senior Examination. No *subjects*, however, will be specified on the certificate except those in which the candidate attains the "standard of recognition," *i.e.*, a standard at least equal to that at present required for a pass in the existing Senior Examination. It may be expected that universities and other public bodies will recognise, for purposes of exemption from their own examinations, only such certificates gained in the Senior Examination as contain specific mention of the subjects in respect of which the candidate desires exemption.

The certificate will continue to include, as at present, a statement as to those subjects, if any, in which the candidate has attained a standard of special distinction. Candidates who have attained a standard of special distinction will no longer be arranged in orders of merit. The names of candidates reaching a creditable standard in the examination regarded as a whole will be arranged in three Honours classes. Towards this standard only those subjects will be counted in which the

¹ Two of the following four subjects to be taken: (a) Mechanics, (b) Heat (c) Sound and Light, (d) Electricity and Magnetism.

candidate has reached the "standard of recognition."

The university fee for the Senior Examination will be £1 10s.; this fee will cover, in addition to the written examination and practical tests in certain subjects included under Group III., an oral examination in French and German for candidates taking these subjects at home centres, and, for all candidates, the provision of a detailed report containing a statement as to the quality of the candidate's work in each subject of the examination.

The university fee charged for a supplementary examination, in the case of candidates who have already obtained a certificate, will be 15s. provided that not more than six papers in all are taken. Such candidates will not receive a second certificate, but a statement will be issued to them specifying the subjects in which they have attained the "standard of recognition."

SECONDARY EDUCATION IN SCOTLAND.

THE Report by Sir John Struthers on Secondary Education in Scotland for the year 1914-15 has just been issued. As might be expected, it is essentially a war number. The school staffs, the inspectors, the pupils have rallied in large numbers to the colours, and if more have not gone, it is not because of any lukewarmness, but because they have been distracted by the rival claims of Army and school. When regard is had to the dislocation of work caused by these things, to the preoccupation of parents and teachers in the tremendous conflict in which the nation is engaged, and the corresponding unrest and suppressed excitement of the pupils, the results of the year's work are truly amazing. The percentage of passes both for the Intermediate and the Higher Certificate are rather above the normal; while the detailed reports of the examiners testify that there was little or no evidence shown in the written papers of the abnormal conditions of the year. It is hardly possible to hope for similar results this session when the strain upon the whole fabric of school organisation is certain to be much greater, but the small band of teachers who will be compelled to remain at their posts—*rari nantes in gurgile vasto*—may be trusted to maintain the interest and activity of their pupils at the highest level possible in the circumstances.

Sir John Struther's reports, though covering the same ground year by year, have each a distinct individuality. New problems are continually swimming into

our educational ken, and these are discussed in the frankest and most practical manner as they arise, and thus the freshness and interest of each report is maintained. In the present report a good deal of space is devoted to a discussion of the present position and prospects of Latin as a school subject. Unfortunately no statistics of the presentations in the various subjects are furnished in the report, but there is good ground for saying that the study of Latin is declining at an alarming rate. Sir John Struthers suggests that in every large school there should be two parallel courses, one with Latin as the main language and the other with French. He considers that it is impossible to carry on the study of two foreign languages up to Intermediate level save by neglecting other essential branches. Experienced teachers will not be prepared to accept this view. The best pupils can easily carry two foreign languages, and the only hope for Latin is that they be allowed to do so.

Much surprise has been expressed at one sentence in the report: "We have no reason to believe that the custom of putting forward only selected pupils for Intermediate and Leaving Certificates prevails to any appreciable extent." It has all along been understood that schools selected their pupils, and in past reports teachers have been censured for presenting pupils who were manifestly below the standard required. But further, Sir John Struthers does not seem to be aware of the regulation which states that "all pupils who, in the opinion of the headmaster, are likely to complete the course *satisfactorily* should become candidates." What does this mean if not selection? If adequate statistics were published with the report they would prove the case for selection up to the hilt, as it is probable that not more than 70 per cent. of those who complete the three years' course are presented for examination at the Intermediate Certificate. If selection is to go by the board then it is certain that the standard of examination will have to be materially reduced, and the value of the certificate, built up after long years of effort, will be correspondingly lowered.

The following extracts will give some idea of the interest and value of a report which will well repay perusal in full:—

The circumstances of the year have been so unprecedented, and the minds of all loyal citizens so much preoccupied with the tremendous struggle in which the energies of the nation are now absorbed, that it would not have been surprising to find that movements which in normal times would have been active had perforce been brought to a standstill. It is all the more satisfactory to be able to say that so far

as regards the essentials there has been steady progress. In some districts where the flame of patriotism has always burned brightly it has been customary for the older lads to join the Territorial Force. Consequently August 4th, 1914, saw a sudden and marked depletion in the higher classes of several of our best-known schools. In one case, for instance, as many as thirty-eight, and in another thirty-two, of the pupils were immediately summoned to the colours, where many of their companions have joined them as the call has grown more insistent. If complete statistics as to enlistment were available, they would, I am certain, reflect much credit upon our Scottish schools. As it is, the only figure which I am in a position to give is that of the number of pupils who took the written papers at the leaving certificate examination in March, and immediately thereafter left school to enrol in the armed forces of the Crown. Of these there were no fewer than 124.

And, of course, it is not only pupils who have put their ordinary tasks away and braced themselves to face a sterner ordeal. Some 900 teachers are also on active service, and a large proportion of these have been drawn from our secondary schools. Already we know of several who will return no more—*ob patriam pugnando volnera passi*. In addition, every school has been busy compiling its "roll of honour," containing the names of those of its *alumni* who have responded to the nation's call for service. The length of these lists affords conclusive proof that the educational system of the country does something more than merely provide those who take full advantage of it with the minimum of knowledge necessary to assist them in making a successful career; it also gives—or helps to give—the high courage, the faith, and the patriotism which are of the essence of good citizenship. As your lordships are aware, our own inspectorate has not been behindhand in furnishing its quota of volunteers, while the ranks of those whose duty it is to assist in the details of administration have been very heavily depleted. Such conditions have inevitably imposed a serious strain upon the whole fabric of school organisation.

ENGLISH.

Each year it becomes more and more evident that where the teaching is good the study of English awakens and quickens intellectual and imaginative interest in a way that reacts upon every aspect of the work of the school. An inspector, for instance, who has had a wide experience in examining in French, remarks incidentally that as a rule he has found that the quality of the work in that language varies directly with the quality of the work in English. Of the elements upon which a successful issue depends, not the least important is a right mapping out of the programme of work. As a rule this is adequately realised. The best schools put forward year by year an admirable profession—admirable for its variety, its due proportion of prose and verse, and its attention to the proper gradation and development of English study. Such a profession may be too ambitious. It may even include books which should be left to the adult student. It is, of course, appropriate that where a teacher is himself interested in Browning, selections

from that poet's work should be included in the course; and it is interesting to note that in several cases this has actually happened. But surely "Porphyria's Lover" and "Caliban upon Setebos" are scarcely more suitable for school reading than "King Lear" and "Antony and Cleopatra."

Once more the literary questions have produced the best work in the whole paper. On this the revisers are unanimous. These questions were done well by most of the candidates and with distinction by many. Indeed the composition in this part of the paper was often far superior to that of the formal composition exercises. Of the three alternatives the second was the favourite. All the characters there named were described by one or other of the candidates, with the solitary exception of Miss Bates. Most popular and most successfully treated were Sir Roger de Coverley, Joe March, and Rikki-tikki-tavi. One is pleased to see that Sir Roger has not lost his charm for the young; for it was quite clear that affection for him was no more simulated than for the others. And it was thoroughly in keeping with his own kindly character that he should have been useful in helping some lame dogs over stiles. It is not at all surprising that Miss Austen should not have begun to appeal to girls of the age of lower-grade candidates; but one could have wished to see Dandie Dinmont more often chosen, though it cannot be said that he was altogether neglected. Among the options given in the third question, the Trial Scene from the "Merchant of Venice" had obvious attractions, but not a few of the novelists were also laid under contribution—Dickens, Dumas, Stevenson, and, above all, Scott.

LATIN.

The disturbance of teaching caused by the war was naturally most marked in the higher Latin paper, and I do not therefore think that any good purpose would be served by criticising the work in detail as if it were in any sense typical. Some of the mistakes to which the revisers direct attention almost pass belief. But the reason of this is plain, and does not justify us in believing that Latin scholarship is decaying in our schools. The papers, however, do suggest that it does not reach the standard of twenty years ago, and it may be worth while to consider why this is so.

In the main, I believe that the unsatisfactory standard of the higher Latin paper is due to the fact that a large number of pupils take the subject who would be much better employed in some other way. It is obvious that a knowledge of Latin up to the standard of the lower grade is useful for perhaps the great majority, but I am inclined to think that higher-grade Latin is not really suitable for pupils whose main studies are modern. It is very doubtful whether good results can really be attained by pupils who are wholly ignorant of Greek. And it is certain that the study of French as a chief language subject is directly injurious to the study of Latin. The deceptive similarity of the two languages leads to an incongruous mixture of both. I note in this year's papers the occurrence of *car* for *nam* (a constant error), *souvent* for *saepe*, *semblabit* for *videbitur*, and *deveniret* for *fieret*. In the translation paper again *sol* was

often rendered by "soil" or "earth." In fact, a jargon resembling that of the Strassburg Oaths was quite common. It need scarcely be said that this sort of thing possesses no educational value of any kind, and that, on the contrary, it is educationally injurious. There can be no doubt that, if all the papers of this sort were weeded out, the pessimistic feeling which a general view of the work is apt to produce in the minds of some revisers would be in great measure abated. It would be an excellent thing if teachers and others would reflect carefully, before they embark their pupils on the study of higher-grade Latin, whether it is likely to be helpful to them or the reverse. It would also be useful if statistics could be prepared which would enable us to compare the performances of those who take higher Latin with French, and those who take higher Latin with Greek. I do not make this suggestion from any hostility to the study of modern languages. On the contrary, I should be surprised if it were not found that the combination of higher Latin and French is as injurious to French as it certainly is to Latin.

FRENCH.

In some schools oral answering is ridiculously low and obscure in all subjects. The defence occasionally put forward by teachers—that they are always telling the pupils to speak out, but cannot get them to do so—is simply an admission that the general standard they set is not sufficiently high. There are, of course, many schools where this piece of bad manners, for it comes to that, does not exist, and where the teachers realise to the full that such apparent trifles may exercise a considerable influence on the future comfort and success in life of their pupils. I have also noticed that this obscurity of speech sometimes goes hand in hand with an excessive concentration on early or even premature success in written examinations. From every point of view, and not only for the sake of French pronunciation, the evil deserves to be pilloried. I wish, indeed, that we could devise some positive means of penalising schools which sin in this respect.

Again, the necessity of good oral work, not only for conversational purposes, but as an integral part of grammar drill, has not yet been fully realised. The appeal to the eye, according to the practice of too many teachers, is still more important than the appeal to the ear. The teaching of language, in other words, is a constant suppression of the vocal and auditory organs which were the primary and remain the most important instruments in the communication of thought in ordinary human intercourse. The fallacy is an old one, and has vitiated much of our philology and of our whole study of language. To return to the school, however, a written exercise can scarcely be said to be completed until it is known orally, whereas, in fact, as soon as the exercise is "gone over," it is too often regarded as done with. Try the pupils on the sentences orally, and the result is disastrous; they have been written down laboriously with the aid of grammar, vocabulary, and dictionary, the mind has held the words for a second on their way from their source to their destination and last resting-

place, but not long enough to make them a possession for all time, or even for ten minutes. *Non multa sed multum*. The old-fashioned practice of getting a fair copy of the Latin "prose," of learning it by heart for the next day, and of facing an examination on fair copies every month methodically, deserves to be revived.

Lastly, the sounds are frequently not taught methodically but in a haphazard fashion. The pupil makes a blunder, the teacher repeats the correct form; that is all. In many cases the pupil does not even take the trouble to try to imitate the teacher. The result is nil. The child who is reading has probably made no advance; the rest of the class, if it has been listening, has heard the right and the wrong sound once each. It is quite extraordinary to watch the difference between the reading and the grammar lesson; in the reading, apathy; in the grammar, hands up and every sign of interest. It has not been fully realised that it is the business of the teacher to teach, not to preach—to train the class to criticise the pronunciation of *rue* and *cieux* just as mercilessly as the plural of *animal* and *timbre-poste*. When the correct sound has been arrived at, the peccant pupil should be made to say it several times. It does the teacher no good to repeat a sound which it is his or her business to know; it is the class or the individual that needs the practice.

MATHEMATICS.

In mathematics the history of the past session is on the whole a record of steady progress undisturbed by any new development of method. Instruction in the various branches of the subject had followed the lines that have now come to be regarded as normal. To say that they are normal does not, of course, imply that they are in all respects ideal. There must be various directions in which improvement is possible. And it behoves all who are in any way responsible—teachers and inspectors alike—to do what they can to discover ways and means of getting rid of weaknesses. For my own part, after looking carefully through a large number of this year's written papers, including those from some of the most successful of our schools, I have come to the conclusion that the teaching of decimals, and therefore inferentially of the principles on which all our ordinary calculations rest, still leaves much to be desired. In too many cases it is plain, even where a substantial total of marks has been accumulated, that the pupils are merely mechanically applying a formula, the *raison d'être* of which has not been clearly grasped. More thorough and more reiterated study of the principle of decimal notation is apparently greatly wanted. At present many of the pupils simply work blindfold according to some rule which they have learned by heart. The rule so learned is, of course, very soon forgotten when the pupil leaves school, and decimals remain a source of dread and mystery to him for all the rest of his life.

In most schools where the subject is carried to the higher-grade level the pupils who take it up are carefully chosen, and results are usually quite encouraging. But it is not always remembered that the standard is high and that only those pupils who show some real scientific ability should be advised to attempt to attain

it. In the best schools the syllabuses are being kept well up to date. In all work involving measurement, and especially in a mathematical subject like magnetism and electricity, it is a matter of the first importance that the units employed should be quite clearly grasped by the pupils. Failure here was a weak point in some otherwise very good advanced work in experimental science.

THE MOST NOTABLE SCHOOL BOOKS OF 1915.

THE compilation of the following short lists of books published during 1915 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.

Modern Languages.

"First Steps in French." By Walter Rippmann. (Dent.) 2s.

"The Early Teaching of French." By Walter Rippmann. (Dent.) 1s. 6d. net.

"Aventures et Merveilles." By C. V. Calvert. (Heinemann.) 3s. 6d.

A French reader for junior forms.

"A Manual of French Composition." By R. L. Graeme Ritchie and J. M. Moore. (Cambridge University Press.) 7s. 6d. net.

"Einführung in die Syntax." By R. Blümel. (Heidelberg: Winter.) 3s. 6d.

"General Phonetics, for Missionaries and Students of Languages." By G. Noel-Armfield. (Cambridge: Heffer.) 3s. net.

"Mother Tongue and other Tongue: A Study in Bilingual Teaching [in Belgium]." By J. G. Williams. (Bangor: Jarvis and Foster.) 1s.

"An Introduction to the Study of African Languages." By C. Meinhof, translated by A. Werner. (Dent.) 4s. 6d.

Classics.

"Zeus: A Study in Ancient Religion." Vol. i. By A. B. Cook. (Cambridge University Press.) 25s. net.

"The Asiatic Dionysus." By Gladys M. N. Davis. (Bell.) 10s. 6d. net.

"Republican Rome: Her Conquests, Manners, and Institutions from the Earliest Times to the Death of Cæsar." By H. L. Havell. (Harrap.) 7s. 6d. net.

"L. Annaei Senecae Dialogorum Libri X., XI., XII." Edited by J. D. Duff. (Cambridge University Press.) 4s. net.

"Via Romana." By Frank Granger. (Bell.) 1s. 6d. net.

"A Short History of Classical Scholarship, from the Sixth Century B.C. to the Present Day." By Sir J. E. Sandys. (Cambridge University Press.) 7s. 6d. net.

"The Histories of Tacitus." Translated by G. G. Ramsay. (Murray.) 15s. net.

"Titi Livi, Ab Urbe Condita." *Recognoverunt et adnotatione critica instruxerunt R. S. Conway et C. F. Williams.* Tomus i. Libri i.-v. Oxford text. (Clarendon Press.) 3s. 6d. or 4s.

"An Introduction to Greek Reading." By George Robertson. (Cambridge University Press.) 2s. 6d. net.

"Einhard's Life of Charlemagne." The Latin text, with notes by H. W. Garrod and R. B. Mowat. (Clarendon Press.) 2s. 6d. net.

"A Book of Latin Verse." By H. W. Garrod. (Clarendon Press.) 3s. 6d.

"Ovid." (*Tristia, Epistulae ex Ponto, Halientica, Fragmenta.*) Oxford text. (Clarendon Press.) 3s.

"The Scholia on the Aves of Aristophanes, with an Introduction on the Origin, Development, Transmission, and Extant Sources of the Old Greek Commentary on his Writings." By John Williams White. (Ginn.) 14s. 6d.

"Apulei Apologia (sive Pro se de Magia Liber)." With Introduction and Commentary by H. E. Butler and A. S. Owen. (Clarendon Press.) 7s. 6d. net.

English Language: Grammar and Composition.

"A Junior Graphic Grammar." By E. A. A. Varnish and J. H. Hanly. (Cambridge University Press.) 1s. 8d.

Admirably adapted for use with pupils between nine and thirteen.

"Composition for Junior Forms." By G. H. Green. (Black.) 1s. 4d.

For pupils between nine and fourteen; an excellent introduction; has illustrations.

"Exercises in Prose Literature and Composition." By G. Clifford Dent. (Clarendon Press.) 3s. 6d.

Very useful and very suggestive.

"A Matriculation English Course." By B. J. Sparks. (University of London Press; Hodder and Stoughton.) 3s.

Well planned for its special purpose, and well executed.

"On the Writing of English." By G. Townsend Warner. (Blackie.) 3s. 6d. net.

Attractive; specially fitted for private study.

"The Elements of Style." By D. W. Rannie. (Dent.) 4s. 6d. net.

Characterised by sanity of idea and statement; a book for the teacher.

History.

"The Inductive English History." Vol. i. By F. G. Snowball and T. H. Bowtell. (Harrap.) 1s. 6d.

"A Short History of Modern England, 1485-1914." By F. Bradshaw. (Hodder and Stoughton.) 3s.

"A History of England and the British Empire." Vol. iv., 1802-1914. By A. D. Innes. (Rivington.) 6s. net.

"The British Empire." By Sir Charles Lucas. (Macmillan.) 2s. net.

"The People in the Making." By Stanley Leathes. (Heinemann.) 2s. 6d.

"An Introduction to the Economic History of England." Vol. i. By E. Lipson. (Black.) 7s. 6d. net.

"A Social and Industrial History of England." By F. W. Tickner. (Arnold.) 3s. 6d.

"The Tale of the Law." By A. E. McKilliam. (Cassell.) 1s. 4d.

"The Tale of Progress." By A. E. McKilliam. (Cassell.) 1s. 6d.

"The Tale of the Towns." By A. E. McKilliam. (Cassell.) 1s. 3d.

"Picture Books of British History." By S. C. Roberts. Two vols. (Cambridge University Press.) 3s. 6d. net each.

"A Short History of Modern Europe." By James Oliphant. (Dent.) 3s. 6d.

"A Thousand Years of Russian History." By S. E. Howe. (Williams and Norgate.) 7s. 6d. net.

"The Evolution of Prussia." By J. A. R. Marriott and C. G. Robertson. (Oxford University Press.) 5s. net.

"A Short History of Rome." By E. E. Bryant. (Cambridge University Press.) 3s. 6d. net.

Geography.

"The Teaching of Geography." By B. C. Wallis. (Cambridge University Press.) 3s. 6d. net.

This book can be recommended thoroughly to all teachers of geography, for Mr. Wallis has embodied in it the results of actual experience in teaching the subject.

"Economic Geography." By John McFarlane. (Pitman.) 7s. 6d. net.

A regional study of the influence of geographical conditions upon the economic life of man.

"North America." Vol. i., "Canada and Newfoundland." Edited by H. M. Ami. (Stanford's Compendium of Geography and Travel, new issue.) 15s. net.

A comprehensive and valuable reference book, which should be of great assistance to all students and teachers of geography.

"Physical Geography." By P. Lake. (Cambridge University Press.) 7s. 6d. net.

A book for older students.

"North America." (Senior Course.) By H. Pigott and R. J. Finch. (Dent's Historical and Economic Geographies.) 3s.

A work with many valuable sections.

"Cambridge County Geographies." 1s. 6d. each.

"Durham." By W. J. Weston. "Glamorganshire." By J. H. Wade. "Staffordshire." By W. B. Smith.

Useful additions to a valuable series.

"The English Countryside." By E. C. Pulbrook. (Batsford.) 7s. 6d. net.

A delightful and enjoyable book.

"Stories of Exploration and Discovery." By A. B. Archer. (Cambridge University Press.) 2s. 6d. net.

A helpful book, especially for those teachers who teach both history and geography.

"Surveying for Schools and Scouts." By W. A. Richardson. (Philip.) 1s. 6d. net.

A thoroughly practical and useful manual.

"Geography and World Power." By J. Fairgrieve. (University of London Press.) 3s.

"A text-book of matriculation standard illustrating the geographic control of history," which is either a phantasia or a work of profound erudition, according to the point of view of the reader.

Mathematics.

"Arithmetic." By C. Godfrey and E. A. Price. (Cambridge University Press.) 4s.

"Lessons in Geometry." By C. Macleod. (Aberdeen University Press.) 3s. net.

"Plane Geometry." By G. St. L. Carson and D. E. Smith. (Ginn and Co.) Part i., 2s. 6d. Part ii., 2s. 6d.

"Exercises in Laboratory Mathematics." By A. W. Lucy. (Clarendon Press.) 3s. 6d.

"Statics." Part ii. By R. C. Fawdry. (Bell.) 2s.

"Practical Mathematics for Advanced Technical Students." By H. L. Mann. (Longmans, Green and Co.) 7s. 6d. net.

"The Essentials of Descriptive Geometry." By F. G. Higlin. (Chapman and Hall.) 7s. 9d. net.

Chemistry.

"Historical Introduction to Chemistry." By T. M. Lowry. (Macmillan.) 8s. 6d. net.

No teacher of chemistry can afford to be without this excellent introduction.

"A Text-book of Elementary Chemistry." By A. Smith. (Bell.) 5s.

"Modern Chemistry and its Wonders." By G. Martin. (Sampson Low, Marston.) 7s. 6d.

A good prize book.

"The Gases of the Atmosphere." By Sir W. Ramsay. (Macmillan.) 6s.

A new edition of a classical work.

"Quantitative Law of Biological Chemistry." By S. Arrhenius. (Bell.) 6s.

"Molecular Association." By W. E. S. Turner. (Longmans.) 5s.

An excellent volume in Findlay's series of "Physico-Chemical Monographs."

"Practical Organic and Bio-Chemistry." By R. H. A. Plimmer. (Longmans.) 12s. 6d.

"First Aid in the Laboratory and Workshop." By H. Eldridge and H. V. A. Briscoe. (E. Arnold.) 1s.

Invaluable in every laboratory.

"Surface Tension and Surface Energy." By R. S. Willows and E. Hatschek. (Churchill.) 2s. 6d.

Based on lectures delivered at the Cass Technical Institute.

"The Chemist's Year Book." Edited by F. W. Atack. (Manchester: Sherratt and Hughes.) Two vols. 10s. 6d.

Handy pocket-books based on the Chemiker Kalendar.

Physics.

"Notes on Practical Physics for Junior Students." By Prof. C. G. Barkla and Dr. G. A. Carse. (Gurney and Jackson.) 3s. 6d. net.

"X-Rays and Crystal Structure." By Prof. W. H. Bragg and W. L. Bragg. (Bell.) 7s. 6d. net.

"Experimental Harmonic Motion." By Dr. F. G. C. Searle. (Cambridge University Press.) 4s. 6d. net.

"Numerical Examples in Physics." By H. S. Jones. (Bell.) 3s. 6d.

"Molecular Physics." By J. A. Crowther. (Churchill.) 3s. 6d. net.

"Liquid Drops and Globules: Their Formation and Movements." By C. R. Darling. (Spon.) 2s. 6d. net.

"Discoveries and Inventions of the Twentieth Century." By Edward Cressy. (Routledge.) 7s. 6d. net.

Botany and Nature-Study.

"Botany for Senior Students." By D. Thoday. (Cambridge University Press.) 5s. 6d. net.

Intended primarily for Senior Local candidates. Strong on physiology.

"The Study of Plants." By T. W. Woodhead. (Clarendon Press.) 5s. 6d.

Of Senior Local standard. Unusually full and helpful on ecology.

"Elementary Studies in Plant Life." By F. E. Fritsch and E. J. Salisbury. (Bell.) 2s.

Of Junior Local standard. Skilfully arranged in relation to seasons.

"Junior Botany." By F. Cavers. (Clive.) 2s. 6d.

Emphasises physiology. Has a good section on preliminary chemistry and physics.

"Experimental Plant Physiology." By Lucy E. Cox. (Longmans.) 2s. net.

An excellent guide to logical practical work.

"Families of British Flowering Plants." By W. B. Grove. (Manchester University Press; Longmans.) 1s. net.

A useful pocket synopsis based on the system of Engler.

"First Book of School Gardening." By Alexander Logan. (Macmillan.) 1s. 6d.

"The Principles of Agriculture through the School and Home Garden." By C. A. Stebbins. (New York: The Macmillan Co.) 4s. 6d. net.

"A Laboratory Manual of Horticulture." By George W. Hood. (Ginn.) 4s. 6d.

A combined laboratory guide and notebook.

"Cottage Gardening." By George A. Taylor. (Constable.) 2s. net.

For teachers' use.

"Biology." By Gary N. Calkins. (New York: Holt; London: Bell.) 7s. 6d. net.

A discussion from the modern point of view of fundamental principles as exemplified by selected types of animals and plants. Stimulating reading for advanced students.

Hygiene and Domestic Science.

"The Health Series of Physiology and Hygiene." By M. V. O'Shea and J. H. Kellogg. (1) "Health Habits." 2s. (2) "Health and Cleanliness." 3s.

(3) "The Body in Health." 3s. 6d. (4) "Making the Most of Life." 3s. 6d. (New York: The Macmillan Co.)

Attractive readers for pupils in elementary schools.

"Personal Hygiene for Boys." By D. L. Anderson and L. McNicoll. (Cassell.) 1s. 6d.

Suitable for boys up to fourteen years old.

"Keeping in Condition: A Handbook of Training for Older Boys." By Harry H. Moore. (New York: The Macmillan Co.) 3s. 6d. net.

Intended for boys of fourteen to nineteen, with whose special needs it deals frankly and wisely.

"First Book of Physiology and Hygiene." By Gertrude D. Cathcart. (Macmillan.) 1s. 6d.

Simple, attractive, and scientific.

"Domestic Work for Rural Schools." By P. H. Arch. (Pitman.) 2s. 6d. net.

An excellent practical course for older girls.

"Lessons and Experiments in Scientific Hygiene and Temperance." By Helen Coomber. (Macmillan.) 1s. net.

Detailed notes of lessons, for teachers' use.

EXAMINATIONS IN SECONDARY SCHOOLS.¹

THE proposals of the Board of Education, as embodied in Circular No. 849, are in effect as follows:—

(1) To establish in every secondary school recognised for grants two new external examinations of grades suitable for the fifth and sixth forms respectively, to be taken annually in every school and to be conducted by a university, but the standard to be fixed by the Board of Education and to be substantially equivalent throughout the country.

(2) To reserve the right of prohibiting every such secondary school from preparing pupils for other external examinations except with the special permission of the Board of Education.

The proposed change is momentous for two distinct reasons. It seeks for the first time to standardise secondary education throughout the country, and it deprives the schools of the freedom which (except in the case of very young pupils) they have hitherto enjoyed of deciding for what external examinations they may consider desirable to prepare their pupils.

The apparent object of these proposals is to remedy an evil, viz., that the true aims of secondary education are sacrificed or prejudiced by the excessive number of external examinations for which the schools prepare or are expected to prepare their pupils.

The association do not dispute the existence of this evil, but they are of opinion that its extent is often exaggerated. Indeed, they are informed that in many large areas there is no evidence of its existence, and where the evil does exist, there appears to be an effective remedy.

If the Board's scheme is adopted, the question still arises as to the extent to which the number of external examinations taken in the schools will be thereby reduced. In any circumstances, it would be desirable that some assurance should be obtained from the universities and the authorities responsible for the entrance examinations to the professions that the new examinations would be accepted by them in lieu of their preliminary examinations.

The Circular states that the first examination will be conducted on the principle of easy papers and a high standard of marking, and in such a way as to serve the double purpose of a school examination and matriculation. It further states that it will be

¹ Extracts from a memorandum of the Secondary Schools Association on the Board of Education's Circular No. 849.

for the universities to say on what terms they will accept the examination as exempting pupils from the ordinary tests of admission.

This part of the scheme suggests many possibilities. Some of the pupils in the fifth form (the whole of which is expected to be presented for examination at the same time) may be working for the higher standard, others for the lower. The work of those who aim at the higher standard will be controlled by the requirements of the particular university which they desire to enter, and by the subjects which that university prescribes as essential. Thus one university may prescribe Latin as essential for entrance to a particular faculty or to the University itself, while another may prescribe a modern language or a particular science. If the examination is to serve the double purpose which is indicated in the Circular, the secondary school must give its pupils the opportunity of preparing for a variety of alternative subjects and for various grades of efficiency in those subjects, and this is much the same thing as allowing preparation for two or more examinations.

These and other considerations lead to the conclusion that for the first examination there can be no uniform preparation of the form as a whole.

As regards the second examination, the Circular itself proposes a wide choice of subjects involving separate preparation for each. This is the present practice in the sixth form of many secondary schools, and, if the practice continues, there seems to be no reason why the pupils of that form should be restricted to the examination conducted upon the lines of the Circular.

It has been pointed out that the effect of the scheme, if adopted, would be to attach insufficient weight to the views and authority of the bodies by whom a large and increasing number of secondary schools are controlled.

The association have every reason to believe that the local education authorities throughout the country have, as a general rule, worthily carried out their trust, and that to their efforts is largely due the marked progress in secondary education during the last twelve years. One cause of that success has been that these bodies are acquainted not only with local needs, but also with local traditions and sentiments.

The Board of Education are no doubt aware of the difficulty and the undesirability of establishing a new system of examinations affecting secondary schools without the cordial co-operation of those who manage and control those schools. But assuming that the Board's scheme were so altered as to give to the local education authorities an adequate share in shaping and controlling the proposed examinations, there would remain the difficulty underlying any scheme for the establishment of a single standard for all secondary schools, and as the scheme stands, a substantially equivalent standard is to be applied to all grant-aided secondary schools, irrespective of differences of aim, of locality, of the ages and character of the pupils. It follows that any such standard must be a low one, as it would be manifestly inequitable to expect pupils in a young municipal secondary school, who leave at a comparatively early age, to reach a standard which

would be suitable in a long-established school with an organisation that has stood the test of time, and where the pupils continue their education to the age of eighteen or nineteen. But the combination of a low standard with a wide choice would inevitably lead to the choice of easy subjects—"soft options"—and the neglect of more difficult ones. It is feared, therefore, that any common standard would thus lead to a levelling down and not to a levelling up of school work.

Whilst recognising that the Board are entitled to satisfy themselves that the education provided in all State-aided schools is efficient, the association venture to hope that the Board may see their way to make such modifications in their Circular, on the merits of which they have invited criticism, as will give to the new grant-aided schools the same degree of freedom in their choice of examinations as is enjoyed by other older schools.

ITEMS OF INTEREST.

GENERAL.

THE annual meetings of the Association of Assistant-masters in Secondary Schools will be held at Merchant Taylors' School, E.C., on Tuesday and Wednesday, January 4th and 5th, 1916. The council of the association will meet on January 4th and on the morning of January 5th, and the annual general meeting of members will be held on the afternoon of January 5th, at 2.30 p.m.

THE annual general meeting of the Historical Association will be held at University College, Gower Street, London, on January 7th and 8th. After the business meeting on the first day, a paper on "The Teaching of Naval and Military History" will be read by Mr. Julian S. Corbett, and followed by a discussion. On the morning of the second day Sir Charles Lucas, K.C.B., will open a discussion on "The Teaching of Imperial History." Full particulars of the work of the association can be obtained from the secretary, Miss M. B. Curran, 22 Russell Square, London, W.C.

THE war has brought about a national stocktaking. English spelling is among the assets which are being critically considered. The problem of making our present system more efficient is not simple. It will engage the attention of several eminent scholars at the Conference of Educational Societies held at the University of London in the first week of January. On the afternoon of January 4th, at 2.30 p.m., Prof. Gilbert Murray, Sir Frederick Pollock, Dr. R. W. Macan, Prof. Grandgent, and Prof. Walter Rippmann will speak on various aspects of the problem.

THE Royal Society of Arts has added to the list of subjects in which it holds examinations that of English for Belgian refugees and other foreigners. The examinations will be held at the same time as the society's usual examinations in the spring of next year. The papers will be suited for foreigners of Belgian or French nationality, and will include translation from and into English, the writing of a short

essay or letter, and a few suitable questions. The examination will be in two stages—elementary and intermediate. The elementary paper will be quite simple, and intended for people who have only a very moderate knowledge of the language. The intermediate paper will be a little more difficult, and suited for a person who has a moderate knowledge of English. *Viva voce* examinations will also be held.

IN its report to the Senate of the University of London for the year 1914-15, the Appointments Board, which assists graduates to secure appointments, directs attention to the special assistance given in supplying the vacancies caused by men enlisting, by the appointment of women graduates. In many scholastic appointments women graduates are being substituted for men, and other women, who have taken honours or pass degrees in arts or science, and in some cases secretarial training in addition, are willing to take up work in Government offices, banks, insurance offices, municipal offices, railways, etc. Several women graduates of London University have already taken up positions in the head office of one of the important railways, and, so far as can be judged, the experiment of getting a better educated type of woman to take up work of this kind is proving satisfactory. The secretary to the board at the central offices of the university at South Kensington will be glad to assist employers by giving names of suitable women graduates still disengaged.

THE December Cambridge Local Examinations were held at 219 centres in the United Kingdom and the Colonies. There were 15,531 candidates, of whom 189 entered for the Higher, 5,450 for the Senior, 6,406 for the Junior, and 3,486 for the Preliminary Examination. Of the Colonial centres 23 are in India, 6 in Ceylon, 5 in the Straits Settlements and Malay States, 10 in South and West Africa, 13 in the West Indies; there are also centres at Bermuda, Buenos Aires, Belize, Mauritius, and Shanghai.

THE Northern Universities Joint Matriculation Board has recently made its report for the year 1915. The board has examined 2,430 candidates in all during the year. Of these, 881 were candidates for matriculation under ordinary conditions at the July examination, and 308 in September; 437 passed in July, and 126 in September, the percentage of failure being 50.4 and 59 respectively.

THE *Educational Times* will, until further notice, be issued four times a year, instead of monthly. The next issue will be published on February 1st, 1916, and succeeding issues will be made on the 1st of May, August, and November. This economy is accompanied by two other changes: the Mathematical Supplement will become a separate publication, issued monthly to subscribers, and the journal itself will no longer be distributed gratis to those members of the College of Preceptors who hold their membership without the payment of an annual subscription, by virtue of the possession of a diploma of the college and of actual work in schools.

MR. C. E. TOWN, writing of the work of the London Chamber of Commerce, of which he is assistant

secretary, points out that for the time Germany's trade is strangled in the clutch of our naval power; her exports to the United States of America have, according to official figures, decreased almost to a vanishing point, viz., from the respectable total of £11,188,543 down to the meagre value of £406,277. Now is Britain's opportunity. If she resolves to arm herself at all points in the effort to regain, maintain, and extend the commercial supremacy which was hers in the past, the fullest success is likely to crown her endeavours. The importance of productivity has been insisted upon, but the products have to be sold in the world's mart. Therefore we must be excellent salesmen; and for the purpose of selling the most capable men must be employed from bottom to top. Then steps in the indispensable condition that these men must be British; they may not now exist, but they are to be secured by training, specialised training, for the work in hand. We must specialise in education. The foreign waiter is a risky sort of person to have about the house; still more risky is the employment of a man who becomes *au fait* with all the workings of a British mercantile or industrial establishment; he is able to convey exact information as to the terms of British tenders; in future this risk must be avoided.

AMONG the obvious needs of a commercial curriculum are:—Handwriting, good, plain, adaptable to rapid execution; the teaching of arithmetic by quick, modern methods, together with the metric system; the inculcation of good, concise, grammatical composition as applied to commercial correspondence; geography and history; book-keeping by double entry and accountancy; shorthand and typewriting; modern office routine, and a knowledge of the nature, sources, uses, values, etc., of the principal commodities in which we trade; the elements of political economy, enabling an intelligent grasp of the various social and economic problems concerned with and influencing commerce; fire, life, and marine insurance; Stock Exchange business and the foreign exchanges, which so largely govern the carrying on of commerce, banking, and currency; commercial, industrial and company law; and last, but not least, the art and science of advertising, with which salesmanship is intertwined. The importance of modern languages cannot be overrated. Mr. Town quotes the example of India:—"They (the aliens) soon make themselves invaluable, and it is no wonder they are promoted, since their knowledge of foreign language gives them an advantage over their rivals." Mr. Stanley Machin made the same point at the distribution of prizes to the students of the City of London College at the Mansion House on December 10. He pointed out that the success of German trade in Russia and China had been largely, mainly due to the way in which Germans had learnt the language of the country, seeking trade in its language, in its weights, its measures, and its money. We must then teach modern languages, especially Spanish and Russian.

A NEW list, No. 65, published by Messrs. A. Gallenkamp and Co., Ltd., gives an illustrated description of the improved electric laboratory furnaces which this firm is now able to provide. The furnaces are

built on a patented principle, and every part has been designed with a view of being quickly interchangeable. Renewal parts are supplied. Five types of furnace are available, including tube and crucible furnaces. For temperatures up to 1000° C. constant, a winding of special high-resistance alloy is used, which for short periods can be taken up to 1100° C. safely. The tube and muffle furnaces are of special interest to teachers of practical chemistry, who may be recommended to write to 19-21, Sun Street, Finsbury Square, London, E.C., for a copy of the catalogue.

A FURTHER appeal is made by the Board of Education for books of an educational character for the British civilian prisoners of war (of whom there are some 4,000) now interned at Ruhleben in Germany. Under the auspices of a Camp Education Department a school and a science and art union have been organised among the prisoners, and in them are enrolled 1,500 students, with 150 lecturers and teachers. The educational work in the camp is divided into nine sections, and covers languages, art, science—in fact, nearly all the usual subjects of a school or college curriculum. Persons willing to contribute either books or money to this interesting and most deserving effort to help our unfortunate fellow-countrymen in Germany to relieve in a profitable manner the tedium of their confinement, may obtain a circular, giving full information on the subject, by addressing a post-card to Mr. Alfred T. Davies, Board of Education, Whitehall, London, S.W., who is in charge of the arrangements for obtaining and forwarding the books to Ruhleben.

THE Uplands Summer Meeting in August last was described in our issue for October; it was attended by "persons (and especially parents and teachers) interested in educational reform, that is, in the reform of school life and teaching." The Uplands Association, which was constituted at the time of the summer meeting, "is not concerned with the criticism of the public administration of education, or with any form of political or religious agitation." It regards education *sub specie aeternitatis*, so to say. It knows nothing of parties or sects, but is a company of seekers after truth about the child and his possibilities. And the *Uplands Circular*, the second number of which lies before us, is certainly of hopeful augury. Prof. Findlay, who is the leading spirit, points "The Way of Reform in Education"; Prof. Shelley contributes a striking article on "Rhythm in Art and Education," and there are other suggestive papers. It is, however, as we understand, rather by personal interchange of views than by books and papers and lectures that the association means to work. We admire, not without a touch of envy, the enthusiasm which is able to flourish even in the present time of stress and strain. There will be an England after the war, and people who cannot help directly in the prosecution of the war are well occupied in thinking and planning for the future.

THE annual report of the Education Committee of the city of Bradford states that a special sub-committee of teachers, presided over by the director of education,

met on several occasions to compile a selection of poems suitable for the use of children at the present time. The selected poems were printed and the authors and publishers concerned were good enough to forgo their usual fees as the book was for the use of children and not "for sale." An edition of 10,000 cost approximately 2d. per copy (linen) and 1d. per copy (paper). The report contains a list of the selected poems, some of which are "The White Man's Burden," "Admirals All," "A Song of England," "Pro Patria," "Trafalgar Day," and "Song of the Soldiers."

IN the course of an article on "The Morals of the War" (the *Times* Educational Supplement, December) Dr. M. E. Sadler points out that German education makes good use of second-grade ability, and that the war has demonstrated how strong a hold education has over men's minds and souls. Education aims at five things: character or "soberness and understanding, righteousness, and courage," a sense of obligation to humanity, a power of concentration on the immediate task, readiness of memory allied with a skill in finding trustworthy sources of information, and, finally, openness of mind coupled with capacity to grasp new truths rapidly. English education is best with regard to the best type of children; it tends to fail with the child of average ability; it needs a great statesman as a leader who will be capable of guiding the national will so as to obtain better results from the devoted labours of all those whose life work is associated with the education of the youth of the nation.

DR. MONTESSORI'S contribution to the *Times* Educational Supplement for November on "The Imagination in Childhood" has elicited a host of criticisms. The *Educational Times* devotes a leader, "The Overthrown Ninepin," to the subject. Mme. Montessori is accused of a superficial confusion between childish make-believe and imagination. Her confusion has permitted her to set up a tottering ninepin which she easily overthrows. Over-fond parents frequently encourage the childish habit of make-believe beyond the suitable childish age, but educators, kindergarten teachers, and wiser parents cultivate a facility in imagination which is based upon knowledge, observation, and feeling. "The meanest among us lives a poor life if his imagination is dwarfed and stunted." The Rev. W. F. Rawnsley, in the December issue of the *Parents' Review*, states a rather different opinion. The child's imagination is a spontaneous original growth, capable of far wider vistas of beauty than anything a grown-up teacher can suggest. This capacity quickens invention, and the child who enjoys games of make-believe knows that it is make-believe, yet by a happy power of imagination preserves a sense of reality while the game lasts.

MR. EDMOND G. A. HOLMES and others have sent their criticisms to the *Times* Educational Supplement for December. Mr. Holmes is surprised and dismayed at Mme. Montessori, and refuses to believe that she has said her last word about imagination in children; his argument is that the walking-stick bestridden by the boy who makes believe he is riding is a symbol of a pony, used because the boy desires to experience

riding exercise, and a centre for imagination to play around. Miss Alice Woods suggests that Mme. Montessori errs in connection with the facts as we know them in England; the rich, not the poor, child plays most at make-believe, and kindergarten teachers do not act as Mme. Montessori suggests, and impose their imagination upon their pupils. Dr. Greville Macdonald upholds the use of the fairy tale, which is not likely to foster illusions or make a child credulous, and quotes Tolstoy, "The child is much nearer than I am, or any grown man, to the true, beautiful, and good to which I undertake to raise him!" The whole discussion is illuminating in view of the unrest and heart-searching which prevail under the present critical conditions.

MR. C. A. PARKER contributes to the *Child* for November an article on "Leisure Hours for Children," which presents the views of a medical man upon children's occupations out of school. Games should be spontaneous and should include all children as players, physical exercises should be taught scientifically, and compulsory cricket, football, and hockey should not be forced upon all pupils indiscriminately. Compulsory games have few advantages, whilst the need to teach children how to occupy their leisure hours is self-evident. Such teaching should recognise the ideals which underlie wholesome recreation, and should form part of the curricula of all schools. Teachers should interest themselves in the hobbies and out of school pursuits of their pupils, and should give them guidance and encouragement. Parents must shoulder their share of this task. The test both of the necessity for, and the success of, such teaching occurs when the holidays arrive. If parents or pupils grumble at the length of the holidays, the child does not wisely employ his leisure hours.

THE currents of thought which reach this country from the United States during this critical time have a special claim upon our attention. The thinkers, and notably the educators, over the sea are likely to see the trend of events more clearly than ourselves, who are blinded by the dust of conflict. *School and Society*, for November 13th, reprints an address, "Should there be Military Training in Public Schools?" delivered before the International Congress of the National Education Association in August last. The speaker pointed out that some militarists in Britain prate about the doom of democracy after the war, and that the Allies are in danger of Prussianism at home in their zeal to crush Prussianism abroad. The legislatures of Ohio and Massachusetts have been forced to appoint commissions to inquire into the feasibility of introducing military training into their schools. The American immigrant frequently gives as his reason for his change of home, "I did not raise my boy to be a soldier." Militarism has been the undoing of Europe. Shall the educators of America desert the side of progress? Military training in itself is valueless; as a prop to militarism it is essential. Which side shall be taken?

THE *Journal of Geography* for November directs attention to some persistent errors in geography. The

whole mountainous area of western North America is called the Rocky Mountains; that name should only be applied to the eastern ranges of mountains which, in Colorado, are a thousand miles from the Pacific Ocean. It is frequently stated that the great harbours of the world are naturally sufficient for modern shipping; even the best of them are only kept satisfactory as a result of a steady and increasing annual expenditure. Practically no diamonds are mined in Brazil, and for twenty years no iron ore has been obtained from the mines in Pennsylvania, yet these areas are still mentioned as sources of these products. The statement that the Gulf Stream washes the shores of Europe is still believed, and taught; although the Gulf Stream "frays out" and ceases to be a definite current before it has traversed the American half of the Atlantic Ocean. The frigid zones are often credited with a six months' day and a six months' night, although that phenomenon is strictly limited to the poles themselves.

SCOTTISH.

CORPORAL (now acting Company Sergeant-Major) JAMES LENNOX DAWSON, a member of the staff of Hill's Trust School, Govan, was the first Scottish teacher to be awarded the Victoria Cross. It was given for conspicuous bravery and devotion to duty during the assault on the Hohenzollern Redoubt on October 15th. The act which won for him this coveted distinction was one of exceptional daring in the face of tremendous risks. During a gas attack, when the trenches were full of men, he walked backwards and forwards along the parapet, exposed to a very heavy fire, in order to be the better able to direct the operations of his own sappers, and to clear the infantry out of those portions of the trench which were full of gas. Later, finding that three of the gas cylinders were leaking, he rolled them away from the trench, again under heavy fire, and then fired bullets into them to let the gas escape. The official report declares that the cool gallantry of Corporal Dawson on this occasion saved many lives. Teachers throughout Scotland are justly proud of his heroic action, and wish him God-speed in the work that still lies before him.

SIR WILLIAM MACKINNON, founder of the British India Company, left a sum of money to endow a technical school in Kintyre specially designed to train boys for engineering and agricultural pursuits. For various reasons it was not possible for some years to set the scheme going, but recently ground was bought for the purpose in Southend, Campbeltown, and last week the Kintyre Technical School was formally opened by Mr. Duncan MacNeill, nephew of the founder. The great drawback to education in the country is the narrow range of curriculum necessarily available. Every effort, therefore, to give variety of type to schools in country districts should be heartily welcomed. Kintyre Technical School will supply a type of education that the ordinary secondary school cannot provide, and open up to pupils in a wide district avenues of training that are usually limited to urban centres. The new Technical School is modelled on Sutherland Technical School, which has already

rendered such excellent service in the north of Scotland, and the governors have been fortunate in securing as its first headmaster Mr. James Mason, who has been for several years on the staff of the northern school.

DR. WILLIAM BOYD, lecturer on education in Glasgow University, recently addressed a meeting of teachers in Dundee on the subject of "Professional Unity." He expressed satisfaction with the progress that had already been made towards enrolling all teachers in a single association, but even if success crowned their efforts in this direction, much would still remain to be done before they had complete unity of spirit among teachers. For this the first requirement was that the standard of general education and professional training should be raised for all teachers. Following that, he advocated the need for greater powers of self-government being vested in the profession. The conditions of service, of entrance to the profession, and of after training should all be largely in the hands of a body representative of teachers. Only when these reforms were accomplished would they become in reality, as well as name, a learned profession.

THE Higher Education Committee of the Educational Institute has had under consideration the proposed ordinance of Edinburgh University for the institution of a degree of Bachelor of Education. The policy of the institute has always favoured such a degree because it would necessarily lead to the creation eventually of a faculty of education in the Scottish universities, and the committee resolved to give the new ordinance its strongest support. It appears that Aberdeen and Glasgow University Courts have opposed the granting of the Edinburgh ordinance on various grounds, but mainly because they are not prepared to set up a similar degree. It is a weakness of the Scottish universities that they are all tied up together, and no one university can make any forward movement without the sanction of the others, or at least it is extremely difficult to do so. The final appeal is to the University Committee of the Privy Council, who cannot fail to be impressed by the strong support given to the Edinburgh proposal by all classes of teachers.

THE Scotch Education Department is authorised by Lord Derby to say that in the case of any appeal from a local tribunal relating to teachers in schools aided by grants from the Department, an opportunity will be given to the Department to express its opinion on the case to the Central Tribunal before a final decision is given. Arrangements will also be made by which the Department, through its inspectors or otherwise, will be freely consulted, as regards teachers who have been attested, by the Advisory Committees which have been set up to assist local military authorities in determining what individuals are indispensable to education, and should not be called up.

THE Scottish School Boards' Association held its half-yearly meeting last month in Glasgow. Dr. Dyer, chairman of the Glasgow School Board, submitted a report on supplementary classes. The principal recommendations were that greater stress should be laid on

the main subjects of the primary school, reading, writing, and arithmetic, in order that all pupils should be ready to begin a course of supplementary education at twelve years of age. The supplementary course should extend over a period of not less than two years, and the award of the merit certificate should mark its successful completion. The curriculum should have regard not only to the *terminus a quo*, the primary school, but the *terminus ad quem*, the practical work of trade classes, and the higher theoretical and practical work of the continuation classes. The subsequent discussion brought out great diversity of opinion on the question, and ultimately the report was referred back for further consideration. At the close of the proceedings the president, the Rev. Dr. Smith, of Partick, was presented with a number of handsome gifts to mark his great services to the association during his continuous presidency of eighteen years.

IRISH.

THE first meeting of the Irish Registration Council was held at the offices of the Intermediate Education Board on December 8th. The council consists of fifteen members, five being chosen by the Intermediate Board, one by each of the three Irish universities (Dublin, the National, and Queen's), one by the Department, and the other six by associations of teachers, the Catholic Headmasters, the Protestant Headmasters, the Christian Brothers, the Schoolmistresses' Association, the Secondary Teachers' Association for Men, and the Secondary Teachers' Association for Women. The business at the meeting was purely formal. Dr. Starkie (chairman of the Intermediate Board) was elected chairman, rules of procedure were adopted, and the next meeting fixed for January 3rd. By the Government rules the council is bound to hold a meeting in January. There are rumours that the Government proposes to increase the size of the council.

THE Intermediate Board has issued the time-table of its examinations to be held next June. They will begin on June 13th, and end on June 21st. There are no changes from last summer's time-table, except the introduction of a paper on practical mathematics on the first morning. It was generally anticipated that the time of the papers in Latin and Greek would have been extended, but it remains at two hours as before.

THE Department has issued a circular stating that in the interests of economy, owing to the war, it is obliged to suspend temporarily certain of its operations. It will not conduct any summer courses of instruction for teachers in 1916. It will hold no examination in the principles, methods, and history of education, nor for teachers' qualifications in manual training (woodwork) until 1917. And section iii. of the programme for technical schools and classes, which makes provision for special classes in the subjects of the programme for teachers of primary and secondary schools, will be suspended for the year 1916.

THE Senate of the Queen's University, Belfast, has taken strong steps to direct the attention of all

members of the University, especially the teaching staff and students, to their duty to join the Army. All medical students except those in their fourth and fifth years are strongly urged to this course, and the Senate binds itself not to appoint any person of military age and capacity to any position in the University unless in exceptional circumstances, and all appointments made during the war are to be temporary. Parents of students are urged to remove any obstacle preventing their sons from offering their services to their country. All students enlisting during the term will have their class and University fees returned.

THE Commissioners of National Education have passed a new rule which should be of much use to the small scattered schools in remote Irish districts. They will recognise the right of Roman Catholics or Protestants to have a school if there is no other of their own faith within two miles, and they will give a capitation fee to either Roman Catholics or Protestants for children, however small their number, in such schools. The capitation fee is doubled, and untrained teachers may be appointed in schools with an average attendance of less than fifteen.

THE autumn number of the *Journal* of the Department of Agriculture and Technical Instruction contains among other articles an address delivered at Kingstown by Mr. Geo. Fletcher, on technical education and industrial prosperity, and two articles on the industrial uses of peat, one entitled "Peat as a Source of Power," by Mr. Fletcher, and the other "Some Chemical Aspects of the Peat Problem," by Prof. Morgan.

WELSH.

THE chief movements at present in progress in Welsh education are in the direction of war economies, enlistment, and the provision of substitutes. The Monmouthshire Education Committee has received from its special sub-committee, appointed for the purpose, some sweeping recommendations. The members are asked to begin with themselves, receiving only third-class fare instead of first-class when away on deputations; officials are to begin work half an hour earlier, take half an hour less for lunch, and not leave before five o'clock. No new buildings and extensions are to be undertaken, and teachers are to perform extra work. Reductions in staff are also proposed, and presumably those who lose their places or part of their salaries will have opportunities of practising economy.

At a recent governors' meeting it was mentioned that the teachers in the five girls' county schools in Glamorgan received an average salary of about £125 per annum. This figure, which will apply to about half the teachers, men and women, in Welsh intermediate schools, is below the minimum wage secured to the colliers of the South Wales coalfield by Lord St. Aldwyn's last award, not more than 2 per cent. of the colliers—i.e., coal-cutters—being at this minimum. Some of the teachers are paid less than the poorest colliery labourers; only seventeen teachers rise to £200 a year, while there are thousands of Rhondda colliers

making £5 and £6 a week. There is much to be changed in Wales—after the war.

TEACHERS are taking their full share of the fighting; out of 14 secondary schools in South Wales 40 members of the staff have joined the colours, and the average number of old boys enlisted is estimated at about 180 per school. Great numbers of elementary teachers have gone also; one large urban district is said to have only twenty-five men teachers left, nearly all of whom are above military age. In some schools the only man left is the headmaster, as at Tenby County School; and two-thirds of the students at Caerleon Training College have enlisted, and the training and university colleges throughout Wales are almost empty.

THERE is great activity in the training of women and girls to do men's work in schools, banks, post offices, and other places; Cardiff and other towns are providing special classes for the training of girl clerks and other workers. While Glamorgan has discontinued its evening classes—with the exception of those taught by the county travelling teachers—as a matter of economy, Cardiff has extended the programme, having added the teaching of Russian and of munition-making in various branches.

IN view of the proposals of the Board of Education to abolish the junior examination of the Central Welsh Board as a hindrance to the best educational interests of the country, it is worthy of notice that the Board is now proposing to suspend it for one year as a measure of war economy.

THE war has caused much interruption to building schemes; the South Wales Garden Cities and Town Planning Association finds that architects and others are suffering greatly from unemployment due to this cause; there are at present estates being developed as garden cities at Rhubina, near Cardiff, at Pengam, at the western end of Barry, at Bargoed, at Caerphilly, and at Gorseinon, near Swansea.

MAJOR J. LLEWELYN DAVIES, who at the beginning of the war was a master at Perse School, and was elected to the headship of Cardiff High School, was recently killed in action. He was the son of Mr. D. J. Davies, headmaster of an elementary school near Neath, and was extremely popular.

LIEUT. BALLINGER, son of the librarian of the National Library of Wales, has been reported "missing, believed wounded," in France. He went out in July.

THE South Wales and Monmouthshire University College, Cardiff, has been granted £1,250 by the Treasury as a contribution towards the losses caused by the war, and Aberystwyth University College £950 in respect of special provision for agricultural education.

THE scholars of Howell's School, Llandaff, received certificates instead of prizes, the money so saved, £15 15s., being devoted to the Serbian Relief Fund. Similar action has been taken in other schools.

BOOKS FOR STUDENTS OF THE WAR.

(1) *A Thousand Years of Russian History.* By Sonia E. Howe. xvi+432 pp. (Williams and Norgate.) 7s. 6d. net.

(2) *The Evolution of Prussia: the Making of an Empire.* By J. A. R. Marriott and C. G. Robertson. 459 pp. (Clarendon Press.) 5s. net.

(3) *Stories from German History.* By Florence Aston. 276 pp. (Harrap.) 3s. 6d. net.

(4) *Poland.* By W. Alison Phillips. (Home University Library.) 256 pp. (Williams and Norgate.) 1s. net.

(5) *Historical Atlas of Modern Europe, 1789-1914.* By C. G. Robertson and J. G. Bartholomew. (Oxford University Press.) 3s. 6d. net.

(1) The large number of people who for the first time are feeling a sympathetic interest in Russia and a desire to learn something of its history will be grateful for this book. The writer is a lady by birth a Russian, but now a subject of King George through marriage with an English clergyman. She writes with an equally perfect command of the history of her native land and the language of the land of her adoption. Hence she has produced a book which will do much to dispel the ignorance and prejudice which still exist in some quarters concerning the records and the genius of the Russian people. She divides the history of Russia into four main periods, and notes that each period is marked by the concentration of power in a different capital city:—"In the course of ten and a half centuries Russia's political centre has shifted from Kiev to Vladimir, from Vladimir to Moscow, and from Moscow to St. Petersburg. Each of these four names represents distinct phases of development with very definite characteristics." Each period is described in some detail; but special attention is devoted to the last phase—the St. Petersburg era comprising the two centuries from the days of Peter the Great to our own. There are supplementary chapters on Poland, Lithuania, and Finland. The book is illustrated by some remarkable and beautiful reproductions of old Russian drawings done by means of a new and most effective gravure process. A number of sketch maps also are given in the text, but these are small, poor, and of little value. It is a good feature that dates are freely interspersed in the narrative; but they are unfortunately not always consistent with one another. For example, the period of the reign of Vladimir Monomach is given as 1113-25 (pp. 12 and 14), 1113-28 (pp. x., xv., and 76), 1113-75 (p. 42), and 1114-25 (p. 22). Again, on p. 13, Oleg (879-912) is said to have made the *first* expedition against Byzantium, but on p. 10 Askold and Dir are said to have made a similar expedition in 851. Throughout the volume, in fact, the dates need careful verification. In spite, however, of this superficial blemish, which can be easily rectified in a second edition, Mrs. Howe's sketch of Russian history is singularly timely and interesting.

(2) The Clarendon Press has undertaken the useful task of publishing a series of "Histories of the Belligerent Nations." The first of the series lies before us. It deals appropriately with the chief of the belligerents, the originator of the conflict, Prussia. Since the present year is the quincentenary of the settlement of the Hohenzollerns in Brandenburg, it is probable that in any circumstances histories of their remarkable career would have been written and issued. But it is safe to say that, if peace had prevailed, the histories would have struck a different note from that sounded in this book. True, it is studiously fair, and clearly anxious to give credit where credit is due; but it is also candid, frank, and critical, as no work written before the war would have been. It views the beginnings of Prussia in the lurid

light of the tragic end. The culminating epilogue which summarises the events of the period 1890-1914 is virtually an excellent, carefully balanced war pamphlet, tracing the antecedents of the great struggle. The earlier chapters are more dispassionate in character; but even they show evidence that it is impossible to write an impartial history of Prussia at the present moment. The book, nevertheless, is valuable, for it conveys much accurate information in a lucid and interesting way.

(3) German history is, we fear, not popular at the present moment. The most vehement Teutonophobe, however, need have no hesitation in reading, and no shame in enjoying, this charming collection of stories. For they all relate to the good old days before Germany had become Prussianised. Prussia, in fact, is not mentioned at all until the very last chapter, and it seems as though its advent upon the historical stage is the signal for this fascinating drama of the Middle Ages to close.

In this volume the reader will find, told in lucid prose, and illustrated by excellent photographs and by reproductions of standard pictures, the stories of such heroes as Charlemagne and Frederick Barbarossa, together with accounts of the manners and customs of the folk, the conventions of chivalry, and the movements that led to the Reformation. It is at one and the same time an attractive reading book and a valuable introduction to the serious study of European history.

(4) This historical sketch of Poland, though brief, is of the highest interest and importance at the present moment. The introductory chapter describes the existing situation in the country over which the tide of war has rolled three times already, and over which it must roll yet once again if Poland is to be liberated. The succeeding chapters, twelve in number, are designed to aid the solution of the Polish problem by tracing the story of the unfortunate kingdom from its origin up to the outbreak of the war. One-third of the whole narrative is devoted to the history of the half-century following the disastrous insurrection of 1863. This is exceedingly valuable, because for most people the records of Poland end with that catastrophe. But Prof. Phillips rightly insists that the key to the Polish problem is to be found in the respective policies of Russia, Austria, and Prussia during that period. Every student of foreign affairs should read this masterly summary.

(5) This inexpensive but excellent atlas will be of the greatest value to all who are studying the antecedents of the present war as they developed themselves during the period of a century and a quarter which has elapsed since the outbreak of the French Revolution. It contains thirty-six coloured maps (9×12), depicting at different cardinal dates Europe as a whole, the various regions and countries of which it is composed, and (though less fully) outlying parts of the world, such as Persia, Africa, and the Far East, which have entered into European politics. In addition to the maps there is an explanatory text, which gives a most useful summary of the historical geography of the nineteenth century, a bibliography of important historical and geographical authorities upon the period, and a few statistical tables. We can cordially and unreservedly commend this admirable work of reference.

Common Commodities of Commerce. Clays. By A. B. Searle. vi+163 pp. Illustrations. (Pitman.) 1s. 6d. net.—Like previous books in this series, this comprehensive account of clays and their uses will be useful to the teacher of geography, who will be able to garner much useful information from its text and its illustrations.

THE EXPERIMENTAL STUDY OF CHEMISTRY.

(1) *Quantitative Laws in Biological Chemistry*. By Prof. S. Arrhenius. 164 pp. (Bell.) 6s. net.

(2) *The Rugby Course of Elementary Chemistry*. By H. P. Highton. 79 pp. (Edward Arnold.) 2s. 6d.

(3) *Qualitative and Volumetric Analysis*. By W. M. Hooton. 86 pp. (Edward Arnold.) 3s. net.

(4) *Chemistry: First Stage*. By F. P. Armitage. 50 pp. (Longmans.) 1s.

(5) *Laboratory Exercises (arranged to accompany First Course in Chemistry)*. By Prof. W. McPherson and Prof. W. E. Henderson. 128 pp. (Ginn.) 2s.

(1) The teacher of chemistry who delights in keeping in touch with all developments of his subject might probably pass by the later work of Prof. Arrhenius, and yet it is work of real interest to the pure chemist. The growing importance of biochemistry in this country is seen in the admirable monographs which are being issued from time to time, but Prof. Arrhenius insists on the importance of correlating the existing immense mass of observations by the exact methods offered by physical chemistry. In the present volume, which is founded on the Tyndall Lectures of 1914, he gives a summary of his own work on immuno-chemistry, and shows how the most varied biological processes can be classified under the well-known headings of physical chemistry. The velocity of reactions, the influence of temperature on the velocity of fermentation and agglutination, and biochemical equilibria are treated in that clear and accurate way and with that easy command of language which characterises the great Swedish master.

(2) This is a two-year course, and takes the boy up to the standard required for Woolwich and Sandhurst. Mr. Highton has written a strenuous book, both for teacher and pupil. Sixty-six lessons is the sum total, and every lecture is experimental; even in his first lecture, the teacher has to make a T piece before the eyes of a critical audience. In lesson 9 the student is called upon to calculate the percentage of oxygen in potassium chlorate, after being provided with the necessary atomic weight, but with apparently no instruction as to their meaning or use. The book gives one the impression of a wild rush to complete a syllabus, and this impression is confirmed by the summary given for lesson 66 on chemical laws:—"Recapitulate, explain, and illustrate the following chemical laws: (1) definite proportions; (2) multiple proportions, (3) reciprocal proportions; (4) Avogadro's law; (5) Graham's law; (6) Gay Lussac's law of combining volumes; (7) Boyle's law; (8) Charles's law; (9) Henry's law; (10) Dulong Petit's law; (11) conservation of mass." To have the opportunity of hearing the author deliver this lecture in the time he mentions (fifty minutes to one hour) must be one of the unique privileges that Rugby affords.

(3) It is difficult to decide for what class of students this manual is intended. The first thirty-seven pages deal with the usual qualitative analysis as practised in schools. Then follow four pages in which are given the reactions of nine rarer metallic radicles and eight less common acid radicles. A few organic acids, including hippuric and meconic, are next dealt with. The remainder of the book gives an account of simple volumetric analysis. This last section is certainly the best, containing as it does some excellent problems for the elementary student.

(4) What useful purpose is served by the publication of such a book as this? The first twenty-three pages contain directions for carrying out thirty-three disconnected experiments, ranging from the heating of common minerals to the action of "a

teaspoonful of washing soda dissolved in water on two teaspoonfuls of quicklime." The remainder of the book consists of a series of notes, dealing with common compounds, elements, apparatus, operations, and definitions. The accuracy of these may be gauged from the statement that the solubility of a solid is "measured by the number of grams that dissolve in 100 grams of water."

(5) The course of practical chemistry closely follows the scheme of work outlined in the author's manual on chemistry. It has thus merely specific interest and use. More than one hundred exercises are described, comprising the usual preparations of the commoner elements and their compounds. Amongst those which would appear somewhat strange to an English student of the same standing may be quoted the study of the sugars, textile fibres, the action of preservatives, tests for proteins, analysis of baking powders, use of mordants, detection of dyes in foods, removal of stains, and the composition of flour. The tendency in many American class-books to advertise the close connection of science and common life may benefit the latter, but is of little advantage to the former as a mental discipline.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Modern German Course. First Part. By A. C. Haltenhoff. viii+123 pp. (Hachette.) 2s. 6d.—This book starts badly, with a very brief introduction on the history of the language, in which (for instance) *f* and *z* are described as "aspirates," and a page on the alphabet and pronunciation, in which we note, as an illustration of German *o* "Ob (observe, but lips more closed)," and where the *sh* of "spreche" appears in one place as "shp or sp," and in another as "shp" only. The lessons themselves leave a rather more favourable impression; each occupies two large pages, and consists of reading-matter, exemplifying certain grammatical features, questions on this, a grammar section, and passages for translation into English and dictation and for translation into German. The amount of grammar introduced is considerable; the very first lesson contains the present of *haben* and *sagen*, the declension of both articles and of the attributive adjective, several prepositions, in addition to a vocabulary of between forty and fifty words. The book is obviously unsuitable for ordinary work in school; but it is probably intended for older students. There are a number of details in which it might be improved. Thus, on p. 5, there should be some indication that the word order in the German for "I am at home in two minutes," is not the same as in English; similarly in the case of "What I have to say," on p. 7. It is injudicious to adopt the order Nom., Gen., Dat., Acc. (p. 11). The lists of compound verbs are of little value as they stand; thus, "*angehen*, to address, beg, succeed, thrive," is simply confusing, without illustration by means of sentences. There is little real guidance to the writing of free compositions, except for seven essays given at the end of the book, in which case outlines are supplied. There is also a selection of German poetry, mainly verse that has been set to music. There are a fair number of misprints, and some of the German is queer, e.g., "*ich weiss ihn wohnen*, I know where he lives"; and on p. 26 the teacher commends his pupils for saving that $1\frac{1}{2} + 3\frac{1}{2} = 6$. There is no alphabetical list of words, but the number of these is very considerable, including some very rare ones. It would be interesting to know whether Mr. Haltenhoff has

had any experience of teaching German to a class of young beginners.

La Maison aux panonceaux. By Lady Frazer. With exercises and a vocabulary by A. Wilson-Green. xi+122 pp. (Cambridge University Press.)—This is a charming story of provincial life in France, in which Lady Frazer (well known hitherto as Mrs. J. G. Frazer) has given of her very best. In some of her previous stories there was often something eccentric or harsh in her outlook on life; this book is more mellow. There is quiet humour in the descriptions of the country-town feuds and jealousies; and there is pathos—was it necessary to let the hero die in a foreign land and the sweet girl take the veil? Published as a gift-book (price 5s. net), with twelve pictures from the skilled pen of Mr. H. M. Brock, it will make an admirable school prize; we almost resent its being used for ordinary classroom work. Mr. Wilson-Green has supplied plentiful exercises on the text; those bearing on the vocabulary will be found specially useful.

Classics.

Einhard's Life of Charlemagne: The Latin Text. Edited, with Introductions and Notes, by H. W. Garrod and R. B. Mowat. lx+82 pp. (Clarendon Press.) 2s. 6d. net.—This admirable little edition deserves to be in the hands of all who are interested in the great man it describes. Einhard was, it is true, not an impartial historian; he suppressed much that was not to the credit of his hero, but he does not appear to have lied about him. In any case, the "Life" is a first-rate historical document, and its shortcomings are counteracted in the introduction. The editors also give a list of the other authorities for Charlemagne's life, and good short sketches of German culture of the period, and the Carolingian Empire, in which Charlemagne's great achievements are described, and the administration of the empire. The text is not much in dispute; and the editors have got rid of most of the rubbish which is found in the critical notes of Waitz.

Latin Verse Notes. Prepared by the instructors in Latin, Williams College. 63 pp. (Humphrey Milford.) 2s. net.—These are notes to "A Selection of Latin Verse," by the same authors, and are published on behalf of the Yale University Press. They have the great merit of brevity; and yet, in addition to concise explanations of possible difficulties in grammar and syntax, and elucidations of references, they contain occasional references to, or quotations of, similar passages from a literary point of view in Latin and English literature. To those who use the "Selection of Latin Verse" they should be useful.

On the Teaching of Latin. By F. R. Dale. 112 pp. (Constable.) 1s. net.—This is a useful little book, which we can recommend all classical schoolmasters to read. Teachers on reformed lines will not find much in it that will help them, but it takes up a few points in connection with the direct method, and it is interesting to read what the experience of different teachers has been. Mr. Dale is himself in favour of a partial "Direct Method," and has much to say in favour of the old "Construe," but even those who do not agree with him will gain something from considering his arguments.

A Syllabus of Roman History. By G. W. Botsford. viii+72 pp. (New York: The Macmillan Co.) 2s. 6d.—This should prove a useful guide to undergraduates and students of a similar stage to their reading in both the ancient and the modern authorities. "Its aim is not to convey information, but to present a scheme for the organisation of the facts and ideas

essential to a good knowledge of Roman history." The references are exhaustive, and include quite the latest of modern publications. If the student will overlook the undue prominence of Mr. Botsford's own compilations, he will find the present volume an almost indispensable guide.

Porta Latina: a Reading Method for the Second Year. By F. G. Moore. xviii+62+lxii pp. Appendices and vocabulary. (Ginn.) 3s.—This is an attempt—which we cannot help hoping will be abortive—at a new method of teaching Latin reading. The book consists of fables of La Fontaine in a Latin version, and the chief feature is the presentation of the narrative in "sense groups," indicated by a new method of punctuation by which the words to be taken together are separated by stops above the line. There is nothing wrong in this idea of getting our pupils to take such a sense group, for example, as *per totam aestatem*, at one gulp, but the book is vitiated by other faults which are so great that we can only regard its advent as a "reformed" text-book with dismay. The introduction contains a very American and over-elaborated comparison of the subjects of a fable with a stage play, and ends with advice on p. xvii ("Now for an *ut* clause"!) which will only succeed in perpetuating that old habit of mind, so prevalent in schoolboys, which regards a Latin sentence as a sort of jig-saw puzzle. It is one of the chief merits of reformed text-books in England that they have at any rate done something towards banishing this habit of mind, but according to the present volume it seems destined still to persist in America. One of the appendices contains an all-Latin version of the gender rhymes, in which are included even a few more out-of-the-way words than had to be learnt when we were children—*e.g.*, *udo, cudo, varix* and *tradux*! May Mr. Moore be forgiven!

English.

Letters of Shelley. By Roger Ingpen. 2 vols. 1034 pp. (Bell.) 7s.—The professed students of the epistolary art are few, though the number of good letter-writers is legion. Shelley was one of the best; but he would have been shocked to think that a succeeding generation for no clear purpose would rake together all that it could lay its hands on in the matter of his notes and letters. We must imagine, then, that the labour of love which led Mr. Ingpen to compile this seemingly exhaustive collection was occasioned by a wish to let Shelley's admirers know all that was to be known about him. Even thus, it is a sad thing that anyone, any saint, should have all the weaved up follies of chance letters ranged against him. Shelley, it is admitted, does come out of the ordeal well, and when due allowance is made for his temperament and savage scorn, the mad Shelley may be called the mad gentleman Shelley. The letters as literature are another thing; not one-sixth of them deserve reprinting on this score. But those which do are of the finest. Mr. Ingpen's volumes, first published in 1909, contain, along with the admirable notes, 480 letters. Probably other letters remain unpublished, but the main *casus belli* are settled as far as letters can settle them. Notes are added on Shelley's correspondents, and a full index is given. Notwithstanding the fierce condemnation of her husband by the unhappy Harriet (some of her letters are printed), it is impossible for anyone that is fair to regard Shelley at any period of his career as degraded, sensual, or even coarse. But when we ask the question, "Was he insane?" the answer is not so easy to give.

Tales and Legends of Scotland. Retold by Dorothy King. 128 pp. (Harrap.) 6d.—This is an admirable

introduction to ballad work and, as regards Scotland, it was well worth doing; "Tamlane," "The Worm of Linton," "Thomas the Rhymer," have here their stories told in excellent English; the book makes a good basis for oral story-telling by the children themselves.

The School of Arms. By Ascott R. Hope. 335 pp. (Routledge.) 3s. 6d.—This is a collection of stories of boy sailors and soldiers by a very well-known and widely-read writer. The stories are quite modern, and in two cases have, under another form, appeared before; Belgium and Texas, Austria and Greece, the Redskins and the midshipmite are all here in the glory of their bravery and manhood, and the stories are written in an easy and fascinating way.

The English Journal for October, 1915 (Chicago University Press), contains several papers on the teaching of English. They are all Transatlantic in tone, but that does not prove that we shall not be benefited by them. A hopeful sign is, if we may say it without offence, that Americans are beginning to distrust their own speaking and reading. Mr. Henry James's caustic remarks on "Our Speech," hidden away, alas, in a volume of French criticism, but known to the American educationist, may even yet bear fruit. The magazine before us says that reading aloud is discontinued in the schools. Let us hope we shall not copy America in this.

History.

Jack's School Pictures. Three series:—(1) Classical; (2) Geographical; (3) Historical. Each series when complete to contain 100 plates, size 20×28. Price 1s. 6d. each plate. (Jack.)—We have before us six specimens of this important new series of school pictures which Messrs. Jack, of Edinburgh, have commenced to issue. They have several characteristics which call for note. First, they are very cheap; secondly, they are so large that they will serve for class work of every description; thirdly, each subject is an authentic photograph, so that teachers who use this series will not be perplexed and deluded by those imaginative works of art which are sometimes sold as aids to education. A detailed prospectus can be obtained on application to the publishers (Causewayside, Edinburgh), who will also send a sample plate post free to any address in the United Kingdom for 1s. 6d.

North America during the Eighteenth Century: A Geographical History. By T. Crockett and B. C. Wallis. viii+116 pp. (Cambridge University Press.) 3s. net.—The close connection between geography and history is admirably illustrated by the contents of this little book. The importance of geographic conditions as determinants of the course of the eighteenth-century struggles in North America has long been familiar to those who have sat at the feet of either Mr. H. J. Mackinder or the late Dr. Emil Reich; but never before have they been set forth so fully or explained so lucidly. First, the physical features of the country are described; secondly, the course of the Seven Years' War is traced. Finally, the successive stages of the War of American Independence are depicted. There are twenty-two maps, plans, and pictures illustrative of the text. It is very useful to have a familiar field of history thus surveyed from a new point of view.

Heroes of All Time. (1) *William the Conqueror.* By René Francis. (2) *Oliver Cromwell.* By Estelle Ross. (3) *Sir Walter Scott.* By Amy Crosse. (Har-rap.) 1s. each.—These attractive little volumes, each containing about two hundred pages of letterpress

and nine illustrations, are the latest additions to a series to which from time to time we have directed favourable notice. In short compass, and in clear style, it presents excellent introductory studies of some of the most commanding figures in the world's history. The series deserves the most cordial commendation.

Geography.

Stanford's Compendium of Geography and Travel. New issue. *North America.* Vol i. *Canada and Newfoundland.* Edited by Henry M. Ami. Maps and illustrations. Second edition, revised. xxviii+1069 pp. (Stanford.) 15s. net.—It is difficult in a short notice to enumerate the tremendous advances made in Canada during recent years; the teacher, the student, and the traveller will find this wonderful progress carefully described by Dr. Ami. The statements made in previous issues have been revised, and opportunity has been taken to describe the new provinces of Saskatchewan and Alberta, and the areas which have been added to the older provinces of Manitoba, Quebec, and Ontario. Transport by the steadily growing railway system or by the admirable waterways which concentrate upon Montreal receives adequate treatment. The volume as a whole should remove the considerable misapprehension which still exists regarding "Our Lady of the Snows."

A Secondary School Course in Geography. Book I. *The British Isles.* By A. B. Archer. Maps and illustrations. 224+vi pp. (Heinemann.) 2s. 6d.—Mr. Archer has planned a four years' course in geography for secondary schools. This book, which deals with the British Isles in a simple and pleasant manner, is intended to form an introduction to the real work of the course, which is to commence with Book II. It contains two parts, in the first of which, dealing with general geography, opportunity is taken to introduce geographical principles, and in the second, entitled regional geography, the home country is definitely considered in detail. The maps and illustrations are carefully chosen and valuable.

Historical Geography of England. By Maud Holliday. 112 pp. (Oxford: Blackwell.) 2s. net.—This little book is a sound, brief study of the outlines of English economic history; it has no claim to the use of the word "Geography," it is not imbued with the spirit of geography; it lacks geographical or spatial outlook.

Mathematics.

Five-Figure Mathematical Tables. By E. Chappell. xvi+320 pp. (Chambers.) 5s. net.—Four-figure tables possess this advantage over those giving a larger number of figures, that the mechanical labour and the mental exertion involved in consulting them are both reduced to a minimum. With an increased number of figures the trouble involved in interpolation can only be avoided by a closer tabulation, and the extension of the tables which this involves increases the labour of consulting them. On the whole, the balance is much in favour of extension, as accuracy is of greater importance than speed. The tables before us give the logarithms to five figures of all numbers from 1 to 40,000 without interpolation, and from 40,000 to 100,000 the necessary interpolations involve no number greater than 10. We think this table is probably as perfect a form as can be devised. The author has invented some new terms for the functions tabulated in the tables which follow. Cologs, or the logarithms of reciprocals, are tabulated with the same degree of fulness as the logs. Next follow illogs, that is, antilogarithms, of numbers from 0.0000 to 0.9999 to six figures. Much more interpolation is required

here, and as the proportional parts may be as great as 207, we think a fuller tabulation, say, from 0-0000 onwards, would have been better. The two tables which follow are new, and have apparently been calculated by the author. They are those of lologs (logs of logs of numbers), from 0-00100 to 1,000 to five decimal places, and illogos (antilogos of numbers) from 0-0 to 0-5, both red and black. The lologs of numbers less than unity are printed in red, while those of numbers greater than unity are printed in black. These tables are very useful when numbers have to be raised to fractional powers, but it is clear that some care is required in using them. The use of different coloured inks is a drawback, but in manuscript work some symbol could be attached to indicate a red lolog. The trigonometrical tables give the usual functions at intervals of one minute. The differences for 1" are tabulated, but there are no tables of proportional parts to assist one in writing down the multiples. Some four-figure tables have been published giving a decimal division of the degree, and we wish that the author had done the same for five figures. Altogether the author has performed a piece of useful work, and the tables will be found for most purposes preferable to the seven-figure tables commonly used.

Miscellaneous.

The Students' Handbook to the University and Colleges of Cambridge, 1915-1916. 701 pp. (Cambridge University Press.) 3s. net.—This indispensable handbook has once more been brought up to date, and the present issue contains the new regulations for the university classical scholarships and for divinity degrees—two new schemes which were already far advanced when the war broke out. But the war itself has occasioned temporary emergency legislation, and intending students and others who need to know of this will find accurate information here on all sorts of exemptions and modifications for the benefit of those who are engaged on war service.

EDUCATIONAL BOOKS PUBLISHED DURING NOVEMBER, 1915.

(Compiled from information provided by the Publishers.)

Modern Languages.

"Petit Cours Préparatoire." By L. H. Althaus. A two-term course in Phonetic Script leading up to "Première Année." (Black.) 1s. 4d.
 "A First Russian Reader from Tolstoy." English Notes and a Vocabulary. By Percy Dearmer and V. A. Tanenevich. 80 pp. (Clarendon Press.) 1s. 6d. net.
 "Introduction to the Study of the Russian Language (Alphabet, Reading, Accents, Pronunciation)." By Marc de Valette and Olga Clionoff. 28 pp. Hachette. 2s.
 "Le Verbe en Action." By E. J. Groves. Second edition, revised. 64 pp. (Hachette.) 1s.
 P. Mérimée: "Chronique du Règne de Charles IX." With Notes and Vocabulary by J. M. Rey. New edition, revised. (Hachette.) 2s.
 "French Irregular Verbs." Arranged without abbreviation. By A. Thirion. New edition, revised. 64 pp. (Hachette.) Paper, 6d.; cloth, 9d.

Classics.

"Rēgēs Cōsulēsque Rōmāni." By F. R. Dale. (Lingua Latina Series.) 84 pp. (Clarendon Press.) 2s.
 "Key to New Junior Latin Course." By A. J. F. Collins. iv+80 pp. (Clive.) 2s. 6d. net.

English: Grammar, Composition, Literature.

"The Cambridge History of English Literature." Vol. xii., "The Nineteenth Century." I. Edited by

Sir A. W. Ward and A. R. Waller. xii+566 pp. (Cambridge University Press.) Cloth, 9s. net; half-morocco, 15s. net.

W. M. Thackeray: "The History of Henry Esmond." Second edition. Edited by T. C. Snow and W. Snow, with introduction by G. Saintsbury. 632 pp. (Clarendon Press.) 2s. 6d.

"The Patriotic Poetry of Wordsworth." Edited, with introduction and notes, by the Rt. Hon. A. H. D. Acland. 144 pp. (Clarendon Press.) Cloth, 1s. net; paper, 1s. net; leather, 2s. 6d. net.

Wordsworth: "Tract on the Convention of Cintra." With introduction by A. V. Dicey. (Oxford Library of Prose and Poetry.) 284 pp. (Clarendon Press.) 2s. 6d. net.

Chaucer: "The Nun's Priest's Tale." With Introduction, Text and Notes, and Glossary. Edited by A. J. Wyatt. viii+176 pp. (Clive.) 1s. 6d.

"The Pandav Princes." With Introduction, Notes, etc. By Wallace Gandy. (English Literature for Secondary Schools.) 158 pp. (Macmillan.) 1s.

"A School Manual of Shakespeare." By C. L. Thomson. 96 pp. (Horace Marshall.) 9d.

"Letters Written in War Time." Compiled by H. Wragg. (World's Classics.) 278 pp. (Oxford University Press.) 1s. net.

History.

"Black's History Pictures." Edited by G. H. Reed. Each set contains about 75 carefully-selected pictures reproduced in black and white from contemporary and other sources. "The Middle Ages (1066 to 1485)." In special detachable file-portfolios. Size 11 x 9 in. (Black.) 10d. per set.

"North America during the Eighteenth Century: A Geographical History." By T. Crockett and B. C. Wallis. viii+116 pp. (Cambridge University Press.) 3s. net.

"The Evolution of Prussia: The Making of an Empire." By J. A. R. Marriott and C. Grant Robertson. 460 pp. 8 maps. (Clarendon Press.) 5s. net.

"A Syllabus of Roman History." By G. W. Botsford. 82 pp. (Macmillan.) 2s. 6d.

"A Short History of Modern Europe." By Eugene L. Hasluck. 272 pp. With many new maps. (University of London Press.) 3s.

"Morality of Nations." By Delisle Burns. 272 pp. (University of London Press.) 5s. net.

Mathematics.

"A Course of Modern Analysis: An Introduction to the General Theory of Infinite Processes and of Analytic Functions, with an Account of the Principal Transcendental Functions." By E. T. Whittaker and G. N. Watson. Second edition, completely revised. viii+560 pp. (Cambridge University Press.) 18s. net.

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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.

Imagery and Imaginative Literature.

SOME little time ago I started to investigate the relations between imagery of various types and certain

mental processes involved in an ordinary literature lesson. The results of these investigations were published tentatively in the *Journal of Experimental Pedagogy* for December, 1913, and March, 1914. I am now trying to follow them up, but, not having now the opportunity to experiment very widely, am appealing to any teachers who may be interested in the subject and are able to conduct simple experiments under the guise of a literature lesson to co-operate with me. The work may be done with children of either sex, of various ages, and of different social classes. In fact, it is essential that it should be carried out under conditions varying as widely as possible. I should also be glad to hear from any teacher who has himself (or herself) tried similar experiments, or who has formed decided views upon the value or the hindrance of strong imagery in teaching or learning literature.

E. ALLISON PEERS.

Felsted School, Essex.

Economy in Education.

THE council of the Teachers' Guild desires to direct public attention to the serious injury to educational work in London that is involved in the reduction of staff, both in secondary and in elementary schools, that is now being carried out by the Education Committee of the London County Council. We recognise that education, like all other departments of public life, must expect to suffer at this crisis in our national history, and we believe that teachers are willing to make any personal sacrifice that may be necessary in the interest of national economy, but we think it important that any sacrifice of educational efficiency should be made with a full realisation of its gravity, and with a clear understanding that it shall only be a temporary measure. Recent educational advance has been achieved largely through the reduction in the size of classes, and the resulting possibility of more specialised teaching and closer personal attention. The changes now being made will not only involve larger classes, but fail to take account of the special circumstances of different schools, and will tend to reduce the work of the most efficient schools to the level of the less efficient.

As a temporary measure, it may be our duty to acquiesce in this policy, at a time when many of our male teachers have volunteered for military service. But we foresee the danger that, in the demand for economy that will rightly be made after the war in all departments of public expenditure, the present policy may be retained, or even extended. We believe that our most pressing need after the war will be for greater educational efficiency, and that the sacrifice of educational progress is the one sacrifice that, as a nation, we must not allow. The welcome that has been given by a section of the Press to the action of the London County Council, and the fact that other educational authorities are already adopting the same policy, lead us to feel that bodies like our own ought not to allow it to be supposed, by their silence, that they are not alive to the injurious effect, particularly in the teaching of science and modern languages, of the reduction of staff that is now being made, and to the importance of restoring, at the earliest possible moment, a standard of staffing at least as large as that which is now being abandoned.

On behalf of the council of the Teachers' Guild,
J. HOWARD B. MASTERMAN,
President.

Books for Interned Belgian Soldiers.

BECAUSE no one can fail to realise the more obvious sufferings of men who have lost their liberty until

peace is restored; because the case of Belgian soldiers, whose friends are unable to help them with comforts, is more unhappy than that of others; because their actual sufferings are far beyond what our imagination can depict; and because at little cost of time, trouble, or money, we can do something to alleviate them, I venture to ask you to appeal to your readers for books, either French or Flemish, to help these unfortunate Allies of ours to relieve the tedium of their long imprisonment.

Some thousands of books, comprising old French novels, dog-eared and ink-stained school texts, rescued from the lumber-room, have been sent to prisoners in Holland, and received with a gratitude almost pitiable, which indicates how useful similar gifts would be to prisoners in Germany.

It is for these that the Comité Belge at the Hague are making a special and pressing appeal. If people who have French reading books for which they have no further use would take the trouble to get them out and send them by parcels post for distribution to the camps, according to their needs, they would be doing a most helpful thing. The parcels should be addressed:—M. Hekkers, Comité Belge, Groenmarkt 29, La Haye (Holland). The rates are 10d., 1s. 2d., and 1s. 6d. for parcels not exceeding 3, 7, and 11 lb. But the cost of postage need deter no one from giving a fresh lease of usefulness to old French books, as these may be sent post free to the officer commanding any of the interned camps: Harderwyk, Zeist, Amerspoort, Leeuwarden, and Rijs-Gaasterland, provided they are addressed:—Interned Prisoners, c/o G.P.O., Mt. Pleasant, Officer Commanding, etc.

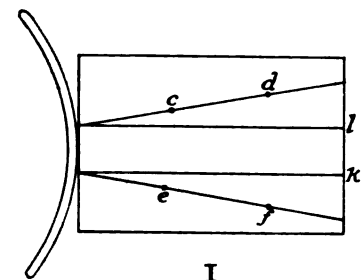
I make this request the more confidently because it is for a work which does not interfere in the least with efforts to help our own men.

F. C. BOON.

Dulwich College, S.E.

Determination of the Focal Distance of a Convex Mirror or a Concave Lens.

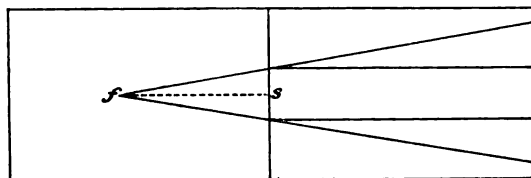
A PIECE of paper is placed on a block of wood which reaches half-way up a convex mirror (Fig. 1). On the piece of paper, which is secured by drawing pins, two parallel lines, *l*, *k*, are drawn. On looking into



the mirror (eyes level with the surface of the paper) these lines appear to converge. Mark dots with a pencil at *c* and *d*, and *e* and *f*, showing the directions which the lines appear to take on diverging from the mirror. Draw lines through these points, and then,

placing the edge of this paper against the edge of another sheet of paper, produce the lines until they meet at the point *f* (Fig. 2). Then *fs* will be the focal distance of the mirror. The same result may be obtained by the method of similar triangles. Make *df* (Fig. 1) twice *lk*. Then the focal distance of the mirror will be the distance of *df* from the mirror. This method obviates the use of a second sheet of paper. In the determination of the focal distance of a concave lens, the method employed is practically the same, the only difference being that the parallel lines are viewed through the lens, *i.e.*, the eye is on one side of the lens, and the parallel lines on the other. The paper should be cut curved to fit the lens curvature.

These methods, which cannot be relied on for extreme accuracy, are believed to be novel, and on account of



II

the lines making a directive appeal to the eye, should have some educational value.

E. T. BUCKNELL.

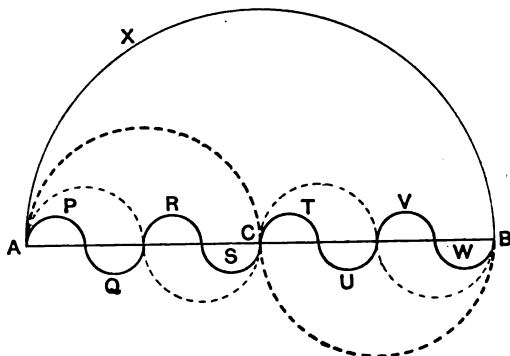
Kingsholme School, Weston-super-Mare.

A Mathematical Fallacy.

THE following fallacy may perhaps be of interest to readers of THE SCHOOL WORLD:—

AB is a straight line 2 units long. Upon it is described a semicircle AXB, the arc of which is therefore π units long. AB is bisected at C; and upon AC and CB semicircles are described, the lengths of their arcs being together π .

By repeating this process twice, we have a curve APQRSTUUVWB, equal in length to the arc of the original semicircle. Proceeding in this manner in-



definitely, it appears possible to replace the arc AXB by a sinuous curve which approximates more and more closely to the line AB, and ultimately coincides with it. Consequently $\pi=2$.

For the non-mathematical mind, which is mistrustful of π , a variation of this fallacy may be devised. An equilateral triangle may be described upon a line one unit long, and by a similar process we arrive at the result that $2=1$.

W. M. CAREY.

Rutlish School, Merton, S.W., November 24.

THE fallacy to which Mr. Carey directs attention can be exhibited in other ways; for example, it can be proved that two sides of a triangle are together equal to the third by connecting the ends of the base with a series of zigzags which are parallel to the other two sides. The mistake, of course, lies in the assumption that when the semicircles are diminished indefinitely the length of the sinuous line becomes ultimately equal to the chord. A study of Newton's "Principia" would probably explain the matter sufficiently satisfactorily. In order that the arc of a curve may become ultimately equal to the chord, it is necessary that the angle between the chord and the tangent should everywhere diminish without limit. Now, as we go round one of the semicircular arcs the angle between the

tangent and the base changes from -90° to $+90^\circ$ or *vice versa*, as the case may be; consequently Newton's proof fails. In the case of the zigzags parallel to two sides of a triangle the same thing occurs, for the segments of the zigzag are inclined to the base at angles which remain finite, however small the segments may be.

It would be a great advantage if in teaching the calculus we could retain a little of Newton's careful study of these propositions in rectification and quadrature. This is the more to be desired, because when we come to *areas* of curves and their inscribed figures the coincidence in direction between chord and tangent is no longer necessary; thus the area contained between the semicircle X and the sinuous arc is equal to the area bounded by the straight base AB . The main difficulty is that all this explanation takes time.

G. H. BRYAN.

Qualitative Analysis as a School Subject.

IN the early days of science teaching in our schools qualitative analysis played an important part in the practical work, but gradually it has been superseded by other things, so that to-day it is scarcely to be found in the school curriculum at all. Surely the reason for this cannot be that qualitative analysis is devoid of all value as an educational subject, or even that other branches of chemistry offer greater scope for teaching purposes? If carefully considered, it would seem to me, that when properly taught, qualitative analysis offers exceptional advantages, although it must be admitted at once, that everything depends on the way in which such a subject as this is presented. For unless the principles underlying the processes are clearly understood and appreciated, the work may be merely mechanical, and so lose all educational value. But this is a difficulty that arises not only here, but in almost all other branches of science. The responsibility is with the teacher; it all depends on him as to the point of view his pupil takes up.

Let us look, then, very shortly at some of the advantages of this now rather old-fashioned and despised subject. To begin with, the apparatus required is simple, and the cost of materials is small—an important item in these days. Then a considerable amount of work can be done in a little time, perhaps more than in other branches of practical chemistry. Fairly large classes can be taken at the same time without undue inconvenience, and the pupils can work separately, and so avoid any risk of such things as "sleeping partners." Qualitative analysis never fails to create interest, and this is more than can be said of some other things which boys are called upon to learn in school. Moreover, it is one of the fundamental duties of the teacher to see that the lessons he provides are as full of interest as possible. If a boy finds his work dull and boring, he cannot derive much good from that particular task, and there is probably something wrong either with the subject itself or the master. A boy instinctively wants to know what things are made of. This instinct has been with him from his very early days; as a little child he broke his toys, later on he pulled his watch to pieces, a kind of analysis; later still he loved to construct things—that is, to find out what things were made of by synthesis, or negative analysis, and so it comes about that finding out what substances are in the school laboratory specially appeals to him. In qualitative analysis the boy feels he is doing something real, and so he is interested.

Then qualitative analysis enables a boy to understand, if it is carefully pointed out to him, the exact meaning of such terms as precipitation, double decomposition, solution, sublimation, etc., in a very practical way. There is all the difference between learning these

things theoretically and learning them practically. This same result may, of course, be obtained by other forms of practical chemistry, but possibly not so conveniently.

Again, if the equations of the various reactions are practised, and duly recorded in a notebook, a good deal of useful information will be acquired. The pupils must be able to understand clearly what they are actually doing when they carry out their tests. It will be easy to show them how certain reactions can be classified. How, for example, the result of treating any sulphide with sulphuric acid is always to produce sulphuretted hydrogen, and the sulphate of the metal. This leads to a better idea of the methods involved in the preparation of gases. The preparation of other things as well can usefully be connected with this kind of analysis. Boys can, by this means, be led to think of general cases instead of individual reactions. They will also learn to expect certain things to happen under particular circumstances, and this must needs be a valuable habit to acquire.

Also, such work as this trains, or should train, the power of observation, and helps to develop the capacity of putting the correct interpretation on results obtained. It teaches the most valuable lesson, that it is a fatal mistake to fly to conclusions, for if the work be properly carried out, results must be confirmed as far as possible, both positively and also negatively.

Besides all this, qualitative analysis does give the pupil some idea of quantity, as he learns that he must make his solutions a certain strength and that he must add enough of some things and not too much of others. Each boy should be responsible for his own set of bottles, and should make up his own solutions.

In teaching a subject such as this, it is, of course, essential to have a regular and graduated plan. At first no formal tables should be allowed, and only those substances should be given which can be readily identified from information obtained in the theoretical class. Next, elementary tables, sufficient to detect a few simple salts, should be drawn up and explained very carefully, and then used in the actual analysis of substances. After this, mixtures of salts containing the same acid radicle, and metals in different groups, should be dealt with. This will lead eventually to more complicated mixtures and easy alloys. The aim must be to make the work as continuous as possible, and also to have a direct bearing on the lessons taught in the theoretical class.

It must not be supposed that the balance can be done away with; it certainly cannot, but it is claimed that qualitative analysis has its real advantages, which would be difficult, and sometimes impossible, to obtain in any other way.

THOS. J. KIRKLAND.

Ely.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

A Monthly Magazine of Educational Work and Progress.

No. 206.

FEBRUARY, 1916.

SIXPENCE.

INTENSIVE WORK IN SCIENCE AT THE PUBLIC SCHOOLS IN RELATION TO THE MEDICAL CURRICULUM.¹

By Sir WILLIAM OSLER, Bart., M.D., F.R.S.
Regius Professor of Medicine, Oxford.

FORTY and more years' experience with the finished article as turned out from your shops should give assurance of a knowledge on my part of your methods of work and endeavours. General impressions are rarely accurate, but it may be worth noting that a composite picture of the thousands of students who have left impressions on my mental films is one to be looked at with pleasure; and not without a feeling of gratitude to schoolmasters who have passed on so many men well fitted to study medicine. I do not say well prepared, but 99 per cent. have possessed the essential factor in a successful education, interest, a living interest in the subject. I am taking advantage of the honour you have conferred to urge that by a more intensive method of the study of the sciences, boys designed for the medical profession may leave your hands prepared to begin their special studies.

In a presidential address, and to this audience, a preliminary reminiscent note may be pardoned. As a boy I had the common experience of fifty years ago—teachers whose sole object was to spoon-feed classes, not with the classics, but with syntax and prosody, forcing our empty wits, as Milton says, to compose "Theams Verses and Orations," wrung from poor striplings like blood from the nose, with the result that we loathed Xenophon and his ten thousand, Homer was an abomination, while Livy and Cicero were names and tasks. Ten years with really able Trinity College,

Dublin, and Oxford teachers left me with no more real knowledge of Greek and Latin than of Chinese, and without the free use of the languages as keys to great literatures. Imagine the delight of a boy of an inquisitive nature to meet a man² who cared nothing about words, but who knew about things—who knew the stars in their courses, and could tell us their names, whose delight was in the woods in springtime, who told us about the frog-spawn and the caddis worms, and who read to us in the evenings Gilbert White and Kingsley's "Glaucus," who showed us with the microscope the marvels in a drop of dirty pond water, and who on Saturday excursions up the river could talk of the Trilobites and the Orthoceratites, and explain the formation of the earth's crust. No more dry husks for me after such a diet, and early in my college life I kicked over the traces and exchanged the classics with "divers" as represented by Pearson, Browne, and Hooker, for Hunter, Lyell, and Huxley. From the study of nature to the study of man was an easy step. My experience was that of thousands, yet, as I remember, we were athirst for good literature. What a delight it would have been to have had Chapman's "Odyssey" read to us, or Plato's "Phædo," on a Sunday evening, or the "Vera Historia." What a tragedy to climb Parnassus in a fog! How I have cursed the memory of Protagoras since finding that he introduced grammar into the curriculum, and forged the fetters which chained generations of schoolboys in the cold formalism of words. How different now that Montaigne and Milton and Locke and Petty have come to their own, and are recognised as men of sense in the matter of the training of youth.

I wonder how many of you have a first-hand knowledge of these great masters in your

¹ Presidential address delivered to the Association of Public School Science Masters on January 4th, 1916.

² Rev. W. A. Johnson, Founder and Warden of Trinity College School Canada.

Israel. For a man who, as Montaigne says, has only nibbled upon the outer crust of knowledge in his nonage, and has only retained a general and formless image, it smacks of impertinence to offer idle whimsies to a group of experts. I have a mental reflex when I meet a young man engaged in teaching, and almost involuntarily out come the questions: Have you read Milton's "Tractate"? Do you know Locke's "Thoughts"? Have you ever tried a boy on Montaigne's classical diet? What do you think of Petty's "Ergastula Literaria"? I know what he thinks of me at the close of a few minutes' conversation! But seriously, who does not envy the happy issue of the noble experiment in education made upon the person of the great essayist, whose influence may be seen in the contributions of Milton and Locke? I was glad to read a few months ago the strong tribute paid by Sir Henry Morris (*Lancet*, September 18th, 1915) to these two great English reformers.

May I for a moment in passing say a word or two about the fourth, Sir William Petty, whose "*Advice . . . to Mr. Samuel Hartlib for the advancement of some particular parts of learning*" touches us very closely to-day. It is interesting that it should have been addressed to the man—himself a great educational reformer—at whose request Milton published his "Tractate." When written, the country was in the midst of civil turmoil, with a larger proportion of the population fighting than at any period in its history until the present. The Universities were deserted, education neglected, and upon the old soil thus unturned Petty scattered the seed—to fall among thorns. Only in our day we have seen his three far-seeing propositions realised. Many of our schools are *ergastula literaria*, literary workshops, "where," as he says, "children may be taught to do something towards their living as well as to read and write"; and he was keen that the children of the better classes be taught some "genteel manufacture in their minority," and a delightful list is given. His *Gymnasium mechanicum*, or College of Tradesmen, is represented by our technical schools. Petty's fertile mechanical genius foresaw the enormous advantage of such institutions in stimulating trades and inventions. "What experiments," he says, "and stuffs would all these shops and operations afford for active and philosophical heads." And what a wonderful design is his third institution—a *Nosocomium academicum*, "a hospital to cure the infirmities both of Physicians and patients," a great scientific school for the study of disease and its cure." Neither Montaigne nor Milton nor Locke had the wide national outlook on education dis-

played by Petty, who alone almost of his generation realised that the problems of natural philosophy, as it was then called, must be attacked in a systematic and co-operative study by a group of men "as careful to advance the arts as the Jesuits are to propagate their religion." One cannot but regret that the Professor of Anatomy at Oxford, and the Vice-Principal of Brasenose College, should have been diverted to a turbulent and disheartening career in Ireland, and to-day the identity of the founder of English political economy and of public health statistics is merged in the author of the Down Survey, and the Beginner—to use Fuller's word—of a great family³ (Lansdowne).

To come now to the subject-matter of my address—the earlier and more intensive study of science at school to save time at the university.

For fifteen years the slowly evolving sprightly race of boy should dwell in a Garden of Eden, such as that depicted by the poet—no sense of any ills to come, no care beyond the day, buxom health, wild wit, the sunshine of the breast, the lively cheer—

The thoughtless day, the easy night,
The spirits pure, the slumbers light.

During this blissful period a boy is an irresponsible yet responsive creature, a mental and moral chameleon taking the colour of his environment, very difficult to understand, often never understood by parent or teacher—yet, tied about his neck is a *clavis symphonia* with which anyone may unlock his heart and control his life. Rather an ideal sketch you may think, and doubtless Plato's description fits better with your experience—"and of all animals the boy is the most unmanageable, in so much as he has had the fountains of reason in himself not yet regulated; he is the most insidious, sharp-witted, and insubordinate of animals." What concerns us to-day is that about the fifteenth year there comes a change in this mysterious being—physical, mental, and moral. Consciousness that he is a man and has man's duties is forced upon him, and repeating the tragedy of the Garden, he awakens to the knowledge of good and evil. It is fitting to mark this change with a change in his education. Plato did it. Following two three-year periods devoted to general and humane studies came the maturer pursuits fitting the young citizen for service in the State. My plea is to follow this plan, as for one profession at least it is most desirable.

At fifteen a boy should have had sufficient

³ Petty's "Advice" appeared in 1648 (4to, Lond.), and is also in vol. vi. of the "Harleian Miscellany." I hope to see this remarkable contribution to educational methods reprinted.

general education—the three R's, a fair knowledge of the history and literature of his country, and in the public schools enough classics to begin a technical training and to pass the ordinary entrance examination. Now comes the fateful period in which the bent of the boy's mind is determined. A difficulty exists in only a small proportion; a large majority have already selected careers, and the work of the sixteenth and seventeenth years should be determined by this choice, whether professional, commercial, academic, or the Services. The classical, modern, and scientific departments of the schools now meet these demands.

The profession of which I can speak is in a serious quandary. With the rapid development of science the subjects of study have become so multiplied that the curriculum is overburdened, and the five years is found to be insufficient. Men come up later, remain longer, and the twenty-fifth or twenty-seventh year is reached before the qualification to practise is obtained. A measure of relief to this heavy burden—and it is one not likely to lighten during the next decade—is in your hands. Devote the sixteenth and seventeenth years to the preliminary sciences—physics, chemistry, and biology—and send us at eighteen men fit to proceed at once with physiological chemistry, physiology, and anatomy.

To do this three things are needed: teachers, laboratories, and a systematic organisation of the courses.

I put the *personnel* first, as the man is more important than his workshop. Your society indicates the position which the science master has reached in our public schools, not without long years of struggle. The glamour of the classics lingers, but the shock which the nation has had in this great war will make us realise in the future that to keep in the van we must be in the van intellectually in all that relates to man's control of nature. Science "Heads" at Winchester, Eton, and Harrow would give the death-blow to the old-time Anglican tradition so well expressed in a Christmas sermon by the late Dean Gaisford, that classical learning "not only elevates above the vulgar herd, but leads not infrequently to positions of considerable emolument." There is an initial difficulty apt to block good men, the fear of overburdened teaching, since it is not always possible for a school to pay an adequate staff; but the past twenty years have seen the whole situation changed. The posts have become more and more attractive and better paid, so that a definite career is now offered to able young men. Many original contributions to science made by the members have given a

proper *caché* to the association, and, I may say, have added enormously to its intellectual status. Men feel proud to have as colleagues distinguished workers. Let us not forget that Priestley got his F.R.S. while a master at the Warrington Academy. The exhibits by members at this meeting indicate a fertility of invention in the highest degree creditable.

Brains, not bricks, should be the school motto in the matter of laboratories. A young Faraday in a shed is worth a dozen scientific showmen in costly buildings with lavish outfits. The accommodation, I am told, is at present ample in the larger schools. I have, indeed, seen laboratories which the most up-to-date college would envy. In the smaller schools it has not always been easy to get either the men, the space, or the equipment for teaching all the branches, and if an attempt is made to give earlier and more intensive science teaching there will have to be improvement all round.

The real crux is not with men or with buildings, but so to organise the teaching of the school as to have a continuous science course through two years. What is done now occasionally by the individual, I should like to see done by all the science men coming up to the universities or to the medical schools. A few men take the preliminary scientific subjects on entering Cambridge. Though possible, this at Oxford is rarely done; indeed, the examination is not at a suitable time! For some years now I have watched the results of the chemistry "prelims" at Oxford, and have consulted with many examiners, and I am sorry to say that the opinion usually expressed has been that in this subject the teaching in the schools is not yet up to college standards. Here is where my appeal comes to the school authorities. Give us the boys of the sixteenth and seventeenth years for well-organised thorough courses in biology, chemistry, physics, and the associated mathematics. You have the teachers and the "plant." Think what could be done with a class of bright boys in two full years, who had *nothing else to do*. No, I would let them have two other subjects, French and German, taught à la Montaigne, by making the boys use elementary French and German text-books. With reading clubs, Selborne clubs, and historical clubs, conducted by the boys themselves in the laboratories, the literary side of their education would be continued, and a sympathetic teacher would not be above putting a little English polish on, say, a short essay on Lavoisier. Judiciously mixed, chemistry through two years, biology through two, and physics in one—how I envy the teachers, how

I envy the taught! A full year would be gained, as the two spent at the school in science would be the equivalent of the one now spent upon the preliminary subjects after entering the medical school. It would indeed be possible to allow those who came up to a certain standard to cut off the fifth year. By shortening vacations, and rearranging methods of instruction, we could return to a four-year curriculum. Practically that is what it is now, as a majority of men spend the first year in preliminary sciences, to teach which is really no business of the medical schools. With this arrangement the average man could qualify at twenty-two years of age, spend a year in hospital or at post-graduate study, and start in "life" at twenty-three. We are now losing valuable time and wasting much needed money. What a present to make to our young men—two full years! It is worth while; and it can be done, and should be done.

My colleague, Prof. Arthur Thomson, has suggested that during the present emergency special arrangements should be made to pass on the boys at an earlier age, with their chemistry and physics well in hand. The plan I urge would make a radical change in the constitution of some schools. Not that science is not taught and well taught, but it should be given its proper place, as the dominant partner in the educational family, not a Cinderella left in the kitchen. From an intellectual standpoint the advantages are obvious. The mental exercise of the physical and mathematical sciences, combined with the technical training in the use of apparatus, gives a type of education singularly stimulating to boys. How many of our great inventors have lamented colourless careers at school! Things, not words, appeal to most boys. What an evolution of mind and hand is wrought by a year in a well-conducted physical laboratory. The fascination of making and fitting the apparatus, the wonders of electricity, and the marvellous laws of heat and light—into this new and delightful world a boy of sixteen may pass safely for a thorough training. Only it must not be a mere dabbling, to which the physical laboratory too often lends itself, but a serious day by day, week by week, gradual progress. The senior boys could keep their knowledge of the subject fresh by acting as demonstrators in the junior classes. Many lads show an extraordinary aptitude for physics; there is always a boy Pascal in a big school, and no subject is so suited to arouse a fervid devotion to science. It would do the nation great good to have each generation, at the sixteenth or seventeenth year, pass automatically through a laboratory of physics.

I have spoken of the doubts expressed whether chemistry in the public schools can be taught at a college level. Of course it cannot as a subsidiary subject, to which only a few hours a week are devoted, but in a course extending over two years, as a major subject, with laboratory work four or five mornings a week, surely a youth in his sixteenth and seventeenth years should be able to put in the foundation stones, and in individual cases it is done already. As a mental discipline chemistry almost rivals physics; indeed, the new physical chemistry is a blend which appeals with magic potency to all science students.

But no subject attracts the young mind so strongly as biology, in its varied aspects. Elementary teaching is now admirably arranged, and in a two-year curriculum it should be an easy matter to cover much more ground than in the preliminaries demanded for medicine. Field classes in botany, gardens, museum work, should all be utilised. I would like to see at every school that excellent plan adopted by the late Sir Jonathan Hutchinson at his village museum, Haslemere—nature lectures on Sunday afternoons, with exhibition of the flowering plants of the season, with any other specimens of interest. The biology class gives an opportunity of a clear statement of the facts of sex, always so hard to discuss with boys.

There are objections, of course, to extensive and intensive teaching of science in schools. It is the business of the college, not of the school, to prepare boys for technical studies; but if it is the business of the school to teach science at all, why not teach it thoroughly? The general influence of the school may be trusted to counteract the evil possible in a too early concentration upon special subjects. Nature is never special, and a knowledge of her laws may form a sound Grecian foundation upon which to build the superstructure of a life as useful to the State, and as satisfying to the inner needs of a man, as if the groundwork were classics and literature. The two, indeed, cannot be separated. What naturalist is uninfluenced by Aristotle, what physician worthy of the name, whether he knows it or not, is without the spirit of Hippocrates. It has been well said that instruction is the least part of education. Upon the life, not the lips, of the master is the character of the boy moulded; and doubtless the great master of masters had this in mind when he said: "It may be, in short, that the possession of all the sciences, if unaccompanied by knowledge of the best, will more often than not injure the possessor." (Plato, "Alcibiades," ii.)

GERMAN SCHOOLS AND THE WAR.

By THOMAS F. A. SMITH, Ph.D.

IN a country like Germany, where the army is the nation and the nation the army, it follows that the schools—which in Germany are essentially national institutions—cannot remain indifferent to the tremendous happenings on the battlefields of Europe. The wonder is that they have been able to continue their regular work during an upheaval which has dislocated nearly every part of the national life. If German reports can be accepted, then the schools of Russia and France broke down completely at the outbreak of war, several months elapsing before the orderly routine of school life was restored. German organisation, however, stood the strain, in spite of the fact that the greater part of the elementary schools were taken over by the army authorities as barracks and hospitals. Not only buildings were taken, but 50,000 teachers (out of 148,000) immediately entered the army, the gaps being filled up by women, and teachers who had been pensioned. During the course of the war staff difficulties must have increased, for as the elder army classes have been called up, more teachers have been withdrawn from the schools.

In all probability the secondary schools have suffered still more through the disturbing influences of the war, because in their case both the boys and the masters have been affected—the former voluntarily and the latter under the ordinary rule of compulsion. In many instances half the staff are in the army, and women have thus found employment within the sacred portals of the *Gymnasien*. A few figures from the report of a Bavarian secondary school in Erlangen will best show the effect of the war on German schools; this picture must be multiplied by 1700 in order to get an idea of the effect in all the schools of this class. It is a small school with only 220 boys on the books, but 57 of these volunteered for service in the army. At the beginning of the year there were 27 in the ninth class, but only 3 at the end (July). Out of a staff of 19, only 11 remained to carry on the work. The school's roll of honour—which the headmaster states is incomplete—contains 33 names. Classes which formerly had been instructed in two divisions had to be united; while several university professors gave their services in the place of absent masters.

Besides the concrete effects manifested in vacant classrooms, it would seem that the very atmosphere of the German school has been permeated by war influences. As one

writer puts it: "It is impossible to keep the war out of the school when there is scarcely a boy or girl in our classes who is not absorbed in the fate of some relative or other. Not to mention members of the staff who have sons, younger brothers, colleagues, etc., in one or other of the various fighting lines." Furthermore, the young have been employed for numerous kinds of relief work, much the same as the Boy Scouts in this country. German pupils, however, have been engaged in other tasks too, e.g., collecting gold for the Imperial Bank; gathering old metals for munitions; sending packets (*Liebesgaben*) to soldiers at the front. In all the reports which I have read, the various sums and quantities are stated with justified pride, and it would appear that every school in the Fatherland has sent many hundreds of packets, varying in value from 3s. to 7s. This appeal to the finer instincts in the young mind is a good point in the history of German schools during the war.

Another important landmark is to be found in the Prussian Minister of Education's decree that a *Jugendwehr* (militia) should be established in every district for boys of sixteen and upwards. Membership is voluntary and open to all youths, whether they have left school or not. The training is quite of a military character, with the express purpose of creating soldiers. Many schools have companies a hundred strong, and the whole organisation has been linked up to the local *Landsturmgewehr* (sections). By these methods, no doubt, a large number of volunteers have been added to the army; but the fact must not be overlooked that Germany has done a great deal of fighting up till now, with soldiers which properly belonged to the future. As a corollary, similar companies have been formed for boys aged twelve to sixteen, but in this case the training practically amounts to physical drill in school hours. It is easy to see, however, that the schools which in peace time were pervaded by a military tone, under these conditions have assumed a deeply-dyed war colouring.

The thirty-third and final paragraph in Minister von Soden's instructions is to be deplored, and was possibly the inspiration for a great deal which has happened in class instruction. It runs: "In the evenings, simple theoretical instruction must be imparted on field exercises, sentry and camp duties. But, above all, the hearts of the young must be moved, and their wrath enflamed against the enemy, by relating the great deeds of their fathers and reading the latest war news to them." For the average understanding this

implies teaching hate, and, unfortunately, there is ample evidence to show that many German teachers have interpreted the paragraph in that sense. More than sufficient hate would have come of itself without von Soden's official suggestion.

Quite a considerable literature has sprung up dealing with the topic, "The War and the School." Judging by some thirty books and pamphlets which I have before me, opinion has been united in "allowing the school to mirror the unexampled greatness of contemporary events." In pursuing this course it would appear that German schoolmen—especially those in the elementary schools—have fallen into a serious pedagogic error. After all, education is a work of peace, and an effort to force the young generation to view the world through war spectacles cannot lead to good results. Because the adults of some half-dozen nations are engaged in a mortal grapple is no reason to educate children on lines calculated to prepare them for similar horrors in ten or fifteen years' time. That is the mistake which a majority of teachers in Germany are making in this war. Furthermore, the effects on the young mind of too intimate a participation—mentally, of course—in the horrors of war are more than questionable from the moral and æsthetic points of view. The naked, brutal realism of war is only calculated to do harm in the classroom, and its frank introduction is the latest sacrifice made by German pedagogues in the endeavour to make soldiers at all costs.

If proof were needed that this false step has been taken it can be found in the "War Method Book," which in many cases openly recommends the poisoning process. But more conclusive evidence is found in the writings of Germans who have protested against it. A Socialist, Anna Blos, member of the Educational Council, Stuttgart, writes:—

The common interests which occupy the thoughts of teachers and pupils at the present moment form a common foundation for the life in our schools. But if they are to be a true basis for educational work, the children must not be trained in blind hate for other peoples. Just in this respect the school can, and must, give an ennobling impulse. The young incline easily to revel in the terrors of battle descriptions, to excite their imaginations with brutal deeds, and to show pitiless contempt for captured enemies. It should be the task of the teacher to supervise their reading and to impress upon his charges that an enemy who inspires respect, increases at the same time our admiration for our own army.

A still more emphatic protest comes from a man already known in England, F. W. Förster, Professor of Education in Munich University. In an article entitled "The New

Educational Duties of our Time" Dr. Förster makes the following points:—

First, we must endeavour to turn to good account the ethical values of war. Secondly, we have to guard the young soul from the many dangers which may arise from the manifold impressions caused by events in the theatre of war. Thirdly, we must point out to the young generation the separating effects which war has upon nations, and from this proceed to the inevitable reunion of the peoples, thereby calling attention to the individual moral duties involved.

One other passage deserves quotation:—

The news which we have been receiving for months of bayonet attacks, the killing of masses by explosives, etc., forms a real danger for our youth—just because they are not present to see the awful sights of suffering which would awaken a counterbalance of pity. No teacher can prevent such news from penetrating to his pupils, but at least he can provide an antidote. He can fight with all his energies against scornful, brutal references to "our enemies." He can teach that in war either action or silence is imperative—battles are not won by abuse. When Israel went out against her enemies, Moses prayed; he did not indulge in abuse. Our armies are victorious by their discipline; therefore you (the pupils) must preserve discipline in speech, rule your tongues, and do not give vent to hate or scorn.

In an essay contributed to "Deutsche Weihnacht," a book sent to every German student at the front, Förster protested energetically against the hate for England. He even dared to point out some English virtues, and it is pleasing to note that students wrote acknowledging his common-sense idealism. The article quoted above appeared in a method book for secondary schools, "Der Weltkrieg im Unterricht" (The World War in Instruction), and it is to be regretted that all the contributors are not as scientifically impartial as Prof. Förster.

Herr Spanuth, director of the High School for Girls in Hamelin, writes on the war in religious instruction wherein he makes banal biblical comparisons in Germany's favour. Each writer treats his special subject in great detail, but there is too much evidence of straining points to bring the war into everything; high explosives in the chemistry lessons; trajectory problems in mathematics; warfare in classical times in Latin and Greek lessons, etc. But the author of the article on "The Teaching of English" surpasses them all. He pleads that the young must henceforth be instructed to look upon England as the root of all evil.

We must not stop at preaching about English materialism, political faithlessness, self-righteousness, and hypocrisy; but we must see to it that our disappointment is not transformed into fruitless hate. We must

seek to lead our people to a more objective understanding of the English, so that they can adjust their dealings with them accordingly, both in peace and war.

Tremendous as the present war is, still, in true perspective, it is an historical episode. But German teachers seem to have missed that point, although no other than Field-Marshal von Hindenburg has indicated quite a different course from what they are taking. Prof. Förster relates that an Austrian school sent a congratulatory telegram to the German leader. The latter replied: "It is better for you not to think of me at all. Think of nothing else but your lessons. You go for your exercises, and I'll go for the Russians."

Another decree of the Minister for Education ordains that one extra lesson should be devoted to history each week. Only modern history is to be dealt with for the present, which has induced the masters to introduce all kinds of political problems into their instruction. A suggestion made in the *Philologenblatt* has found general acceptance; the holding of a weekly war lesson (*Kriegsstunde*). On such occasions letters from the front are read, and the most recent battles discussed. Judging by the available accounts of this innovation, it appears to be a revelry in war enthusiasm and patriotism.

THE TEACHING OF CIVICS IN SECONDARY SCHOOLS.

By ALEXANDER FARQUHARSON.

Secretary of the Moral Education League.

THE teaching of civics is a controversial matter; it would require several articles to argue such questions as whether civics should be taught at all in the secondary school, whether it should be taught as a part of history and geography, or independently; whether it should be taught in one particular year (say the final year of the pupil's school life) or should be given a place in the time-table of every form throughout the school; and were these fully argued in theory, the question of the practical application of the victorious theory to different types of school would still remain to be discussed. I propose to leave these controversies on one side; to assume that I am writing for a public that believes in the systematic teaching of civics; and to hope that my presentation of the objects to be kept in view in such teaching, and the scope of the course as I conceive it, will itself serve as an argument in favour of system. I leave out of account also all that might be said, and said quite truly, about the

pressure of examinations, the overcrowded time-table, and so on. I know how formidable these difficulties are; it is for the individual teacher to take the pattern which I provide and shape his coat as much like it as his cloth will allow.

The object of civics teaching, as far as that has yet been introduced into schools or has got itself embodied in school text-books, seems to be the imparting of information on the machinery of local and central government—its construction and working; with, perhaps, some additional matter on the "rights and duties" of citizenship—often of a semi-ethical character. The "useful information" idea has been dominant; an *extensive* knowledge of government, as complete and detailed as possible, has been the aim in view.

Now I agree that it is one of the objects of civics teaching to impart some knowledge of this kind; for a boy or girl who moves in any sort of educated society, who reads any modern books, who looks at a newspaper, who comes in contact with adult citizens at all, needs to have a certain amount of such useful information at command. I am convinced, however, that civics teaching should find its central object and motive elsewhere; not the extensive side of civic life but the intensive should be its main theme, though the intensive side has yet got scarcely a single school text-book to itself. Unrealised though it be by the great mass of the public, it is this side which is an object of contemplation and a "source of sweet delight" to the philosophers that have begun to understand the common life around them. I must attempt as well as I can to suggest what are its meaning and value.

A modern nation is not a mere collection of twenty, or fifty, or a hundred million individuals. It is composed of an endless series of groups; some (cities, churches, trade unions) large, definitely organised, and ancient; others (families, private schools, theatrical companies) small, less definitely organised, and temporary; and every individual is a member of a number of these groups. Each group finds its origin in a common desire of its members or of the nation at large, and in the process of *willing* socially or in common to satisfy such a desire; the school, let us say, is the result of a widespread desire for education, and a common will among a group of parents or the citizens at large to provide it; and so with the trade union, the theatrical company, and all the rest. Each group has a life-process going on within it; as circumstances change, the common will exerts itself to adapt the life of the group to the new conditions; hospitals, for example, adjust themselves to deal with military cases in war-time, or schools leave the East Coast.

Each group is organised to some extent; it has some machinery for discovering the common will—for making up its mind, that is; it has some kind of officials to carry out its will, and to adjust new conditions to old; a city, for example, has its corporation, its town clerk and other officials, and its magistrates.

There is not space here to illustrate these points from the endless series of groups around us; the whole may be summed up by saying that the central fact about the life that we call civic—that is, the life of organised, civilised society—is its organic nature. It is a unity in which the character and structure of the whole is repeated in every part; and every part has its definite relation to the whole. A modern nation is organised throughout on the principle of division of labour; each group has its own special function in the body politic; each has a similar origin, an organisation the same in essentials, a life-process modelled on the same pattern.

Consider for a moment how these common features of the group-life show themselves in the nation, which is, of course, the group of supreme importance in the world as we know it. The nation is the outstanding example of common will, common life-process on a large scale, common organisation. The common desire which lies at the root of national life is no partial or particular thing; it is a general desire for good living; and the common will of the nation is not directed to any particular end; it is capable of direction to any end; it is a sovereign will, in fact. This national will, in one of its forms of expression, has taken to itself ink and paper; it is written down, printed, and to be read and studied in numerous books; this is Law. Law is not a fixed and final thing; it is changing, developing, daily and yearly; and this change and development is the result of the passing over into a more fixed and definite form of ideas to some extent already current in the mind of the nation, or efforts of the common will already in being. It is a crystallisation of public opinion; and it has, as its allies and coadjutors in the expression of the common will, those two staunch conservatives, custom and convention. (We talk of unwritten laws, do we not?) These also have their slow changes and developments. The machinery which the nation possesses for making up its mind is the legislature; particularly the House of Commons, and more generally all the attendant machinery of legislation—the party system, and all propagandist bodies and means of forming opinion; *legislation* is the process of expressing the national will. To carry out the will thus expressed we have our *administrative*

or *executive* machinery—Ministers of State, Government offices, policemen, postmen, and all the rest. To mediate between new and old, and adjust individual and corporate life to the requirements of the national will, we have our *judicial* system—law courts, judges, sessions, etc.—all the paraphernalia of the law.

The central problem in the teaching of civics is therefore to impart that view of the civic life as organic, simple, and similar throughout, of which the above is an imperfect sketch. How is this to be done? Do not let us make any mistake about our requirements; it is not any verbal knowledge that will do here; it is easy enough to teach phrases like “general will,” “social will,” and the rest; but we want something that goes far deeper than that—a clear conception, a lively conviction, an intimate personal acquaintance. We must therefore follow the same rule as always: start from examples of social willing and its manifestations known to the pupil himself—examples in which he himself takes a share, and whose working he knows from the inside. Every school, every form in a school, every set of pupils working regularly together, every clique or group of associates in the playground, the school cricket and football teams, and so on—all these are social groups, each with its common or social will. Such examples are well worth bearing in mind and using at the proper time; but the element of *authority* is so great in them (the headmaster or headmistress, assistants, captains, or leaders imposing their own will from outside, as it were) that they do not show clearly that system of active social willing in which all can participate democratically which it is our object to bring out. A school society, organised on democratic lines, in whose working all members take a share, is the best starting-point for civic teaching; any school which has not got such societies at work already should start one or more as a preliminary measure.

In working as a member or official of such a society a boy or girl begins to get a practical acquaintance with the workings of a common will; and from this we can proceed in a general analytic treatment of civics. A school natural history society (let us say) will hold meetings periodically to forward its affairs. At such meetings suggestions for action will be made by individual members; discussion will arise on these and opinions will be generally aired; a decision of some kind will be come to by vote; and the decision will in due time be carried out. Here we have, for our analysis, the whole process of social action, which is closely parallel to that of individual action, as psychologists tell us; *desire* leading

to the discussion of diverse means of satisfying it; *opinion*, thus formed, coming to a head in decision or *resolve*; *resolve* expressing itself in *action*. Once this process, which goes on in every social group, has been reflected upon and grasped clearly, it will be easy to extend the idea thus formed to any other social group; it will gradually become clear that there is a similar process going on in the school itself, in a district, a city, a county, a church, a friendly society, and in the nation itself, most important of groups.

Hence if we like we can lead on to the conception of *movements*—changes in political ideas, the formation of new parties and propagandist organisations, political and social agitations, and so on. From the same source we can illustrate the way in which social organisation is developed in order to give expression to the social will. Our natural history society should have a committee, a president, secretary, and treasurer, and other officers if there is room for them. The election of the committee gives us representation in miniature; the president will have certain *judicial* functions; the secretary and treasurer will have special *executive* or *administrative* duties; the committee, as well as the whole membership, will make *resolutions*—that is to say, *legislative* enactments. Having once produced a clear conception of these three concurrent functions of the social will, the rest is largely a matter of names. We can show how these functions are performed in the borough, the school, the county, the nation, the Empire; in the voluntary institution (*e.g.*, the local hospital), the M.C.C., and the church; how subsidiary processes of the same kind go on in the best organised groups; how the individual exhibits the same functions in full action, too.

To sum up what has gone before—the aim of the teacher should be to produce a grasp of the elementary and very simple principles of social activity; it is then merely a matter of time and energy how far these can be applied to particular cases. I do not think it is necessary to lay down any limits within which we need attempt to work; if once we can get a clear central conception like that here outlined, we can leave to the future a great part of the process of filling in the picture; our pupils will not go far wrong.

In our enthusiasm for analysis, however, we must not forget the extensive side of civic knowledge, without which we should, of course, have very little material to analyse. The field here is of enormous proportions, including as it does all our governmental, voluntary, customary, and unconscious organisation for every purpose—industrial, philanthropic, artistic, etc.; and selection is our only

hope of safety. Probably the teacher will do well to keep two closely related objects before him here; first, to give the information that will be of most immediate use to his pupils; second, to give that which explains the social activities with which they are in immediate contact. Under the first heading would come information as to the practical working of the Insurance Act, the meaning of rates and taxes, minor legal matters (the law of arrest for assault, say), the outline of our economic system, and enough detail of the machinery of government to make a newspaper intelligible. Much of this will fit in quite well with the information given under the second heading; it will be of interest to go into more detail as to the methods to be used in that connection. In many secondary schools we shall naturally find that the ground is already prepared for us; boys and girls at fourteen or fifteen will probably have a fair amount of knowledge about the social life of the district they live in, and a keen interest in some sides of politics and some social questions. How can we develop this? These hints may be of use:—

1. Contact with actual institutions is of the greatest importance. Why not start by ascertaining what your pupils actually have seen of our typical social institutions—factories, workshops; town halls, churches, cathedrals; gas or electricity works; municipal baths, libraries, parks, tramways; Government barracks and post offices; lighthouses and coast-guard stations; shelters, almshouses, casual wards, and workhouses? Then try to arrange that at some time they shall see typical examples of some or all of these.

2. In many cases you will find that the interest aroused in the pupil by contact with such institutions will be an interest in material things and mechanical processes rather than in the social life of which they are the embodiment. This is insufficient; you have to get your pupils into the habit of watching what goes on—of seeing movement, development, life, in each social organisation. The medium through which we ordinarily obtain such information is the newspaper; and we ought to make considerable use of this in school to effect our object. Try getting your pupils to work on the newspaper (local or national) on the seminar system; let one look out for items of interest in the work of the local authorities of your district; another might follow movements of merchandise at the docks (if a seaport is in question); a third might collect information about local parks, baths, washhouses; another might follow a Bill through Parliament; there are endless possibilities. Try a scrap-album system of filing information thus

procured, letting the pupil do the work. If I am not mistaken you will frequently come across a boy or girl who will display astonishing rapidity and breadth in accumulating information. You can carry matters much further by using simple blue-books or reports of local authorities.

3. It is hardly necessary to do more than suggest that interest can be stimulated and knowledge increased by arranging for occasional special lectures by people who have done prominent civic service, or are specialists in particular departments of civic work. Men of science, soldiers, social workers, municipal officials, and numberless others can help you here if you will go to the trouble of using their services.

I will close with one last hint. Don't forget that behind all the social processes and machinery which will form the bulk of your subject-matter there lies a deeper reality—the moral life of the community to which you and your pupils belong. You will have opportunities at every turn of bringing out this truth; and they are worth taking. The whole system of group-life which I have suggested in outline above is based on the idea of service—though some people have forgotten the fact. Get this clear in your own mind (read Kropotkin's "Mutual Aid," for example) and make it the central idea of your teaching, as it should be of the corporate life of the school. Give conflict and competition its full weight as a factor in progress—as leading up to new forms of synthesis and co-operation; use war in the same way; but let mutual service and love—which is its interior motive and reflection—be the alpha and omega of your civics teaching.

EDUCATION AFTER THE WAR.¹

By SIR OLIVER LODGE, F.R.S.

IN what way should education after the war differ from education before the war? What difference has the war made? I believe it has opened the eyes of the nation to certain perils which during the long era of peace had been overlooked, or, if not overlooked, accepted in a conservative spirit.

Conservatism is natural in education. We have all been through a certain mill, and we are all ground more or less to a pattern, and we think it proper that our children should go through the same process. The similarity of early training establishes a fellow feeling; and if a great school were subjected to sweeping reforms, a whole generation of fathers and

grandfathers would feel themselves aggrieved—defrauded of their natural rights—the right of basking again in the queer, half-forgotten traditions of their boyhood.

Subjects and customs hoary with age are regarded with respect, and even with affection, now we no longer have to suffer under them. New subjects of which in our youth we never heard cannot evoke the same feelings; they seem by comparison barely respectable.

But there come times when old customs must be ruthlessly examined and many of them changed; the present epoch is such a time. An axe has been laid at the root of old traditions, and, like the root-pruning applied to fruit-trees, the result may be a richer crop in future.

Two danger signals have been conspicuous: one sent up by this country, one sent up by our foes.

The heavy pedagogical grind, the desperate worship of material good, the soulless *ad hoc* preparation for business, the concentration on a purely material ideal and its elevation into the region of worship and sentiment—that is one danger; that is the warning signal issued by Germany. The old sentimental, delightful Germany, with a message to the soul of the human race, has been slain, and a ruthless monster has taken its place. Until the dragon has been exterminated, neither Germany nor the rest of the world can have peace.

But our country has unconsciously hoisted its own danger signal too. Nothing so bad as the other, thank goodness—not soul-destroying, but bad enough, and desperately unwise. The neglect of intellectual things, the satisfaction with book knowledge, the inattention to facts, the concentration on physical prowess and on a passive kind of material prosperity, the widespread ignorance of natural facts even among our leaders, and consequent contempt for investigation and expert knowledge—that is another danger.

What has become apparent is the ignorance of our governing classes. The ignorance of all classes. The fact that education has not led to widely diffused knowledge, was not designed to lead there—that it failed to stimulate any healthy intellectual interest in the majority—such a fact has now at length glared at us too prominently to be overlooked. We have been learning from our enemies; one thing after another we have picked up from them. In initiative we have been behind. The courage and the personal character of our men—our men of all classes, and our women too—have saved us. But we have been saved as by fire.

In this commercial community surely there were experts in trade and manufacture, men of experience and ability, eager to help and

¹ From the inaugural address delivered to the Education Conference at the University of London on January 3rd, 1916.

advise and serve in their several capacities at the outbreak of the war. They were not called in; they were not trusted. I put it down not to viciousness but to ignorance. Only gradually did the need for their services loom on those in control of national affairs, and now at length there is organisation. But it is a kind of Nemesis. The manufacturers have long refrained from calling in the scientific expert; and so they themselves, with their accumulation of detailed knowledge of trading and buying and selling, were not called in either.

Briefly, to sum up the contention of manufacturers all over the country: *Inspection by the inexperienced is an extravagant farce.* I put it all down to disbelief in real education.

Concerning details, I once gave to teachers in training hints on method which were published by Williams and Norgate ten years ago in a book called "School Teaching and School Reform." I have looked up that book, and find myself in hearty agreement with nearly all of it, but I am not going to repeat it now.

I believe my interest concerns itself chiefly with an education suited to the average boy, and with the kind of standard known as the third and fourth forms. Many boys at this stage there must be who will never get into the sixth form, or only get there by a kind of hopeless seniority.

All this group, I believe, require special and skilled attention. Yet it is not by them that a school is judged. Inspectors are apt to slur them over—or so I fancy. They are at an uninteresting stage, and they will grow out of it. Yes, but it is while they are growing out of it that one must be careful that they do not rather thoroughly grow into it.

It is for these youths that education should, I think, be of a more bodily character. Their minds will not really be lying fallow, but they would be having both rest and recreation if instruction were given or practice allowed in a variety of more or less mechanical enterprises.

In general, a cultivation of inventive faculty and facilities for genuine experimentation and subjective discoveries. Self-developed interests and actual experience of the workings of nature—that is the kind of thing I want to suggest.

Some are keen for birds and beasts, some perhaps for plants, especially in the spring. Many will be enthusiastic for engines and machinery. Some will be good at drawing or music. Some will be keen on chemistry, others on wireless telegraphy (the simplest kind of telegraphy), and other scientific novelties. Some will be enamoured of lathe and workshop.

The more self-helped work of this kind can be the better. Cut and dried tasks should be eschewed. Books should be consulted as they are needed, for if results are achieved by long thought and brooding, they are vastly more valuable than results which are over-assisted.

Attention.—Children are wonderfully docile and assimilative, considering the quantity they have to learn. A surfeit of information may easily be given them which cannot be digested, and, though they are more or less protected against it by inattention and listlessness, irreparable harm may thus be done to their characters from an intellectual and, I fear, often from a moral point of view. The faculty of concentration, of giving undivided attention to a subject, is of the utmost value—perhaps of more value than anything else in the intellectual sphere. Listlessness and inattention are always signs of something wrong, they are symptoms of mental invalidism or even of incipient disease, and the cause need not necessarily be sought only with the patient. Change of occupation would seem to be indicated as one remedy. A different kind or method of teaching may be another.

Discipline.—Train the body in useful arts and exercises; do not seek to train the mind alone. Excite the mental appetite as well as the bodily one, and let nutritious food be available for both; but do not apply forcible feeding to either.

Bodily discipline could be a very excellent thing. It is one of the things that mankind has to do: "To keep under my body and bring it into subjection." Too little emphasis is laid upon this, too much to the performance of unpleasant mental tasks.

Wrestling with difficulties is not unpleasant; it is genuine discipline, and most wholesome. Translation without a crib is a valuable and difficult exercise—so is solving a mathematical problem; translation with a crib is but of little value. But quiet reading, in good translation, a great deal more than can be worked through scholastically, is excellent too, though in another way; giving interest and reality and "atmosphere" to the portion of text more thoroughly studied. In general, the mind should be stimulated by attraction, not repulsion, by delight of knowledge, not fear of punishment. Yet not by adventitious stimuli, such as scholarships to be won by dutiful children to save the parents' pocket.

Abuse of Scholarship System.—The system of scholarships from preparatory schools to public schools is open to abuse; it is liable to all the vices of premature specialisation for the sharp boys, and neglect and apathy for the duller. And, mind you, among the dull boys will be found those who in after life are

not altogether dull. Charles Darwin would be among them, for one. And many another who only escapes the accusation of dullness through not having been at school, and who afterwards expresses gratitude that his parents gave him home education, and allowed him to run comparatively wild, instead of subjecting him to the too copious mental discipline of school.

The world is not going to be run by the academically trained; it will have to be run—for better for worse—by the many, not by the few.

Literature v. Science.—There is no natural opposition between literature and science. I would not have the scientific student narrowed down in this way, any more than I would have the literary student with no conception of the facts of nature. The two kinds of study are not incompatible with each other. They should always be combined, though, of course, to different degrees of achievement.

Geometry.—In geometry a fact should be known before it is proved. Proofs are many, fact is one. A real proof can seldom be invented by a child. It is not likely that they can achieve what it took a great man among the ancients to accomplish, but they can get into a frame of mind which causes them to receive the solution with satisfaction when it comes, and can regard it as something really ingenious and pleasing, not something superfluous and dull.

Indirect Instruction by Problem.—One of the most fruitful methods of instruction I have found has been by problem and question. Not an examination question, but an educational question. I mean a problem set, and time given for its solution. Children like problems, and if they find a thing out by themselves, they will remember it hereafter.

Historical facts must indeed be hunted up in books or papers, but that also is a useful facility. The habit of going direct to nature for facts is, however, even more to be encouraged. Botanical or biological facts, for instance, are very amenable to this kind of treatment. Geometrical facts and constructions, if simple enough, can often be puzzled out by unaided thought. And that is capital exercise, and gives confidence in the power of mind. The tendency to go to books and cyclopædias is readily fostered and is of value, but it is of less value than the more troublesome but more repaying scrutiny of the thing itself.

Interest.—There is a small systematic beginners' botany book by the late Prof. Oliver, of Kew and University College, London, which begins thus: "Gather a buttercup." I express my own old feeling when I say that

there was inspiration in such a beginning. Perhaps it wasn't the season for buttercups—no matter, then gather something else: at any rate, begin botany by examining a real flower, with the help of a teacher. Work down to diagrams, not up from them. This is not the easiest kind of teaching: is it not the rarest?

Science Teaching.—How many scientific men feel it incumbent on them to enter the teaching ranks? A few, yes. But I wonder sometimes if the teaching of ordinary school science is not rather a dreary business.

What is wanted as a basis for more systematic and higher instruction is a substratum of fact. Every teacher must appeal to what the boys already know.

No one at a university wants to deal with a boy who has never seen a foot-rule, or a clock, or a balance, or a pulley, or a crowbar, or an oar, or a thermometer, or a barometer, or a pump, or a steam engine, or a magnet, or an electric spark. And in another branch of the subject, if they know enough to recognise the planets and some of the constellations, and were familiar with the ordinary cosmical facts, it would surely be a help rather than otherwise.

Facts are wanted to build education upon. These simple cosmical facts which interested the ancients, and gave them much food for thought, can barely be discovered by each generation for itself, but each generation can be encouraged to think about them by well-planted questions; and curiosity and interest can scarcely fail to be aroused. And on such a basis a competent teacher can gradually proceed further and further without limit.

Facts about the human body ought surely to be known by everybody, as well as facts about the Cosmos. In what dense ignorance most people are concerning the construction and functions of this body of ours. Elementary physiology I believe to be of the utmost importance, and a means of instilling reverence for what it behoves us to take due care of. All manner of hygienic details ought to be inculcated as part of the tradition of the race—if only as a measure of self-preservation.

English.—These simple things I have been enumerating may seem too elementary for the work of a secondary school. In a way, yes, but what scope they give for clear explanation and accurate thinking. Clear expression, both written and oral, is a demand scarcely ever satisfied by a schoolboy.

Primary Education.—Take the case of primary schools. In spite of the thorough and excellent system of training of teachers, are we sure that we are giving the right kind of

education as preparation for life? I greatly doubt it. Especially do I doubt it in country schools. The nation is beginning to realise how amazingly important it is to keep people on the land, to give them an interest in country life. But what are we doing to encourage it? Agricultural life is heartily encouraged and honoured in France—and the surprising and genuine wealth of that country is the result.

Then, again, in the education of girls. Are we giving sufficient attention to home management? Surely no education can be more vital than a knowledge of how to deal with infants, how to preserve them from premature death, and bring up the citizens of the future in health and strength.

I say nothing here and now about the wasteful madness of allowing the mass of children to stop their education just at an age when it was going to become fruitful; for all here must surely fully recognise it. To go through all that labour for a truncated result which ends in oblivion—to turn our coming citizens at a critical age loose on the discipline and companionship of the street, is destructive of all dignity except in the strongest characters, and it surely gives democratic government no reasonable chance at all.

Patriotism.—Discovery and utilisation of the brains of the nation is an aim hitherto insufficiently attended to. Workshop routine is not stimulating, and the preparatory training is not of a helpful kind. Yet among artisans is a great amount of brain power, at present not half utilised. Now and again a Faraday or a Watt has risen from the ranks, but only by dint of exceptionally strong personal character, and in face of great difficulties, or else by what seems like accidental aid.

How to continue real education throughout life, and develop the powers of every human being—or at least to devise conditions which shall not seriously crush out such development—that is a great problem. It is a problem worthy of an exalted patriotism; for nothing could be more beneficial to the country.

Class misunderstandings and petty jealousies—perhaps even trade union rules—stand in the way; and workmen themselves are often each other's hinderers. That is a state of things which has grown up in peace; but the present stress should bring to an end these sad evidences of civil war and industrial strife.

When will there be such another opportunity for inculcating the virtue of patriotism and self-sacrificing devotion to country and duty and nobility and service of all kinds?

Education for boys who leave the primary school is chiefly needed in the direction of

bodily discipline and character training. Here is where the essentials of a kind of military discipline are so appropriate. Yet the aim may be much more general than military service.

Daily life is apt to be thoughtless and selfish, but even now the material is sound, and when emergency arises the metal rings true. Imagination is needed, however, to realise the opportunities for service at ordinary times, and it is but seldom that they are looked for. They will not be looked for, nor thought of, unless something is done in the direction of disciplinary bodily training.

It must be part of the education of the ordinary citizen to recognise an opportunity for service in the life of honourable industry, in the life of creation rather than in the life of destruction, in the arts of peace rather than in the arts of war.

FIRE PREVENTION IN SCHOOLS.

By A. E. DUNSTAN, D.Sc.

Head of the Chemical Department, East Ham Technical College.

IN these days of Zeppelin raids and aircraft attacks it will probably be of value to principals of schools and institutes if a few hints are given relating to their procedure in the event of their premises coming under fire whilst occupied. The British Fire Prevention Committee has issued instructions as to the safest course to pursue in the cases of elementary and secondary schools, and head teachers are advised to communicate with this body at 8 Waterloo Place, Pall Mall, London, S.W.

Whilst in many districts arrangements have been made for pupils to leave school and reach their homes before dusk, yet there may be other localities where this very admirable course has not been adopted, and further, in many schools evening work is carried on, thus opening up the possibility of aerial attack whilst the buildings are occupied by numbers of students.

It is very essential that arrangements should be made so that in the case of an approaching attack by enemy aircraft those in charge of such establishments may be notified promptly by the police. It may be that there is time for the pupils to leave the building and reach their homes in safety before the opening of hostilities. In such a case dismissal should be at once accomplished, the pupils receiving instructions to make all possible haste in reaching their homes and then to remain

under cover. But supposing that actual bombardment has begun in the district or is audible in the distance, they should be detained in school, either in their classrooms, as far from windows as may be, or, where space accommodation exists on lower floors, they should be assembled as near the ground level as possible. At any rate, children in the vicinity of the roof of the building should be removed, providing that this can be done without undue haste or disturbance. If the school should be struck by a bomb whilst in occupation the ordinary fire signal should be given, and the pupils taken out by classes to the most sheltered places in or near the playground. Arrangements should be made so that the police will notify when the danger is over, and no boy or girl should be sent out into the streets until such information has been received.

The ordinary high-explosive bomb used by enemy aircraft will not *per se* cause a fire, but where a building is injured, fires are caused from existing naked lights and open fires, and are assisted by escaping gas from broken gas mains or by arcs from shattered electric cables. Therefore, when bombardment has actually commenced in the vicinity of the school, all gas and electric lights should be extinguished and the meter supply cut off. To avoid the risk of panic and the inconvenience of complete darkness in the event of an evening class centre being attacked, an ample supply of candles should be at hand. Open fires must be raked out and doors and windows shut.

When incendiary bombs are used the most effective fire-fighter, viz., buckets of water, is quite valueless, since an intensely high temperature is produced by the ignition of thermit, a temperature well above the melting point of iron. In this event sand is useful to smother the fierce inflammation which is set up and to prevent the rapid spread of the flames.

With regard to first-aid fire appliances, there should be, first and foremost, a very liberal supply of ordinary buckets filled with water ready for use. These buckets should be inspected at least weekly. Simple hand-pumps can be obtained and are to be strongly recommended. There is scarcely any need to purchase minor appliances of the hand grenade type or the powder extinguisher as they are not trustworthy, nor should apparatus containing carbon tetrachloride or similar chemicals be used, as these liquids produce noxious fumes. It is very necessary if portable fire extinguishers are used to see that they comply rigidly with the specifications laid down by H.M. Office of Works, the Board of Trade, the Metropolitan Police, or the British Fire

Prevention Committee. For the small fires which sometimes occur in laboratories nothing is better than damped sawdust; it is more easily carried than heavy sand and smothers a flame most efficiently. It can be improved by incorporating with it about 10 per cent. of sodium bicarbonate.

The regular performance of fire drill should be an obvious occurrence at the present time. The author's experience has been that this is often ignored, or, at any rate, not treated seriously enough in some secondary schools. Having had the pleasure of witnessing a rehearsal recently at a big elementary school in London, it may be of interest to other secondary schoolmasters to compare this account with their own. The school in question is a three-storey building, occupied by 1,200 children, and it was cleared in less than two minutes. When the fire alarm is sounded, the children, without any word of command from their teachers, stand in their places, form lines in the spaces between the desks, and proceed in double file to the door of the classroom. Each class marches in quick time through the large central hall and proceeds down the stairs to the place of assembly in the playground. The drill is varied occasionally by blocking one staircase, so that the scholars have to make sole use of the other. The children are cautioned not to crowd or push and to stop and assist a fallen companion. The teacher accompanies the class, carrying the class register, so that the roll may be called when the playground is reached. This drill, during the war, is practised weekly, and the converse operations, viz., rapidly entering the school in the event of an attack while the children are in the playground, is also frequently rehearsed.

It is absolutely essential that those responsible for the school should be prepared with a plan of action in case of emergency, and that members of the staff, caretakers, and pupils selected for various duties should be thoroughly conversant with this plan and their own parts in it. Where the building is equipped with special fire appliances the persons selected to operate these ought to be given frequent opportunity for using them, so that they may become thoroughly conversant with their application. Any special fire exits, outside staircases, or escapes, should be, of course, made use of in these rehearsals, so that there will be nothing strange to the children when they are suddenly called upon to act in an emergency. It is advisable to appoint special fire scouts, whose duty it should be to call assistance from the police or fire brigade if the Head so directs. The one essential is to avoid panic. This can be done easily if

those in charge have rehearsed frequently a well-thought-out scheme and are free from panic themselves. No scheme and no rehearsal will avail much if the staff shows signs of nervousness and alarm.

The author desires to acknowledge the assistance given and the courtesy shown by the British Fire Prevention Committee.

SCIENTIFIC DISCOVERY.

By R. A. GREGORY.

II.—NATURAL SELECTION AND MENDELISM.

MORE than six hundred thousand different species of animals have been described, while about half that number of species of plants are known, and probably natural science has not yet on its registers one half of the numbers of animals and plants which actually exist. Each of these separate species could be, and formerly was, assumed to have been an object of special creation, but a more reasonable view is that the various forms have been evolved as the result of the action of natural processes.

The idea of evolution goes back to Aristotle and other early Greek philosophers who attempted to face the problems of the origin and development of forms of life. No advance was, however, made in the application of the idea in the long period of theologians and natural philosophers, which lasted until about the beginning of the seventeenth century, when Greek traditions were largely shaken off and the modern method of inductive observation and reasoning may be said to have begun.

The first serious attempt to discover the law governing evolutionary changes was made by Jean de Lamarck, the eminent French zoologist, who devoted many years of his life to studies of the problem of the origin of species. The main points of the principle published by Lamarck in 1801 are that animals may have their structures modified by external conditions or by continued use or disuse, and that the succeeding generation inherits the modification. On this principle, the long neck of the giraffe is explained by the constant straining of generations of the animals to reach the tender shoots at the tops of trees, and the splay foot of the camel by continued walking on desert sands.

Lamarck's principle states not only that variations may be produced by the influence of external conditions, or by exercise, but also that the new characters thus acquired are inherited by succeeding generations. How far the principle supplies the true cause of natural processes has been a matter of much discussion

in recent years, but the proof of the inheritance of acquired characteristics postulated by it has yet to be accepted at the bar of scientific opinion.

Lamarck grasped the truth of organic evolution better than any naturalist who preceded him, and he carried out the principle on a far larger scale and in greater detail than others had done, but his arguments were not convincing. It was reserved for Charles Darwin and Alfred Russel Wallace to import into the problem an entirely fresh set of considerations, and by means of a new and illuminating theory, supported on a secure basis of fact, to win universal acceptance for a doctrine which all the skill and eloquence of its former advocates had failed to commend to the scientific world.

As naturalist on H.M.S. *Beagle* during a five years' voyage round the world, thrown upon his own mental resources and furnished with many new and interesting facts, Darwin was early confronted with many sides of the process of evolution upon which to exercise his imaginative and reasoning powers. The solitude of the voyage and the almost continuous ill-health afterwards—"For forty years he never knew one day of health"—were contributing causes to the formation of those original and suggestive ideas which were the foundation of his greatness.

Upon returning home in 1836, Darwin began to look for facts in relation to the origin of species, upon which he had reflected long before. A year later, after reading Malthus's "Essay on the Principle of Population," it occurred to him that in the struggle for existence among animals and plants, individuals which possessed variations favourable to particular circumstances would tend to be preserved, while those having unfavourable variations would be destroyed. The result would be the formation of a new species. This was the idea upon which Darwin never ceased working for the next twenty years of his life, and it culminated in the publication of his "Origin of Species" in 1859.

Variation is a common attribute of organic life; no two animals of the same kind are exactly alike in every respect; and the forms best adapted to particular circumstances are the forms which survive longest and carry on their kind. Life is always a struggle, and the fittest for the time being are those which thrive best in their surroundings. The intensity of the struggle for existence, even in so large and open an arena as that of the ocean, is shown by the small number of fish which arrive at maturity in comparison with the immense number of eggs produced. It is estimated that of the five million or more eggs

borne by a single codfish, all except two or three meet with untimely deaths at some stage of their career from the egg to the mature adult. In general, both with plants and animals, individuals which depart most from the normal type are the first to be eliminated. Even with the human race we find genius dying early from neglect, while mediocrity treads contentedly along a primrose path. From the point of view of survival, it is just as bad to be in advance of the time as behind it.

For evolution to proceed in any particular direction, it is necessary for variations in that direction to be encouraged continually, and for the trend of tendency of the parent to be inherited by the offspring. Variation and heredity are thus complementary to each other; and until the laws by which they are determined are understood, no evolutionary theory can be said to be complete. The key to the riddle of heredity was discovered in 1866 by Gregor Johann Mendel, an Augustinian monk, abbot of the old monastery at Brunn, Austria, but the biological world remained unaware of it for thirty years; and Darwin died without knowing of the epoch-making work of his contemporary. "Had Mendel's work," says Prof. W. Bateson, the leading authority upon it, "come into the hands of Darwin, it is not too much to say that the history of the development of evolutionary philosophy would have been very different from that which we have witnessed."

For eight years Mendel carried on experiments on the hybridisation of peas and other plants in the large garden of the cloister of which he was abbot or pralat. He described his experiments in the "Proceedings of the Natural History Society of Brunn" in 1866 and 1869; and they remained unknown outside the circle of that local society until the year 1900, when attention was directed to them. Since the rediscovery of his two papers the principles they teach have been applied to hundreds of different plants and animals, and Mendel's law has guided most studies of heredity, while Mendelism has become a clearly-defined branch of science.

It would be out of place here to describe in detail the nature and consequences of Mendel's great biological discovery, but we may sketch its main principle. Working with garden peas, Mendel found that different characters, such as wrinkled or smooth seed, colour of the seed-coats, form of the pods, length of the stem, and so on, could be used to distinguish them. He observed that when two plants differing by a given feature were crossed, the hybrid offspring invariably exhibited one of the parental characters to the entire or partial

exclusion of the other. Thus when tall varieties of peas were crossed with dwarf varieties, the offspring were all tall. This character of tallness was called by Mendel "dominant," while the character of shortness, which does not appear in the first generation of the hybrid plants, was described as "recessive."

The tall hybrids were then allowed to fertilise themselves, and it might be supposed that they would breed true; but that was not the case. After self-fertilisation each hybrid produced offspring in which the two original parental characters—dominant and recessive—were exhibited in the ratio, on the average, of three to one, there being in the case of tall and dwarf peas three tall plants to one short. From the dwarf plants, when self-fertilised or fertilised from the original short stock, only dwarfs can be obtained henceforth; in other words, the recessive minority of the second generation breeds true. Of the three tall plants belonging to the same generation one possesses the dominant character alone, and will produce only pure-bred or tall plants when self-fertilised; but the two remaining plants are cross-breds, and these, on self-fertilisation again, give the mixed generation of three plants possessing the dominant character of tallness to one plant having the recessive character of shortness.

The same simple law was found by Mendel to be true when plants differing in several characters instead of one were cultivated; and thousands of experiments made by biologists since 1900 have shown that the results of hybridisation discovered by him hold good for characters exhibited by plants and animals of many kinds. The work carried on by Mendel in the seclusion of the cloister at Brunn has, indeed, put the whole subject of heredity upon an entirely new footing, and indicated a mode by which the isolation and perpetuation of definite characters can be assured.

In looking for the cause of evolution as against special creation, Darwin was not influenced by the arguments or conclusions of an earlier day or by evidence of past times; the central fact which he set himself to explain was that of adaptation to environment, and the support which it was to receive from the records of the rocks came later.

At the beginning of the nineteenth century it was well understood by geologists that fossils provide a means of determining the ages of the sedimentary rocks of our globe; they were accepted as convenient labels or signs of relative antiquity, but little was known of their own lines of development. Gradually, however, the view was formed that there is no sharp distinction between organisms existing in our own times and those represented by

fossils; and that in the course of ages simple forms of life had been modified or developed into more complicated or more perfect forms until the highest animals, and even man, were produced. On this view, man is heir of all the ages, and in the course of his life he climbs up his own genealogical tree from the condition of simple cell to that of lord of creation. Geoffroy St. Hilaire expressed this important relationship in the words: "The embryological development of a living creature is a summary of the phases of the palæontological development of its species."

Much remains to be done before the complete story of the transformations of the animal kingdoms of the past can be told, but it is upon the evolutionary plan that all discoveries of fossil forms are recorded and all modifications of structure interpreted. The history of life is written on the rocks by fossil remains, and the record shows that from the beginning there has been a steady upward tendency. Taken as a whole, the plants and animals of to-day are far more highly organised, varied, and beautiful than in the past ages of the world, and the future will probably see still higher forms of life. But what of the beginning? Evolution is not creation, and naturalists do not pretend to account for the origin of life, but only to trace the changes it has undergone and the conditions which produce them. Increased knowledge of the older rocks has not shown that we are nearer the fulfilment of the biologist's dream, and the secret of Pandora's box remains undiscovered still.

We have not yet reached the beginning of life. Though science can trace and interpret the "footprints on the sands of time," it knows not how life began or what was the first created form. Deeper down than the oldest rocks lies the mystery of creation; deeper also than the development of structural characteristics of organisms may be the origin of mind and intelligence, which do not admit of accurate measurement. The process by which man has become a moral and ethical being with a spiritual life may be different from that by which animals and plants have advanced in perfection of organisation. There seems, indeed, as Matthew Arnold said, to be "something within ourselves which makes for righteousness" apart from the principle of cosmic evolution, and often in conflict with it.

The existence of this spiritual part of man's nature cannot be said to be explained adequately by natural selection, as the fittest to survive under certain conditions is often not the best ethically, but the worst. "In one aspect," said a leading naturalist, Sir William Thiselton-Dyer, "the religious sentiment is a response to a craving for a supernatural sanc-

tion to rules of conduct. Its varied but practically universal manifestation amongst mankind has to be accounted for by evolution just as much as the possession of a vertebral column. It is not practically helpful to dismiss it as irrational."

No philosophic biologist would now insist that the principle of natural selection, or any other plan of organic evolution which leads up to man, is a complete expression of the origin and expansion of human consciousness; but most naturalists are satisfied that the principle truly represents perceptual operations of nature. Beyond this concept there may be a new and transcendental philosophy, but it belongs to the realm of metaphysics rather than to that of observational science.

PERSONAL PARAGRAPHS.

THE death of Sir John Rhys removes a picturesque and honoured figure from Welsh educational and literary circles. A native of Abercaero, a small village near Ponterwyd, in Cardiganshire, he was born in 1840. At fifteen years of age he was a pupil teacher in a British school near Aberystwyth, and afterwards entered Bangor Normal College. He was made headmaster of an elementary school in Anglesey at the age of twenty-five, and soon after went to Oxford as a commoner of Jesus College; at the age of twenty-nine he was elected to a Fellowship at Merton, pursuing his studies at the Sorbonne, the Collège de France, and the Universities of Heidelberg, Leipzig, and Göttingen. He became H.M. Inspector of Schools for the counties of Flint and Denbigh, and was elected in succession Honorary Fellow and Fellow of Jesus College, member of the Aberdare Commission on Higher Education in Wales, and of the Welsh Land Commission, secretary of the Tithe Commission and of the Welsh Sunday Closing Commission, and a member of the Royal Commission on University Education. He was the first occupant of the chair of Celtic at Oxford, and became Principal of Jesus College in 1895. He was knighted in 1907, and became a member of the Privy Council in 1911. He was chairman of the Royal Commission on Ancient Welsh Monuments, the suspension of the activity of which by the war was to him a source of keen regret. He was at once a hard-working public man and one of the greatest, if not the very greatest, of the Welsh scholars of his time: a recognised authority alike on archæology and on philology, and an ardent advocate of the study of the language and literature of Wales.

THE RIGHT HON. SIR HENRY ROSCOE has died suddenly in his eighty-third year. A native of London he went to Liverpool High School, where he learnt chemistry from Balmain, the inventor of luminous paint. He then returned to London, where he attended University College. In the autumn of 1852 he obtained his B.A. degree and a £10 prize in chemistry; after which he went to the University of Heidelberg and became a pupil of Bunsen, with whom he was on terms of warm friendship which lasted throughout life. Roscoe there worked on the solubility of chlorine in water. When Williamson succeeded to Graham's chair at University College, he invited Roscoe to be his official assistant in the winter session of 1855-56. Roscoe accepted, but returned to Heidelberg for some months in 1856. Later in the same year he became lecturer in a military school at Eltham, and started a consulting practice with Dittmar.

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IN 1857 Roscoe became Professor of Chemistry in Owens College, Manchester, and for thirty years his fortunes were largely bound up with those of the college. With the principal, J. G. Greenwood, Dittmar, and later Carl Schorlemmer, Roscoe formed first a school of chemistry at Owens, and a later result of their efforts was the foundation of the Victoria University. His work to this end, at first almost unconscious, and gradually becoming more and more explicit in its importance, was probably the most fruitful work of his life. At the time of the passing of the Act of 1868 and the transformation of the University of London from an examining into a teaching body Roscoe was its vice-chancellor.

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SIR HENRY ROSCOE'S most important work was in pure chemistry. He carried out an extensive research on the vanadium compounds; and for this and his notable work in photochemistry he was awarded one of the Royal Medals of the Royal Society. His "Elementary Lessons in Chemistry" has had an extraordinary success and has been translated into many languages. He published the "Life of John Dalton," and later, with Dr. Harden, "A New View of the Origin of Dalton's Atomic Theory."

* * *

DR. JOHN MARSHALL, formerly rector of the Royal High School, Edinburgh, died at the age of seventy years. Dr. Marshall was a native of Edinburgh, and was educated at Edinburgh University and at Balliol. In 1874 Dr. Marshall was called to the bar by

Lincoln's Inn, but two years later returned to Balliol as classical lecturer. He was, from 1877 to 1882, professor of classics at University College, Leeds. Among his best-known works are "A Short History of Greek Philosophy" and a translation of the "Odes of Horace" into English verse.

* * *

THE REV. EDWARD GILLIAT died at Bath from injuries received by being knocked down by a motor-car. Mr. Gilliat was educated at Pembroke College, Oxford. He was a master at Westminster and afterwards at Harrow, where he succeeded Matthew Arnold as occupant of Byron House. His work at Harrow extended over thirty years, ending in 1901.

* * *

EDUCATION is recognised in the Honours List published on New Year's Day. Knight-hoods are conferred upon the Very Rev. George Adam Smith, principal and vice-chancellor of Aberdeen College; upon Mr. Owen Edwards, chief inspector of education for Wales since 1907; and upon Mr. George Franklin, the pro-chancellor of Sheffield University and a former Lord Mayor of Sheffield. Dr. John Cadman, professor of mining in the University of Birmingham, petroleum adviser to the Colonial Office, and coal-mining adviser to the Government of Nigeria, obtains a C.M.G. The honour of A.C.S.I. is conferred upon Mr. H. Sharp, of the Indian Education Service, and upon Mr. L. C. Porter, of the Indian Civil Service, lately secretary to the Government of India in the Education Department. Mr. G. MacDonald, assistant secretary in the Scotch Education Department, is made a C.B.

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MR. A. H. HOPE, a master at Manchester Grammar School, has become headmaster of Roan School in succession to Mr. T. R. N. Crofts, now headmaster of the Royal Masonic School at Bushey.

ONLOOKER.

AN EXPERIMENT IN RURAL EDUCATION.

LITTLE by little, by slow and faltering steps, the primary education of rural England is being extricated from the slough into which it was led by unpractical theorists in the great reaction which followed the dull, mechanical *régime* begotten of "payments by results," and in due time, if we faint not, we shall doubtless see the establishment of a rational system founded on the bed-rock of

reading, writing, spelling, and elementary mathematics taught by mind-awakening methods, from which are excluded many of the expensive, showy, time-wasting, and often almost useless devices which sometimes do duty for education to-day. We are beginning to learn that things which are really useful to the future citizen *can* be so handled in the classroom as to be educative in the best sense of the term, and that town and country require separate treatment. Education Pamphlet No. 31, issued by the Board of Education, gives a brief account of one such step which deserves to be studied by every educationist and to be imitated by every local authority, not slavishly, of course, but with modifications adapted to the locality.

We are not told where the experiment is being carried on, but an old disused grammar school in a small village has been converted, at small expense, into a rural centre for instruction in handicraft, practical mensuration, gardening, laundry work, cookery, and housewifery. Boys and girls from eight village schools within a radius of six miles, conveyed to the centre by brakes, spend one day each there per week in eminently practical work, with apparent advantage to the rest of their educational course. It is painful to note a hint that one or two of the head teachers of the contributory schools appear to be somewhat jealous and lukewarm. What a pity that petty jealousies should hinder educational advance!

The following short extracts will give some idea of the character of the experiment:—

The boys do practical drawing and mensuration, and have practical instruction in nature-study in the school garden in addition to handicraft; and the girls do housework which can be spread over the whole day.

The girls learn laundry work in the first three months of the first year they attend the centre, cookery during the next three months, and a mixed course completes the year's instruction.

The specialised knowledge gained in the first year's attendance at the centre is applied in the household management course of the second year, where the special processes of cooking, washing, and ironing are performed in their right place, along with other housework, as part of the general routine of the home.

The course includes instruction in the best, quickest, and most hygienic methods of cleaning a house and keeping it clean, and the organisation of this work by the day and week and on special occasions. The instruction aims at bringing about order, freshness, and sweetness in the home. The girls are also taught how to choose and keep in good condition furniture, floor coverings, bedding, and everything used in a house. Simple upholstery, which will help them to mend their own furniture and keep the covers in order, is included in the syllabus. They are all also

taught how to make the best use of remnants, how to renovate old clothes, how to keep household accounts, and how to spend money to the best advantage. Instruction is further given in the care of a baby, and in the preparation of its food.

The curriculum for the boys is of a very useful rural character. Measurements, drawings, and calculations are made from objects of all kinds, both indoors and outside, leading up to the estimation of the volumes of such objects as haystacks, timber, milk-churns, etc., and the surveying of fields.

The nature-study is largely taken out of doors and is principally concerned with forestry, gardening, and beekeeping, all of which have a very definite bearing upon the occupations of the neighbourhood. The boys also learn how to graft and bud, and to propagate the common garden plants and fruit trees.

The handicraft is chiefly work in wood and metal. The work includes repairing cupboards and bookcases, fixing curtain rails, etc., and repairing objects brought from home, such as leaky funnels and oil-cans.

The co-operation between the teachers of the domestic and manual centres is also an excellent feature; the boys greatly appreciate the share they are taking in furnishing the house, and the girls will no doubt think more highly of the articles their brothers have made than of those provided by the authority.

There is no question that the children take the keenest interest in the work. The weekly journey is an incident in their often monotonous lives, their minds are broadened by contact with fresh teachers, and they feel that the work they are doing is useful at home and after they leave school. It is satisfactory to find evidence that some of them are already applying at home the work they have learnt at the centre. The girls are allowed to take a more responsible share in the home, and the boys make or mend articles for their parents in their spare time.

In several schools there is also evidence that the work is having an effect on the leaving age. There are several children of fourteen who would in the ordinary course have left at thirteen, and there is a clear tendency for children to stay at school to finish their practical course.

The opinion of all the head-teachers concerned was sought as to whether there had been any falling off in attainments in the essential subjects owing to the whole day a week spent at the centre. All said there was no evidence of this so far.

It is very satisfactory to find that the opinion of managers, some of whom were at first for various good reasons inclined to doubt the advisability of sending the children to the centre, seems to be very favourable to the scheme now that experience has been gained of its working. So far as can be ascertained the opinion of parents also is generally favourable.

The good results achieved here should stimulate other trustees of rural charities to apply their funds to schemes of a like character, either by the provision of a centre serving several schools or by affording facilities at one or more individual schools according as circumstances permit.

RECENT RESOLUTIONS ADOPTED BY ASSOCIATIONS OF SECONDARY SCHOOL TEACHERS.

THE HEADMASTERS' CONFERENCE.

THAT in the opinion of this conference very grave loss to the country is caused by the employment of young students of exceptional mathematical and scientific ability as subalterns in Line battalions.

That the conference should consider the best means of reducing the expenses of school life, and that its members should seize the opportunity of promoting simplicity of living and industry in the English public schools.

ASSOCIATION OF HEADMASTERS.

That those masters who, having attested, are certified as medically fit only for home service, should be allowed to continue their work at school, and not be called up for service with his Majesty's forces.

(a) That in effecting economies in educational expenditure, reductions in the expenditure on administration, inspection, and material should precede economies more directly affecting the immediate needs of the children.

(b) That in all schools under their control the Board of Education and local authorities should at once reduce to a minimum their requirements as to inspections, examinations, returns, and all kinds of clerical work; and that the expenditure on prizes, school functions, plant, and apparatus should be, wherever possible, curtailed.

(c) That the present scale of salaries for assistant-teachers should not be regarded as admitting of a reduction.

(d) That whereas any reduction in the normal staffing of schools is directly injurious to education, whenever such reduction is necessitated by present emergencies it should be regarded as a purely temporary expedient.

(e) That this association do consider the best means of reducing the expenses of school life, and that all its members pledge themselves to seize this opportunity of making simplicity of living a marked feature of English public schools.

That military training in secondary schools should, as soon as possible, be reorganised under the direction of the War Office.

That there should be a formal scheme for the organisation of cadet corps under the War Office, and that in any reorganisation the elementary schools should be included.

That both the O.T.C. and the cadet corps should receive financial support from public funds.

ASSOCIATION OF ASSISTANT-MASTERS.

Educational Economy.—(a) That this association, while recognising the need for national economy, affirms its belief that any reduction in State grants for education would be false economy, and gravely prejudicial to the welfare of the nation.

(b) That in effecting economies in local educational expenditure, reductions in the expenditure on adminis-

tration, inspection, and material should precede economies more directly affecting the immediate needs of the children.

(c) That in all schools under their control, the Board of Education and local authorities should at once reduce to a minimum their requirements as to inspections, examinations, returns, and all kinds of clerical work; and that the expenditure on prizes, school functions, plant, and apparatus should be, whenever possible, curtailed.

(d) That owing to the great increase in taxation and the cost of subsistence, which bears most heavily upon individuals in receipt of fixed salaries, the present scales of salaries for assistant teachers do not admit of reduction in any case.

(e) That whereas any reduction in the normal staffing of schools is directly injurious to education, whenever such reduction is necessitated by present emergencies, it should be regarded as a purely temporary expedient.

Co-optation on Education Bodies.—That this association is of opinion that on every local authority and governing body there should be at least one nominee of the teachers employed in the secondary schools.

Right of Hearing.—That this association reaffirms its opinion that the dismissal of an assistant-master should not take effect until it has been confirmed by the governing body; and, before confirming it, the governing body should give the assistant-master an opportunity of stating his case (with or without the help of a friend, as the assistant-master elects) before them.

National Service of Teachers.—That the members of this association desire to record their gratitude to those teachers, upwards of 8,000 in number, who are voluntarily serving in his Majesty's forces; their resolve to do all in their power to prevent, as far as is possible, loss of efficiency in the schools being caused by the absence of their colleagues on active service, and their hope that the war, testing as it does to the uttermost national character and national methods, may yield experience of great value in the future guidance of education throughout the British Empire.

ASSOCIATION OF ASSISTANT-MISTRESSES.

That £100 of the surplus of the year's income be granted to the Education Section of the Professional Classes War Relief Council; £50 to be assigned in January, and the remaining £50 in June.

(a) That this association approves of the inauguration of a loan fund for the use of A.A.M. members.

(b) That £100 of the association funds be used to start the fund. Such fund to be augmented year by year on the recommendation of the executive committee.

(c) That the executive committee be empowered to appoint a committee to draw up and administer a scheme for such a loan fund.

That this association, while fully recognising the need for economy under the present abnormal conditions, wishes to protest against retrenchment being made at the expense of efficiency in education, is of opinion that the present scale of salaries for assistant-

teachers does not admit of any reduction; and that inasmuch as any reduction in the normal staffing of schools is directly injurious to education, wherever such reduction is necessitated by present emergencies it should be regarded as a purely temporary expedient.

SUBJECTS DISCUSSED AT THE JANUARY CONFERENCES.

THE ECONOMY OF SIMPLIFIED SPELLING.

IN his presidential address to the Simplified Spelling Society on January 4th, Prof. Gilbert Murray insisted that reformed spelling in England is essential for mere economy's sake. Practical teachers estimate that there is a dead-time loss of one year in a boys' or girls' school by the present bungling methods. England must have a training in reason. The child wants a reasonable teacher and a reasonable world; instead, he is presented with a mad world and a capricious teacher. The Society's movement is for reform; its members work as lovers of language and lovers of literature. English is a beautiful language, and to make its rich sounds enduring there must be a common law or standard for the conveyance of these sounds literally in the spelling. The Society has adopted more or less the old phonetic alphabet as being the most practical. It works with an open mind, for ever having before it the goal of a consistent phonetic system, though not minutely phonetic. Our present method of spelling is simply grotesque. Sensibility must be sacrificed. Our language will be getting hard and forbidding if the divergences are allowed to continue, and there is a danger of our language being ultimately split up into a variety of dialects. Reading and writing form the core of education. The Society is out to conserve this centre heart action, and to eradicate the irrational and harmful spread of the present method of spelling.

FUTURE WORK IN EDUCATION.

Mr. G. D. Dunkerley in his address as retiring chairman at the annual meeting of the Assistant-masters' Association indicated what, in his opinion, would be the principal lines in educational development in the next few years. He enumerated them as follows:—

(a) The modification and gradation of existing schools, with a view to the placing of boys in schools most suitable for their temperament and ability, irrespective of class distinction and material cost; in which are implied:

(b) The widest extension of the scholarship system on true educational lines;

(c) The establishment of machinery for the transfer of scholarship pupils and liabilities from county to county as necessity demands.

(d) The substitution to a large extent of State support for aid from local rates, and a consequent improvement in the tenure of teachers.

(e) A satisfactory solution both of the tenure question and of that of salaries and superannuation, so that the profession may attract entrants by its

inherent worth rather than by what, with the present system of subsidy, is little more than bribery.

(f) The training of teachers.

(g) Standardisation of examinations and extensive changes and simplification in curriculum, together with diminution in the size of classes.

PART-TIME EDUCATION AFTER FOURTEEN.

A discussion on this subject took place at the annual meeting of the Teachers' Guild. Mr. A. C. Coffin dealt with current practice and opportunities. He stated the outstanding facts to be faced as follows:—

(a) That the various educational forces already at work could provide the necessary energy for conducting a national system of part-time education for boys and girls over fourteen years of age.

(b) That the opposition to the establishment of such a system is due in a great degree to those commercial and industrial conditions which obtained before the war, but that with a more enlightened view of their national obligations employers would probably be willing to provide the necessary facilities for their pupils to attend day continuation classes.

(c) That such day continuation classes would have to cater effectively for the physical as well as the vocational education of the pupils in attendance.

(d) That the problem is associated closely with problems such as housing, Sunday observance, and other intricate matters which would arouse much fierce controversy.

(e) That the effect upon the elementary and secondary schools of the country would be profound and far-reaching.

It is a problem upon which it is impossible to devote too much care, too much thought, too much goodwill, and it is a problem which it behoves us to solve if we are intent upon repairing the ravages of the present war.

A PATRIOTIC DUTY.

At the annual meeting of the Association of Teachers of Domestic Subjects the economic aspect of the war was discussed. Miss Zoe Hawley gave some figures regarding the country's financial situation, and insisted on the necessity for individual saving. One of the most patriotic things we can do to-day, she said, is to refuse to buy imported articles. Owing to the blockade Germany cannot squander her money on imported luxuries, and it is quite possible that we have rendered Germany an enormous service by forcing her to become self-supporting. We ought to be forced to stop the consumption of luxuries. If Miss Hawley were a Cabinet Minister she would set up a court to try everybody who spent money foolishly, because that is to spend it criminally now; and she would begin with Cabinet Ministers. The only money we have a right to spend is that which will make us more efficient to do our work for the country. So far, the wage-earning class, said the speaker, had not been alive to its responsibilities; she heard the other day of a soldier's wife who had bought a grand piano. The wage-earning class are, she urged, squandering the sinews of war, increasing our imports and stopping exports. The heart of the people is all right,

but they do not understand. The situation is such that it is not the millionaires who are going to save England, nor the rich, nor the middle class, nor professional people; we shall only be saved if all will economise. Are we ready to sacrifice the big things, not the small odds and ends? If we are not prepared for sacrifice, we shall neither win nor deserve to win.

SCIENCE AND INDUSTRY.

Mr. Barker North, of the Bradford Technical College, dealt with an important subject at the annual meeting of the Association of Teachers in Technical Institutions. In his paper, he said, even now the general public are far from realising that, to a large extent, the success of our industries in the future will be proportionate to the application of science to them. It is a remarkable fact that Britain and France have produced a far greater number of the pioneers in the world of invention and discovery than Germany, but what Germany has lacked in brilliancy she has more than made up for in the large number of well-trained technical men, of more than average capacity, who have apparently been gifted with the power of adapting initial discoveries to their own ends. The discovery of the first aniline dye, the researches on electrolysis, and the induction of currents, the pioneering discoveries in connection with spinning, wool-combing, and the modern power-loom, the discoveries in engineering in connection with the great systems of power production—in all these and in many others Britain has led the way. In spite of this, however, at the present moment we are feverishly engaged in improvising the aniline dye industry to save our textile trade; the enormous number of products derived from benzine are mostly made in Germany; the biggest chemical and electrical works are in Germany; it is principally in Germany and America that electrolytic processes are being exploited for the manufacture of chemicals and for the extraction of metals; the synthetic production of ammonia, nitric acid, ammonium nitrate, and potassium nitrate are being turned to account by Germany in the manufacture of high explosives; in the textile industries Germany is becoming a serious competitor in the manufacture of fabrics which at one time we made exclusively for the world; and, finally, in the period of thirty-three years ending in 1913 the German output of pig-iron increased more than 700 per cent., American 800 per cent., and British only 50 per cent. In four large dyestuff businesses in Germany no fewer than 1,000 chemists are employed, while in the whole of the British chemical industries we employ only 1,500 chemists. The first thing needed is to bring all the technical forces of the country to bear on the war, so as to bring success in the shortest possible time, and the next is to be prepared for the industrial war for which Germany and other nations are preparing. For this purpose we must have a true mobilisation of all the technical forces of the country, controlled by some central organisation the function of which should be to co-ordinate the spasmodic efforts that are being made and direct the technical knowledge and skill into the most useful channels. He

suggested a strong Ministry of Industries and Commerce. We have in this country a unique system of technical evening classes that is doing far better work than most people realise, but the system will have to be further developed if we are to keep pace with the improvements which must follow the application of science to industry.

EXAMINATION OF SECONDARY SCHOOLS.¹

1. IN July, 1914, the Board of Education communicated to local education authorities in England, and to certain other bodies and persons, a paper containing their proposals for improving the examination of secondary schools.

2. The chief points in these proposals were:—

- (a) that the universities should be recognised as the responsible bodies through whom examinations in secondary schools should normally be conducted;
- (b) that teachers should be brought into touch with the examining bodies by some system of representation or consultation; by the right to submit their own syllabuses for examination; and by a provision that headmasters and headmistresses should submit their estimate of the merits of candidates from their schools in each of the subjects offered for examination;
- (c) that only two examinations should as a rule be recognised for schools, one suitable for pupils of about the age of sixteen and one for those about a year or two older;
- (d) that the first examination, for which a school would be expected to present as a whole a form in which the average age was about sixteen, would aim at testing the attainments of the pupils in the three main branches of their curriculum, namely, English subjects, foreign languages, and mathematics and science. It was not then proposed to extend the test to such subjects as music, drawing, manual instruction, etc.;
- (e) that the group of subjects rather than individual subjects should be the unit in respect of which success or failure would be determined;
- (f) that the standard should be such that a pass with credit should entitle the candidate to admission to a university, while a slightly lower standard would be accepted for an ordinary pass;
- (g) that the second examination should assume that the candidate had, after the stage marked by the first examination, followed a more specialised course;
- (h) that all State-aided schools would be expected to take the first examination, and would not be allowed to arrange their curriculum so as to provide special preparation for any external examination not recognised by the Board;
- (i) that candidates from other schools would be admitted to the examination, but, unless entered

¹ Board of Education Circular 933, December, 1915.

from a school recognised by the Board as efficient, would receive a certificate of a different character;

- (j) That in order to secure the necessary equality of standard, and to provide machinery for enabling the scheme to be improved from time to time, there should be a co-ordinating authority, and that the Board should perform this function with the help of an advisory committee comprising representatives of universities taking part in the scheme, of teachers and of local education authorities.

3. The replies to that communication, while furnishing the Board with a number of valuable criticisms and suggestions, and displaying a variety of opinions on some points, generally agree in the view that the cost of any such proposals must be borne by the central authority.

4. The Board had already acknowledged that their proposals would involve additional expenditure, and had held out the hope that, if the proposals met with acceptance, financial aid would be forthcoming. In view, however, of the situation created by the war, it is obvious that the Board are no longer able to give such an assurance; and they, therefore, think it their duty to state that their proposals, in so far as they would involve expenditure by the Board, must be considered to be in abeyance.

5. They consider, however, that it is due to those who have shown an active interest in the question to give a brief account of its present position and of the results so far arrived at. Apart from finance, the public discussions which have taken place and the criticisms and suggestions which have been received by the Board indicate that interest has been specially concentrated upon five main points:—

- (a) the attitude of the universities;
- (b) the attitude of the professional bodies;
- (c) the proposal that all State-aided secondary schools should be required to take the first examination;
- (d) the treatment of subjects such as manual instruction, housecraft, music, and drawing, in connection with the proposed examinations; and
- (e) adequate representation of secondary-school teachers on the committee to be constituted to advise the Board in the exercise of their functions as co-ordinating authority.

6. The negotiations between the Board and the university examining bodies have been marked by great cordiality, and have resulted in substantial agreement on the main issues; in most cases little more remained to be done to enable revised regulations giving effect to these agreements to be issued.

7. The Board have also been much encouraged by the reception given to their proposals by the professional bodies. Of the seventeen bodies consulted by them, ten are prepared to accept a certificate of success in the proposed first examination on the terms on which they now accept certificates of somewhat similar standard; five reply favourably, though in less precise terms; and two defer their decision until the proposed new system is at work.

8. As a result of their conferences with the university examining bodies and others, the Board are glad to find that the reasons which induced them to propose that the first examination should be obligatory for State-aided schools have no longer the same weight. On the other hand, there are obvious advantages, both educational and administrative, in preserving freedom to deal with particular cases, *e.g.*, schools conducting educational experiments or going through some crisis in their fortunes, or very small schools in country districts, especially as the Board have already power under their Regulations for Secondary Schools to require any school on the grant list to be at any time submitted to an approved examination. It has accordingly been decided that the proposal to make the first examination obligatory for all State-aided schools should not be pressed.

9. The Board have studied with great interest the criticisms on their proposal not to require candidates to offer subjects such as those mentioned in 5 (d) above, and not to consider success in these subjects in the award of certificates. In taking that course they were not actuated by any want of appreciation of the importance of the subjects, but rather by the fear lest harm might be done to them at this early stage of their existence in secondary-school courses by bringing them prematurely into the sphere of examination. Their inclusion also involves a serious increase of cost. The Board are, however, satisfied by the expressions of opinion they have received that the time has come for the experiment to be tried, and that provision should be made for giving such subjects a fair place in the scheme.

10. The Board intend to provide for a substantial representation of secondary-school teachers on the proposed advisory committee, and for such representation of local education authorities as will enable them to keep in direct touch with it as well as with the Board.

11. While it is impossible for financial reasons to proceed for the present with their scheme as a whole, and particularly with those parts of it with which the Board were specially concerned, they venture to hope that, in view of the large amount of support which it has received, the parts which are educational rather than administrative in character need not, even temporarily, be sacrificed. The points they have specially in mind are:—

- (a) limitation of external examination to two examinations at the age of about sixteen and eighteen respectively;
- (b) recognition of the principle that the group rather than the individual subject should be the unit on which success or failure is determined in the first examination;
- (c) concentration in the second examination on a special group of studies with one or more by-subjects;
- (d) inclusion of subjects such as drawing, music, manual instruction, housecraft, or some of them, in the scheme of examination; and
- (e) provisions for securing the co-operation of the teachers with the examining body.

The Board note with satisfaction that the Oxford

University Delegacy for Local Examinations have already published a revision of their regulations on this basis, and that the Cambridge University Syndicate have also issued a statement of the lines on which they propose to make a similar revision. It is hoped that other universities will see their way to follow these examples.

ITEMS OF INTEREST.

GENERAL.

IN Circular 933, which we reprint in another part of the present issue (p. 62), the Board of Education announces that in view of the situation created by the war it is impossible for the Board to give any assurance of the necessary financial aid which the adoption of the proposals in the now famous Circular 849 would render necessary. The Board states, therefore, that the proposals so far as they would involve increased financial aid from the State are to be considered in abeyance. The opportunity has been taken at the same time to make it known that the proposal to make the first examination obligatory for all State-aided schools will not be pressed, and that the Board intends later to provide for a substantial representation of secondary-school teachers on the proposed advisory committee, and for such representation of local education authorities as will enable them to keep in direct touch with the committee and the Board.

EDUCATIONISTS will have read with satisfaction the speeches in the debate on January 10th in the House of Commons on the motion of Mr. Hewins that the Government should enter into immediate consultation with the Governments of the Dominions in order with their aid to bring the whole economic strength of the Empire into co-operation with our Allies in a policy directed against the enemy. Attention may be directed specially to the reply of the President of the Board of Trade. Mr. Runciman recognised what were the essential things in the present grim struggle and the equally deadly competition which will follow the declaration of peace. "I put down," said Mr. Runciman, "as one of the first necessities of this country, if she is to hold her own during times of war and when war is over, that we must improve our research methods, the education of our people, and the training of our young men. We should not attempt to economise on the money we now spend on technical colleges and modern appliances. There are other directions in which we can cut down expenditure with less national damage. The next quality that undoubtedly is requisite in order that we can hold our own is that we should be adaptable. The war at all events has taught the commercial people of this country the necessity of adaptability. The whole commercial world has changed. Men have had to go into almost entirely new businesses. They have had to consider almost entirely new conditions, and that adaptability which was not supposed to be our characteristic in the past has been fostered rather than hindered by the war." Teachers at least know that this encouragement of adaptability is a large part of their work, and that in this direction lies a vital means of assisting the country.

THE Rev. W. Temple, rector of St. James's, Piccadilly, president of the Teachers' Guild and of the Workers' Educational Association, and formerly headmaster of Repton School, has accepted the presidency of the Educational Science Section of the British Association, for the meeting to be held at Newcastle this year.

THE London Centre of the Teachers' Guild has arranged an interesting series of meetings for the present term. The opening meeting will be held at 9 Brunswick Square, W.C., at 5.30, on February 4th, when the president, the Rev. William Temple, will deliver his presidential address on "The Place of Education in Politics."

A VERY interesting and highly instructive series of submarine pictures taken by cinematography in the Bahamas is being shown twice a day at the Philharmonic Hall, Great Portland Street, London, W.; and we advise all who are attracted by the beauties of nature, as well as those who appreciate human achievement, to take an early opportunity of seeing this film. To take the pictures, the brothers G. and E. Williamson devised a kind of flexible caisson, at the lower end of which was a chamber provided with a large plate-glass window. The caisson, or tube, was suspended from the bottom of a barge, so that the operator could descend the tube from the barge, and thus reach the submerged chamber from which the photographs were taken. It was found that in the clear waters of the West Indies there was sufficient light down to a depth of twenty fathoms or more to enable cinematograph pictures to be secured without artificial illumination. It has thus been possible to obtain a series of views of the sea-bottom from Nassau to San Salvador.

IN the seas where the operations were carried on, marine life is so rich and diversified that the pictures obtained are really wonderful in their beauty. They show living coral growth, sponges, and divers gathering them, an abundance of fishes of various kinds; and all this with much more in the living and moving pageant of the submarine world. Sharks attracted by the body of a dead horse, and an encounter with one of them by a diver, give an element of excitement to this remarkable series of cinematograph pictures. More can be learnt from the pictures in an hour than from many lessons and much reading, and we hope that the enterprise which led to their production will receive the fullest encouragement from teachers and others concerned with educational work, as well as from the general public.

WE are informed that the scholarships, medals, and prizes awarded in connection with the examinations for Commercial Education Certificates by the London Chamber of Commerce, which have hitherto been confined to candidates of British birth and parentage resident in London and suburbs, will for the 1916 and subsequent examinations be open for competition to such candidates in all parts of the British Empire.

At a joint meeting of the Geographical and Historical Associations on January 7th, Mr. Mackinder urged that in elementary schools and in the lower

forms of secondary schools geography and history should be taught as one subject. He argued that not only must children acquire the power of expression, not only must they have scientific instruction, but they must also be trained in outlook in order to acquire practical judgment. To gain outlook, facts, both in relation to time and space, should be taught together. Prof. Ramsay Muir, on the other hand, was of opinion that undue emphasis had been laid upon the geographical explanation of historical facts, and he feared that there was danger in attempting to attribute the history of national greatness or national decay entirely to material causes. He therefore hoped that geography and history would always be kept separate in the school curriculum.

SOME time ago the German schoolmasters issued a manifesto concerning the alleged atrocities committed by the German armies in the early stages of the war. The argument of the manifesto was that the alleged atrocities, were entirely impossible to persons trained in German schools, and entirely incredible to all who were acquainted with the excellence of the German educational system. To this German manifesto the French schoolmasters and schoolmistresses, through the Board of their National Federation, have just published a crushing rejoinder. The German *a priori* argument is met by overwhelming historical evidence that the impossible abominations have actually been perpetrated. Only facts that the Germans themselves admit, defend, and glory in are quoted; they are a sufficient damnation. Then follows an interesting examination of the German educational system. The French teachers admit its efficiency within its own narrow and soulless sphere, but they condemn it for its inhumanity, and show how it has conduced to the present conflagration and to the barbarity of the German method of conducting war by the persistence with which it has preached the doctrine of *Deutschland über alles*, and of the success which it has achieved in elevating devotion to the Fatherland into "a sort of wild idolatry." "As for us," they conclude, "our conception of education and patriotism is entirely different. We do not place France 'above everything.' We should not honour her if we only thought of placing her above law and justice, above honour, and above the eternal laws of human conscience. We wish her to be strong, not against law and justice, but for law and justice, and for the sake of law and justice. We belong to a nation which a hundred years ago proclaimed the Rights of Man, and is now fighting for the Rights of Nations. . . . Fundamentally the present war is a conflict between two kinds of morality—the morality of force and the morality of law and justice. We await with confidence the judgment of nations and of history." It is a splendid and annihilating rejoinder to the German sophistry.

An interesting study of the appointment of teachers in cities has been made by Dr. F. W. Ballou, director of the "Department of Educational Investigation and Measurement, Boston Public Schools." The study is based upon a consideration of the methods of appointment in a number of representative city school systems

in America, and the writer concludes that, provided certain conditions are satisfied regarding the organisation of the school system, the superintendent should appoint the teacher, such appointment to be confirmed or rejected by the board. Such a plan, even with the safeguards suggested by the writer, would probably not be widely accepted in this country; but we direct attention to the study, not so much because of its conclusions, but because the study should have been made at all. A scientific view of educational administration can scarcely be said to exist in this country, and it is time that our universities and directors of education had repaired the omission. It would, of course, never do to make appointments by the mechanical application of rules, but, on the other hand, the careful study of norms or standards of eligibility would tend to fairness, especially where large numbers of similar posts have to be filled. Dr. Ballou's report is published as one of the "Harvard Studies in Education," published in this country by the Oxford Press. Another of these studies is Dr. Learned's monograph on "The Oberlehrer," an account of the social and professional evolution of the German schoolmaster.

THE number of children attending schools in Ceylon is upwards of a third of a million, spread through 817 Government and 2,031 aided schools. There is a decreasing number of unaided schools. In 1914 fifteen colleges had cadet companies, with a total roll of 2,063, and the annual report states that a large number of passed cadets volunteered for service with the Ceylon Light Infantry in Egypt, and several applicants were chosen; to the disappointment of the cadets, the idea of sending the C.L.I. contingent was dropped. Since 1880 Ceylon has presented candidates for the Junior and Senior Cambridge Locals. The number of candidates has risen from 21 to 1,928 per year, and it is noteworthy that the proportion of Seniors to Juniors is usually about 2 to 3. Other candidates take the examinations of the University of London; in 1914 candidates were presented, frequently with success, for matriculation, intermediate arts, science and law, final arts and law, and the first medical examination.

We have received vol. vii. of the *Journal of the Municipal School of Technology*, Manchester, which is a record of investigations undertaken or published by members of the teaching staff and students of the school during 1913. Of the numerous contributions we notice several which are of exceptional value to the industries concerned; thus there are two papers by Mr. Popplewell on reinforced concrete; Prof. Haldane Gee's paper on the electrolytic methods of preventing corrosion; Mr. Sinnatt's papers on the determination of carbon dioxide in carbonates, and on a new apparatus for gas analysis; and Mr. Hübner's very informative paper on the history of dyeing. The volume has been printed in the photography and printing crafts department of the school, and it is an excellent piece of work.

"ON no educational topic has more nonsense been written than on Character. What is the good of saying that 'character is produced by the impact of the personality of the teacher on the individuality of the

pupil,' unless we know the meaning of the terms we use? So long as the public will submit to be loaded up with such nonsense, so long will education be a free field for the charlatan"; is the opinion expressed by Mr. Hugh Richardson in an article, "Character: its Analysis and Measurement in C.G.S. Units," in the current *Journal of Experimental Pedagogy*. The article is replete with suggestions which defy summarisation, so we take one illustration. The schoolmaster is baffled because the boy in class and the same boy in isolation appear to be different characters. Take a simple illustration; stand the class in a ring, holding hands, and with eyes shut. A squeeze received by each left hand is passed on by each right hand. The teacher times the experiment between his initial and final squeezes. Take the minimum time and divide by the number of boys to get the average personal equation of the class. Now, consider how long it takes for a general laugh to arise in class. Neither the total personal equation nor the average. Exacter determinations might suitably be undertaken to determine for practical purposes the rate of response of a class to stimulus.

THE headmaster of Sherborne School, Mr. Nowell Smith, contributes to the current issue of the *Preparatory Schools Review* some notes on the question of compulsory Latin. In his opinion education based on the classics is the finest sort of education for those who have both the time and the capacity to profit by it. Remove from a group of boys those with exceptional abilities in reference to some non-classical study and the spiritual aristocracy of the remainder will be the classical boys; they will have assimilated more formative ideas, and they will be able to acquire other subjects more rapidly later in life. The others, *i.e.*, preparatory-school boys of no special gifts, who lack the time to devote to classics, will be better prepared for life in every way if the time devoted to a meagre acquisition of some Latin were utilised in other studies in which they can realise their progress towards a definite aim. For the able boy with a particular bias, new arrangements are necessary. Oxford and Cambridge should at last realise that it is sufficient for a university to demand proof of trained capacity to undertake at least one line of study within its ever-widening sphere. The correspondence columns of the same issue contain several letters dealing with this subject.

In the current number of the *English Journal*, published by the Chicago University Press, occurs an interesting article by a writer who appears to know what he is talking about. The subject of this article is "The Natural Method of Voice Production"; and it would be difficult to think of twelve pages more fundamentally opposed to the teaching of the pundits. Teachers of speaking and of singing, as well as all phoneticians, and a number of classic writers on the human voice, are flatly challenged by Mr. Floyd S. Muckey, of New York City. Very briefly his conclusions, in which it appears the late Prof. Hallock would have agreed, amount to this:—(a) The voice is a string and not a reed; (b) Resonance is all-powerful for its excellence; (c) this resonance is gained by an open nose and a hanging uvula; (d) inter-

ferences are added and the voice spoilt by the action of the false cords and the tongue. "The voice mechanism was made involuntary so that the whole mind of the performer could be centred upon interpretation." Tone-producing muscles are beyond our control; interfering muscles are within our control. Nearly all this is heresy; even the great Helmholtz is not spared. But, inasmuch as teachers of singing disagree, inasmuch as phoneticians have never proved the truth of what they write on nasalisation, and inasmuch as voices are continually breaking down with scarcely any strain being put on them at all, it would be interesting to see what can be said in answer to the closely-reasoned pages and the beautiful diagrams contained in this number of the journal. If it can be shown that the nose is the helper and not the enemy of the speaker and singer, and that it is to the natural pitch that we must return, a revolution would be accomplished in almost every classroom in the land, always supposing that the classrooms trouble themselves about speaking. We hope to see the article issued as a pamphlet.

"EXAMINATIONS, one would think, have now fallen into deserved discredit, and boys and teachers are now saved the worry of them. But the fact is exactly the reverse." They used to occur two or three times per annum, now they are almost daily. Formal and surprise examinations, oral and written ones, examinations of class notes, home preparation notes, and so on, until they are a chronic fever. The new scheme has changed bright boys into careworn lads, and enthusiastic teachers into miserable examiners poring over inky manuscripts and drudging accountants calculating marks. A class of boys is now a set of drooping, dejected, jaded creatures, looking woe-begone, like doomed victims. The schools are prison-houses, where teachers are worked like slaves to the last point of human endurance. They do not educate, they grind hard like monstrous mills, and turn out what can scarcely be called men. These opinions concerning schools in India are culled from an article, "The Schoolmaster's Lot," in the November number of *Indian Education*.

AMERICAN colleges are beginning to recognise that not every man who knows can teach what he knows. *School and Society* directs attention to the evil which results from turning young Ph.D.s fresh from the prolonged study of some remote nook of science and literature, loose on freshmen to bore them with minutæ. The president of a flourishing State University avers that it takes five years to make a common-sense teacher of a raw doctor fresh from three years of graduate work. The chief evil lies in over-systematisation, so that the student may accumulate masses of facts without obtaining a grasp of the relative importance of each fact; he fails to reach a stage of warm-blooded enthusiastic appreciation. A phrase in a Greek classic referred to the croaking of frogs, and the professor kept his class overtime to discuss the author's correctness in saying that frogs croaked in the autumn. The universities need professors who possess a wide knowledge, a broad outlook, and a culture which compares with affectionate contagious interest several sciences or several literatures.

THE *Journal of Geography* for December tabulates the position of the United States as a producer of minerals. In view of the importance of minerals and metals at the present time, we reproduce the percentages of the world's production obtained in U.S.A. for the minerals named:—Gold, 21; silver, 30; iron ore, 45; copper, 55; lead, 32; zinc, 36; asphalt, 10; coal, 39; petroleum, 65. In addition to these resources of raw material, the United States refine more nickel than any other country, although Canada is the source of the supplies of ore; they also are the greatest manufacturers of asbestos products, although Quebec province is the largest producer of the mineral. The production of natural gas in the United States is estimated to be 581,900,000,000 cubic feet annually, to the value of seventeen millions sterling. Tin ore is almost the only important mineral which is not obtained in the United States; the chief supplies come from the Straits Settlements and Bolivia. The United Kingdom produces but one-quarter of the U.S.A. total of iron ore, a sixth of the zinc, two-thirds of the coal.

THE Lord Mayor Treloar Cripples' Hospital at Alton, Hants, forms the subject of an admirably illustrated and stimulating article from the pen of Dr. Gauvain, the medical superintendent, in *The Child*. The hospital exists for the alleviation of the sufferings and the correction of the deformities of children crippled by tuberculous disease of the bones and joints; there are three main departments of activity, curative treatment, research, and education. A striking factor in the curative treatment is heliotherapy, whereby the children become so pigmented in the skin as to endure long spells of strong sunshine and open-air treatment clad in the scantiest of costumes; artificial sun-lamps are used when sunshine is not available. Much use is made of plaster of paris, and in consequence of a discovery by Mrs. Gauvain of a method whereby celluloid is made non-inflammable, celluloid and "duralumin," an alloy of aluminium, are both used for splints. The school contains 170 patients, and is in charge of six special teachers; the educative work makes the children happy, and hastens their cure.

M. EMILE BOUTROUX, de l'Académie Française, lectured at the University of Berlin on May 16th, 1914, on "German Thought and French Thought," and a translation of the lecture is afforded the place of honour in the December issue of the *Educational Review* of New York. German thought is controlled by the idea of the whole; the part has neither life nor activity except in the whole, which is itself an infinite development starting from a minimum of being and reaching to its maximum of perfection. German philosophy is idealistic, but involves a definitely realistic basis; German art has for its object all possible forms of reality from the humblest to the most exalted. To the German, universal history is the universal tribunal; the judgment of history is, like the judgment of God, visible and indisputable; the true, the good, and the just are measured by the all-powerful intelligence of the whole. Collective life is the normal form of human existence, true greatness consists in identifying oneself with a living whole. An indi-

vidual has no actual value, he is not useful unless he possesses some special ability; he must act with an organised unit in order to make his action effective. The principle of the cohesion of parts of the community is: A single purpose and workers bound by a common interest. Liberty is the unity of the individuals with the whole.

FOR the Frenchman, the ideal lies not in summarising the universe in ourselves, but in being truly manly in the most real sense of the word. Man is intelligence and feeling, and the harmony of these two elements is the end to be realised. This harmony is symbolised by naturalness, which is higher than either art or nature, and combines the two. Reason, taste, and conscience should combine to form an accomplished gentleman; and a gentleman, a man seriously and subtly cultivated, is an essentially sociable being, for he finds in society the model and the purpose of the quality he covets. Since all men possess the germ of reason they should unite in view of their common nature; for all mankind union is the consummation of their highest, truest, and most human will. Modern Germany is a nation which focuses its individual forces upon a common purpose; unified action, the result of the methodical organisation of individual actions, surpasses in power the sum of these actions. Can, or should we, attempt to amalgamate these two types of mind? Most fusions of distinct qualities yield a sterile hybrid. History shows that the most original creations are the results of foreign influences; hence, the two types should cultivate intimate relations while retaining their individuality. Humanity would lose were it only to possess the hazy result of the amalgamation of these divergent types of mind.

JUNIOR masters are of two classes—the conscientious and the insouciant; there are no others. The first type is young and unknown in literature, except in the one incomparable study of "Love and Mr. Lewisham." He usually works for a degree, often in the tenacious grip of a certain correspondence college—known by its three magic letters. He is an indifferent player at "footer," but contents his soul by despising such "toys"; in society he is rather a failure. Embarrassed in manner, inwardly sure of his superiority to the company, he does not shine. His salary is £20 a year, resident, and he is worth a trifle more. Though not quite happy, he is very determined, and eventually finds his feet and makes an excellent master—of the retiring sort. The insouciant junior is comparatively rare; usually he uses teaching as a stepping-stone to higher things. One specimen of the type maintained a show of discipline without much trouble. He took the newspaper into the form-room, set his boys some work to do, and digested the news at leisure. He kept the form very quiet—mostly with a drum-stick. The junior master is not really a type, but a stage. His experience is gained in a hard school, but perhaps his class deserves most pity. These are a few of the points of an amusing article by Mr. E. E. Kirby in the December number of the *A.M.A. Circular*; could the existing methods of recruiting the teaching profession be more strongly indicted?

ALL is not well with the educational system of New York is the burden of an article by Mr. H. O. Rittenhouse, a retired naval officer, on "Public Education, the First Line of National Defense," contributed to *School and Society* in December last. There are grave disorders in connection with administration, sufficient schools are lacking, the salaries, status, and duties of teachers are in controversy; but there are more serious dangers than these. For various reasons parents are unable to supply in the home that wholesome discipline and tone which are essential to the up-building of character; it devolves, therefore, upon the public, through the public school, to make good the deficiency. School training towards good health and upright character should take the first place, higher than book lessons, and should be continuous throughout school life. American colleges dominate by their influence the high-school system, with the result that the high-school pupil is subject to weaker discipline just when he needs a stronger formative influence. Good habits are worth more than an outward garb of culture and intellectuality.

SCOTTISH.

THE New Year honour—Companion of the Bath—conferred upon Dr. George Macdonald, assistant secretary, Scotch Education Department, has been received by all classes of teachers with the most unfeigned satisfaction. It has been fully earned, both by the distinction of his administrative work in education and by the rare quality of his antiquarian researches in the field of Roman remains and British coins. Secondary-school teachers, in particular, are conscious of their deep debt of gratitude to him for his work in connection with the leaving certificate examinations. He has been closely connected with these examinations almost from the outset, and he still devotes to them his closest personal attention. Probably no other examinations in the kingdom enjoy in such marked degree the confidence of the teaching profession. The questions set do not always escape criticism, but they are invariably founded on sound educational principles, and they are directed to test capacity and not mere knowledge. Most important of all, teachers are convinced that so far as the most painstaking and personal supervision can secure it, the results are a fair reflex of the pupils' efforts.

SCHOOL authorities in Scotland have as a whole responded splendidly to the Department's appeal to grant allowances on Civil Service lines to their teachers on war service. There have been one or two exceptions, and of these perhaps the most notorious is Beath School Board, Fifeshire. This board, in the first flush of enthusiasm, granted the usual terms to its teachers who joined his Majesty's Forces. But this ardour rapidly cooled, and at a recent meeting it was agreed to pay no more allowances to teachers enlisting unless those who were already in receipt of allowances agreed to have them reduced by half. The Education Department promptly intervened and protested against this "singular condition," which is a new version of how to pay Peter by robbing Paul. The board, however, was obdurate, and the Depart-

ment has no power to overrule its decisions. In the long run, however, Beath School Board will find that it will not gain but lose financially by its action. The Department is prepared to relax and even to strain its regulations in the interests of those who take a generous view of their duties at this time, but from authorities like Beath School Board it will assuredly demand its full pound of flesh.

ONE of the many results of the present war is certain to be a closer commercial alliance with Russia, and traders are already taking measures to understand the conditions and needs of that country. In Scotland, which is exceptionally well situated for sharing in this trade, much activity in this direction is being shown, and it is satisfactory to find that the newly-awakened interest is not confined to the commercial classes. Russia has one of the most original and vigorous literatures in Europe, but it only filters through to us in very inferior translations. The University of Edinburgh has arranged for a class in Russian language and literature, to which both matriculated and non-matriculated students will be admitted. In this way it is hoped to introduce the virile Russian literature to a much wider circle of students. At Glasgow a Russo-Scottish Society has been founded, somewhat on the lines of the Franco-Scottish. The membership is thoroughly representative of the commercial and university elements. An evening school course in Russian for commercial students has also been inaugurated, and the opening attendance has been most encouraging.

At a meeting of Aberdeen University Court it was announced that the late Dr. William Dey, formerly rector of Old Aberdeen Grammar School and chairman of the Aberdeen Provincial Committee, had left £6,000, the free income of which should be applied in purchasing books for the general University library; £1,000 to the Celtic department of the library; and £1,000 for the library in connection with the lectureship in education. The residue of his estate, after the fulfilment of various trust purposes, has also been left to the University for library purposes. All through his career Dr. Dey took a deep interest in the affairs of his Alma Mater, and his last benefactions prove how keenly he had its welfare at heart.

EDINBURGH UNIVERSITY COURT, on the recommendation of the Senate, has approved of the addition of military science as a subject for graduation in arts and of the classification of the subject as cognate with geography. Only those students who are cadets of the Officers Training Corps and who intend to apply for a commission in his Majesty's Forces at the end of their university training will be allowed to take the subject as a qualifying course for an arts degree. Such students will also be required to take military history as one of their remaining subjects for the degree.

PRINCIPAL SIR DONALD MACALISTER, at a meeting of Glasgow University Court, reported that he had received intimation from Lord Derby that attested students whose groups are called up before March 31st, and who have examinations, ordinary or special, before that date will be excused from service until they

have sat for their examinations. The Senate would take steps to arrange that all the necessary examinations were completed before the prescribed date. At the same meeting the clerk reported that Mr. Peter Brock, Cambuslang, had given a donation of £4,000 to be applied at the discretion of the University Court to some University purpose. The principal, in acknowledging the generosity of the donor, thanked him, especially for giving full power to the Court to apply the money as seemed best to them from time to time.

IRISH.

THE National University of Ireland has issued a time-table of all its examinations for the present year, winter, spring, summer, and autumn, with the latest day for receiving forms of application, on ordinary fee. Students are requested to note the date, not only of the examination, but also of the last day for sending in their applications, which is, in some instances, a considerable time, occasionally several months, beforehand. They are also warned that while no examination will commence on a date earlier than that specified, it may be postponed as may be found necessary. Candidates may enter on a late entry fee, but in no case more than seven days after the latest date prescribed in the time-table. The late fee will be ten shillings extra. All forms of application must be accompanied by fees, otherwise they will be returned. Forms of application for admission to examinations may be had on application to the registrar of the National University, 49 Merrion Square, Dublin.

THE Senate of the National University also announces that in and after 1916 no candidate at the matriculation can be adjudged to have passed in any language who fails to answer in grammar and composition to the satisfaction of the examiners.

As with most other reforms of education in Ireland, the course of the registration of intermediate teachers does not run smooth. The Registration Council has met twice, but has been unable to make any progress in its work, for no fault of its own. The Government has appointed it, and asked it to meet, but at the same time is proposing to alter its constitution, and it therefore feels that its hands are tied. It will be remembered that when the constitution of the Registration Council was published the Roman Catholic bishops objected that while three-quarters of the pupils and three-quarters of the teachers in the intermediate schools were Catholic, the bodies appointing representatives are predominantly Protestant. As a matter of fact, the majority of the present council is Catholic, but the bishops point out that the two representatives of distinctly Catholic teaching bodies—the Catholic Headmasters' Association and the Education Committee of the Christian Brothers—do not adequately represent the diocesan colleges or the teaching order of nuns, while the two Protestant universities have each the same representation as the National University, with its three constituent colleges and the recognised College of Maynooth. The Government has apparently been persuaded by this appeal, but is very slow in deciding what to do, so that it is uncertain

whether the Registration Council will meet again before Easter. The harm of delay lies in the fact that the present conditions for distributing the Birrell grant of £40,000 are not very satisfactory, while it is difficult to suggest anything better until a register of teachers is in operation. It is therefore important for the Government to settle the matter as quickly as possible.

THE Classical Association of Ireland, which last year did not hold its annual public meeting on account of the war, this year held its meeting as usual in the lecture theatre of the Royal Dublin Society, when Prof. J. I. Beare, fellow of Trinity College, who was re-elected president for this year, delivered his presidential address on "Plato and Poetry." The chair was taken by the Right Hon. Mr. Justice Ross, who was president in 1914.

ALEXANDRA COLLEGE, Dublin, announces three special courses of instruction for the present term. The first is a series of ten lessons in "War Time Cookery"; the second is a course of practical demonstrations in "Domestic Crafts"; and the third a course in "Home Nursing," under the St. John Ambulance Association. Full particulars may be obtained from the lady principal.

WELSH.

THE case of Mr. J. E. Edmunds, a member of the staff of a Cardiff elementary school, will be of interest to those teachers—a much larger class than is generally supposed—whose outlook and activities are not bounded by the four walls of their classrooms. Mr. Edmunds, who is secretary to the Cardiff Trades Council and has done much public work in the town, was removed from the Libraries Committee, and when inquiry was made into the cause of this treatment it appeared that he was accused of disloyal action in a matter affecting the defence of the realm. An investigation by the School Management Committee established the fact that an anonymous letter concerning Zeppelins, which was held to be of a disloyal nature, had been received by Mr. Edmunds; he passed it on to a colleague, who seems to have given it to another colleague to be read out in an evening class. The second teacher admitted the foolishness of his action, which he regretted, and the Committee declared itself satisfied that neither of the gentlemen concerned had any evil intention, although the alderman who brought up the matter was justified in doing so. Mr. Edmunds is to be proposed for re-election to the Libraries Committee.

MISS KIERNAN, the Dowlais schoolmistress whose stand for the right of the teacher to exercise out of school the rights of the ordinary citizen attracted so much attention a few months ago, was recently presented at Manchester with an inscribed dressing-case and a purse of gold in appreciation of her struggle for justice and liberty. The presentation was organised by the Merthyr branch of the N.U.T. on behalf of a large number of Miss Kiernan's friends and former colleagues. It will be remembered that the struggle was complicated by many side-issues and

technical difficulties, and gave rise to appeals to the Board of Education and to a strike of the school-children.

THE Union of Welsh Societies and the Welsh Language Society have established a joint committee to arrange for a conference and exhibition to illustrate the progress made in inculcating the study of Welsh in the Welsh schools and colleges. At a meeting held on December 18th, 1915, it was decided to hold the conference in March at Cardiff. There are to be discussions of methods employed and difficulties encountered, tempered with dramatic sketches, Welsh folk-songs, and Welsh dances.

THE executive committee of the County Schools Association has been considering the position of Welsh in relation to other modern languages in the intermediate schools. An inquiry brought out the facts that: (i) in four schools, Welsh and Latin are alternative with French throughout; (ii) in three schools, Latin and French are alternative with Welsh throughout; (iii) in twenty-six schools, Welsh and French alternative with Latin throughout, or alternative with commercial subjects; (iv) in thirteen schools, Latin, French, and Welsh are all taught; (v) in twelve schools, Latin and French, but no Welsh; (vi) in one school, Latin and Welsh, but no French. The Association declined to express an opinion as to the best course, but the weight of feeling seemed to be in favour of the third of the plans given above.

OF the 15,202 pupils in intermediate schools in 1914-15, 43 took Greek and 4,570 Latin; 165 took German (the war had very little effect) and 4,619 took French, while 2,533 took Welsh. This means that in place of the old standard of two ancient and two modern languages the Welsh schools have dropped Greek—wisely for most pupils—science being given the time formerly allotted to it; Welsh has from the first been allowed to displace German, as being the vernacular; the present tendency is to let it displace French in addition, which is for many reasons a menace to the efficiency of the schools and detrimental to them in comparison with the schools of other parts of the country.

HISTORY FOR YOUNG STUDENTS.

(1) *Essays for Boys and Girls: A First Guide toward the Study of the War.* By Stephen Paget. xii+198 pp. (Macmillan.) 5s. net.

(2) *In Victorian Times.* By Edith L. Elias. 240 pp. (Harrap.) 1s. 6d.

(3) *Shown to the Children.* No. 14: *The Navy.* By P. A. Hislam. No. 15: *The Army.* By A. H. Atteridge. (Jack.) Each 2s. 6d. net.

(4) *Black's History Pictures.* Series II. *The Middle Ages, 1066-1485.* Selected by G. H. Reed. 32 pp. (Black.) 10d. net.

(5) *Black's History Pictures.* Series IV. *The Stuart Period, 1603-1714.* Selected and edited by G. H. Reed. (Black.) 10d.

(6) *The Story of Islington and Finsbury.* By W. Vere Mingard. 89 pp. (T. Werner Laurie.) 1s.

(1) MR. STEPHEN PAGET is already famous, both as a surgeon and a writer. These fine essays

will rightly add to his fame. They were written as the contribution of a man, temporarily laid aside by ill-health, to the cause of his country, which he cannot otherwise assist "He ventures," he says, "to write something for boys and girls only." Boys and girls, it is true, will understand and enjoy the essays. But older people, too, will enjoy them, and will in most instances learn a good deal from them. In any case, it is noteworthy that the boys and girls for whom the later essays were written are obviously considerably older than those for whom the introductory essay was penned. There are nine essays in all. The first, entitled "Your War," brings home to those of the rising generation something of the debt which they will owe to those of the present generation who are meeting wounds and death on their behalf. The second, entitled "A Venture of Faith," deals with the meaning of war in nature and among men. The next six relate in brief the stories of the leading combatants. The closing essay, "Looking Back," tells of the transformation of our thoughts and ideals effected by the war. This is a notable book by a notable man.

(2) It is not easy to teach, or even to understand, the reign of Queen Victoria. The material for its study is so vast, so complex, and so various that no finite mind can encompass it. Nevertheless, it is all-important that some knowledge of it should be attained, because in it lie the antecedents of all the political problems of our own day.

The easiest method of approach is undoubtedly the biographical, and this method Miss Elias has chosen. In this handy little volume she presents twenty-six short, well-written sketches of people eminent during the reign in most of the great walks of life. They are classified into six groups. First comes the Queen herself, with her uncle, William IV. The leading statesmen follow: Peel, Palmerston, Disraeli, Gladstone, and others. Thirdly the empire-builders are dealt with: Havelock, Lawrence, Gordon, Rhodes, Roberts. Finally come the groups of inventors and discoverers, preachers and philanthropists, painters and sculptors. One is amazed, however, to find no account of literary men, for surely, to mention only one name, a sketch of Victorian times which contains no reference to Tennyson, the representative thinker of the period, is extraordinarily incomplete.

Within its limits, however, the book is well conceived and well executed.

(3) These two volumes are the latest additions to the excellent series which began with books about beasts, birds, flowers, trees, and other phenomena of nature, and then turned to the works of man. In this new department gardens and architecture have already been dealt with, and now—very opportunely and appropriately—the British Navy and Army are described. Needless to say, the books are made extremely attractive to children. That on the Navy contains more than forty coloured plates, accompanied by 134 pages of descriptive letterpress. That on the Army has four dozen plates, and 104 pages of print. Children who read these little volumes will gain an exceedingly valuable amount of information concerning the constitution and organisation of our two fighting services.

(4) This album of historical illustrations is chronologically the second of Messrs. Black's excellent series. There are no fewer than ninety pictures in all, representing costumes, architecture, portraits, notable events, and other aspects of the Middle Ages. The plates are filed in the album in such a way that they are detachable and replaceable at will. It is remarkable that so large and useful a collection of prints can be produced at so low a price.

(5) This cheap but excellent portfolio of historical pictures follows the same principles of selection and production as its Tudor predecessor. Sixteen sheets of art paper, printed on both sides, present seventy-six illustrations of the history of the Stuart period. Of these, twenty-five are portraits of prominent personages of the century. The majority of the remainder are reproductions of famous pictures representing scenes from the most notable events of the era. Others exhibit the architecture and the costumes of the time.

(6) We are delighted to find that this sketch of Islington and Finsbury inaugurates a new "Local History Series" projected by Mr. Werner Laurie. If the series is continued and completed on the same excellent lines as those exemplified in this opening volume, it will provide a new storehouse of historical illustration for teachers. In twenty-one short chapters—each one a complete and self-contained pen-picture—Mr. Mingard sketches the development of two of the village suburbs of old London from the time when not one solitary house broke the monotony of swamp and wood, down to the present day, when London has reached out its long arms and drawn the whole region into itself. Fifteen useful illustrations from ancient prints add to the attractiveness of the book. There is, however, no map.

THE STUDY OF LITERATURE.

(1) *The Cambridge History of English Literature*. Vol. xii. 564 pp. (Cambridge University Press.) 9s.

(2) *Methods and Aims in the Study of Literature*. By Lane Cooper. 239 pp. (Ginn.) 5s.

(1) THIS great work approaches our own time, and the twelfth volume deals with the nineteenth century; but two more volumes will be required to take us to Georgian times. Therefore if readers do not find certain names dealt fully with now, perhaps we shall see them later. The writers to whom most space is allowed are Sir Walter Scott, Byron, Shelley, Keats, Hazlitt, Lamb, Jane Austen, and chapters are devoted to magazines, scholarship, history, and the Oxford movement. Owing to the intrusion of these last three a number of writers have to be content with scantier notices. The usual bibliographies, so often mentioned only for praise, follow; the essays of Rossetti and others on the Prometheus might have had definite mention, so little of value having been done in this line; they are hidden away in the Shelley Society's papers.

The great writers are admirably pictured; though how much Scott, Shelley, Lamb gain, and how much Hazlitt, Landor, Byron, possibly lost through the mere personal equation, is but lightly touched on. Beddoes receives his due; Clare surely more than his due; and with the scholars, to most of whom entry might be denied by some, any literary excellence has to pass unnoticed, e.g., in the case of Sellar. The Ancient Mariner is referred to as an "exceptionable poem," but the passage (p. 113) is indistinct in meaning. Lamb's letters go without their meed. A curious censorship of one word in this volume gives us "humourous" in several places; in other volumes the usual "humorous" passes. We wonder if even Austenites would plead that Jane's nature was "sweet"; probably they would resent the epithet.

But these are trifles, and the history goes on its full, strong way like Denham's Thames. The binders, alas, have not given us a fast colour, as the binders of the similarly coloured London Library catalogue did; and already the backs of ten volumes have turned into a dingy brown.

(2) Notwithstanding its similarity to Mr. Cowl's "Theory of Poetry," which was reviewed lately, this book is original in its plan. It consists in a collection of passages from writers whose names are for the most part well known on the method adopted in writing what have since become masterpieces. The critic always thinks he can discern the method; many great writers, the best example of whom is Wordsworth, know that they can enlighten us on what has happened to them when under the afflatus of the Sibyl; only now and then a Mr. Henry James laughs the whole bag of tricks to scorn in "The Pattern in the Carpet." Wordsworth is by many of us most unfortunately chosen as a guide, for it is admitted that when the carpet was finished and exhibited he of all men did not know whether it was a joy for ever or a parcel of fustian. But it is always a matter of immense interest to know what the aim of a writer appears to him to be; to hear what great writers think of their productions and of the recollection of their methods, though methodology in poetry may lead us nowhere—or to criticism. Petrarch blotted every line; Shakespeare blotted none. Lamb and De Quincey and Kinglake and Hearn fidgeted over vowels; but do we really think St. Paul, whose chapter on Love closes Mr. Cooper's book, knew how the immortal words appealed, and even sounded, in their uncouth Greek? The truth is that writers know how they work when they work and re-work consciously, and that is all. All that is behind the method is unknown to them, though, no doubt, some psychological physiologist of the future may be able to give a guess; for there must be process even in the making of Shelley's "Skylark." Along with extracts intended to let us into secrets there is an admirable chapter on the studies of poets, from which, alas, Chaucer, the most instructive of all, is excluded.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Dictations for Home Work.—By S. A. Richards. iv+52 pp. (Constable.) 1s. 4d.—We have here one hundred short passages in the phonetic transcription, which are to be reproduced in the ordinary spelling, a process sometimes known as "silent dictation." The idea is undoubtedly good; but we believe that such passages should be based on the text that is being read in class, and that the exercises on the text should include passages in phonetic transcription for this purpose. The accurate printing of phonetic texts is difficult, and that before us is not free from misprints; but on the whole it is a creditable piece of work.

Petit Cours Préparatoire: A Two-term Course in Phonetics. By L. H. Althaus. viii+87 pp. (Black.) 1s. 4d.—We have never, in these columns, failed to emphasise the importance of phonetics; but in going carefully through this book, we ask ourselves whether phonetics may not be seriously overdone. Let us strive after perfection by all means, as Miss Althaus urges "mesdames et messieurs les professeurs," in her prefatory note; but is it really necessary to make everything else subservient to phonetics, so that we may even not say "bonjour" until lesson xxvii.? And if Miss Althaus is so desirous of perfection in others, would it not have been well to read the proofs a little more carefully? There are many inconsistencies and misprints in her book. We readily acknowledge that there is much useful phonetic drill, and the teacher will be able to pick up some good hints from a perusal of the book. Viewed, on the other hand, as a first course in French, or even as a "petit cours prépara-

toire," as it is modestly called, it is not satisfactory. Like the "First German Book" recently published by the same author, the grave mistake is made of including in the pupils' book a great many directions solely intended for the teacher; and this in spite of the lesson notes which are supplied separately. The book would have gained immensely if the author had included in the pupils' book only what was for their use. Apart from this, a good deal might be said about the selection of words and grammatical features and the order of their introduction, matters quite as important in their way as a proper sequence in phonetic instruction; but we leave teachers to judge of these aspects of the book for themselves.

Extracts for Translation into French: Intermediate and Advanced. vi+21 pp. (Hachette.) 8d.—The subtitle runs as follows: "Short standard pieces of medium difficulty [not "intermediate and advanced"] from contemporary English authors [Dickens and Scott being regarded as still with us], specially selected to prepare candidates for the free composition tests set at junior and senior examinations." We notice this booklet in order to warn against any misunderstanding as to its contents. It contains twelve passages, each running to about forty lines, and supplied with ten or twelve lines of notes, mainly translations of single words (e.g., "arrow, flèche; fate, sort"). That is all. How a translation of these passages is to prepare candidates for tests in free composition is nowhere indicated by Mr. Edwards, the compiler of the book.

The Oxford Treasury of French Literature. Vol. i. Mediaeval, Renaissance, and Seventeenth Century. By A. G. Latham. 331 pp. (Oxford University Press.) 3s. 6d.—"The Oxford Treasury of English Literature" is favourably known, and Mr. Latham, who expresses his indebtedness to that work, may reckon on an equally friendly reception of the three volumes in which he proposes to set before us what is best in French literature—or at least to give us a taste of what is best. The first volume takes us from the Chanson de Roland to Saint-Simon, and omits only the drama from its survey; it has been decided to devote a separate volume to dramatic literature. Mr. Latham contributes to each section a well-informed and freshly written introduction, and where necessary suggests the context of the extracts given. These are well selected; just enough, as a rule, to make the reader anxious to have more, which is perhaps the chief value of such a treasury. We are at a loss to understand why there is no extract from Rabelais; and we should have gladly sacrificed one of Baif's poems for a sonnet by Louise Labé; she and the Lyons school do not seem to be even mentioned. The extracts in Old French are accompanied by renderings in modern French, and there is a brief appendix "on the chief differences between old and modern French," which will give some help to the dilettante student of the older literature. The only weak feature in an otherwise admirable book are the footnotes in explanation of old words, which do not seem to have been added on any definite plan. Some of the extracts have hardly any notes at all, while in others quite obvious words receive a note; one piece has numerous references to the appendix, another has none. Mr. Latham's interest is clearly not philological, but literary; and for the literary work he has done we are grateful. His treasury will prove a source of joy to many young students.

An Elementary Grammar of Colloquial French on Phonetic Basis. By G. Bonnard. xii+181 pp. (Heffer.) 3s. 6d. net.—The ordinary French spelling contains so many silent letters and ignores so many

modifications of sounds that a grammar based (as is usually the case) on the written language is likely to obscure many facts noticeable in the spoken language. In some recent grammars, such as Mr. Berthon's, this has been realised, and modifications of the sounds not represented in the spelling are duly noted. A grammar on a phonetic basis has now been provided by M. Bonnard, a professor at the Gymnase at Lausanne. We readily acknowledge that it contains a good deal that will interest the teacher who has the requisite phonetic knowledge; but though it is called an "elementary" grammar, it is not suitable for the secondary school, especially as the text is in English. There are only eighty-eight pages of grammar; the rest of the book consists of a rather inadequate introduction on the sounds, pages upon pages of unnecessary paradigms, and a list of the words occurring in the illustrative examples, which would have been more useful if the gender of the nouns had been indicated and references to the chapter on conjugation had been added to the verbs. There is a long list of errata, which is by no means complete. As Mr. Daniel Jones points out in his rather too kindly preface, the pronunciation differs in some details from that shown in other books dealing with French phonetics. This may interest the phonetician, but it is a real drawback in a school book. However, there is little likelihood of this grammar being used in the classroom, as long as the price is so high and the text is in English.

Classics.

Latin Literature. By M. S. Dimsdale. ix+549 pp. (Heinemann.) 6s.—This is the latest of Mr. Heinemann's well-known "Literatures of the World," edited by Edmund Gosse. It needs a really great man to write a readable history of the literature of any nation, and he who writes a history of Latin literature to-day is—well, brave. The present volume must not be compared with either Teuffel or Simcox for its exhaustiveness, nor does it make any false pretences. It is intended for the general reader, and we wish to say at once that the "general reader" will find in it a really remarkable and concise survey of the chief works of all Latin authors from the earliest times down to Boethius; but he won't learn to love Latin literature from it, as he well might from reading Mackail's even shorter book on the same subject. But, as a reference book, this should be of great value, not only to the general reader, but also to the young student. Mr. Dimsdale says that he has "aimed at tracing the development of Latin literature, and at setting forth the influences which determined the character of its successive phases." Sometimes he does this well, as in the contrast between the literature of the Neronian and of the Flavian régime; his appreciation of individual authors is always careful, sometimes (e.g., of Tacitus) excellent, and he can put sound criticism very tersely at times, as when he speaks of "the subtle union of sound and sense which constitutes the unique charm of the Virgilian hexameter" (p. 462), or again, "The weak point about Persius is that he is wanting in the indispensable requisite of the satirist—knowledge of mankind" (p. 419). In spite of these excellencies, we cannot help feeling that Mr. Dimsdale is himself lacking in one of the indispensable requisites of a historian of literature. What this is it is difficult to say, though when we read (on p. 502) of Juvenal:—"As a moralist his judgments are sometimes vitiated by national prejudice. . . . The climax of Nero's crimes, and that which makes him worse than another insane matricide, is that he, an Emperor, wrote a poem on the fall of Troy"—when we read this, we almost make up our minds that what

is lacking is a sense of humour. Will Mr. Dimsdale some day write a treatise on the depravity of town clerks in Athens, taking as his text Demosthenes *de falsa legatione πανουργος οἶτος καὶ θεοὺς ἐχθρὸς καὶ γραμματεὺς?*

Apulei Apologia sive prose de Magia Liber. With Introduction and Commentary by H. E. Butler and R. S. Owen. lxxi+208 pp. Text not paged. (Clarendon Press.) 7s. 6d. net.—Mr. Butler has made a special study of Apuleius, of which this book is not the first-fruits; but it deserves an especial welcome because the work is almost unknown to the ordinary scholar, who thinks of Apuleius as author of the "Golden Ass." But the "Apologia" is the chief authority for Apuleius's life, and it is a most instructive and entertaining work. It arose out of a prosecution for sorcery. Apuleius made the acquaintance of a rich widow, whom he married, but members of the family brought this action from interested motives. It is clear that there was no ground for it in fact, and the "Apologia" itself shows how trifles were twisted to support the accusation. The speech is highly amusing; its tone of easy banter is most convincing to the reader. It throws much light on the social life of the day, and incidentally on both magic and religion.

As to the text, the editors have made a fresh collation of F, and they have examined all the MSS. earlier than 1649, when the book was first printed. They have found a few readings of interest, but they must all be regarded as the conjectures of scholars of the Renaissance, although not a few of them forestall the emendations of scholars considerably later in date." There is indeed not much to trouble us in the text, which is far easier than the "Golden Ass." The introduction contains a good life of Apuleius, with a discussion of his works, the MSS., and the style of the Apology; the last part will be very useful to students of later Latin. The notes are excellent, especially as regards both the late Latin language and the magical topics of the speech. When they touch on other topics they are not always adequate; thus the note on *quippe qui* (p. 10) fails to note that in Plautus *qui* is an adverb, and its later use as the declinable relative is due to a popular mistake (p. 10). But we do not go to these notes for historical syntax; and whatever is wanted for understanding the text is here. We believe this is the only English commentary. There is a bibliography and full indices.

English.

Wordsworth's Patriotic Poetry. A selection by Right Hon. A. H. D. Acland. 143 pp. (Clarendon Press.) 1s.—A book from this source, dedicated to a friend, Edward Grey, is somewhat of an event. A long historical and critical introduction attempts to connect the poet's undoubted patriotism with his gospel of nature. Thirty-seven poems, mainly sonnets, are quoted, and an admirable feature of the work is that each sonnet has its little introduction. The mass of them produce an effect which is needed to-day, and at this very hour when another tyranny has raised its head to strike at all freedom. If a word of question is suitable, we might ask whether Wordsworth's own day recognised in him a patriotic poet? Nine only of these poems appeared at or even near the time to which they refer; the other thirty were seen for the first time four, twelve, or even thirty years after the event. What should we think of the "Islanders," the famous and well-justified warning, if it were published for the first time to-day? A peculiarly interesting sonnet is that beginning, "Ah, where is Palafox?" when everyone knew where Palafox was (1815). If it be meant that Wordsworth was patriotic

in his verse for all time, there is no contesting it. The notorious *Edinburgh* of 1807 praises the sonnets, but apparently misses the patriotism. Was it belated? When the more important view of these sonnets as a heartening prophecy is considered they stand out shining jewels across the hundred years. They belong to 1915, like the inspired "Staff" and "Scrip" of Rossetti.

The Elements of Style. By D. W. Rannie. Pp. 307. (Dent.) 4s. 6d.—Books on style are infrequent, mainly because people cannot make up their mind what style is. This is not because style is at all vague, but because we use one word when we mean three or four different things. Mr. Rannie aims at disproving the ordinary interpretation of "The style is the man," but it is doubtful if he succeeds in keeping the man out of it. The book deals with poetry and prose, with fitness or suitability of means, with the mechanics of style, with unity, and finally with individuality. There is an excrement and too short chapter on translations. Style is optional, says the author, but it happens to be what the writer chooses, and he chooses as he is and as he must, unless he works *ad captandum*. Shelley and Voltaire, alike in opinions, have a whole thermometer between them, the men being essentially different. All the subjects dealt with, except perhaps what we have called the mechanics, are debatable, and at the beginning of every chapter the writer tells us that the subject of the chapter is difficult. The book is learned and suggestive, and it supplies a want; it is a good sixth form book; but a short bibliography would have been welcome, and a few definitions as given by others would have put the matter more clearly. The writer takes the A.V., the real date of which he is well aware of, as an example of Elizabethan style, whereas the Bible English owed nothing at all to the days of Elizabeth or King James. Neither the "Ecclesiastical Polity" nor Bacon's Essays, nor Burton's Anatomy, nor the Arcadia bears the faintest resemblance to the A.V. Mr. Rannie is at great pains to distinguish between poetry and prose, but though his analysis of the elements of poetry is clear and good, he will not allow us simply to say that the contradictory of prose is verse; we have no term to express the contradictory of poetry. We take his quotation from "Modern Painters," omitting two words only, and not altering the order of the words:—

Above, in thunder-blue serration, stand
The edges of the angry Apennine,
Dark with impudence of volcanic cloud.

This is good verse, and not bad poetry; indeed, it is Miltonic.

The Lay of Havelok the Dane. By the late Prof. Skeat. Second edition. Revised by K. Sisam. 171 pp. (Clarendon Press.) 4s. 6d.—In preparing this edition the editor has used the discovered fragments and has followed the learned doctor, who was one that was willing to see his work improved on in the interests of scholarship. There is a full introduction, notes, and glossary. If another edition is called for, we would ask for a summary of Prof. Skeat's article on the scansion of English poetry, for the younger student does not want to hunt for it, and all books dealing with Middle English touch the subject with great diffidence. Yet it is one of the most important of all matters in regard to our appreciation of the verse. Havelok is not poetry, but he is most interesting and linguistically invaluable.

This England. An Anthology. By Edward Thomas. 177 pp. (Oxford University Press.) 2s. 6d.—We have here a delightful little book, full of out-of-the-way

reading, and embodying a new idea for an anthology. The editor might, at this time, have omitted the carp at patriotic poetry, and we could have spared the Wife of Bath's octogamy, Prospero's elves, and even Coleridge's jaundice; they are not particularly English. But where, oh, where, is Langland; where, too, is Falstaff, visible only in a tiny rushlight of quotation; where, too, George Meredith, quite as English as Hardy, and more wholesome? Where are our sports, from Stowe to Strutt, from Strutt to Lefroy and Norman Gale? Absent, too, is Washington Irving, more pathetically English than we ourselves. It would be well if anthologists told us what pieces they had applied for, and what people had refused to lend. But what we have here, with the notable exception of all the grosser English verse and prose (so English) is admirable, and we hope this is not the last anthology of the kind that the editor will attempt. The subject is almost inexhaustible, and the Broadsheets for the men at the front might well take a lesson from this little volume, as "full of English character and country as an egg is of meat."

History.

The Fringes of the Fleet. By Rudyard Kipling. 71 pp. (Macmillan.) 6d. net.—In a series of vivid sketches Mr. Kipling here portrays the priceless and heroic work that is being done for the Navy and the country by the trawlers, the submarines, and the patrol boats which form "the fringes of the Fleet." He tells some thrilling stories which have about them the ring of verity. They enable one to realise the magnitude of the achievement which is implied, but not described, in the bald reports which one reads from day to day of the doings of the seamen of Britain. Interspersed among the sketches are a number of vigorous and characteristic poems. It is interesting to find that the war has already given rise to a new naval vocabulary. A German is (amongst other things) a "Gottstrafer." His method of maritime warfare is "to lusitania."

History Teachers' Magazine. Vol. vi., Nos. 7-10. (Philadelphia, U.S.A.) 20 cents each number.—With the issue of December, 1915, the American *History Teachers' Magazine* concludes its sixth annual volume. The war seems to have lost its interest for American history teachers, for in the four numbers under review there is not a single article bearing upon it. The matters discussed are those of the general routine of the educationist's placid career. The most interesting are the following:—(1) "Recent Changes in History Teaching in Colleges," in which Dr. R. W. Kelsey is able to say as the result of exhaustive inquiries that social history is supplanting political history in many curricula; (2) "Standards for Judging History Instruction," in which Prof. A. H. Williams considers the various mental, moral, and civic aims which the history teacher should keep before him; (3) "Correlation of English and History," in which Miss K. M. Munro discusses the question of the harmonious co-ordination of the two prime studies conducted in the mother-tongue; and (4) "How the Museum of History Works," by Prof. E. C. Page.

Geography.

The World We Live In. Vol. i. Edited by Græme Williams. Pp. 232. Illustrations, some in colour. (London: The Waverley Book Co., Ltd.) 8s. 6d. net.—This work will contain in four volumes "an illustrated description of all the lands and seas of the globe, their peoples, animals, plants, and products." A pamphlet, which accompanied the volume before us, claims that this work will furnish the teaching pro-

fession with a new and complete work on geography that satisfies every demand made by those who framed "The Revised Suggestions" of the Board of Education. It states that the book emphasises throughout the human side of geography; but at least half of vol. i. consists of highly specialised articles upon the making of the earth, the evolution of the oceans and continents, the distribution of plants and animals, ocean currents and climate, in which there is no effort made to indicate the human side of the subject. Prof. Lyde contributes an introduction, wherein he states that school geography is now becoming a study of environment, and that its natural divisions are political, historic, and economic; but his introduction is almost completely out of touch with the remainder of vol. i. Sir Harry H. Johnston writes an essay on the distribution of man, which is excellent reading for an adult, but of little importance to a teacher of geography; and Mr. Arthur Hinks concludes the volume with an essay on maps and map reading which is interesting and useful to the general reader, but adds little to the information already possessed by the teacher of geography. Vol. i. thus contains eleven excellent essays, in which are set forth certain sets of facts which are more or less geographical since they refer to various areas on the earth; it should interest the public, and might therefore stimulate increased attention in geography. The most "human" essay, by Mr. R. J. Finch, on trade and transportation, is largely an iteration of matters with which the teacher of geography is already familiar.

Descriptive Handbook to the Relief Model of Wales. By Wallace E. Whitehouse. 6r pp. Seven plates, etc. (National Museum of Wales, Cardiff.) 6d.—Mr. Whitehouse has carried out, with the help of willing assistants, the construction of a relief model—wrongly called a map in the preface—of Wales, on a scale, horizontally, of 1 in. to a mile, and with a vertical exaggeration of 2.64. This handbook is a record of this work, and contains suggestions as to the value of such relief models, both in and out of schools. The complete model as prepared for the National Museum of Wales consists of sixty-seven separate blocks, to which the handbook provides a key-map, and a description with illustrative photographs of ten of the most typical areas. Mr. Whitehouse adopted the vertical method of modelling, described in *THE SCHOOL WORLD* by Mr. McMichael in November, 1907, and made the first model in plasticine, cast the negative in Keene's cement, and again used Keene's cement for the final model. He estimates that each block, 18 in. by 12 in., took 112 hours to complete, spread over four weeks of time. Teachers of geography should purchase the handbook, and also apply to the council of the National Museum of Wales for a list of the prices at which the separate blocks can be obtained. The Snowdon block, for example, will provide an excellent model of hill country, and either the Nantwich or Holyhead block a model of lowland plains. Mr. Whitehouse is to be congratulated upon his industry.

The Wheat Industry. By N. A. Bengtson and Donee Griffith. Pp. xiii + 341. Maps and illustrations. (New York: The Macmillan Co.) 3s. net.—The story of wheat is interestingly and suitably told in this volume, which is prepared for use in schools. The photographs are good and helpful; the maps are poor, since they are neither definitely related to wheat nor sufficiently concise for inclusion in a text-book. No British school is likely to adopt this book, but it should find a place in pupils' and teachers' libraries. More than half of it is devoted with great thoroughness to the facts concerning wheat, and the authors

are at pains to illustrate throughout the effect of geographic controls. The rest of the book deals with the great producing and consuming countries, in similar fashion. The teacher of commercial subjects will find here a complete study of production, marketing, with the necessary transport and storage, and consumption. The teacher of geography will find material for many lessons on man's adjustment to his environment.

Mathematics.

First-Year Mathematics for Secondary Schools. By E. R. Breslich. xvii+344 pp. Fourth edition. (Cambridge University Press.) 4s. net.—The present volume may be regarded as the outcome of a piece of pedagogical research carried out by teachers in the high school attached to the University of Chicago. Collaboration in the production of text-books is much more common in the States than it is here, and although the present edition bears only one name as author, it appears that at least seven persons have contributed to the development of the course of study during the twelve years which have elapsed since it was planned.

The problem which confronts teachers on both sides of the Atlantic is fundamentally one and the same, although the circumstances immediately antecedent to its discussion are perhaps somewhat different. It is: How best to impart an adequate amount of mathematical instruction in view of the steadily increasing claims made upon the time and attention of the students by other subjects. In the secondary schools of America, algebra, geometry, and trigonometry were treated separately in three successive years, and we gather from the preface that failure to pass the examination in algebra at the end of the first year frequently brought the pupil's course in mathematics to an abrupt conclusion. With us failure to learn something of geometry and trigonometry has not arisen from causes such as this, but whatever the causes may be, opinion on both sides has swung steadily round to the view that the old plan of keeping the subjects in separate watertight compartments is essentially bad, and that a fusion is from all points of view preferable. The book before us represents this idea, and for this reason is worth notice by English teachers.

The book is attractive in appearance and is enlivened by portraits and brief biographies of some eminent mathematicians. The weakness of the course lies in the examples, which seem to us to be of a very antiquated and uninteresting type.

Revision Papers in Algebra. By W. G. Borchardt. vi+152+xxxix pp. (Rivingtons.) 2s.—Teachers will find this a very representative collection of the different types of problems set to candidates in examinations of the school-leaving standard. It is inevitable that a number of the examples should be of no particular interest, involving mere jugglery with letters, but, on the other hand, there are many which give boys some idea of the use of mathematics in the modern world. We notice that a considerable number are taken from engineering, and although here they merely serve as pegs on which to hang an equation to be solved or a graph to be drawn, they may help to keep alive interest in the subject. One of the most important ideas which boys should take away from their study of algebra is that of functional dependence, and no parts of the subject are so well calculated to impart it as graphs and variation. Of these the first appeals to the eye, and the second to the logical faculty. We are therefore glad to notice that in addition to the sets of miscellaneous problems, special sections are devoted to these two topics.

Science and Technology.

Elementary Lessons in Magnetism and Electricity. By Prof. Silvanus P. Thompson. New edition. 744 pp. (Macmillan.) 4s. 6d.—The text has been revised completely, and in many parts rewritten, the new matter increasing the size of the volume by more than 100 pages. The additions, of course, refer more especially to the technical applications of electricity, e.g., power measurement, metal filament lamps, dynamos, motors, electric traction, and wireless telegraphy. The final chapter discusses the electron theory of electricity. These additions, which bring the volume quite up to date, are handled in a most able manner. The arrangement of the text is the same as in previous editions. Part i. is an elementary treatment of frictional electricity, magnetism, and current electricity; and it is evidently intended as a theoretical text for beginners. Part ii. is a much more elaborate treatment of all branches of the subject, and assumes a previous knowledge of part i. This break in continuity leads to some difficulty in finding the information sought for, but this disadvantage is minimised by the remarkably complete index—indeed, this index may well be taken as a model of what an index should be. The full information concerning the historical growth of the subject makes the volume very useful for reference; this feature is so pronounced that the student cannot expect to remember all the facts given, but it certainly serves to arouse an intelligent interest in the subject.

An Introduction to Mining Science. By J. B. Copcock and G. A. Lodge. 230 pp. (Longmans.) 2s. net.—The reviewer has rarely had the pleasure of meeting with so sane and excellent an introduction to a branch of applied science as the present volume. As the authors point out, the failures met with in teaching science to the adult student are due to the divorce between precept and practice, and the want of connection between the nomenclature of science and the vocabulary of common life. This book therefore attempts to make use of the experience of the student as a means of developing a scientific fact. On the purely science side of the scheme we find clear and precise instructions for carrying out experiments on the nature of burning, the air, the safety lamp, explosive mixtures, flames, and diffusion. Every experiment is approached from the point of view of the miner's experience. For example, the student prepares and examines the various "damps" which are encountered in the coal mine, and round the nucleus formed by his own experiments he crystallises a mass of useful knowledge. It is impossible to over-estimate the value of such a course of work as this. It is not too much to say that its utility is measurable in the saving of so much human life.

Miscellaneous.

Edith Cavell: a Norfolk Tribute. By H. Leeds. 92 pp. (Jarrold.) 1s.—The writer tells in quite a restrained way the story of a world-known crime and a gentle life. Until the full facts are possessed we must necessarily suspend judgment on the wisdom of Miss Cavell's action; of her bravery, self-sacrifice, patriotism, there is no shadow of doubt in the mind of anyone; her death has quickened life. Nor can any later history condone or excuse the execution of one who had nursed the soldiers of the enemy. By this and similar deeds the conscience of the world has been not only exasperated but revolted; Germany has lowered the human currency. We hope that the little book, which contains, beside the life, some local tributes to Miss Cavell, and some excellent photographs, will find its way into many schools.

EDUCATIONAL BOOKS PUBLISHED DURING DECEMBER, 1915.

(Compiled from information provided by the
publishers.)

Modern Languages.

"Passages in Prose and Verse from German Literature of the Nineteenth Century, 1800 to 1870." Selected and chronologically arranged by M. E. Weber. xx+212 pp. (Cambridge University Press.) 3s. net.

"A First Russian Reader from Tolstoy." With English Notes and a Vocabulary. By P. Dearmer and A. Tananevich. 80 pp. (Clarendon Press.) 1s. 6d. net.

"Key to the New Junior French Course." By L. J. Gardiner. iv+52 pp. (Clive.) 2s. 6d. net.

"Matriculation Model Answers. French. Being London University Matriculation Papers in French with Model Answers, from January, 1910-June, 1915." 120 pp. (Clive.) 2s.

"German-English Dictionary (in Roman Type): 36,000 German Words, including Most Recent Terms in Arts, Science, Commerce, Engineering, Agriculture, Army, Navy, etc." By A. H. Haltenhoff. 962 pp. (Hachette.) 4s. net.

"An Elementary Grammar of Colloquial French." By G. Bonnard. xii+180 pp. (Cambridge: Hefter.) 3s. 6d. net.

"The First Twenty-eight Lessons and their Special Vocabulary of 'First French Course' Phonetically Transcribed." By A. R. Florian. 64 pp. (Rivington.) 1s. 4d. net.

Classics.

Tacitus: "Agricola and Germania." Edited, with Introduction, Notes, Indexes, and two maps, by J. H. Sleeman. (Pitt Press Series.) liv+211 pp. (Cambridge University Press.) 3s. net.

"Régès Consulaires Rômani." By F. R. Dale. (Lingua Latina Series.) 84 pp. (Clarendon Press.) 2s.

English: Grammar, Composition, Literature.

"Modern Essays Reprinted from Leading Articles in *The Times*." With an Introduction by J. W. Mackail. xvi+292 pp. (Edward Arnold.) 5s. net.

"An Essay on Metaphor in Poetry, with an Appendix on the Use of Metaphor in Tennyson's 'In Memoriam.'" By J. G. Jennings. (Blackie.) 2s. 6d. net.

"Selections from the Poems of Percy Bysshe Shelley." Edited by A. Hamilton Thompson. (English Romantic Poets.) xxx+198 pp. (Cambridge University Press.) 2s. net.

"Selections from the Poems of John Keats." Edited by A. Hamilton Thompson. (English Romantic Poets.) xxxii+172 pp. (Cambridge University Press.) 2s. net.

"A Literary Middle English Reader." By A. S. Cook. 554 pp. (Ginn.) 8s. 6d.

"School Poetry for the Junior Division." 64 pp. (Ralph, Holland.) 4d.

"School Poetry for the Senior Division." 144 pp. (Ralph, Holland.) 6d. net.

History.

"Matriculation Model Answers in History and Geography. Being London University Matriculation Papers in History and Geography, from January, 1913, to June, 1915, with Model Answers." 140 pp. (Clive.) 2s.

"A Short Ancient History." By J. H. Breasted. 334 pp. (Ginn.) 4s. 6d.

"The Middle Period of European History." By J. H. Robinson. 421 pp. (Ginn.) 4s. 6d.

"The Fifteen Decisive Battles of the World from Marathon to Waterloo." (Oxford Editions of Standard Authors.) By Edward Creasy. With Introduction by H. W. C. Davis. 500 pp.; 12 maps. (Oxford University Press.) 1s. 6d. net.

Geography.

"The Beginner's Regional Geography: The Americas." By J. B. Reynolds. Containing thirty illustrations, fifteen of which are in colour (two maps are included). 64 pp. (Black.) 1s.

"The Wheat Industry. For Use in Schools." By N. A. Bengtson and D. Griffith. 358 pp. (Macmillan.) 3s. net.

"A Regional Geography of the Six Continents." Book III. "North America." By Ellis W. Heaton. 102 pp. (Ralph, Holland.) 1s.

Mathematics.

"A First Course of Geometry." By Dr. Charles Davison. viii+90 pp. (Cambridge University Press.) 1s. 6d.

"Algebraic Equations." Second edition. Cambridge Tracts in Mathematics and Mathematical Physics, No. 6. By G. B. Mathews. viii+64 pp. and wrapper. (Cambridge University Press.) 2s. 6d. net.

"Problems in the Calculus." By D. D. Leib. 224 pp. (Ginn.) 4s. 6d.

Science and Technology.

"Questions and Numerical Exercises in Physics and Chemistry." By David Baird. 104 pp. (Blackie.) 1s. net.

"A Junior Chemistry." By W. Willings. 280 pp. (Blackie.) 2s. 6d.

"Exercises in Practical Physics." Fourth edition revised. By Prof. Arthur Schuster and Prof. Charles H. Lees. x+380 pp. (Cambridge University Press.) 7s. net.

"Catalysis and its Industrial Applications." By E. Jobling. 128 pp. (Churchill.) 2s. 6d. net.

"The Apple." By A. E. Wilkinson. 492 pp. (Ginn.) 8s. 6d.

"Applied Mechanics for Engineers." Second edition, revised and rewritten by N. C. Riggs. By E. L. Hancock. 456 pp. (Macmillan.) 10s. 6d. net.

Miscellaneous.

"The Book of the Prophet Isaiah, Chapters i.-xxxix." In the Revised Version. With Introduction and Notes. Cambridge Bible for Schools and Colleges. By the Rev. J. Skinner. lxxxvi+314 pp., with map. (Cambridge University Press.) 3s. net.

"St. Mark's Gospel." With Introduction and Notes. By Archdeacon Allen. Forming a volume of "The Oxford Church Biblical Commentary." 230 pp. (Rivington.) 7s. 6d. net.

"Memorabilia Series of Cards for Schools. No. 9. The Old Testament Card." (The Year Book Press.) 2d., or 1s. 6d. a dozen.

"The Clergyman's Ready Reference Diary and Calendar, 1916." (22nd year of issue.) Edited by Rev. Theodore Johnson. 352 pp. (The Year Book Press.) 3s. cloth, 4s. 6d. roan, 5s. 6d. pocket and tuck.

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.

Voluntary Aid in Education.

It occurs to me that there may be a considerable number of superannuated teachers, men or women, of (say) between sixty and seventy, who, though incapable of a full day's or week's work, might yet render valuable voluntary aid to schools which suffer from an inadequate staff. Such persons are perhaps already asking themselves what they can do to help in the national crisis. The work they have done the greater part of their lives will probably be what they are most fitted for, and it often happens that elderly people, especially after a few years' pause from the stress and strain of school teaching, feel a renewal of sympathy with the young, and a strong desire to be amongst them again. If my surmise that the superannuated exist in appreciable numbers is correct, would it not be possible for them to band together in some such fashion as the Red Cross Voluntary Aid Detachments, and offer their services to impoverished and understaffed schools in their own town or district?

All that is needed for success in such a scheme is good will on the part of school authorities, and a proper humility and readiness to adapt themselves on the part of the voluntary helpers. It would only be a return to the voluntary aid rendered by our grandfathers and grandmothers, by which the foundations of English education were laid in British and National schools, with this advantage, that the helpers I am contemplating would not be untrained. Their teaching, if slightly out of date, would surely be superior in quality to that of the half-paid, half-trained assistants who seem likely to be pressed into service.

FANNY JOHNSON,

Formerly Headmistress of Bolton High School.

Books for the Armies.

AN organisation has been formed with the title of "The Fighting Forces Book Council." It is important to know that while this has the approval of the War Office, Colonial Office, and Board of Education, and of the High Commissioners of the Dominions beyond the Seas, this organisation is intended to supplement, and not in any way to overlap, existing bodies, such as the Camps Library, which is the recognised collecting and distributing depot for the books sent through the medium of the General Post Office, the Red Cross, and St. John's Ambulance War Library, which supplies the hospitals, and the Young Men's Christian Association. Through the machinery of these various organisations large quantities of books are being regularly distributed to the Forces on active service, naval and military hospitals, and convalescent camps, both at home and abroad. The work done by these organisations is, however (mainly, if not entirely), that of distributing agents for the books generously supplied by the public and sent by them through the Post Office or otherwise. These books are naturally of a miscellaneous kind, and consist preponderantly of light fiction, and the enormous numbers of books issued to the troops (about 100,000 weekly) make any systematic selection or classification impossible.

It has been found, however, that books of a more solid kind are largely asked for by an immense number of educated men now in the military service of the Empire, who find themselves cut off from the studies in which they were engaged, and which they are still anxious to pursue. The objects of "The Fighting

Forces Book Council" will, therefore, be to try to meet this need, and at the same time to assist the existing organisations in every possible way. It proposes to:—

(1) Raise funds for providing reading matter of the kind indicated above for his Majesty's Forces at home and abroad, including the wounded and convalescent and the British prisoners of war.

(2) Procure, by purchase or gift, books of this kind in sufficient quantities, and arrange for their distribution through the Camps Library to the various organisations and corps.

(3) Draw up lists of such books required by, or suitable for, various types of men.

The Fighting Forces Book Council is pursuing these objects, not only in concert with the above-named organisations, but also with the support of the Incorporated Society of Authors, the Library Association, the Publishers' Association of Great Britain and Ireland, the National Home Reading Union, and other like bodies. The council consists of representatives of almost every branch of letters and every side of public life. An appeal is made for funds to carry on this work, and we feel sure that we need add nothing to commend such an appeal to the public. Contributions forwarded to us or to the London County and Westminster Bank, Law Courts Branch, W.C., will be duly acknowledged.

E. W. WARD,

Chairman, Executive Council.

I. GOLLANZ,

Hon. Treasurer.

B. CRESSWELL,

Hon. Secretary.

ALFRED PERCEVAL GRAVES,

Hon. Literary Director.

Seymour House, 17, Waterloo Place,
London, S.W., January 18th.

Politicians and Geographers.

THE SCHOOL WORLD for December contained a review of a small book of mine in which the reviewer—after, in quite a friendly way, seeming to throw doubt on some of my statements in reference to European frontiers and to imply that "bestiality and barbarism" were somewhat extravagant terms to apply to the modern Prussian—asks the question: "Why did geographers not warn politicians of the mistakes they were committing and the dangers they were running?"

As some people might read into this question a suggestion that geographers were remiss in the matter, and as the reviewer's attitude is typical of an attitude on which *Nature* has been throwing a penetrating light, the question deserves a passing notice, even though one must be to some extent personal.

The suggestion is, of course, very far from the actual facts, though, of course, geographers are very few in number, and so badly paid that they cannot spare time for political excursions. If we counted only those teachers of geography who have—with the consent of their employers—salaries of at least £400 a year, each of them would have to be responsible for 10,000 politicians and 2,000,000 of our population otherwise.

In any case, how was the necessary work to be done? Our obvious spokesman was definitely associated with one particular political party, and that the party not in office. Some of us who had once been attached to the opposite party, had been attached to certain principles, not to a certain partisan body, and we adhered to the principles when—as we thought, rightly or wrongly—that body deserted them.

More important than these purely personal considerations was the fact that the geographer studies all nations alike with such impartial enthusiasm that—

though he may occasionally make a real statesman, he very seldom makes even a fairly good partisan. And, therefore, he is distrusted by the partisan leaders. The work, then, could scarcely have been done politically.

What could we do professionally? Well, we could urge on Government departments, especially those concerned with foreign affairs, the vital importance of studying the political and economic geography of foreign nations; and that was urged. Few people have forgotten that decision which made the Foreign Office the laughing-stock of three continents—that Diplomatic and Foreign Office candidates did not need to know any geography! It was entirely owing to the Royal Geographical Society that that absurd and suspicious decision was rendered more or less harmless, although it was not directly cancelled; and, as I was the first person to direct the attention of the society—through Dr. Keltie—to the matter, the reviewer's question left my own withers unwrung.

In a less official, but perhaps even more effective, way the Geographical Association has supplemented the general action and attitude of the Royal Geographical Society. One of the fundamental principles which the late Professor Herbertson accepted from Mr. Mackinder, and which he both practised and preached right up to the end, was the imperious necessity for discovering, describing, and accounting for regional characteristics and regional consciousness. The whole meaning of modern geography, as a great outlook, lies in the application of this principle to citizenship; for only the citizen who has learnt to picture clearly, truly, sympathetically, strange peoples and strange ways of doing things, is really able to appreciate, e.g., the high percentage of good government and real freedom in the British Empire or the inner meaning of political and economic phenomena in foreign countries.

From this point of view it is scarcely extravagant to believe that the marked discouragement of geography by politicians has been due to their *fear* of it. The attitude of mind and the body of knowledge given by geography are obviously unfavourable to the juridical niceties and straw-splitting futilities of our typical politicians. Even in an elementary school a pupil stays long enough to gain some familiarity with those portions of geographical economics which are neither too abstract nor too contentious for school use; and, if these are allowed to be taught properly, they will prevent any pupil from being, as a citizen, any longer bamboozled by politicians of any party. At present, especially in foreign affairs, our political atmosphere is dominated by legal bluff, not by geographical realities—by a passion for looking back to precedents on technicalities, instead of looking forward to an immediate future already clearly portrayed by a study of facts as they really are. And so long as our citizens have not learnt to take a wide outlook, they must be foredoomed victims of the eloquence, the practised ingenuity, the vested interests, and the colossal assurance of our lawyer-politicians—an assurance which I always long to describe as steatopygous, because it is so frankly materialistic.

What the Geographical Association has done corporately, all serious geographers have done individually; but perhaps we have not done it in the right way. Personally, for some years now I have felt bound, in dealing with the Prussian plain, to describe minutely—but *without any comment of any kind whatever*—the political frontiers. And in describing the Belgo-German frontier I described fully the heavily-metalled, double-tracked railway running parallel with that frontier at a distance of about half a mile. I simply stated, e.g., that there was a station every three miles, that every station had sidings for a dozen long trains,

that every siding had platforms and apparatus for unloading very heavy materials, that tunnels or bridges gave access to all sidings without blocking the main lines, and that the time-table showed half a dozen small trains in the twenty-four hours!

What was the result? Some students thought it a piece of panic-mongering. Others thought that the facts—for they obviously were facts—were curious; but—so far as I know—only some of my Indian Civil men left the slimy trail of "wait and see" to investigate the phenomena further. And in 1911 two women students left the class altogether, in indignation apparently against what I believe they called a criminal attempt to stir up bad blood against a great, peaceful, kindred nation!

What would the reviewer have done—as student or as teacher?

L. W. LYDE.

PROF. LYDE gives three reasons why geographers—who apparently knew from of old all about the origin and nature of the Prussians, and what they were about—did not warn the Government and the country what to expect. He says:—(1) Geographers are few in numbers—as though a loud combined shout were necessary; (2) they are ill-paid—as though a man were influential in proportion to his salary; (3) they did not know how—as though the means which Prof. Lyde has now employed so effectively had not always been open to him. A simpler explanation I suggest is that, like everyone else, they did not know until after the event.

THE REVIEWER.

School Assembly.

My first glance at THE SCHOOL WORLD of January, 1916, fell upon Mr. Paton's admirable article on "School Prayers," and my first New Year's school thought was one of pleasure that our Widnes school came so near what Mr. Paton considers the right and proper line. Perhaps from proximity and acquaintance, we have gained some little touch of his quality!

We speak, however, of "assembly," rather than "prayers." Prayers there are, morning by morning, without exception—some two, or at most three, with chanted "Our Father," in which all may join—but the Introit, the Lesson, the Hymn, and the Announcements have each an appeal which scarcely seems secondary to that of any one of the others. For myself, Assembly is the great part of the day—formative, recollective, anticipatory. You found your day on the tone and character of Assembly; "atmosphere" begins there, praise and blame, service and reward, hope and recompense, tranquillity and life. Perhaps a few notes will not be out of place.

Introit.—This is a small matter, but one of the greatest, by its own kind of paradox. It is the Invocation, the General Introduction to worship and reverence. Four, five, six lines—sonorous, harmonious—simple, well-known words—some quatrain of elemental grandeur, and the Introit lives through the life. We have found, with three or four Introits in eight years, that this part of Assembly is best unchanged for long periods, as lending a kind of continuity and repose.

Hymn.—We use Emma Mundella's "Dav School Hymn Book," and have found it very valuable. The book, however, matters little, provided it contains the genuine strains. On a bright day, "Summer suns are glowing," or "Let us with a glad some mind"; for winter dullness, "Now the days are dark and dreary," "Lord, give me light to do thy work"; for harvest, "We plough the fields"; for springtime—well, there are a hundred for springtime, and for any other changeful season of mere time of year; for the youngsters, "Brightly gleams our banner" or "Child of the earth! oh, lift thy glance." For the older—but why continue, when the book is full of names like Cowper's,

Addison's, John Wesley's, Philip Sidney's, Henry Wotton's? Above all, choose some good words. Tunes will come quite easily, and they will be sung beautifully when the words have their message—more beautifully still where there are girls, as with us, and the two types of voice are blended in rapture.

Lesson.—I note that Mr. Paton would occasionally allow a senior boy to choose his own lesson for morning reading. Well, there may be wisdom. But here, certainly, we want great care and forethought. My own duty has been, for some years now, to arrange the lectionary for each term beforehand, reading through each passage with care, and breaking continuity rather than committing ourselves to verbiage and mere connecting matter. The lesson is read by the prefect for the week, boy or girl. Occasionally a master is invited to read, but only two or three times per term. Some boys and girls read with extreme beauty, and send little shivers of joy down the spine. Others want some listening to.

Prayers.—Here, at the moment, there is a choice of many excellent books; but, once again, the book is not the point. It is the prayer and the occasion and the actuality of the praying that really count towards the inner life, as Mr. Paton very clearly shows. Indeed a prayer fixed beforehand—before the next morning has brought its news, and its newspaper, its hopes and fulfilments—may turn out to be highly inappropriate and even unwise. Let the morning bring its own inspiration. Here, again, for benefit of grandeur and continuity, a chanted Lord's Prayer, repeated through the years in its own grand monotony, is wisely left unchanged.

Announcements.—Introit, Hymn, Lesson, Prayers are over in ten minutes, almost precisely. Practically the whole school attends regularly and stands the whole time. Occasionally, on a stuffy morning, much more often among boys than girls, there is a faint or a collapse. Generally, however, the school, provided it is kept interested, can stand it very well, and even another five minutes of announcements afterwards. When the announcements are long let the school sit—on chairs, if you have them (though school chairs are noisome things), on the floor, if you have not. And as to the announcements themselves, letter from absent soldier-principal, letter from old boy somewhere in France, news that an old girl is now house-surgeon somewhere, that an old boy is Smith's prizeman and fellow of Trinity (neither of which, happily, is a mere effort of the imagination), that a new teacher is replacing a munitions-worker, or a warrior, that Form IV.B is a home of genius, that Form VI.A shines in chemistry, that the self-denial fund has reached five pounds eight and threepence, and so forth—we all know these morning conferences, where history is written from the platform on the forming minds below, when promotions are read out (and dispromotions, alas!), when coming events are pleasantly anticipated, and when traditions consolidate themselves before the eye. Most often, say we start at 8.55 a.m., the school at 9.5 a.m., or 10.10, may "turn" with soldierlike precision, and file through its pair of doors. Let us hope that the morning's Assembly has blessed each one, and most the undeserving, with some soul-informing thought.

C. RICHARD LEWIS.

Secondary School, Widnes.

English Grammar.

ENGLISH grammar is admittedly one of the most difficult subjects in the school curriculum. A few years ago it was taught almost as a separate subject, and its *raison d'être* as a means to the writing of correct English was almost lost sight of. As usual, the pendulum has swung across to the other side, and the powers that be whole-heartedly denounce the teach-

ing of formal grammar altogether. But is this wise? Surely there is a *via media* between the cold, dead treatment that some of us were the victims of and the absolute neglect advocated nowadays. You may not be able to cultivate an elegant English style simply by careful attention to what Bradley calls negative rules, but, on the other hand, it is equally certain that mere imitation will not achieve the same result. A boy by contact with the best English, written and spoken, may avoid the nominative "who" after a preposition, but there are many cases that he cannot decide for himself without some theoretical knowledge.

The point does not need labouring; every teacher knows the difficulty. There must be a *minimum* of grammar taught. The question is: How shall this minimum be presented to the pupil so that (i) he may be led to regard it as a means and not an end, and (ii) he may derive the greatest benefit from it as a logical exercise? I am convinced that (ii) is of extreme importance. The modern schoolboy who has been robbed of that excellent mental training known as Euclid requires an effective substitute. Nowadays he is spoon-fed, and the old habits of self-reliance are dying from inanition. It is here that grammar, well taught, comes to our aid, and my object is to point out a system of analysis that has stood the test of extended trial and that will not (I think) disturb the equanimity of the most bitter grammarphobe.

In the first place, the system contains parsing and analysis. It requires that the child fully understands the relations between the various parts of the sentence, and detail throughout is subordinated to principle. In place of the multiplicity of columns, there are three, the first giving the clause, the phrase, or the word that constitutes a definite whole in the analysis; the second defines the grammatical relationship; and the third names the part, or parts, of speech. The word "adjunct" takes the place of the old words "enlargement" and "extension," and the principal parts of the sentence (for the sake of clarity) are written throughout at the left-hand side of the column, and all "adjuncts" at the right-hand side.

As an example we will analyse the sentence:—"The Prime Minister, who has recently returned from the front, reported that the troops were in excellent spirits."

COMPLEX SENTENCE.

Sentence	Parts	Consisting of:
Prime Minister the who front reported that spirits	Subject (i) Adjunct of subject (ii) Adjunct of subject Predicate Object	Noun Def. Art. Adjectival clause Verb Noun clause
NOUN CLAUSE.		
troops the were in excellent spirits	that Connecting word Subject Adjunct of subject Predicate	Conjunction Noun Def. Art. Verb and complement.
ADJECTIVAL CLAUSE.		
who has returned recently from the front	Subject Predicate (i) Adjunct of Pred. (ii) Adjunct of Pred.	Rel. Pron. Verb Adverb Adverbial phrase

It should be noticed that, no matter how complex the sentence may be, it should, first, be treated as a whole. This is a distinct advantage. It shows the pupil at once the character of each subordinate sentence. There is nothing arbitrary in this method. It tests the boy's reasoning powers and supplies him with sufficient detail to correct all prevalent grammatical errors.

WILFRID J. HALLIDAY.

Pudsey Secondary School.

A Mathematical Fallacy.

IN connection with Mr. Carey's fallacy in your last issue (vol. xviii., p. 39) it is only necessary to point out that six points ranged at equal intervals round the circumference of a circle are the vertices of a regular hexagon, and the side of the hexagon is equal to the radius of the circle. Since the length of any arc of a circle is greater than that of the chord joining its extremities, it follows that a semicircle exceeds one and a half times the diameter in length. This being true for each semicircle in Mr. Carey's diagram, however great the number of them, the sum of the lengths of all the semicircular arcs must exceed one and a half times the sum of the diameters.

W. E. H. BERWICK.

THE fallacy to which I directed attention in the January issue of THE SCHOOL WORLD, and which is exposed by Prof. Bryan, is less plausible if the semicircles are constructed all on the same side of the base AB. In this case it may be noted that the area between the "sinuous line" and the original semicircle X is not constant. The construction given is, of course, merely a convenient method for dividing the line AB into a number of equal parts, and it is not essential that this number should be even. The fallacy becomes much more obvious if an attempt is made to prove that $3=1$ by drawing squares on the equal parts in the same manner as the semicircles are drawn in the figure given, and Newton's Lemma clearly does not apply. In my letter I suggested a method of proving that $2=1$ by drawing equilateral triangles on the equal parts; and it is interesting to compare this fallacy with the more obvious algebraical fallacy:—

$$\begin{aligned} \text{If } x &= y \\ \therefore x^2 &= xy \\ \therefore x^2 - y^2 &= xy - y^2 \\ \therefore (x+y)(x-y) &= y(x-y) \\ \therefore x+y &= y \quad \therefore 2=1. \end{aligned}$$

The pitfall in the algebraical fallacy occurs where it is assumed that since $2 \times 0 = 1 \times 0$, then $2=1$.

In the geometrical fallacy if the line one unit long be divided into n equal parts, the length of each part is $1/n$, and the sum of the lengths of the sides of the equilateral triangle described upon it is $2/n$. If n increases indefinitely both $1/n$ and $2/n$ vanish; but it does not follow that $1=2$.

W. M. CAREY.

Rutlish School, Merton, S.W.

Economy and Simplicity in Schools.

As hon. secretary to the Schools Committee of the National Food Reform Association I read with great sympathy the resolution adopted by the Headmasters' Conference, which aimed at securing reduced expenditure and increased simplicity of living in English public schools. The following schools belonging to this influential body were represented at the first Guildhall School Conference, 1912, not a few by their headmasters or medical officers:—Abingdon; Bromsgrove; Canterbury, King's School; Christ's Hospital; Clifton; Dover; Eastbourne; Eton; Glenalmond; Haileybury; Harrow; Lancing; Malvern; Marlborough; Mill Hill; Oxford, Magdalen College School; Radley; Ramsgate, St. Lawrence College; Rugby; Sedbergh; and Sherborne. The master of Haileybury also sat on the Special Committee which organised it, as nominee of the Headmasters' Conference, while among his colleagues were representatives of the Incorporated Association of Headmasters, the Association of Headmistresses, the Private Schools Association, the Medical Officers of Schools Association, the British Medical Association, and other bodies.

May I be allowed to remind your readers that in discussing the principal conclusions arrived at on

this occasion, the *Lancet* used these words: "What is wrong is the business management of the catering department—in a word, the house-keeping." Until women specially trained on the lines advocated by our Joint Matrons and Schools Committee are available in this country, as they have long been in America and more recently in Canada, the task of catering at once scientifically and economically in schools and other institutions must at best be a difficult one. Paradoxical though it may at first sight appear, it has been demonstrated that increased variety of food—held at the Guildhall to be one of the desiderata—so far from involving increased expense, can be provided at a lower cost than a monotonous and unappetising diet. This takes no account of the reduced amount of waste or the improved physical and mental conditions alike of scholars and staff that result. It may be convenient for me to add that we have already been able to be of some service to a number of schools. I shall therefore be glad to hear from, or to see by appointment, any head of school or house or responsible caterer who stands in need of help.

CHAS. E. HECHT.

178 St. Stephen's House, Westminster.

Determination of the Focal Distance of a Convex Mirror or a Concave Lens.

THE method for determining focal distances of mirrors and lenses, described in the January issue, has been in use in my classes since 1900. In that year a detailed description was given by me in the *Practical Teacher*. I find that the direction of the reflected or transmitted ray is more easily found by using a ruler. Special care must be taken to keep the mirror or lens fixed. The sheet of paper on which the pins or rulers are fixed should be raised to the middle of the mirror or lens.

I do not know any better method of finding the focal lengths of diverging mirrors and lenses for boys of fourteen, as it depends only on a knowledge of first principles.

ERNEST L. COTTON.

Central Secondary School, Sheffield.

Economy in Education.

THE General Council of the Educational Handwork Association has had under consideration the question of retrenchment in expenditure on education, and I am instructed to send you the following resolution:—

"That the Council of the Educational Handwork Association feels that while economy of expenditure may be inevitable in all branches of educational work, yet it considers that in view of the vital importance of all educational handwork in relation to education in general and to such circumstances as those created by war, the limitation of expenditure on educational handwork should be the *last and lightest* of the absolutely *unavoidable economies* in education."

J. SPITTLE.

The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

THE RELATIVE IMPORTANCE OF THE VARIOUS MODERN LANGUAGES.¹

CONSIDERED FROM THE POINT OF VIEW OF THE ENGLISH BOY AND GIRL.

By LUCY A. LOWE, M.A.

Headmistress, Leeds Girls' High School.

FOR many years before the war this question of the relative importance of the various modern languages was becoming one of extreme urgency for the following reason: the educative and utilitarian aims of modern language teaching were often at variance, or appeared to be so. Since the outbreak of the war the question has grown still more urgent in the minds of many people, for not only has it been felt that the war has in some measure been due to the failure of governments in the past to understand the temper and tendencies of other governments, but also the problem has arisen of how we are to come into closer union with our allies and of how we can make use of the greatly increased opportunities of foreign trade, hitherto monopolised to a considerable extent by Germany. I fully realise the magnetic attraction and the urgency of this twofold problem, but, in our natural desire to solve it, we may be too eager to make hasty and inadvisable changes; therefore I want to put forward a plea for very wary action and great caution, before we dislodge either of the two great modern languages, which up to the present have been those generally learnt by boys and girls in our English secondary schools.

We all agree, no doubt, that it would be a great gain, from both the ideal and practical points of view, if boys and girls could leave our schools with a good working and appreciative knowledge of the main languages of Europe, but we also agree that,

unless our educational system is to be hopelessly one-sided, it is impossible, or at any rate most inadvisable, to introduce more than two *modern* languages into our ordinary school curriculum. I am presupposing the study of Latin in a large number of our schools, and I am not intending to exclude an intensive study of one or two additional modern languages for special pupils in the highest form or forms, when satisfactory arrangements can be made, but I think that from an educational point of view the main European languages still naturally divide themselves into two groups:—

1. Those which form the basis of a general all-round education: in other words, those which should be studied by the normal, or perhaps slightly above the normal, English boy or girl passing through a secondary school.

2. Those which may be taught as special subjects in special circumstances in the highest forms of a school, or preferably as an after-school course.

After thinking over the matter very carefully, I still relegate French and German to the first class, and Russian, Italian and Spanish to the second. I intentionally omit the claims of Dutch, Flemish, Danish and other northern linguistic branches of the Germanic family, as I believe that, given a knowledge of English and German, moderate facility in the use of these languages can be very quickly acquired.

In considering the claims of French and German to be the first two modern languages to be learnt in our schools, I shall confine myself mainly to the educative point of view, for though I in no way undervalue the practical side of the question, still, as the greater includes the less, so also what is fundamentally educative must undoubtedly be useful too.

It might not be thought necessary perhaps to urge a plea for French at the present time,

¹ A paper read at a recent conference of the Association of Headmistresses.

as not only has it been included for many years in the ordinary curriculum of an English secondary school, but also the close alliance which this great war has brought about between England and France has certainly acted as an incentive and has stimulated the study of French throughout the land. And yet, unless we realise why French holds its place in schools, this enhanced interest, founded on sentiment rather than on conviction, may be only ephemeral, for though the hours claimed by French have been on the whole fairly generously allotted in the past, in a large number of schools, perhaps especially of boys' schools, French is still held to be of secondary importance, and it has therefore not aroused the best energies of those who are studying it. Though I almost hesitate to say it, I believe that this is due to a great extent to the attitude of those in authority, and I think I do not make this statement without some justification, for only a short time ago I was present at a local meeting of the Classical Association, where the impression made by some of the speakers was that they regarded French merely as a language to play at, a pretty ornament, one that could be mastered without much serious work, and one that as a factor in education was not worthy to be mentioned in the same breath as Latin. That this has been the condition of things for some time is further shown by the fact that when, not long ago, four English Ministers went to Paris for a conference with Ministers of the French Government, it was reported that only one of their number could speak French. How, looking at the matter from a purely practical point of view, can we hope to understand our friends, if we can only converse with them through an interpreter, for I am afraid that in this respect the French are no better than ourselves? An interpreter as an intermediary for delicate political and diplomatic intercourse must be as hampering as an ear-trumpet when one wants to carry on an intimate or secret conversation.

We can only suppose that the traditional and century-old antipathy between the two countries led us in a sort of "John Bullish" way to despise those we did not understand and consequently to deprecate the study of their language. We felt, perhaps, that "where ignorance is bliss, 'tis folly to be wise," and yet, in spite of this exclusive attitude, at certain periods in the history of the nation, the intrinsic charm of French has made itself felt, and our English authors who assimilated its outstanding qualities imbued their own language with a sounder logic, a more brilliant transparency and a

crisper precision than was common in our prose writers; for logic, transparency and precision are the three main qualities which we English can gain from an intelligent and appreciative study of French. English has, of course, great qualities which it can give to French—none realised this more than Montesquieu and Victor Hugo—but we are naturally deficient in that clear logical way of expressing ourselves, of which even the normal French boy or girl at school is to a great extent master; and we should all agree, I think, that transparency and precision certainly do not characterise the greater proportion of essays and examination answers, which almost drive us to despair as the written expression of knowledge which we feel sure is in the minds of a large number of those whom we have taught. And I firmly believe that, if we could all assimilate more of French logic and clearness of vision in thought as well as of their logic and clearness in expression, not only would each one of us be better equipped as individuals, but also as a nation we should avoid much of the disastrous, self-complacent, uneconomical "muddle through" policy which has stamped us in the past. We have a great deal to learn from our neighbours in this respect, for even now we hear from those on the spot that the French Red Cross is being managed far less extravagantly and far more efficiently than the British.

And so I plead both for individual and for national reasons that, though French has hitherto been accorded the first place among the *modern* languages to be taught in our schools, it should be promoted to a still higher rank, and be placed on an equal footing with other subjects, and be studied everywhere by boys and girls with all the seriousness of purpose which is brought to bear on mathematics, science or classics. So far as possible a certain mastery of the language itself should be gained at school, and further, no teacher of modern languages should be satisfied to stop short at this stage, for, at any rate in schools where the normal leaving age is between seventeen and nineteen, there should be some real introduction to the study of the great literature of France, so that those who have gained a good working knowledge of the language may have also a first-hand acquaintance with the builders-up of that language from the time of Bossuet, Pascal and La Rochefoucauld, through Montesquieu and Voltaire, to the great masters of style of the nineteenth and twentieth centuries—Chateaubriand, Flaubert, Bourget, Anatole France; while, of course, a study of the great poets of the three centuries would form an important

part of any scheme for the teaching of French literature.

Though, however, French as an educative factor has had an uphill fight and has yet much ground to win, still the French language has gained a firm foothold, from which there is very little danger of its being dislodged. The same can hardly be said of German, which undoubtedly has a great struggle to face. The question is: Should German, the language of a nation which has justly won the condemnation of civilisation on account of the method in which she has waged this war, be still accorded the second place among the modern languages generally taught in English schools, or should it be made to give way to one of the three languages which are naturally clamouring for admission to the school curriculum (Russian, Italian, Spanish)? From a practical or utilitarian point of view, very sound and forcible arguments can easily be urged for the retention of German. It must be admitted that, in the past, lack of knowledge of the language has led to a disastrous ignorance of the aims of the German nation, and particularly of the war party and of their vast preparations for the attainment of these aims. Even as early as the reign of George II. it was recognised that it was advisable for the Secretary of State, who was then at the helm of foreign affairs, to be an adept at German, in that the ambitions of Frederick the Great and the Austrian problem needed careful watching, and it was mainly on this ground that Carteret, the only English Minister who knew German, was appointed in 1742. And not only for political reasons, but also for commercial reasons, a widespread knowledge of German must be considered most desirable—in this respect the recent policy of a section of the French nation in advocating the total cessation of the study of German in their schools appears to me to be simply suicidal—but cogent as are these reasons, they would not be sufficient to justify the retention of German as the second modern language, if the study of the language itself were of no educational value. What can the study of the German language and of her literature give to us?

In this connection it is worth while to read what Madame de Staël felt at the beginning of the nineteenth century about the Germans and their literature, which then, as now, though for a different cause, was regarded with considerable disfavour by Europe at large. In her book, "De l'Allemagne," published in 1810, Madame de Staël gives a discriminating and appreciative criticism of German literature, acknowledging its faults,

but showing clearly how much is to be gained by a careful study of its masterpieces; but she goes further, for her critical estimate of the nation is extraordinarily accurate, and in the light of current events she sometimes almost seems to read the future with the eyes of a prophet. In these days, when the German people are being so justly condemned, it is well to remember that in Madame de Staël's time France herself was passing through the Napoleonic phase of a belief in the superiority of the French nation and of her right to impose her rule and her civilisation on Europe at large. Madame de Staël fought so strenuously against this tendency that she incurred the stigma of traitor and a sentence of exile at the hands of Napoleon, who could brook no opposition, and who scented danger in her efforts to stir up a spirit of nationality and of liberty in the German States. It is interesting to note that over a hundred years ago Madame de Staël realised that Germany needed a master to unite her, but that that master would need to be a German. She saw, however, that Prussia, the least purely Teutonic nation of Germany, was ready to dominate the country, and further, she shows in her picture of the Napoleonic régime how easily mastery may degenerate into tyranny. France had strengthened her sense of nationality, but at what a cost!

Madame de Staël drew a picture of the attitude of the France of 1810, which is an extraordinary replica of that of Germany of 1870 and since: a France which knew no other right than might, no other code of justice than success; and, addressing herself to Germany, she closes her book with words which should have sounded a note of warning to the land which, before long, was to be ground under the heel of Bismarckian and Hohenzollern tyranny. "If enthusiasm [*i.e.*, for the ideal] were ever to be strangled on your soil . . . an active intelligence and force might make you the masters of the world; but you would only leave in it the traces of a sandstorm as terrible as the sea, but as arid as the desert." Madame de Staël saw wherein the real strength of Germany lay—not in armaments and material power, but in mind and soul; and I have dwelt for a few moments on her picture, because what she saw and feared for the France of her day has passed, while the glimpse she caught of what might threaten the Germany of the future has become the momentous reality of the present time. We feared and hated France, until we were delivered from her ruthless and domineering methods by the destruction of the force which set her springs in motion; now we fear and hate Germany for the same cause. But

the true inborn spirit of France asserted itself: the spirit of militarism was crushed, the spirit of liberty revived—liberty both within and without, demanding freedom for herself and tolerance towards her neighbours—and so we hope may the true spirit of Germany revive; a spirit of cosmopolitanism tinged with a love of poetry and of the ideal, the spirit which characterised the thinkers and writers of the great classical period, of whom Madame de Staël had a first-hand knowledge.

In short, I want to urge that the just and natural hatred of militarism and Hohenzollern methods should not degenerate into a narrow prejudice against everything German, including what is best in the nation; and that, in our haste to put Germany beyond the pale of all friendly relations in the future, we should not forget that in the past it was a German, the philosopher Kant, who, at the end of the eighteenth century, in 1795, produced that epoch-making work, "A Philosophic Argument for Perpetual Peace," in which, showing how peace might rest on a union of free States, embracing the whole of Europe, and represented by a permanent congress, he foreshadowed the scheme of a confederation of European nations, which has been so frequently urged before and since the outbreak of the war as the only sound basis of a lasting peace. Blindly Germanophile we have been in the past to our cost, and never wish to be again superficially and indiscriminately in the future; but let us freely acknowledge even now that a great deal of what is of infinite value can be learnt and assimilated by our boys and girls by a careful and intelligent study of the German language and literature.

But—not for the same reason that we study French. We learn both by contrast and by similarity. Therefore French should be learnt because it is a language so very different from ours; it fills up our gaps and makes good deficiencies to a great extent; it gives us qualities we do not possess. German, on the other hand, being the other great Teutonic language akin to English, emphasises qualities we already perhaps possess, but in an embryo state.

In conclusion, I should like to summarise shortly some of the main reasons why I feel that it would be a great loss to the national intelligence, if the study of German were to be excluded from our schools:—

1. It is a language with terminations, and, like Latin, it develops a special linguistic sense, which should help to overcome the natural tendency to grammatical slovenliness and inaccuracy in our speech.

2. In that it is the second great language of the north and akin to English, it almost

unconsciously produces an understanding of comparative philology in its widest sense, an understanding which should help international relations, and which certainly serves to enrich the mother tongue.

3. In spite of the present Prussian obsession, of the wholesale distortion of view on the part of the German race, due to the deliberate spread of a certain type of teaching by those in power to those who serve (we may note in passing that Madame de Staël drew attention to the danger of the somewhat servile and imitative spirit of the German people), still the *true* Germany, before Bismarck and the Hohenzollerns transformed and marred it with their gospel of a brutal "Kultur," is a nation of a simple-hearted, poetic folk, dreamy perhaps and lacking in energy—for the present ebullition of energy is not healthy, but feverish—a nation of real sentiment and instinctively musical; and surely, we English need to develop the side of our natures which finds expression in poetry and in music. Is it too much to say that some of this sense might perhaps help to do away with the sordid surroundings which disfigure our large towns; for, at any rate as far as I have had an opportunity of judging, the dirt and squalor prevalent in the poorest parts of our English cities have no parallel in Germany, even though the poverty be as great?

4. German is the language of a very large number of the European people, and if, by a deliberate non-study of the language, we cut ourselves off from an intimate acquaintance with their thoughts and ideals, we shall be doing our best to postpone the lasting peace based on a confederation of nations, which is the vision most of us see before us in the future, even though at present the vision be very dim.

I have found it very difficult to put adequately into words what I feel to be the great reasons why the study of German should not be ousted from our schools, but I hope I may have given a general idea that, while French has the first place among modern languages for educative reasons, on account of its very differences, because it supplies deficiencies, German, apart from international reasons and in spite of the crimes of the race in this war, has the second place on account of its similarity, because it strengthens qualities we already possess; and therefore, though I agree that if only one foreign modern language can be learnt, French should be that one in preference to German, in that we can learn more from the opposite than from the like, yet where a second modern language can be learnt, very much is gained, and German should be that second language. Moreover, not only on

the above grounds do French and German claim their place, but also because they, with English, are the languages of a very large proportion of the inhabitants of Europe, and a knowledge of these three languages, added to a knowledge of Latin, places us on the threshold of all the other languages of Europe, with the exception, of course, of Russian, which, though it fulfils nearly all the conditions put forward in favour of French or German, I consider to be too hard for the normal English boy or girl of school age, without a great and unjustifiable sacrifice of time and labour.

To sum up very briefly: the following are, I believe, some of the chief considerations which, apart from a utilitarian point of view, should guide us in our choice of the foreign modern languages to be admitted into the curriculum of the ordinary secondary school.

1. How far the modern language is in contrast to our own, and consequently able to supply deficiencies inherent in most of us in the use of the mother tongue.

2. How far the modern language is akin to our own, and consequently able to strengthen qualities we already possess.

3. How far the modern language is feasible for the necessarily immature intelligence of the average boy or girl.

4. How far the modern language will open the doors to a great literature and to the ideals and tendencies of a large number of the inhabitants of Europe.

5. How far the modern language may be considered a good foundation for the study of kindred languages.

These are, I believe, the main principles which, as regards our schools, underlie the crucial and perplexing question of the relative importance of the various modern languages considered from the educational point of view.

THE CONSTRUCTION OF FLORAL DIAGRAMS.

By E. STENHOUSE, B.Sc. (Lond.).

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FOR some years it has been usual, in examinations in elementary botany, to ask candidates to construct diagrams expressing more or less conventionally the structure of given flowers. Great importance is rightly attached to such practical exercises, for they test, as no written description can test, the student's ability to observe for himself and to concentrate his attention on details of outstanding importance in floral structure.

A floral diagram in the narrower sense of

the term is a sort of ground plan of the flower, drawn to show in a simple manner the symmetrical arrangement of sepals, petals, stamens and carpels apparent in such cross sections of flower buds as Figs. 1 and 3. Many additional features, which no single true section could show, are, however, indicated by special devices, so that the complete diagram summarises a large number of facts. Time is well spent which trains an elementary student in the rapid and accurate construction of such figures.

Nothing could give the beginner better practice in floral diagrams than a lily, tulip, star of Bethlehem, or other polyphyllous flower of the Liliaceæ. It is immediately clear that such a flower is radially symmetrical (actinomorphic), with its parts in multiples of three,



FIG. 1. - Cross section of flower-bud of Orange Lily ($\times 5$).

viz., an outer whorl of three perianth leaves (sepals), an inner whorl of three perianth leaves (petals), an outer whorl of three stamens, an inner whorl of three carpels—alternating in such a way that the middle line of any member of one whorl lies opposite the interval between two members of the next whorl. The parts of the five whorls thus occur on six radii.

The diagram is begun by drawing faintly five concentric circles (one for each whorl), and three diameters (xy , pq , rs , Fig. 8) at equal angles to serve as guide lines. If the flower is pentamerous, as in most dicotyledons, five diameters are drawn; if tetramerous, four. The perianth leaves are then indicated on the two outer circles, the midrib of each being shown by a ridge or thickening. The stamens are represented, as in Figs. 2 or 8, to convey the impression of anthers in cross section. In the Liliaceæ the pollen lobes are to be shown on the inner faces

of the conventional stamens, to indicate that the anthers are introrse, since the method of dehiscence has an important bearing on pollination. The pistil is shown by a diagrammatic cross section of the ovary, which is here trilobular, with axile placentation. It is necessary, for drawing this, to notice that the three septa of the ovary are in line with the midribs of the inner perianth leaves—in other words, that the carpels themselves are opposite the outer perianth leaves. The various whorls may be diagrammatically shaded or coloured.

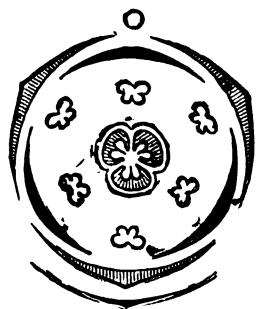


FIG. 2.—Floral diagram of Star of Bethlehem (compare with Figs. 1 and 8).

If the specimen is a tulip the diagram is now complete. The flower, being solitary and terminal, cannot be said to have a back or a front. On the other hand, where a number of flowers arise on the same stalk (star of Bethlehem, hyacinth, etc.), it is possible in each case to distinguish between the side nearest, and that furthest, from the axis (stalk). The former is conveniently called the back or posterior, the latter the front or anterior, side of the flower. In diagrams of such flowers the position of the axis is marked at the outset by a small circle or dot. An imaginary plane (represented by

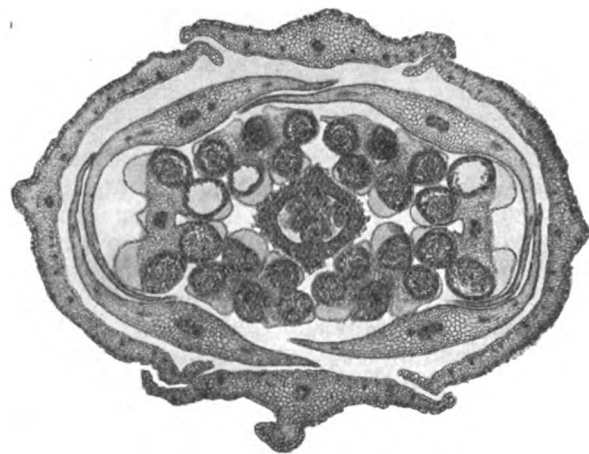


FIG. 3.—Cross section of flower-bud of Wallflower (x 17).

the arrow *xy* in Fig. 8) through the axis and the centre of the flower divides the latter into right and left halves. Using this plane of reference we may now say that the calyx consists of one anterior (front) and two posterior-lateral sepals, while the corolla consists of one posterior (back) and two anterior-lateral petals. The various stamens and carpels may be distinguished similarly.

A crucifer (Figs. 3 and 4) furnishes excellent practice in "orienting" a flower on these principles, and beginners are interested in discovering and showing diagrammatically whether the pouched sepals of a wallflower are the "front and back" or the two "side" sepals; whether the pair of short stamens are front and back, or right and left; whether the septum in the ovary runs from front to back or from side to side, and so forth.

The position of a bract, if present, may be

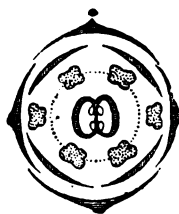


FIG. 4.—Floral diagram of Cruciferae (compare with Fig. 3).

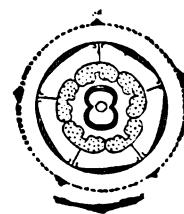


FIG. 5.—Floral diagram of Compositae (tubular flower).

indicated as in Figs. 8, 13, etc. It is, of course, in most cases anterior. When the perianth is gamophyllous, the cohering leaves are shown joined by their edges, as in Fig. 8. A gamosepalous calyx or a gamopetalous corolla is represented in a similar manner (Fig. 6). When the stamens are epiphyllous or epipetalous they are drawn as in Fig. 8, 6 etc., connected by lines to the perianth leaves to which they respectively adhere. The stamens of Leguminosae, which cohere by their filaments, are shown joined by lines (Fig. 11); those of Compositae, in which the anthers cohere, are drawn touching each other at their



FIG. 6.—Floral diagram of Primrose.

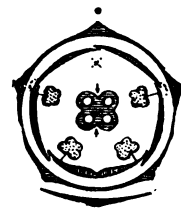


FIG. 7.—Floral diagram of Labiate. The original position (posterior) of the missing stamen is shown by the cross.

edges, as in Fig. 5. All such diagrams should be drawn on a large scale, say three inches in diameter. An average student, who has worked through exercises of graduated difficulty, applying the principles outlined above, is soon able to construct a diagram of the parts actually present in any fairly simple flower placed before him.

Floral diagrams, however, have a further value, in that various theoretical questions relating to the suppression of certain parts of the flower can be most readily illustrated by

their use. Thus the explanation of the anti-petalous position of the stamens in Primulaceæ—which is quite contrary to the student's previous experience of floral structure—is felt to be entirely satisfactory when the "lost" outer whorl of stamens is theoretically restored by the little crosses in Fig. 6.

Floral diagrams are similarly indispensable in explaining the peculiarities of the stamens of Labiatae (Fig. 7) and Scrophulariaceæ. Again, the suppression of the inner stamens of the crocus or iris, and the extrorse dehiscence of the remaining outer three (the latter fact significant in respect of pollination), are

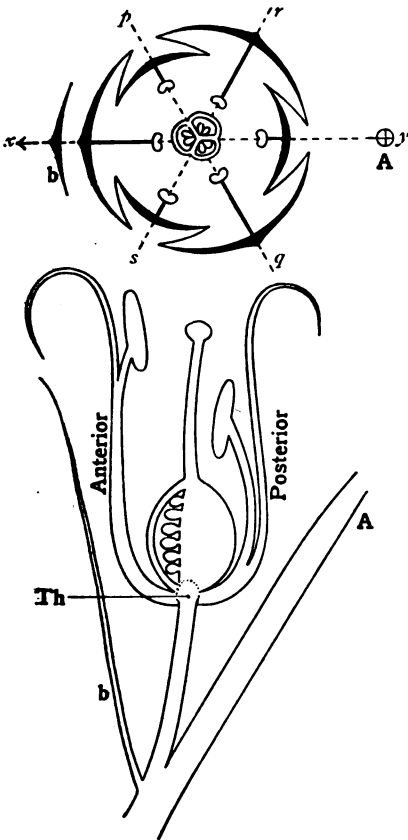


FIG. 8.—Floral diagram and longitudinal section of Wild Hyacinth flower. A, axis; b, bract; Th thalamus; xy, plane of section.

grasped with ease by students who are familiar with the normal monocotyledon type represented by Fig. 2 or Fig. 8. The suppression of the calyx, so common in Compositæ, is indicated in Fig. 5.

Students will find a pleasure in devising for themselves, or studying in various books, methods of representing the petaloid stigmas of iris, the corona of daffodil, the positions of nectaries (Fig. 13), and other special features. Pupils may not be able unaided to work out the floral diagram of an orchid or a grass, but they certainly appreciate the light which such

diagrams throw upon the structure of these rather puzzling flowers. Similarly, an attempt to plot the spiral arrangement of the stamens in Ranunculaceæ is work for the specialist rather than for the elementary student.¹

Such diagrams as those considered above plainly provide very useful summaries of floral structure. They are, however, seriously incomplete in that they represent the parts as if they were in the same horizontal plane, and therefore give no information respecting their relative height. A tulip and a snowdrop, for example, have the same floral diagram, notwithstanding the very important differences between them. For this reason a floral diagram should always be supplemented by a diagrammatic longitudinal section of the flower, made, if possible, along some definite plane marked on the diagram. Indeed, of the two sketches the longitudinal section is the more helpful to the student.



FIG. 9.—Daffodil flower cut through lengthwise (x ½).

The method of drawing such a section will be clear from Fig. 8. In this example a cut from back to front through the median plane (marked by the arrow) plainly passes in turn through the axis, one inner perianth leaf, the posterior stamen, one septum of the ovary, the middle of one loculus, the anterior stamen, one outer perianth leaf, and the bract. All these parts, but only these parts, should be represented in the drawing. The section shows that the stamens of the two whorls are of different heights, and adhere to the perianth at different levels. What is much more important, it shows that the perianth is inferior. Comparison with a longitudinal section through a daffodil (Fig. 9) or a snowdrop (which have superior perianths) brings out in

¹ Teachers interested in the question will find an analysis of the arrangement in *Helleborus niger* in Church's "Types of Floral Mechanism." (Oxford: Clarendon Press.)

the clearest manner possible the essential difference between the two natural orders.

Sections should be drawn on a large scale, otherwise young students become hopelessly confused in representing, *e.g.*, the attachment of the stamens. Even in large-scale drawings such important details need special attention and careful workmanship. It is, indeed, of the first importance that the manner of attachment of the various parts of the flower to one another should be shown clearly. A drawing which is indistinct in this respect is worthless. It is



FIG. 10.—Orpine Stonecrop. *a*, flower; *b*, longitudinal section of flower ($\times 4$).

chiefly for this reason that any attempt to put in a "background" (to show, for example, the lateral perianth leaves and stamens of Fig. 8) defeats the object of the section. Fig. 9 is very useful as a text-book illustration, but, since the places of attachment of two of the perianth leaves and of two of the stamens shown in it are left entirely to the imagination, it is most undesirable that it should be taken as a model by the student. A simple sketch in the manner of Fig. 8, or even of Fig. 10*b*, which has no reference to a floral diagram, is much to be preferred. In many examinations candidates are now told that in drawings of longi-



FIG. 11.—Floral diagram of Bird's-foot Trefoil.



FIG. 12.—Cherry blossom cut through lengthwise ($\times 14$).

tudinal sections only the parts actually cut through are to be shown. The object of this restriction is clearly to discourage the practice of putting in backgrounds for the sake of pictorial effect. Probably, however, it is not meant to be obeyed quite literally in such cases, *e.g.*, as a section along the median plane of a leguminous flower. It is evident from Fig. 11 that such a section through the flower of bird's-foot trefoil would entirely miss the posterior part of the calyx, as well as both keel petals. To indicate, by

dotted lines, the parts which lie slightly to one side of the plane of section makes the drawing more complete, and at the same time avoids ambiguity.

It is, of course, in displaying the differences between the hypogynous (Fig. 8), perigynous (Fig. 12), and epigynous (Fig. 9) types that longitudinal sections of flowers are most useful. In such cases it is a great help to distinguish the thalamus by special colour or shading. Beginners in such work have a curious tendency to exaggerate the size of the thalamus, no doubt because the importance of this part of the flower is so much emphasised by teachers. It is especially instructive for students to prepare from nature a comparative series of large-scale drawings, diagrammatically coloured, of longitudinal sections through the flowers of buttercup, potentilla, strawberry or blackberry, plum or cherry, wild rose, and apple or pear, to show the change in the shape of the thalamus in the transition from hypogyny to epigyny.

Associated with work on floral diagrams of the kinds described above, are various simple methods of representing inflorescences diagrammatically. Diagrams from the side are easily drawn; it is a help to represent the flowers by circles of size varying with the age, and to letter or number them in their order of opening, and to draw arrows following this order. Fig. 13 shows an easily understood diagram, from above, of the inflorescence (a cymose panicle) of *Ranunculus acris*. Such a biparous cyme as that of *Stellaria media* or *Gypsophila* serves excellently for first efforts in this kind of work. In all such diagrams of inflorescences special attention should be paid to the position of bracts. Where these are absent, students must perforce accept the method of branching as a matter of faith.

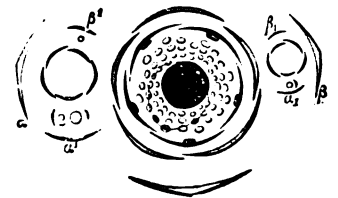


FIG. 13.—Diagram of inflorescence and flower of *Ranunculus acris*.

The Story of Manchester. By Miss J. F. Wood. 71 pp. (Werner Laurie.) 1s. net.—This is the second volume in Mr. Werner Laurie's "Local History Series." It provides an interesting sketch of the development of a notable city. In 1724 Manchester was described as a village. Not until 1845 did it become independent (at a cost of £200,000) of its manorial lord. It has been associated with many great men, and it has taken a lead in not a few important movements. An influential school of political and economic thought is named after it. Hence Miss Wood's brief but lucid story has a much more than local significance, and it should make an appeal to a wide circle of readers.

REWARDS AND PUNISHMENTS.

By CHARLOTTE M. WATERS, B.A.

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I. REWARDS.

N EARLY all writers on education deal with rewards and punishments, and vary from whole-hearted admiration of both to a deprecating admission of one of the two as a necessary evil. Now and again a voice crying in the wilderness of educational sterility raises a question as to the reality of their axiomatic nature, to be met usually with scornful queries as to the prophet's experience of "boy without cane," or an exaggerated caricature of education on a basis of "do as you like." Recently it has dawned on some practical teachers that possibly the few advocates of moral suasion have been right in their theory, though often, alas! culpably wrong in practice. For though this is an article which attempts to show the uselessness of the whole retributive business, let me hasten to say at once that there are forms of "moral suasion" beside the immorality of which the brutalities of a Busby become a healthy corrective. A spiritual instrument misused can outrage humanity in a way impossible to any process merely physical. Education is a dangerous business, but that is where the responsibility comes in.

Rewards are usually defended on two grounds: either that they are necessary or that they are natural; let us take the former first. Nine teachers out of ten will maintain that children are so lazy that they won't work without extraneous stimulus, that they are so constitutionally averse to order and discipline that they must be bribed to submit to it. And even if you can do without repression, you certainly cannot without the reward of virtue. Now let us consider what rewards are possible, because this is quite as much a question of practice as of theory. The two incitements to diligence most common in our schools are prizes and marks, to which we may add the approval, openly expressed, of the teacher.

First as to prizes, do they really stimulate the industry of the class as a whole? I believe that every teacher would agree that they do not, and indeed cannot. Prizes can be given for work, for brains, for good conduct, or for all three. But in any class of twenty-five there will be at least twelve who have not, and know they have not, a chance of one of these prizes from the beginning. Are these twelve stimulated to try for an unobtainable goal? I think not. And among the twelve with a chance, will all strive steadily through a long

school year for the honour and glory of a prize at the end? By no means. I think it quite safe to estimate six as the outside number whose work or conduct is definitely affected by consideration of possible prizes. It will be noted that I have left out the twenty-fifth member of the class, the safe prize-winner who would work with or without reward, or who is of the kind (there are always one or two of these in any school) whom indisciplined conduct does not attract, who bears the "good-conduct" label by innate incapacity to do anything else. And this "prize" youth is often one of the sufferers from the prize scheme. He is so accustomed to be first, to win, that he or she is apt to regard public success as the criterion of virtue and to sacrifice much to secure its continuance. In his case the competition stimulus is wholly unnecessary and its results are bad.

But it may be urged, all this is perhaps true—probably prizes form a very inadequate stimulus to work or virtue—but, even then, where's the harm in them? The harm lies in the false standard put before the girls and boys. To work for a reward, to study just to secure some material end, even the applause of the rest, is, to put it mildly, a totally inadequate reason, and in seeking the little prize they miss the great reward. At this point I can hear the voice of the mere man interrupting, his limit of patience having long since been passed:—"But, my dear madam, do you really think boys can be induced to study because they like it, or because they ought! Of course, I know nothing about girls, but—" Here I break in to assure my critic that there is not much to choose between girls and boys (I have taught both, separately and together), and that I not only *think*, but I know, that it can be done. Both boys and girls will work, and work splendidly, at anything in which they are interested, and if they are not interested that is simply a case of bad teaching. The teacher who cannot interest her class has mistaken her vocation. I know it is said, "Keep order and you can teach"; this is not true. What is true is that "if you can teach you can keep order"; an interested class is never disorderly. And such a class learns the real reward of study or of labour, "the joy of the working."

I have said nothing of the more obvious evils of prizes, more prominent indeed among girls than among boys, this owing rather to the tradition among boys to despise a "swot" than to any inherent difference in character. When some ten years ago I put to a school of about one hundred girls, mostly over fourteen years of age, whether we should have prizes or not, I received an

almost unanimous objection to them. A few saw deep enough to reject them on the ground of individual competition, but the majority simply urged that they were a source of ill-feeling. Not so much jealousy of the successful was in their minds as a rooted belief, fed by considerable experience, that they were rarely allotted fairly. I believe that in this opinion they did not greatly err; even where partiality is eliminated to the utmost, there is a lot of luck about prizes, whether in school or in the world. We older people become philosophic on the subject, some of us even try to account for "luck" as a mere aspect of character, but at sixteen one cries for justice crystal clear, and is embittered when one thinks one does not get it. If for no other reason than this possible envy and jealousy I would banish prizes from a school.

The other and more general reward common in schools is marks, and I think I am more likely to raise a storm about my ears over them than over prizes. The average teacher does not care much about prizes—she knows how really unimportant they are—but he or she does believe in marks, and wears out much brain matter in elaborating schemes for making them scrupulously fair and really significant. And here are a few of us preaching the awful heresy that marks are not only unnecessary but harmful, that they are a block in the way of creating a healthy public spirit, and, worst heresy of all, do not act as the stimulus they are supposed to be. I will take the last, though minor matter, first. Generation after generation of teachers goes on saying and believing, parrot-wise, that without marks children will not work. And the marvel is that it never occurs to these would-be educators to ask whether it is really probable that any boy or girl over twelve years of age is going to burst himself in an effort to drudge at something he has no interest in, on the chance of being tenth in the class instead of fifteenth! First instead of fourth, possibly, the ambition is worth considering, but tenth for fifteenth, is the pupil really so keen? Are there not many other motives more likely to produce work than this? And what about the twenty-fifth, the permanent dull pupil, whose only chance of being twenty-fourth is the unusual laziness of someone else, what stimulus do marks provide for her? I have known such a girl work her way steadily up a school to the upper fifth, always last and weakest, but a plodder of the best, and a successful girl at college at the end of it. Marks would not have helped, would only have been a perpetual source of worry. Indeed, where marks succeed in their object and are consequently seriously valued in a

school, this question of worry is important. To a keen, sensitive, or ambitious pupil, this weekly or fortnightly stocktaking is a strain on nerve and endurance of the most undesirable kind. Work is done feverishly instead of calmly, marks become more than health, and rest and sleep are sacrificed, not for knowledge but for position. The fear of a lost position takes a girl to school who ought to be in bed, because, though work might be made up later, marks cannot. I am certain that this evil is neither imaginary nor remote.

And if of no use to the mediocre and the dull, what sort of stimulus do they provide to the brilliant half-dozen at the top? In my opinion, purely a bad stimulus. There is a vice well known to teachers, called in the staff-room "mark-grubbing." It is akin to examination cram and has the same deteriorating result. I believe marks to be at the root of much of our futile education; they emphasise knowledge and take no account of power, they set an undue value on memory, and overweight the small success against the greater failure, and like prizes they are apt to be a cause of jealousy and the ever-ready cry "It isn't fair."

But even if marks are only partially conducive to work, are they really harmful? The answer depends on what is the aim of education. If the school merely sets out to instil knowledge, even if it goes further and tries to develop the individual in character as well, then possibly marks may be little more than a harmless futility. They will not hinder greatly the acquisition of knowledge, and will, for the most part, leave the individual free to develop as he can. But if the school sets out to do something bigger and better than this—if it aims at producing a civic being and member of a community, trained to act with and for others, to develop himself to the utmost only to use himself for the State or for the world, to be one who could never expostulate at any time, "Am I my brother's keeper?", then, I maintain, marks and all forms of individual competition are a hindrance and must be dispensed with, and some other stimulus provided.

Now it may sound strange to some when I say that it is much easier to stimulate the civic sense in girls and boys than it is in adults. I have found that girls who will not work for themselves will work for the form, girls who care nothing for their own reputation care intensely for that of the corporate group to which they belong. Is not this shown, too, in our boys' public schools? In games where this corporate sense is appealed to, boys will slave at the dulllest drill and

practise for the honour of the house. The pity is that it does not yet seem to occur to the authorities that exactly the same appeal could be made to the intellectual efforts of school life. (After all, cricket practice at the nets is quite as dull, or just as interesting, as problems in trigonometry or Greek conditional clauses. It all depends on how you approach them.) Adolescents are usually regarded as self-centred even when not selfish; this is true, but it is also true that the same age is the age of romance, of self-sacrifice, of ideals, of a passionate desire to help the world. The school can appeal to one or the other and can use its rewards accordingly. Make all of them rewards to corporate bodies, sink the individual in the form or the house, and the result will amaze the teacher to whom it is new. Of course this involves marks of a kind, truly, but they are harmless when competitive places are not built on them, and when the form-average is the all-important factor, and not whether Mary Smith is one mark above Barbara Jones. A legitimate pride in the success of the form is created, and the successful overcoming of difficulties can be openly lauded, even by those who have achieved the feat. To take pride in a success, of which your share is one-twenty-fifth, is a healthy exercise, stimulating to all concerned, and safe from the penalty of swelled head.

Last comes the most subtle of rewards—the praise of the master, and on its right use depends the tone of the school. I do not think young teachers are trained to think enough of the potency of their praises. Indeed, most students in training colleges have so little praise and so much criticism that they easily grow to believe encouragement a vice. Too many teachers, again, praise the wrong virtue; there is a tendency to approve those forms of activity, or inactivity, that give the teacher least trouble. If the school is of the kind depicted above, which aims at the good citizen, the praise of the teacher can seriously help or hinder. A teacher whose ideal is the meek, quiet, retiring student, who has no influence with his or her fellows and seeks to have none, is a positive danger to the school tradition. The same teacher usually has little kindness for the high-spirited or the intellectual rebel, sees no good in the noisy girl who leads her form in the paths of fearless honour and outspoken criticism, would crush if she could the tantalising but inspiring learner with an insistent "Why?" Such a teacher may be merely futile, but can be harmful.

But supposing the teacher knows the right thing to praise, how far is it wise to use the

lever? Again it is safe to praise the corporate unit, dangerous often, though sometimes advisable, to encourage thus the individual. But it is all-important to guard against encouraging the pupil who lives for approval. One of the most important things, and one most lacking in our education, is the power of relying on one's own conscience for approval, "to trust yourself when all men doubt you," and this power of self-reliance will never come to the seeker of the "dole of praise." I believe that while it is not only safe, but eminently desirable, to praise the class, or sections of it, as often as it can possibly be done with honesty, the singling-out of individuals for this form of encouragement should be rare and confined to very special occasions. Praise your class often, abuse it rarely, but let your approval of the individual be felt rather than expressed, let it be a quiet trust surrounding her like an atmosphere; a boy will do much to avoid losing such recognition from a teacher he respects.

There is not much space in which to deal with the argument that rewards are natural, are an integral part of life, and therefore should appear in the miniature world of school. It involves the question of how far our schools must swerve from their ideal in order to prepare the pupil to function in a world very much its reverse. The answer seems to me to be that the compromise should be as little as is compatible with a due preparation for the coming battle. I take it we would like to see a world in which each man and woman worked for the good of all, in which all unhealthy competition was eliminated, where the reward of right living should be of the spiritual and not the material order, and where all "spend their bodies, as mere external tools, in the city's service, and count their minds as most truly their own when employed in her behalf." If we want a world like that, then we must train a generation to make it. It will be said "Yes! but these boys and girls will have to live in the world as it is, not as it might be; if you make school so unlike it, what sort of preparation will it be for life?" Well, that is the question. For my part I answer it by eliminating individual competition from the school and developing corporate life, for I believe that the risk to the individual is more than balanced by the probable gain to the State; that to learn to give oneself to the world is a better thing than to struggle for its rewards; that in this case also he who "loses his life shall save it."

There is one further objection that the advocate of the mark system is called upon to meet. It is his business to show that marks have sufficient value (supposing he regards

my argument of their harmfulness as nonsense) to justify the appalling expenditure of time they involve. I suppose that the simplest system involves a total expenditure of at least one hour per week per form. I know of many schools where the work on them of the form mistress alone, without counting the time in collecting or entering spent by the individual specialist, is at least three hours per week. Take as an average two hours per form per week, and allowing seven forms to the average school, here is an expenditure of time of fourteen hours a week, equivalent to rather more than one-third of a mistress's time in each school. Since most schools under local education authorities, and many outside, are grossly understaffed, is not this one-third mistress's (in many schools it would amount to one-half or a whole mistress's) time worth saving? Multiply by the 1000 schools known to the Board and you find spent on marks the equivalent of the whole time of more than 300 highly-educated human beings. Is it worth it? Can the nation afford waste of this kind, not allowing for the fact that time thus spent wastes not merely itself, but reacts on the efficiency of the teacher in the real work he was trained to do? Surely we are missing the wood for the trees.

MODERNIST THEOLOGY IN THE TEACHING OF SCRIPTURE IN SECONDARY SCHOOLS.

By the Rev. S. D. SMART, M.A.
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SCHOOLMASTERS, like many other people, have been conscious during the last ten or twenty years of passing through a time of crisis and transition during which there has been a more or less complete revolution in the teaching of most of the subjects which make up the school curriculum. But it is probable that with few exceptions this process has not been applied to the study of the Bible, although there is no subject perhaps in which, outside the schools, there has been a more radical change both of method and results. It was indeed inevitable that this should be the case, for in nothing are ordinary men and women, whether schoolmasters or parents, more conservative than in religion, while even if they have been conscious that their own religious views have been gradually undergoing modification, they have been unwilling to disturb the minds of the young with their doubts and difficulties.

Yet there are reasons for thinking that a time is coming when those teachers in second-

ary schools who are charged with the sacred and important task of teaching theological, religious, and ethical truths will be compelled to revise their methods, to take into franker account the results of modern criticism; in short, to bring their subject into line with other school subjects, and in so far as it is an intellectual study to teach it scientifically and without obscurantism. It is true, indeed, that up to a certain point efforts have been made to move forward. A conference was held in Cambridge in 1912 to discuss "Scripture Teaching in Voluntary Schools," and its results were embodied in a little book published by the Cambridge University Press. But some who have been grateful for the help thus given have felt that it does not go far enough; that it avoids the burning questions at issue, and in doing so begs the real question which is presenting itself with increasing emphasis to their attention.

Nor can it be doubted that even since the Cambridge conference the difficulties of the teacher have been accentuated. Many of us, for example, including it is evident the members of the conference, have been much influenced by the writings of Dr. Sanday. But since it met, Dr. Sanday, who, we had hoped, would vanquish the enemy on his own ground, has on a vital question gone over to him. Again, quite recently, a remarkable book, "The Stewardship of Faith," by Prof. Lake, has been published, which, though it is not addressed specifically to schoolmasters, contains a challenge which they, as stewards in their measure of the faith, are bound to ponder. "A new age," he tells us, "is coming speedily upon us, and whether it is to come in light or darkness depends on the clearness of vision and singleness of purpose of the stewards of faith."

Now schoolmasters are certainly among the most thoughtful members of the community, and a number of them have tried to face the issues which separate our modern theological controversies and to come to some conclusion about them. That the sympathy of a large number among them is with the modernists was brought home to the present writer when it fell to his lot not long ago to read a short paper dealing with our subject before a representative scholastic gathering. The discussion which ensued was very interesting, and made it perfectly clear how keenly the difficulties of the situation are being realised. Two speakers, it may be mentioned, had felt these difficulties so strongly that they had requested their headmasters to relieve them of the duty of teaching scripture at all. It was evident that no one had ventured to explain the modernist position clearly to his class, and

there was a unanimous feeling that the present situation is unsatisfactory, without, it is true, a very clear idea of how it could be met.

I do not know whether we shall get much help by looking to the experience of teachers on the Continent or in America. In some at least of the German schools the problem has been solved in what may, perhaps, be regarded as a characteristically German manner. I have myself been present at the classes of a "Reform-Schule" in Hanover, when a very able teacher, a convinced modernist, presented the modernist case without paying any regard to what might and could be said on behalf of the orthodox view, *i.e.*, without any regard to scientific impartiality. But such an attitude as this seems, at least to the present writer, to be impossible at the present time in England, and, quite apart from the validity of the modernist position, to be crude and unwise. I shall therefore take it for granted throughout that if modernist theology is to be taken into account at all in our teaching to upper forms, it must be presented as one possible solution, and not as the only solution of our theological difficulties.

If, however, we exclude the possibility of a proselytising presentation of the modernist case, what are we to say about the wisdom of presenting it with all possible detachment as a possible interpretation of the facts, side by side with an equally unbiassed presentment of the orthodox position? It may, perhaps, be found useful to sum up the "pros" and "cons" of the matter as they appear to the writer, to suggest in a very tentative way a possible compromise, and finally to express a hope that others who are better equipped than he is to throw light upon the subject may be induced to come forward and express their views.

Let us take first the case of those who consider that the time is ripe for putting a clear outline of the modernist position before their pupils. In the first place, they might argue that silence is a proof of weakness. If the modernist case is so strong that to state it clearly to an intelligent class of boys, while at the same time indicating the strength of the orthodox position, is to convert the class to modernism, then the days of orthodoxy must indeed be numbered.

Then, secondly, it might be argued that intelligent boys are by no means unaware of the existence and sometimes of the nature of modern theological problems. They may have heard their parents discuss them, or the preacher deprecate the study of them, or have read articles about them in the religious and lay newspapers or magazines which have come in their way. In other subjects, at any

rate, they are trained to be critical, to follow experiment or mathematical deduction to their logical conclusion. They have acquired some notion, however immature, of the laws of evolution; they have come across instances of the power and importance of illusion in the progress of humanity; they have heard something of the growth and decay of myths; their outlook has been broadened by history; their capacity for textual and critical study by their classical work; and finally they have read enough literature to be aware that not every poetical and paradoxical statement is to be taken *au pied de la lettre*. When, then, they come to the study of the Bible they are naturally critical, and at least in some cases alive to problems which the schoolboy of twenty years ago would not even have felt. They expect their master to elucidate them and are grateful for his help.

This will be still more inevitable if, as is now generally the case, the higher criticism of the Old Testament is taught. If, *e.g.*, a boy is encouraged to accept the critical view of the book of Daniel he will not be much shocked if an outline of the difficulties which surround the Gospel of St. John is put before him. Moreover, in many schools boys have been encouraged to accept some of the results of higher criticism applied to the New Testament, as notably in the case of the synoptic problem. If this is done it is almost inevitable that the teacher should go on to explain the reconstruction of the life of our Lord which writers like Mr. Streeter think must necessarily follow from it, and to note the difficulties in the way of reconciling this with the acceptance of the higher Christology of St. John. In short, the boys will have been brought to the edge of a precipice; it is no use, indeed, it is dangerous, to blindfold their eyes.

This brings us to a third point. Only a few of our older pupils go up to the universities, where possibly they may find opportunities for studying these matters scientifically and adequately. The majority enter business or professional life and have no other opportunity for theological teaching than that which they receive at school. Is it not possible—in view of the silence of the pulpit—that they may become victims of religious doubt, that the well-springs of their religious life and faith may be dried up? There are some who speak of the modernist view of Christ as the "tragedy of the faith"; the Modernist, of course, denies that this is a tragedy, but he points to the real tragedy of religious souls whose faith may have been shipwrecked by a rigid insistence on presenting eternal truths as though they stood and

fell by one particular form of dogmatic presentation. The modernist schoolmaster would cherish it as one of his highest ambitions to save his pupils from the struggle and spiritual agony through which he knows, perhaps from personal experience, that many of the older generation have had to pass.

Fourthly, it will be argued that if the study of the Bible has an intellectual side, as the word theology itself implies, it is absurd and even demoralising to ask boys to trust and follow their reason wherever it leads them in every other subject except the study of the Scriptures and there alone to call a halt: "Thus far shalt thou reason but no farther—not beyond a certain point where the Fathers left off." Such has not been the method of our forefathers since the days of the Reformation. They did not hesitate in days of heated controversy to teach in the schools definite theological postulates which they believed could be justified by reason as against the obscurantist interpretation of the Church of Rome. They were not afraid of shipwrecking the faith of young minds; they believed that truth would prevail and that the exercise of seeking it would strengthen and brace the characters of their pupils.

A fifth point is that as the teaching of Scripture in our secondary schools is undenominational, as the classes may include the children of avowed Unitarians, or in still larger numbers of parents who hold liberal or at least unsettled views, it is only fair that, granting the postulate that the main stress be laid upon ethical and spiritual elements, the instruction given to the class should be impartial. To teach with proselytising intent, therefore, either the orthodox position in its rigid form or the modernist view would alike be unjustifiable. What the teacher who has kept abreast with theological development must strive to do is to avoid the spirit of controversy and point out with the greatest possible fairness and absence of bias the main issues and arguments of both schools of thought, leaving his pupils, in so far as they are able, to come to their own conclusions, and at any rate clearing the ground for later thought and development. It is one of the most discouraging features of English thought and education that, as Dr. Sanday has himself remarked, the free development of thought is checked and impeded by the supposed necessity of accepting as sacrosanct and axiomatic postulates which ought themselves to be brought to the anvil of thought. If on its intellectual side the Scriptures could be studied in an absolutely catholic and scientific spirit this reproach would be removed.

A final point which need not be laboured is

that the interest of the teacher, and with it that of his class, would be stimulated if he were encouraged to bring and keep his subject up to date. In every other subject it is considered vital that a teacher should do this; in the theology alone is he discouraged.

We must pass now to a brief review of some of the reasons which, it may be thought, weigh with the more conservative among us. Perhaps their foremost fear is lest the introduction of questions of controversy into the classroom may unsettle faith where otherwise it would not be unsettled. They fear lest the seeds of that religious struggle which has wrought havoc in many souls may be sown unnecessarily. They point out that a boy between, say, fifteen and eighteen stands at a critical point in the development of his character, when it is of supreme importance that his will should be strengthened and his spiritual nature developed. They are afraid that the introduction of controversial matter into the presentation of dogmatic truth may undermine the sanctions of his faith; may weaken his trust in God and even the strength of his moral convictions.

Then, secondly, they point out that, whatever may be the disputations of the theologians, and whatever the private beliefs of broad church clergymen, the outward attitude of the Church remains orthodox. They fear lest the presentation of modernist criticism in the classroom would not only cause confusion in the mind of the pupil, but would lead to open hostility between the schools and the churches. There would be a real danger in that case of religious teaching being driven out of the schools altogether, and this they would regard as one of the gravest misfortunes which could befall our country.

In the third place, they argue that in all probability the larger number of parents remain orthodox, and if they were consulted would probably say they were content for their sons to be educated on the old lines. They insist that on such a matter the view of the majority should be respected. They would give little heed to the suggestion that the teacher is likely to be as much better informed in this subject as in others, and that, therefore, it is not for the parent to dictate his methods to him. They would reply that in this subject the pupil is not ripe to receive advanced teaching or to estimate its proper bearings.

Finally, they would insist that the whole subject is still *sub judice*, and that it is entirely unreasonable that it should be debated by the schoolboy before it has been settled by the churches.

Such is a summary, naturally brief, but I

hope impartial, of the arguments of both sides in this thorny and important controversy. Is it possible for the teacher who feels the difficulties and has an open mind to come to any conclusion? There are some who will say that it is impossible on the ground that men are naturally biassed, and will be prone to give greater weight to the arguments of the side they favour. Here also it is the "imponderabilia" which count.

Nevertheless, the present writer hopes that in this problem, as in the related problem of undenominational teaching in elementary schools, something like a compromise may be arrived at, and he is bold enough, in conclusion, while expressing his hope that others will intervene in the discussion, to indicate in a tentative manner two or three of the conditions which must accompany it.

In the first place, then, every teacher of goodwill who has accepted the task of instructing higher classes, should consider it his duty to make himself well acquainted with the facts of the controversy, and until he has done so he would be well advised to keep to the old lines. To do justice to the positions, whether of the conservative or of the liberal school, requires more than a cursory acquaintance with the subject.

Secondly, the master will remember that the moral and spiritual welfare of his pupils is his primary object. If he has this at heart he will not easily shock their religious convictions, even if, as occasion offers, he finds it necessary to put new points of view which may surprise them.

Thirdly, as has been taken for granted throughout, he should avoid, so far as possible, the exhibition of bias and of any conscious attempt to proselytise. If from time to time he feels bound to touch upon controversial subjects in the interests of truth and of a scientific presentation of his subject, he should nevertheless strive to keep his own personal convictions out of sight. But let him never hesitate to enthuse his hearers for the great spiritual and dogmatic truths, without a firm hold on which no one—be he modernist or orthodox—would wish to be called upon to teach the Scriptures.

Finally, if he finds that there are any of his pupils who are more deeply interested than their fellows in obtaining a clearer understanding of critical and dogmatic difficulties, and who come privately to him for guidance, let him go as fully with them into the matter as he finds both he and they are capable of doing. It is impossible here to go into further details, but I may, in conclusion, express my hope that when a tactful teacher bears these points in mind, he may do more than a little

at once to make his subject interesting, to prepare his pupils to meet the intellectual difficulties of faith, and yet at the same time to avoid wounding the susceptibilities of parents, or, which is more important, weakening the essential religious convictions of their sons.

THE PUBLIC SCHOOLS AND THE LAND.¹

By CHRISTOPHER TURNOR.

IT is sufficiently accurate to say that there are 50,000,000 acres under cultivation in the United Kingdom, and that the total yield of foodstuffs therefrom amounts to £200,000,000 sterling. As this sum total remains fairly constant, in spite of the fact that prices for commodities have been increasing during the last few years, it shows that the actual amount of food produced tends to decrease rather than to increase. This is most serious from the national point of view. Belgium with 4,000,000 acres of cultivated land produces £80,000,000 worth of food stuffs, which comes out at the huge figure of £20 per acre as compared with £4 per acre in this country. These two examples are at the opposite ends of the scale. I do not for one moment suggest that we could bring our average up to £20 an acre. It would mean too great a revolution in all our methods of farming and handling the land, but it is quite clear that our total output of £4 an acre should be greatly increased. If all the land cultivated were properly cultivated, and waste avoided, I think we might clearly expect to reach a yield of £8 an acre. If this were accomplished we should produce £400,000,000 worth of food stuffs, which represents practically the total consumption of food by human beings in the United Kingdom.

This war demonstrates very clearly, from the national point of view, the important difference it would make if we were now producing at that rate. It would relieve the Government of great anxiety in regard to finance, and in regard to arranging for the necessary shipping to keep the people of our islands sufficiently supplied with food.

What we must realise in a practical way is: that land is one of the nation's greatest assets, that it has only been put to about one half of its potential use, and that if we are to recuperate quickly after the war it must be put to its fullest use. A very clear indication of the state of agriculture in this country is to be derived from the study of the average price of agricultural land, which is just one half the

¹ A paper read before the Association of Public School Science Masters on January 4th, 1916.

average price that maintains in most Continental countries.

If we are to build up the agricultural industry, and have it play the part, economically and socially, that it should play, it must be organised. At this moment it is completely unorganised: if one compares it with the splendid organisation of some of our urban industries, or with that of the agricultural industries of the different European countries, where co-operation, access to capital, the provision of expert advice, and excellent transport facilities have created conditions really favourable to agriculture, and which are entirely absent in this country.

If agriculture is to be made the flourishing industry that it should be, every member of that industry, whether landowner, farmer, or labourer will have to work together to achieve this object. It is only right that landowners should give the lead. Even from the selfish point of view they must become real leaders of the industry and the champions of all that is progressive, if they are to maintain themselves at all. They must show by their powers of development that they are an economic section of the community; just as Danish landowners, by their progressiveness, and the wonderful way in which they have developed their estates, have made it impossible for the most out and out Socialists to say that the landowners of Denmark are drones, and that they are in any way checking the progress of the industry.

Alas! in England the attitude of the landowner to-day is very much what it was in the eighteenth century. He receives rent and he does not live by his direct efforts applied to the cultivation of the soil. He may have a home farm on hand, but as a rule it is an expensive amusement rather than a profitable occupation as it invariably is on the Continent. Landowners must begin to study their position in relation to that of the nation. As stewards of one of the greatest national assets they must stand for the agricultural industry as a whole, and not merely for their own interests as landowners.

But if they are to do all this they must be trained for their work. A year's smattering of agricultural instruction in an agricultural college, interlarded with many days' hunting, is not at all sufficient. The landowner in future must be above all things interested in the land itself, not just interested in living a healthy country life, in hunting and shooting, or even in seeing that his villages—or at all events the village near his house—are well kept up and pretty to look at, but he must be interested in his estate as a manufacturer is interested in his factory. He must be constantly on the

look out how to improve the business conditions, how to increase the income for himself, how better to organise the work on the estate, and how to encourage the increased production of the land. The landowner in this country has not begun to understand the possible output of an estate, if properly industrialised. In the good old times if a man had a 10,000-acre estate he was supposed to have about £10,000 a year as net income, but it is doubtful if it yielded even then a clear income at that rate. It certainly is very far from doing anything of the kind now. Yet a Continental landowner generally counts on deriving an income at the rate of £2, £3, and even £4 per acre from his land. Of course Continental landowners farm a very much larger proportion of their estates than is customary in England, because, as any foreign landowner will tell you, he wants his rental and the profit that would otherwise go to the tenant as well.

In this country the average owner of 5,000 acres would, unless he had money in securities, be a poor man. In Denmark, or Hungary, or Austria, for example, he would have £15,000 a year, and there is one notable example of an estate of 5,000 acres in Denmark which has its own sugar factory, wood-pulping mill, and tar vats, and the income the landowner enjoys is £20,000 a year net.

The question that immediately interests us to-day is how to induce the future generation of landowners to qualify themselves most effectively to meet the requirements of the present condition of things? Cambridge has developed a most excellent agricultural side, and it is very much to be regretted that Oxford has not followed suit, because it makes it much more difficult for the public schools. But whatever Oxford and Cambridge may do, the essential is to lay the foundation in the public school:—

(1) By giving the science teaching, up to the age of sixteen when bifurcation comes in, as far as possible a land basis. Chemistry should be organic rather than inorganic, and there should be botany and entomology dealing with the living things on the farm. All this can be made just as good a basis for subsequent science teaching, and there is no doubt that by emphasising this side many boys can be stirred to an interest in science who would fail to take an interest in more abstract science.

There are several schools, such as Knaresborough, in Yorkshire, and Sexev's School at Blackford, in Somerset, which have concentrated attention on this side with the most excellent results.

(2) That a certain number of lectures on agriculture and rural economy (of the right

type) should be given, which would further stir the interest of the future landowner, pointing out to him the possibilities of the land, the interests and advantages of life on the land for the person who is thoroughly trained, the high national duty which every man who is connected with the land has towards it. He must see that the land with which he is connected is made to produce all that it possibly can for the nation.

If this line is taken up in the big public schools the smaller schools must needs follow suit, and gradually the county secondary schools.

If interest in the land is aroused whilst the boy is at school, he will somehow succeed in getting effective instruction on the subject either at the University or by going to a suitable agricultural college.

Although it is difficult to concentrate attention on anything that is not directly connected with this great war, the question of putting our land to its fullest use is so vital, and will so greatly hasten recuperation from the results of this war, that I feel strongly that no time should be lost in taking steps to give effect to alterations in the training given to future landowners and others in our public schools.

Quite apart from the actual alteration in the instruction, I hope that, in view of the high object we aim at, the teachers themselves will do their utmost to induce future landowners who may be under their care to prepare themselves definitely for their occupation, just as the professional man prepares himself for his profession. And this applies not only to the future landowner, but also to younger sons and to many others, who, if properly trained, could make as good a living from farming as do the younger sons in Denmark. So many of our younger sons go in for what is termed "business," and either make a precarious living, or actually lose their capital.

Many people still think that farming by a gentleman cannot be made to pay in this country—but this is not so if the gentleman farmer is properly trained and will work fairly hard.

The Theory of Invariants. By O. E. Glenn. x + 245 pp. (Ginn.) 10s. 6d. net.—The author of this volume has endeavoured in a very successful manner to present an account of the fundamental principles and processes of invariants, in which the subject is developed in a logical manner, while at the same time the methods of Boole, Cayley, and Sylvester are placed in close relationship with those of Aronhold, Clebsch, Jordan, and Hermite. The study of invariants may be said to have originated with Cayley, who made use of both the symbolic and unsymbolic methods, although he, in common with the other mathematicians of the English school, confined himself mainly to the latter. The subject is one the applications and ramifications of which are innumerable, and it is still far from being exhausted.

SCIENTIFIC DISCOVERY.

By R. A. GREGORY.

III.

THE LAW OF GRAVITATION.

Trees in their blooming,

Tides in their flowing,

Stars in their circling

Tremble with song.

God on His throne is

Elders of poets;

Unto His measures

Moveth the whole.—W. WATSON.

PRECONCEIVED ideas and traditional beliefs are drags on the chariot of truth. By meditation Plato arrived at the doctrine that the planets move at uniform rates in circles. A circle was conceived to be the most perfect figure, therefore it was concluded to represent the appropriate path of a heavenly body, without any reference to actual observation or experience. For fifteen hundred years Plato's principle of uniform motion in circles was not disputed, and even Copernicus, while constructing his revolutionary system, regarded it as an axiom that "The movement of the heavenly bodies is uniform, circular, perpetual, or else composed of circular movements." The difficulties which this tradition introduced in trying to make observation fit theory were explained in one way or other, but there were always errors or defects which could only be accounted for by complicated reasoning.

When Kepler began his analysis of Tycho Brahe's accurate observations of the positions and motions of heavenly bodies, particularly of the planet Mars, he tried numerous combinations of circles and epicycles with the view of finding a theory to account for them completely. The Copernican theory was sufficient to explain the general aspects of the heavens, but the principle of uniform circular motion postulated by it for the planets was unable to bear the burden placed upon it by precise measurement. Kepler found that when theory was confronted with observation there was always an error of eight or nine minutes of angular measurement, and this amount he believed to be impossible in such careful observations as were made by Tycho Brahe. The amount is about equal to one-fourth the apparent angular diameter of the sun, or to the angle subtended by a halfpenny looked at squarely from a distance of a dozen yards. "Out of these eight minutes," said Kepler, "we will construct a new theory that will explain the motions of all the planets."

All previous theories had assumed the existence of uniform circular movement; and it was only when this doctrine had to be

abandoned that Kepler was led to the truths embodied in his three famous laws of planetary motion. In the first of these laws the Platonic principle was disestablished for ever, for it states that the planets do not move in circles, but in ellipses, and that the sun is situated at a focus of each ellipse. The second law, announced at the same time, in 1609, defines the rate of movement and shows that a planet moves fastest when nearest the sun and slowest when most distant. The third fundamental truth, which was not discovered until nine years later, is known as the Harmonic law; and it gives precisely the relation that exists between periods of revolution and distances from the centre of motion.

The meaning of Kepler's three laws of planetary motion remained a mystery until Newton's discovery of the principle or law of universal gravitation. By this discovery, not only were the facts then known as to celestial forms and movements capable of explanation, but also every case to which the principle has since been applied. In the concluding lines of the inscription written by Pope for Newton's monument in Westminster Abbey, but never inscribed upon it:—

Nature and Nature's laws lay hid in Night,
God said, "Let Newton be!" and all was Light.

There had been many surmises as to the nature of the force which keeps the planets in their courses around the sun and makes the moon describe its path around the earth. It had been shown that the strength of the force of attraction between two bodies does not diminish, as Kepler supposed, in the simple ratio of the distance separating them, that is, is halved when the distance is doubled, but varies as the square of the distance. When the distance is doubled, the force is thus reduced to one-quarter, when trebled, to one-ninth, and so on. The problem was to account for the movements of the planets and their satellites in elliptical orbits upon the assumption of a force varying in this way.

In January, 1684, Sir Christopher Wren offered Hooke and Halley "the present of a book of forty shillings" if either of them could bring him a convincing demonstration within two months that such a force would cause a planet to move in an ellipse. The demonstration had not been given in August of the same year when Halley went to Cambridge to consult Newton on the subject. Without mentioning any of the speculations of Wren, Hooke, or himself, he asked at once:—

"What will be the curve described by the planets on the supposition that gravity diminishes as the square of the distance?"

Newton answered immediately, "An ellipse."

"How do you know?" asked Halley in amazement.

"Why," replied Newton, "I have calculated it," and he proceeded to search for the calculation, but unsuccessfully.

Halley returned to London with the knowledge that the problem had been solved, but without the demonstration, which, however, reached him in November, and early in the following year was communicated to the Royal Society. Halley was thus the means of bringing Newton's immortal discovery to light; and he used justly to boast that he had been "The Ulysses who produced this Achilles."

Twenty years before this, in 1665, Newton's mind had been directed to the subject of gravity. He had left Cambridge on account of the plague, and was in the garden of his home at Woolsthorpe, Lincolnshire, speculating upon the power of gravity, when an apple fell from a tree, and is said to have started a train of thought which led to the discovery of the universal law of gravitation. There is little foundation for this anecdote; and in Newton's case the fall of an apple was certainly not needed to originate a speculation to which several natural philosophers of his day had given attention.

An isolated fact can be observed by all eyes; by those of the ordinary person as well as of the wise. But it is the true physicist alone who may see the bond which unites several facts among which the relationship is important, though obscure. The story of Newton's apple is probably not true, but it is symbolical; so let us think of it as true. Well, we must believe that many before Newton had seen apples fall, but they made no deduction. Facts are sterile until there are minds capable of choosing between them and discerning those which conceal something and recognising that which is concealed; minds which under the bare fact see the soul of the fact.

HENRI POINCARÉ.

The free fall of an object on the earth made a convenient point of departure for Newton's mental excursion into space; and the line of reasoning was: a body falls, or is pulled toward the earth's centre by a force which is called gravity; does this force extend beyond the earth to the moon, and, if so, will it account for the motion of our satellite around the earth?

A stone dropped from a height upon the earth's surface falls 193 inches in a second; how far would it fall in the same time if it were dropped from the distance of the moon? Assuming that the centre of attraction may be regarded as at the centre of the earth, the moon is sixty times farther away from this point than is the earth's surface. The force would, therefore, be not 60 times less, but

60 × 60, or 3,600 times less, for it diminishes according to the square of the distance. To make an accurate calculation of the amount, however, requires a correct knowledge of the distance from the earth's centre to the surface, that is, of the earth's radius.

Taking the value accepted in 1666, Newton calculated that the moon would fall toward the earth by 44 thousandths of an inch in a second; in other words, this is the amount by which the path of the moon should deviate from a straight line in a second in order to describe its curved path around the earth in a month. The amount by which the moon actually swerves from a rectilinear path in a second is 53 thousandths of an inch, so Newton saw that the calculated result did not agree with what was then considered to be fact. The discrepancy between theory and observation "induced him to abandon the subject, and pursue other studies with which he had been previously occupied."

Not until 1684 did he "resume his thoughts concerning the moon." A few years before that time an accurate determination of the size of the earth had been made by Picard, and this gave a more correct value of the length of the earth's radius than had previously been accepted. Using the new value, Newton again took up the calculation of the moon's deflection from a straight path on the assumption of the force controlling it being the same as that which causes bodies to fall on the earth, but diminished in strength on account of the distance of the moon from the earth. The result now obtained showed that the central force should cause the moon to swerve from a straight line path by 53 thousandths of an inch in a second, which is exactly the amount that will produce the curved path described by the moon around the earth. As the calculations which were thus to extend the domain of gravity from the earth to the universe were drawing to a close, it is related that Newton was "so much agitated that he was obliged to desire a friend to finish them."

It must not be supposed for a moment that the problem of testing the theory of gravitation by the motion was so simple as it is here presented. In order to establish the principle, Newton had to prove that, as regards gravitational attraction, a globe like the sun, moon, or earth behaves as if the force due to the whole of the mass resided at the centre alone. This conclusion was only arrived at after infinite labour and by the employment of a new mathematical method invented by him. By this same method, also, he was able to prove that the path of a body under the influence of attraction depending upon a central force could be an ellipse or any other related curve.

The elliptical paths of the moon around the earth, of the earth and other planets around the sun, and of all satellites around their primary planets were explained by this discovery; yet, as we have seen, Newton was content with having found it, and only through the intervention of Halley was the world made aware of it.

This is not the place to show that the law of universal gravitation provides a complete explanation of Kepler's three laws of planetary motion or to discuss its profound significance. A law of Nature is tested by its ability to meet all the cases to which it may be applied; and in not a single instance has the law of gravitation been found wanting in this respect. It explains the fall of bodies on the earth, and the motions of the planets and their satellites; it enables the paths of comets to be calculated, and the disturbances to which they may be subjected in passing near more massive bodies; it is used to determine the masses of bodies in our solar system and of stars revolving round one another, and is applied to calculate the tide-raising effects of the sun and moon; while by its tables of the moon's movements are calculated to a high degree of perfection for use in determining longitude at sea; and it does all this without any need of amendment.

The law of gravitation has proved to be a universal key which has opened the door of many secret places in Nature, yet what the key itself is—or wherein lies the cause of the attraction of gravitation—is still to seek. Now that the interstellar æther is becoming almost as familiar to us as a household word, and its recondite properties are being unravelled, there is, perhaps, some prospect of the problem being solved. Efforts have been made to discover whether gravitational force is propagated instantaneously through space. If we could suddenly create or destroy a centre of attraction, as we can a beam of light, the answer would be fairly easy. But as it is, we can only watch whether changes of position among the heavenly bodies produce their proper effect upon other bodies at once or after a measurable lapse of time. So far, no evidence of such a lapse of time has been forthcoming, although the most favoured theories demand it. One of those theories, originally due to Le Sage, supposes that an infinite number of very small "ultra-mundane" particles is constantly traversing space in all directions. They are partly intercepted by ponderable matter. Hence two bodies will shield each other from the particles on one side, and the bombardment on the outside will drive them together, producing an apparent "attraction" between them. Reasons have

been found for the conclusion that at a certain great distance gravitational attraction is inter-cepted altogether. If this were true, Newton's grand conception of universal gravitation would have to be modified, and we should have to consider the visible universe as held together by beams of light.

CHOICE OF BOOKS FOR THE SCHOOL LIBRARY.

By NORMAN L. FRAZER, M.A.

Headmaster of the Grammar School, Batley.

THERE are many reasons for thinking that the school library is receiving more attention than ever before. Specialist bodies such as the Historical and English Associations have issued book-lists in their own subjects, publishers have been most enterprising and alluring, and the Board of Education has devoted a considerable part of a recent annual report to the matter. And yet it would seem that while finance and organisation have been considered in some detail, very little real attention has been directed to the principles which should govern the choice of the books themselves. As very few secondary schools possess satisfactory libraries even yet, some consideration of these principles may not be out of place.

First of all, it cannot be insisted upon too much that the requirements of secondary schools are by no means uniform. The largely boarding, country grammar school and the purely day, municipal, or county secondary school in an industrial area may or may not have the same ultimate needs, but their pupils have usually had very different antecedents. The needs of the juniors which used to be so tactfully ignored, clamour for recognition now, when, alas! in most schools there are no seniors at all, and when, consequently, the former ideal of building up a library adapted to the tastes of a rather scholarly sixth form is no longer practicable. This necessary concentration upon the younger boys has, however, the obvious advantage that many more children will presumably be given the opportunity of reading suitable books.

Here is exactly the initial difficulty in making a choice of books. What *are* the suitable books, and who are the judges of what is suitable and what is not? Are the children to have foisted upon them books which their teachers would like them to read, or are the children themselves to have a say in the matter? Have we any machinery for getting to know what books they desire, to say nothing of the books they need? A little study of the last question may help to answer some of the others. Most young boys and girls in

secondary schools are, by the nature of the case, more or less illiterate; but illiterates, like the rest of us, have natural appetites, which grow by feeding. It is not wise to conclude that a child can only get nourishment from a diet prescribed by himself; at the best we can only regard such a statement as one of those half-truths which tend to obscure the need for guidance and development. If left to himself the boy will devour raw food with avidity, and—such is his wonderful constitution—without any outward sign of indigestion. On the other hand, the natural appetites are usually quite healthy, if they are not indulged to excess. In other words, while the boy or girl is the best judge of the *type* of book required, the teacher is the best judge of the particular example to be bought, and especially of the quantity to be consumed.

I once asked a third form and a fifth form to write down the names of six books which they would like to see in the school library. I found, of course, that "Peter the Whaler" and "Coral Island" and "Facing Death" and their congeners were all there—as, no doubt, they should be—and I found, too, that not only was scarcely anything else there, but that the fifth form's list was made up of the same *type* of book as the third's. I maintain that if we are guided too much by the boy's untutored inclinations, such a result is inevitable. The boy reflects his surroundings; most busy parents read nothing but fiction, and, if left to himself, the boy would read nothing but fiction either. But for a school library, fiction is merely one side of reading, and scarcely the most important. Indeed, if there is a public library in the neighbourhood, a school library might very well reduce ordinary fiction to a minimum; for by so doing it could specialise in books especially suitable to its pupils, a kind of literature scarcely to be expected from the public library. It is, however, only fair to say that some public libraries co-operate with the local education authorities, and supply the schools with a splendid selection. I have before me as I write the juvenile catalogue of the library in my own town, and its suitability for young readers could scarcely be surpassed; in fact, in reading it one recalls the idea of a distinguished librarian that the public libraries should be placed under the administration of local education authorities. If that proposal were ever carried out, perhaps we should then have in England the children's librarians who do such admirable work in America.

If, then, we agree that fiction may be relegated to a secondary position, what are we to say of the reference library? In most schools it will be of greater importance for the teachers

than for the pupils, and the specialists will have to build it up for themselves. But it is an expensive business at the best, and with our limited resources must proceed very slowly. Here again, however, there is sometimes help to be got from outside. Some county and other large educational authorities have school circulating libraries; if when the schools have had time to build up fairly adequate libraries these larger authorities would come to the rescue by making grants for the more expensive books—as some of them do even now—the position would be greatly simplified. In the meantime it is possible to do a great deal even for the reference library by a modest outlay in cheap reprints.

Now to come to the body of the library. The three categories of thought, action, and recreation are the basic principles on which we must build, and afford all the scope we need for progressive development in view of our final aim—a balanced mind. There is not one of these three avenues to our goal which cannot be approached by the easiest paths; the difficulty is to guide our pupils along the connecting byways. Here there are two helpers whose importance has not yet perhaps been fully recognised—the school librarian and the form teacher. It seems scarcely necessary to say that the school librarian has much more to do than keep a record of the books taken out, and yet it is a fact that he often does little else. His proper function is rather to guide his readers to fresh pastures, and to take care that his shelves provide fitting exercise for their varying development. He must keep in touch with his colleagues, and, above all, with the form masters. If his collection will allow him to set aside a few form libraries, when he can count upon the co-operation of the form masters, he will find that the reading of the boys becomes more systematic, and that their calls upon the central library gain in precision. By adopting form libraries we can be more certain that boys will be saved a good deal of desultory reading unsuited to their expanding faculties; for one boy who gains by mere browsing there are hundreds who lose all sense of method and growth. It is not unwise to give the form library a certain bias towards the taste of the form master. His special knowledge and enthusiasm will more than counterbalance the obvious risks. How many of us date our own literary affections from contact with monomaniacs!

In some cases form libraries will be less useful than form book-lists based on the school library, especially if the form is invited to supplement the list. Indeed, in the latter idea we probably have the most fruitful form of the suggestion book, for it ensures the co-

operation of the boys as well as of the staff; and the co-operation of both will produce the best school library.

Some schoolmasters out of their love of literature object to the rather snippety compilations which may be generically denoted as "Peeps." But perhaps they scarcely appreciate the material with which some of them, at any rate, have to deal—the material which regards the "Pictures" as a normal part of existence. For such boys "Peeps at a Hedgerow" may be the normal mode of approach to Jefferies' "Life of the Fields." It is idle to expect that the ordinary non-literary boy—and, happily, most boys are non-literary—will rise to the classics as a trout rises to a fly; he needs many graded lures.

I know of only one published list of books graded according to the forms of an English secondary school. It was compiled by Mr. H. B. Browne, now headmaster of Morley, when he was on the staff of Hymer's College, Hull. Of course, Scotland has its prescribed books for home-reading, and in a recent number of the American *English Journal* is a "List of Books for Home Reading of High School Pupils," but interesting as these are, the scope is obviously less wide than that of Mr. Browne's little booklet, seeing that their purpose is primarily academic; and at the risk of seeming cheaply paradoxical, I am inclined to think that the easiest way to nullify the work of a modern secondary-school library is to make it too academic. Happily there are many avenues to the maturity of thoughtful reflexion, and the humblest hobby may often prove a stepping-stone to higher things. The crudest interest in mechanism, for instance, may lead from "How it is made" to an appreciation of modern invention and of modern industry, but the possibility of such development demands the provision of books upon which it may feed.

There are three types of books which are usually neglected in school libraries; we rarely find there the literature of citizenship, of contemporary English culture, or of foreign nations. And yet these three types are particularly needed if we are to turn our boys into understanding citizens of a modern world. It is, however, a welcome instalment in this direction that the English Association is inaugurating by publishing in the near future an anthology of contemporary poetry. Could not kindred associations follow this example by publishing simple studies of current social problems and bibliographies of French and German books—other than the familiar class-texts—suitable for young readers?

But it is easier to provide books of varied types than to ensure their careful reading;

boys are experts in the art of self-deception, and are often quite convinced that they have read a book which really they have very successfully skipped. Many schools now assign periods of private reading, especially for the junior forms, and a discreet master can do a good deal to check so fatal a habit. If two or three library books are given for holiday reading or even monthly reading, a sufficiently interesting test can be drawn up to encourage thoroughness. For slipshod reading merely engenders a mental slackness which is of all things the least desirable in young people.

If, then, the school library is to serve its proper purpose in education, variety of interest and discreet supervision to ensure regular development are the cardinal points by which we must steer.

PERSONAL PARAGRAPHS.

MR. ALGERNON LATTER has been appointed headmaster of the King's School, Canterbury, in succession to the Rev. C. R. L. MacDowall. Mr. Latter received his early education at the King's School, from which he proceeded to Trinity College, Oxford, where he obtained second class in Classical Moderations and a third in History. After holding a mastership for four years at Felsted School, Mr. Latter returned to Canterbury as a master; first he was a form master and then became headmaster of the Junior School.

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THE Rev. C. R. L. MacDowall was also an Oxford man who was a master at Wellington College from 1896 to 1902, and a master at Eton from 1902 to 1910.

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THE death has been officially assumed of Capt. W. L. Paine, who took part in the general attack in Gallipoli in June last. From a sympathetic appreciation of his career in the February issue of the *A.M.A.*, we learn that Capt. Paine was given a commission in December, 1914, in the 10th Battalion (King's Own) Royal Lancashire Regiment, in which he was quickly made captain and adjutant. He was educated at Oundle and Sidney Sussex College, Cambridge. He taught for various periods at Oundle, Lycée d'Amiens, and Whitgift Grammar School, Croydon. He was joint-author of "Primus Annus" and "Decem Fabulæ." The writer in our contemporary says of him: "The loss of Capt. Paine is the more poignant because he was a pioneer in education, and in the short time in which he was engaged on original work he showed the promise of genius. What he achieved will live only to emphasise what has been lost by his early death."

THE death is announced of Mr. Frank Pownall, who will be sincerely regretted by those connected with the work of the Royal College of Music. Mr. Pownall was educated at Westminster School and at Exeter College, Oxford. He was called to the bar by Lincoln's Inn in 1873. Mr. Pownall was appointed registrar of the Royal College of Music in 1896. His success in that office was due to his business capacity and his appreciation of the special difficulties of an artistic institution. His personal attainments (he had a fine baritone voice) and his personal qualities, especially his kindness and sympathy, endeared him to all those with whom he came into contact. He remained at the College of Music until ill-health compelled him to resign in December, 1913.

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MR. R. W. WHITE-THOMSON died at the end of January. He won a scholarship at Eton in 1874, and became a scholar of King's College, Cambridge, in 1881. He took first-class honours in Classics and became a master at Eton in 1885. A correspondent writes to the *Times*:—"He was an excellent schoolmaster, and did his work with great thoroughness and effectiveness. He was soon moved into the Army class, where, without being exactly a brilliant or suggestive teacher, he was so clear and sound both in explanation and statement, that he interested the boys in their work, as well as making them conscious of their powers. When he succeeded to a large boarding-house, both he and his wife, a sister of the present Lord Baring, devoted themselves whole-heartedly to the care of the boys. Mr. White-Thomson thus earned and kept in a singular degree the confidence and respect of his boys, who knew that he was always studying their welfare, down to the smallest details of domestic management."

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MR. WHITE-THOMSON suffered while at Eton from some amount of ill-health. The climate did not suit him, and his preoccupation with his work and duties allowed him little leisure. It was a surprise to many of his friends that he should have given up this arduous work at Eton to take up the equally arduous and what might have appeared to be the uncongenial work of an inspector in the newly-formed Secondary School Branch of the Board of Education. From the first day he threw himself into it with a characteristic energy which never abated, and continued till a few days before his death. The insight which, from long experience, he had gained into many of the most difficult problems of the schoolmaster was of special value in meeting the difficulties which had to be dealt

with when, for the first time, the State began the work of organising secondary education. He was an excellent inspector; himself an accurate, if not profound, classical scholar, a good linguist, with more than the ordinary knowledge of mathematics, he expected a high standard of work. A very loyal colleague, always cheerful, equable, and full of energy, he leaves the memory among the many friends whom he formed of one who was, above all else, a high-minded English gentleman.

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MR. C. F. MITCHELL, headmaster of the Technical Day School of the Regent Street Polytechnic for twenty-five years, died at Acton on February 4th. Mr. Mitchell was from his earliest days associated with the Polytechnic, of which his brother Robert is Director of Education.

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THE resignation is announced of Mr. D. E. Norton, headmaster of the King's School, Bruton, Somerset. Mr. Norton was educated at King's School, Bruton, and at Keble College, Oxford. He was a master at the Royal Institute School, Liverpool, and later for three years at Brighton College before becoming headmaster of Bruton in 1890.

* * *

MR. THOMAS RAYMONT, vice-principal of the Men's Training Department, has been appointed Acting Warden of Goldsmith's College for the period of the war, in succession to Captain William Loring, who died of wounds received in Gallipoli. Mr. Raymont was for four years tutor at Borough Road Training College; he then went to Cowper Street as a master, but left in 1890 to become lecturer in education at Cardiff University College; in 1904 he became professor. In 1905 he went to the Goldsmith's as vice-principal.

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LIEUT. JOHN STEEL, R.N.V.R., lost his life on active service on February 7th. Formerly on the staff of Borough Road Training College, and latterly in a similar post at the Islington Day Training College, he was transferred when the latter institution was closed to the County Secondary School, Holloway, from which after a few months' service he entered the Navy, an opening having been found in which his special abilities were useful. He was deservedly popular among his colleagues on all occasions, and his untimely death deprives the nation of a useful servant both in the Navy and in the teaching profession. He had spent a year at Jena, was a B.A., B.Sc. of London, and was on the point of publishing the results of some valuable educational researches when he obeyed his country's call.

THE death of Sir Clements Markham, K.C.B., F.R.S., removes a link which connects the great achievements of Sir John Franklin with the greater work of Captain Scott. A native of Stillingfleet, in Yorkshire, he was born in 1830; educated at Cheam and Westminster, he passed into the Navy in 1844, and became a lieutenant in 1851, and left the service shortly after his participation in the Franklin Search Expedition of 1850-51. The immediate result of his freedom was a two-year visit to Peru, which ultimately led the Secretary of State for India to entrust him with the supervision of the transference of cinchona plants from the Andean region to India. This enterprise benefited humanity, as the price of quinine fell from several shillings to a few pence per ounce. He was honorary secretary of the Royal Geographical Society from 1863 until 1888, when he was awarded the Founder's Medal; from 1867 to 1877 he was in charge of the Geographical Department of the India Office. He was secretary (1863-88) and president (1890-1909) of the Hakluyt Society. For twelve years, 1893-1905, he was president of the Royal Geographical Society, and his work was crowned by the undoubted success of the National Antarctic Expedition under his nominee, Captain R. F. Scott. He was an authority upon Peru, Tibet, and Polar exploration.

* * *

MISS DAWSON, of the County School for Girls, Bromley, has been appointed mistress of method at St. George's Training College, Edinburgh. Until she begins her work there she is to hold a temporary post at Queen Mary's High School, Liverpool. Miss Dawson was educated at Allan's Endowed School, Newcastle-on-Tyne, and Armstrong College, Durham University; at the University she obtained the M.Litt. and also the Teachers' Diploma. She has had considerable experience as a teacher, having held appointments at the Jersey High School, the County School, Ruthin, the Municipal Secondary School, Coventry, and the County School, Bromley. At Bromley Miss Dawson was for a time Acting Headmistress, a difficult office that she filled with tact and skill.

* * *

MR. ROBERT WILD, for many years a power in the ranks of the National Union of Teachers, and its President in 1885 and 1889, died on February 4th. Mr. Wild was a Lancashire man, and was trained at St. Mark's. His first headmastership was at St. Michael's Church School, Poplar, in 1862. After meeting with considerable success there he was appointed to the Byron Street School under

the London School Board in 1878. Mr. Wild remained headmaster of the same school, afterwards known as the Hay Currie School, until his retirement from active work in 1906. The reform with which Mr. Wild's name will long be associated is the abolition of payment by results; for this he laboured with tenacity of purpose and educational zeal.

ONLOOKER.

OXFORD LOCAL EXAMINATIONS, DECEMBER, 1915.

HINTS FROM THE EXAMINERS' REPORTS.

JUNIOR.—In *English Composition*, the examiners report the character of the work is not satisfactory. The following faults are exceedingly common:—

(1) The composition of the sentences is very monotonous: rarely is anything attempted beyond simple sentences, strung together by "and," "next," or "so."

(2) Punctuation appears to be entirely neglected: very few candidates employ any stops except full-stops and commas; and the latter are very commonly misplaced.

(3) No trouble appears to be taken in choosing words and phrases. The same term is often repeated over and over again.

To the above general criticisms of the style of the essays must be added some mention of the painful absence of descriptive power which characterises the majority of the candidates' productions; in many, little more was attempted than a list of meals taken in the course of a week's tour. It seems that candidates usually begin to write before they have considered what they are going to say.

In *English Grammar*, the questions on the accidence were answered well, and explanations of proverbial phrases were satisfactory, and sometimes quite good. Parsing was unequal, good at a few centres, but weak on the whole. More attention should be paid to this branch of the subject. The question on the different ways in which the subject-word of a sentence may be qualified was answered well by only very few. Many candidates had not read the question with sufficient care, and wrote answers that were quite off the point.

In *French* many of the Junior candidates possessed a very creditable vocabulary, but their grammar, as exemplified both in the answers to the grammatical questions and in the second part of the paper, was weak; this defect was specially noticeable in the work of those who attempted the free composition.

In *Geometry*, there is still a large proportion of Junior candidates who lack practice in solving new problems, and who make no attempt to unravel anything unfamiliar. The simpler properties of solid figures are rarely known.

In elementary *Algebra*, the work attained a very satisfactory standard on the whole. Very few candidates, however, were able to do a simple question on negative and fractional indices.

SENIOR.—The proportion of weak Senior papers in *Arithmetic* was larger than usual. In many cases failure was due to lack of care. Some when working

in decimals appear to think that the position of the decimal point is of no importance and accept the ludicrous results without investigation. There is still need to direct attention to the importance of applying rough tests and common sense.

In *English Composition*, the work of Senior candidates was not quite so good as usual; the paragraphs especially were poor. Excessive length is no longer common; in fact, many essays are not long enough. Spelling is still defective in many exercises, and punctuation very defective indeed. The use of slang should be discouraged, and candidates should be warned against the use of words of which they do not understand the meaning.

The work in *General Literature* was very disappointing. Very few candidates attained creditable marks on the first question, though several of the passages set were very familiar. The questions on Shakespeare were often illustrated from one play, sometimes with too great, but more often with too little, detail. The most frequent fault was a tendency to write a brief summary of an answer, without developing or illustrating the ideas. There was very little irrelevance, but candidates seem to be in danger of going to the opposite extreme, and of avoiding irrelevance by writing only a few lines in answer to a question.

In *English Grammar*, the work on the whole was rather below the average, and in some centres weakness was almost as marked in the simple as in the more advanced parts of the paper. The analysis of the better candidates was usually satisfactory. Comment on given words was distinctly poor; criticism of sentences was very fair. The attention of candidates should be called to the necessity of adding explanatory notes in answering questions which ask for the illustration of various uses: failure in this respect was very common.

The written answers in *Geography* showed on the whole a satisfactory range of knowledge; yet in few instances was real ability exhibited. There was not such an accurate knowledge of "war-places" shown as might have been expected. A tendency to draw superfluous sketch-maps was apparent, and many sketches were much too crude to serve any useful purpose.

The practical work in *Geometry* was on the whole well done, but the theoretical work suffered from ignorance of definitions and of the meanings of words and symbols (e.g., the opposite sides of a parallelogram were assumed to be equal by definition). The work of most of the candidates did not reach a high standard. Constructions were frequently employed which begged the question; where more than one case was possible only one case was considered; too much reliance was placed on memory, which was often defective.

Though much of the work in *Algebra* was of a fair standard, comparatively few Senior candidates scored high marks. The work, with the exception of logarithms, was as a rule well set out, and the easier questions well done. Much inaccuracy was shown in the solution of equations, and many failed to see that $x=0$ is a solution of $2x^2+x=0$. The harder of the two problems was often attempted with very little

intelligence, and logarithms were seldom really understood. Many were able to take out the logarithm of a number from the tables, but the great majority, even when obtaining correct results, showed by the manner in which they set out their work that they did not really understand the nature of a logarithm. Very few were able to see that the graphs of $y=x^2$ and $y=\frac{1}{2}(x+2)$ must cut where $x^2=\frac{1}{2}(x+2)$, though many drew the graphs creditably.

The answers in *Sound, Light, and Heat* were of poor quality, and showed that many candidates had very vague and inexact ideas of physical principles. A simple graphical question on total reflection was correctly done by only one candidate, and very few succeeded in explaining in what circumstances and why a liquid evaporates. It was particularly noticeable that essential practical details were omitted by the large majority in describing experimental work.

Many of the papers in *Electricity*, etc., showed very imperfect knowledge of the elementary conceptions of electrostatics. The idea of capacity in particular seems to have been little understood. Only a few candidates showed a knowledge of the principles underlying the Wimshurst machine, though nearly all could describe this apparatus.

The work in current electricity and magnetism was of better quality. It was, however, noticeable that electrolysis was almost always described in terms of the Grothuss hypothesis. The present ionic theory should at least be taught.

ITEMS OF INTEREST.

GENERAL.

IN our issue of December last attention was directed, by the writer of the article on "True and False Economy," to the scheme of educational economies contemplated by the London County Council, and some curiosity was expressed as to whether the council's other departments would suffer as education was being made to suffer. The answer to that question forms the basis of a protest sent by the London Teachers' Association to each member of the council. From this document it appears that the savings on education (maintenance and capital) for the next financial year will probably reach nearly a million sterling, whilst the amount for all the other services together is only a fraction of that sum. Taking maintenance estimates only, the savings on education are nearly £400,000, whereas for other services they are only £75,000. The teachers are especially, and we think justly, alarmed at the proposal to employ a large number of unqualified persons to teach young children, notwithstanding that there is no proved shortage of qualified persons. The council's policy, if it can be said to have a policy, regarding the supply of trained teachers is indeed an enigma. For years past it has gone on piling up training-college accommodation, at enormous cost to the ratepayers, apparently on the assumption that trained teachers are a necessity in all grades of elementary education. But if they were a necessity before the war they are a necessity now, and if they are an extravagance now they were an extravagance then. We agree that economy must be practised, but we repeat

that the teaching staff is entirely the wrong place in which to practise it. We are glad to see that not only the association above referred to, but also the National Union of Teachers and the National Association of Head Teachers, have protested against economies which in the long run are not economies. The latter body adds to its protest some positive suggestions for reasonable retrenchment.

THE Easter meeting to be organised by the Committee for Development of Regional Survey in 1916 will be held at Ludlow from April 22nd to 29th, and a practical study will be made of this interesting town and its region from as many points of view as possible. The results of these studies will be correlated to form what is hoped may be the beginning of a regional survey of Ludlow. The various sections of the meeting under capable leadership will study along their own lines—geographical, historical, sociological, etc., and the result will be correlated and discussed at the evening meetings. A small fee, calculated to cover the expense of organisation, will be charged to each member of the meeting. Further particulars may be obtained from the secretaries of the meeting, Mr. Geo. Morris, 18 West Road, Saffron Walden, and Miss M. Barker, The Outlook Tower, Edinburgh.

A MEMORIAL or manifesto signed by many distinguished men of science, on the position of science in national affairs, especially in connection with education, was published in the daily papers a few weeks ago. It was naturally an *ex-parte* statement; nevertheless, it was a powerful plea for a fairer recognition of the place which science and scientific methods should take in the education of all who are to exercise control in the government of the State. Though modern life demands that a knowledge of the rudiments of physical and natural science should be part of the intellectual equipment of everyone, this necessity is disregarded in the training of most of the pupils in our public schools, and attention to the matter is discouraged by the predominance there, and in the ancient universities, of vested interests in traditional subjects and methods, while in the examinations for the highest appointments in the Civil Service attention to scientific subjects is discouraged by the disproportional number of marks attainable by candidates who select them. We are not surprised at this relative neglect of science in the education of the wealthier classes when we read:—"At Cambridge but four colleges are presided over by men of scientific training; at Oxford not one. Of the thirty-five largest and best known public schools, thirty-four have classical men as headmasters. Science finds no place in the list." The result is that most of our legislators and influential administrators are incapable of exercising intelligent control over the many problems presented to them in which scientific matters are involved.

WHILE the main points of this indictment may be conceded, it must not be forgotten that the business of an advocate is to present a convincing case rather than to concern himself with the merits of the plea against it. Science, as usually taught and commonly

understood, means the study of matter rather than of the spirit; and it is not, therefore, necessarily the best means of training men to deal humanely with the varying and intricate problems connected with the government of the social organism. No one doubts the power of science, but we are not so willing to believe that specialised knowledge of one or more of its fields is a particular qualification for administering a school, college, or department of State. The best men for such positions are those whose wide sympathies and knowledge enable them to be in close contact with all the main activities of life and thought. A readjustment of values attached to the humanities and to science is probably desirable, but it may be doubted whether the character of the individual and our "native temper" are determined very much by subjects of study, or, as Mr. T. E. Page put it in a letter to the *Times* of February 4th, by "whether a boy is to be nurtured on Greek or chemistry." To assume, however, that the response of our youth to the country's call is a complete justification of our educational methods is as unsound as the suggestion that science is responsible for German barbarities. The questions are whether vested interests exert too great an influence upon the curriculum, and whether the needs of modern life and thought are neglected because of a disinclination to change traditional teaching. Mr. Page thinks this is not the time to discuss such matters, but while the war has shown us our strength it has revealed also our weaknesses, and we cannot be surprised that suggestions are being made with the object of remedying them for the future.

THE Benevolent and Orphan Fund of the National Union of Teachers is worthy of considerable support from all branches of the profession. Those who have been privileged to peep behind the scenes at the large amount of assistance which is distributed with great sympathy from the offices of the fund, will heartily endorse its claims upon the charitable and wealthy. At a recent meeting of the council tabular statements were presented which showed that throughout 1914 and 1915 an average amount of £700 a month was distributed in temporary relief, while £200 a month was expended in connection with cases of consumption which were under treatment, both at home and in sanatoria. Unfortunately, in 1915 the income was less by £4,000 than that of £26,000, which was obtained in the previous year. It is to be hoped that the current year will see this deficit made good. The offices of the fund are at Hamilton House, Mabledon Place, W.C.

THE report of the New Zealand Minister of Education on secondary education in New Zealand during 1914 shows that the total number of children receiving secondary education in the various classes of secondary schools was 11,280, a slight increase over the previous year. Based on the estimated population of New Zealand on December, 1914, the proportion of persons receiving some form of day secondary education is 98 per 10,000 of population. There are now very few pupils—only 16 in every 100—who pay fees for admission into secondary schools. That the free-place system has undoubtedly been fully taken advantage of by

the people of New Zealand is evidenced by the enormous increase in free places in the last few years. In 1903 there were 1,600 free pupils at endowed secondary schools; now the number is more than three times as great. Altogether there are approximately 8,942 pupils receiving free secondary education in the Dominion, exclusive of those holders of free places in technical schools, mostly evening students, who, while not taking full-day courses, were nevertheless receiving free education of secondary grade.

DR. F. A. SIBLY, in his address to the annual general meeting of the Private Schools' Association, dealt with the question of external examinations for schools. He argued that such examinations were a relief to the teacher, since they obviated a portion of the teacher's most tedious work—marking papers. To make matters better two other examinations are necessary, one below the preliminary and another for the first of the two years which usually elapse between the junior and the senior. External examinations help teachers to stimulate their pupils; teachers cannot afford to neglect, in training the young, any force which will inspire them with earnestness. Cramping is usually alleged as a disadvantage of the system, but cramping is impossible in some subjects, such as essay-writing or arithmetic, while it is essential in some cases, such as the accidence of languages; and a properly constituted board of examiners should see that the question paper penalises the mere crammer. The multiplicity of qualifying examinations does not exist for the self-respecting schoolmaster; and if the energy used in denouncing public examinations were devoted to their improvement the advantages would immensely outweigh the disadvantages from which they, in common with all human institutions, suffer.

"GET a Boy Scout to do it" is the usual way of solving difficulties in many American towns where there is a well-organised Scout troop. The Boy Scout in the United States has demonstrated that, given a hint or allowed to work on his own initiative, he can perform useful tasks for the community; he helps to keep the town sanitary, keeps guard at bathing beaches, "swats" the fly and distributes anti-fly literature, and rises to special occasions, as when he kept clear from snow all the fire hydrants in the city of Cleveland. Under the patronage as honorary president of the President of the Republic, 200,000 scouts with 7,000 scout-masters are organised as "The Boy Scouts of America," incorporated in February, 1910. These particulars are taken from a well-illustrated article in the *Child* for February, which also contains an article on shortcomings in the school medical service by Dr. V. E. M. Bennett. The school service does not attract and retain the best doctors; there is too much lay control, the pay is poor, even after several years' work, and the outlook is poor as regards status and the consideration and respect of society in general. The work is scattered over so wide an area that the multiplicity of cases inhibits the best attention from the really necessitous.

THE current issue of *Science Progress* contains a further article by Dr. F. A. Mason, on "The Influence

of Research on the Development of the Coal Tar Dye Industry," a subject which has been very much to the fore during the month in the public Press. It is becoming generally admitted that the only remedy for the backward position in which this country now finds herself is the greater cult of science in schools of all kinds, so that the coming generation may view all problems from a scientific and practical point of view. Dr. Mason quotes in particular the well-known story of the industrial production of synthetic indigo, and he assigns the German supremacy in chemical industry to two main causes—the attention devoted to research work and the manipulation of the patent laws. In German works there is one university trained chemist to every fifty workmen; in Great Britain the ratio is not greater than one to 500!

REPORTS on the measures taken for the continuation of education during the plague at Amraoti, in Berar, are given in *Indian Education*. Plague is no stranger to the town, and as each quarter of the town becomes infected all who can leave their homes and live in wattle-sheds, tin-roofed, which stretch for miles round the city. Usually the schools were closed and the pupils had an enforced holiday; recently the schools went to the boys; pupils flocked to the temporary hostel, and senior teachers became peripatetic, for the pupils were all mixed, to supervise, to organise, and to help. For three months the boys will make some progress instead of forgetting all they knew. Bombay was the first city in India to introduce medical inspection of school children. At first in the Parsi schools and later in the municipal schools, the necessary work was accomplished for a time. Recently 1,946 children were examined, and more than 1,000 of them were found with unsatisfactory health, so that point has been given to the demand that medical inspection shall be recommenced immediately.

EDUCATION in the Cape of Good Hope Province is experiencing considerable difficulties; the teachers are informed that increases of salary are out of the question, and even the most deserving are expected to appreciate the justification for this course. All school expenditure is to be rigidly cut down to a minimum, both by school managers and teachers. The mere provision of additional teachers to work in newly established schools or in newly developed departments will tax the available resources seriously, and it thereby becomes possible that children of school age will be denied the opportunity of instruction unless stringent economies are enforced. Salaries are surprisingly low in the province; in a recent advertisement for twenty-nine principals of schools the average salary offered was less than £180 per annum, usually with a house or free quarters. Assistant-teachers are expected to be satisfied with £100 or £120, according to qualifications and experience, while the usual price for board is between £30 and £36. In some cases the advertisement states that a male teacher is preferred.

A MEDIUM for the information of Australian teachers is furnished by the *Education Gazette*, published by the Minister of Education for New South Wales, of the current additions to scientific knowledge regarding Australia. For example, the December issue reprints

a long and thoroughly illustrated article on the marine ecology of Sydney Harbour. The water is warm, varying in temperature from 56° F. to 70° F.; and the temperature, as well as the climatic conditions of the neighbourhood, is dependent upon the so-called "Gulf Stream" of Australia. In addition there are a coloured plate showing the Pacific gull and the white-eyed raven to illustrate an article on the insectivorous birds of New South Wales, in which it is stated that the crow is extremely useful as a scavenger on the western edge of the Downs; a brief note upon the twelve most useful birds, in which the habits of the various birds in destroying the harmful insect pests of the farm and orchard are described; and a pertinent reminder of the great need for afforestation. The original forest area of thirty million acres has dwindled to fifteen million acres, of which a half consists of State reserves. It is calculated that at least ten million acres will be necessary, even under careful development, to meet local timber requirements in the future.

EDUCATIONAL economy is imperative. A conference of schoolmasters, given free powers, could establish economies in the use of school buildings, in the size of special classes, and in the services of expert and specialist teachers which might go far towards a reduction in cost of buildings, equipment, and salaries, which items bulk largest in educational expenditure. In how many schools does a highly qualified teacher devote his energies to a class of four or five pupils? The application of scientific management to school organisation is overdue, and the reformer is recommended to an article, "The Gary Experiment in New York City," by Mr. J. S. Taylor, District Superintendent of Schools, New York City, in the January issue of *Educational Review*. By adjustment of school hours one school building serves the purpose of two, and the consequent economy in teaching staff renders possible vocational instruction in ten different subjects, which include printing, pottery, gardening. By means of alternations of study, work, and play, the pupils are occupied for eight forty-minute periods and two hour periods daily. One hour period is devoted to luncheon, and the other to English. One of the forty-minute periods is devoted to play and another to assembly in the auditorium, which is capable of holding nine classes. The experiment is highly suggestive and presents notable possibilities.

"GREAT things are in store for us. It is being recognised that we are more and more citizens of an Empire than people of a subject race." These hopeful words occur in an address delivered by Mr. K. Seshu Aiyar, at the inauguration of the Tiruvalur High School Teachers' Association, and printed in the *Educational Review*. Mr. Aiyar dealt mainly with the disastrous results of the examination system which is rampant in Indian schools; school-life is a continuous and exhausting drudgery, so that the pupils do not maintain the high promise which earned them their first scholarships; graduates of the present generation are short-lived, and fail to serve the community adequately. Abolish the gramophone system of demanding the immediate reproduction of matters just

learned, and begin to train citizens whose adult life is a criterion of their school and college education. The ideal of citizenship, membership of that "Empire of peace, industry, progress, and civilisation which looms to us through the dark clouds of war," should be a guide during the overhauling of the educational system which should result in the removal of India from the position of eternal dependence upon the rest of the civilised world.

THE people of the United States are preparing to take advantage of present circumstances in order to bridge the gulf which separates American and Latin American. The current number of the *Columbia University Quarterly* contains articles which evince this tendency. The two peoples are mutually ignorant and their situation calls for the same corrective—mutual understanding. There is need for a "Who's Who" and also a "What's What" dealing with South America, and the representation of the news agencies must be enlarged and improved for both areas. Based upon the fact that the Southern Republics are beginning to trade with the United States for necessities of life, it is urged that trained specialists be sent from the north to acquire knowledge of southern markets; following such a step arises the need for improved ocean transport and the establishment of regular passenger services to induce South Americans to visit the States. The position should be consolidated by investment of capital in southern undertakings. In reference to literary matters, it is suggested that a system of exchanges in publications should be established on a generous scale. The *Journal of Geography* for January caters for the new movement by informative articles on coffee in Brazil and cattle in Uruguay.

THE New York *Educational Review* for February contains an article on the "Methods of Teaching at Annapolis," which suggests that this American naval school has established a precise, concrete example of the effect of environment upon boys during the educational years. The methods adopted are unique in that work is performed in sections of from eight to fifteen men, while the teacher is continuously testing the pupils and recording marks. Definite tasks are set from text-books, and the student is thrown on his own resources. There is practically no time for extraneous study or reading. A precise system, involving daily marks, and averaged weekly, monthly, half-yearly marks, leads to a final merit roll, based upon all marks, which determines the midshipman's status and his later pay and promotion. It is an admitted defect that the student is led to remember rather than to think; but the school encourages industry and develops a confidence that no task is too difficult to be mastered by resolution and hard work. A definite system, out of touch with modern educational methods, produces a satisfactory and definite result upon selected material.

"COMMERCIAL Training under State Supervision," an article by Mr. O. C. Schorer in the *School Review*, betokens the unrest in the United States concerning the conflict between cultural and vocational training. During the last twenty years the number of pupils taking commercial work in the public high schools has increased from 30 to 161 thousand; during the past

fifteen years the increase has been 200 per cent., while the pupils who take natural science, Greek, and civics have decreased, and the increase in English, the most popular subject, has been 30 per cent. Some form of commercial instruction is now offered in three-quarters of the public high schools and in nine out of ten State colleges and universities. At present, there is no State supervision of commercial education, though there is need for inspection and supervision of the courses which have developed. Experience in Texas and Wisconsin indicates that the best form of supervision lies in inspection by specialists in commerce, who are able to give constructive aid to the teachers. The State universities should set seriously to work to train teachers with a wide knowledge of commerce and finance, a clear perception of the relation between technical subjects and the general science of business, and a knowledge of the psychology of business and teaching.

ANOTHER aspect of the situation is furnished by Mr. Joseph Lee, in an address to the Harvard Teachers' Association, printed in *School and Society*. Children are educated by suitable experience and grow by living in the present, not by learning something which will be useful forty years hence. Whatever it may be, something must appeal to the force within the child and call it out. Consequently, before the age of fourteen vocational training provides the wrong kind of experience; before that age the activities of "mother's little helper," or "father's assistant in the garden or the tool shed," provide educational experience which is real to the child. At the age of fourteen the child begins to be a social animal and learns to take his place in a team, and to realise that if he breaks down the team fails at that point; and vocational training may well begin then. But, although the child responds to the social conditions, his training should aim at greater things than a mere preparation for one of the many modern forms of sterilised and inexpressive occupation. Education is probably an evil from the employer's point of view; modern industry, in this era of fool-proof machines, has little room for men. Consequently we must provide some overflow in our education to carry on that life of the human spirit which is untouched by industry. Our children must become citizens, must specialise in a hobby, must become amateurs in some department of life because amateurs create a civilised society.

MR. CLARENCE D. KINGSLEY, of Massachusetts, is chairman of a commission on the reorganisation of secondary education, and he pleads in *School and Society* for a new course on the "Study of Nations." He concludes that American high schools devote too much time to modern languages, and suggests that the new study would tend to reduce friction in international relations, to a truer appreciation of the foreign immigrant, to a more helpful outlook regarding the backward nations, to enliven a spirit of criticism (based upon the study of the foreigner) of the home country. A typically advanced nation, such as Russia, should be studied in three stages; first, facts should be accumulated regarding the nation as it exists to-day, its life and institutions, its people and their

organisation; secondly, the historian should supply the sequence of events which have formulated the present position; and, thirdly, the geographer should demonstrate the relation of the past and the present to the environment. Finally, the comparison between the Russian and American nations would determine the relative position of the two peoples. The suggestion is sound, provided the course is so arranged that the activities of the scholars are aroused in such a manner as to preclude the teacher from merely impressing the conclusions of an adult mind upon the memories of passive yet retentive pupils.

"THE journalist is simply a historian in a hurry." When he tackles his material, eliminates the unnecessary and the trivial, verifies, criticises, and selects so as to produce a concise, readable narrative, he uses the methods of the historian, and his products can help to make the study of history more vital, more interesting, than of old. The weekly journals are most useful for schools; let the students make cuttings each from a particular weekly; let these be sorted according to subject-matter and redistributed to the student or study group which has charge of that topic, and let the cuttings yield material for the compilation of a continuous narrative. Such practice will permit the study of relative credibility of sources and the balancing of arguments in reference to questions still unsettled, and the narrative will determine the value of the student's judgment. Otherwise, the cuttings suggest pegs on which to hang part of the historical narrative; General Mackensen follows the Morava river in his campaign; this is a "blazed trail, a highway of historic armies." But the weekly is not a text-book; it needs a teacher, an interpreter but not a taskmaster. These suggestions are culled from an article by Mr. E. E. Slossom in *School and Society*.

SCOTTISH.

DR. M. E. SADLER, who occupies in education the position of Surveyor-General which Lord Rosebery holds in politics, greatly delighted Aberdeen teachers with an address on "The Educational Outlook after the War." In modern times at least, he said, it would be found that every period of war was followed by vigorous educational movements, but it would also be found that these had been heralded by similar movements, though on a much smaller scale, in the pre-war days. He therefore believed that the increased attention to physical education, to medical inspection, and to the problem of the adolescent which had been so marked in recent years would in the future come still more prominently to the front. As a result of the war he believed that education would mean far more for Europe and for Britain than it had done in the past. In England the cardinal weakness of the educational system lay in the inadequacy of the professional prospects of the men engaged in it, and to put this right more financial help from the State would have to be secured. The teacher also must have greater freedom and opportunity for self-expression if the best results were to be obtained, and in the administration of education the teaching profession should be much more closely and habitually consulted

by the authorities through the medium of their professional organisations.

At a meeting of the Glasgow Branch of the Educational Institute Mr. Hugh S. Robertson, conductor of the Orpheus Choir, gave an address on "Music and Education," which has caused quite a sensation in the second city of the Empire. Mr. Robertson could not find words bad enough for the Glasgow accent. "There is nothing quite like it anywhere," he said. "It is the most flat, unmusical, toneless, and soulless type of voice in the world. There is no nonsense and there are no flowers about it. It abhors a cadence. Its faulty vowel production is no less noticeable than its sliddery consonants." He maintained that the finest singing at children's festivals always came from the working-class schools, because these children were not afraid to be natural. Mr. Robertson has roused the ire of many Glaswegians by his attack on the local accent, and the elect of Suburbia are particularly wrathful because of the following dictum:—"The vulgarian of Bridgeton was a good deal superior, musically speaking, to the barbarian of Pollokshields and Kelvinside, simply because he had not sold his birthright for a mess of pottage."

MISS HALDANE, sister of Lord Haldane, delivered a thoughtful address to the Dundee branch of the Educational Institute on "The Future Education of Women." Since the war began women had been called upon to perform duties that were formerly regarded as quite beyond their strength and abilities. In most of these they had given entire satisfaction, but whether this was not partly due to a fictitious physical strength owing to the excitement of the times it was yet too soon to determine. One thing, however, was certain, namely, that in most of these occupations women would remain after the war was over. When that time came the struggle for supremacy in industry and commerce would be carried on more bitterly and ruthlessly than ever before. Victory here as elsewhere would remain with the most highly trained and educated, and the question arose how they were to train their girls to enable them to play their full part in the struggle. The most important thing to secure was a solid basis of general education. With that as foundation, technical skill, as was shown in many of our factories to-day, could readily be secured. There would be a determined effort to obtain early specialisation, but that way lay educational and industrial disaster.

EDINBURGH teachers have shown much enterprise in connection with the national campaign on thrift. They believe the best way to arouse interest in the home in this vital question is first to arouse the interest of the children, and for this purpose systematic instruction on practical lines is being given. But in order to bring the question home still more impressively both to pupils and to the general public, they organised, with the assistance and approval of the School Board and the Parliamentary Committee on Thrift, a great meeting of senior scholars in the Synod Hall, to be addressed by Lord Strathclyde. The meeting was a great success. The hall was packed with about 3,000 pupils, and on the platform all the

chief Edinburgh notabilities were assembled. Lord Strathclyde held the great audience of young people throughout as in simple, direct, arresting words he told of the country's need and of the power and duty of young and old to help.

THE Joint Committee for the Teachers' War Relief Fund reported at their last meeting that the total amount received to date was £24,312. Of this, £6,750 had been allocated to the special fund for the relief of wounded teachers and of the dependants of teachers who have fallen, and £13,562 for general relief purposes. These figures certainly reflect credit on the teachers of Scotland, but when regard is had to the heavy demands which are likely to be made on the fund for many years to come, the urgency for still further efforts should be apparent to all.

IRISH.

IN our January issue (p. 31) it was stated that the Department of Agriculture and Technical Instruction had announced certain educational economies in consequence of the Treasury demands arising out of the war. Since then it was further stated that even the science and art grants to secondary schools were in danger. It appears a mean kind of economy that money should be withdrawn from schools which would in consequence be forced to retrench, with the inevitable result that underpaid teachers would suffer still more with no means of defence against increase in prices, while larger classes the work of which is not, to say the least, of greater value to the State are receiving much increased emoluments. However, the outcry in Ireland was so loud that the Treasury revised its position, and Mr. Birrell was enabled to state in the House of Commons that he was submitting proposals to the Treasury which would make it possible to continue the threatened grants. These were for the training of teachers, including summer schools and the teaching of Irish, and for the training of teachers in connection with technical education. With reference to the grants to secondary schools, it is stated that the Treasury had agreed to the payment on the usual scale for the current year 1915-16 and for the next year, 1916-17. There have been rumours about the Birrell grant being withheld, but this is a definite grant under an Act of Parliament, and it is scarcely likely that a sum so hardly won, going under the Chief Secretary's own name, will be allowed by Mr. Birrell to lapse, when other less important sums have now been saved.

THE National University has issued a caution to intending students in engineering and law. For students in engineering it states that the Institution of Civil Engineers will accept matriculation in this University as qualifying for admission to the institution as a student only when passed at one sitting. A candidate who matriculates upon the joint results of the matriculation examination and any outside examination is not qualified by such matriculation for admission to the institution as a student. Further, the necessary subjects at matriculation for this purpose are Irish, English, mathematics, history and geography, and physics (or natural philosophy). It is also necessary to pass in these same subjects at matriculation in

order to secure recognition afterwards of the B.E. degree as a qualification for such appointments as those under the Public Works Department of India. With regard to law, students intending to become solicitors' apprentices are reminded that the Incorporated Law Society does not accept the matriculation certificate of a candidate who has been exempt from passing the matriculation examination on account of having passed an examination which is deemed by the Senate to be equivalent to a matriculation examination, unless such examination is also recognised by the society.

OWING to the early age at which children leave school in Belfast, with the consequent disadvantages, the Commissioners of National Education have inaugurated a new scheme in the primary schools there. It is stated that in the year 1912-13 only 2.5 per cent. of the children in Belfast reached the sixth standard, as compared with 5.8 for all Ireland, and only 1.1 per cent. reached the seventh as compared with 2.6 for the rest of Ireland. In order to encourage children to remain longer at school, the senior inspector of the Belfast district is appointing a committee of eight principal teachers to act as an examining committee to hold examinations and to issue what will be known as a higher grade certificate to children who have attended one year at least in the sixth or higher standards. It is hoped that this certificate will secure wide recognition among employers, and will also be recognised by the Technical Instruction Committee as exempting its holders from the entrance examinations for technical classes.

THE Department has issued in booklet form a supplement to the programme of technical school examinations, containing the syllabuses of honours examinations and conditions for obtaining teaching qualifications in certain courses. The courses are those in commerce, building trades, applied chemistry, electrical engineering, and mechanical engineering. The examinations in all these courses, of which the Department issues also a full time-table, will take place on various dates in May. Another form deals also with the general regulations governing the conduct of these examinations, together with those in domestic economy and art. This gives full details as to the number of examinations in each course, the arrangements for fees, certificates, and other details which candidates should master.

WELSH.

THE Welsh Department of the Board of Education has issued another of its famous booklets dealing with the celebration in schools of St. David's Day. It is entitled "Patriotism," and, with its predecessors in the series, furnishes an instance in which Wales may incontestably claim to be giving a lead to the rest of the kingdom. It is beautifully printed, as usual, the chief blemish being the "M" at the end of the title on the front cover, which is precisely like a W upside down. It is impossible to give here an adequate idea of the value of its contents; we may remark an emphatic disclaimer of the principle "my country, right or wrong," and of the still more wicked idea, "my

country is, of course, always in the right." English teachers in Wales, and outside as well, will, together with their colleagues of actual Welsh nationality, find this pamphlet most interesting and suggestive. His Majesty the King has been pleased to accept a copy of the publication, and Lord Stamfordham, writing to the Permanent Secretary of the Welsh Department, adds that his Majesty is much pleased with the contents of the booklet, and trusts that the principles inculcated in it will bear good fruit in the lives and characters of the coming generation.

THE late Prof. David Jenkins is to be succeeded as co-editor of *Y Cerddor*, the Welsh musical magazine, by Prof. David Evans, Mus.Doc. (Oxon.), of Cardiff University College. The appointment is received with much favour in Welsh musical circles.

PRINCIPAL E. H. GRIFFITHS, of the South Wales and Monmouthshire University College, Cardiff, has, in response to an urgent request, consented to retain his office, from which he had announced his intention to retire during this year. Sir John Rhys's successor as principal of Jesus College is also not to be appointed until after the war.

THE Government's suggestion that provincial museums should be closed for the sake of economy does not find favour in Cardiff. It is pointed out that only two members of the staff of the National Museum are available for military service, that the city's contribution to the museum will in any case have to be kept up, and that the Treasury has already saved £1,500 a year on the museum by reduction of grants, while the proposed closure would only save another £200. The work of the Welsh Monuments Commission has been suspended, effecting an annual saving of £1,863. This Commission was appointed in 1908 to survey the ancient monuments of Wales, and to make suggestions for their preservation.

THE Cardigan County Education Committee has had its attention directed to the small proportion of the children in the elementary schools that competed for scholarships in the intermediate schools. From whole districts scarcely any children had passed into secondary schools for the last twenty years; it has been said that in the rural districts parents were not at all anxious to give their children a secondary education. A conference was arranged with the head-teachers of elementary schools, to see what could be done to remedy this state of things. In the same county it is proposed to amalgamate the Church and council schools in places where one building could accommodate the joint school, and when there was a lack of teachers through absence on military service. Ministers of various denominations are to be allowed to give religious instruction to children of their own denominations in these schools if they desire to do so.

THE governors of the Ebbw Vale County School have threatened to resign their office and hand over the school to the county authorities to manage unless the income of the school is increased; they have received numerous applications for increase of salary, but have

not a shilling to give their staff. It was pointed out at the last meeting of the County Education Committee that, whereas the average salary for Wales was £156, that for Ebbw Vale was £170, and that if Ebbw Vale paid a higher rate than other places it must either find the money locally or curtail its wants in accordance with its means. The explanation was given that the reason why the teachers got £170 was that they had all reached the maximum of their scale; but the scandalous nature of this fact does not seem to have struck any of the speakers.

DURING the autumn the scheme for the new University Medical School has received a check. The Treasury was, in view of the benefactions of Sir W. J. Thomas, prepared to provide a maintenance grant before the proposed commission on the Welsh University had even been appointed. But in view of the situation caused by the war they felt bound to ask that the building work should not be proceeded with, except so far as the physiological block was concerned.

THE King Edward VII. Hospital at Cardiff has received a sum of 1,000 guineas for the endowment of a bed from Messrs. Watts, Watts and Co., coal-owners and shippers. Within the year beds have also been endowed by Messrs. Evans and Reid, Messrs. Morgan and Cadogan, Captain D. T. Lewis, Alderman W. H. Mathews, and Sir W. J. Thomas (Cavell Memorial), seven in all. The new wing has been called after Colonel Bruce Vaughan, in commemoration of his invaluable services to the hospital.

ABERYSTWYTH and Bala Theological Colleges are being worked together at Bala under the remaining members of the staff, Principal Owen Prys and Prof. David Williams, of Aberystwyth, and Dr. W. Porter and Prof. R. Morris, of Bala. The other members of the staff are engaged in national service of various kinds. At Lampeter also there are only forty students in residence, and part of the buildings are closed.

THE Welsh ministers and ministerial students have joined a special unit of the R.A.M.C., which is confined to them, and has been undergoing preliminary training at Hillsborough Barracks, Sheffield; with his usual aptitude for nicknames, "Tommy" has dubbed the barracks "The Holy City," and the unit "God's Own." Now that their equipment is complete the men have gone to Llandrindod Wells for their full training.

Gray. Poems Published in 1768. Edited by Arthur F. Bell. About 190 pp. (Clarendon Press.) 3s. 6d.—The excellent green cloth series of which this volume is one has often been recommended in these columns. Gray is to most people the poet of a single poem; and the fact that the *Elegy* is full of recollections and that he did not care, or pretended not to care, for this his finest child, makes no difference. The poet gains nothing by having his life told; but probably he was less Walpolian than he affected to be. It is an irony that a professed melancholy cynic should have written the *Elegy*. Mr. Bell's edition is printed exactly as the old-world poems appeared—type, margin, and all. Good but condensed notes are added.

THE BROAD OUTLOOK ON EDUCATION.

(1) *Nights and Days, and other Lay Sermons.* By Helen Wodehouse. 188 pp. (Allen and Unwin.) 4s. 6d. net.

(2) *Education and Social Progress.* By A. Morgan. 252 pp. (Longmans.) 3s. 6d. net.

(3) *Henry Augustus Coit, First Rector of St. Paul's School, Concord, N.H.* By J. C. Knox. 150 pp. (Longmans.) 4s. 6d. net.

(4) *The School and Society.* By John Dewey. Revised edition. 164 pp. (Cambridge University Press.) 4s. net.

(5) *Schools of To-morrow.* By John and Evelyn Dewey. 316 pp. (Dent.) 5s. net.

(6) *An Introduction to Ethics.* By G. A. Johnston. 254 pp. (Macmillan.) 3s. net.

(7) *The Practical Conduct of Play.* By H. S. Curtis. 330 pp. (New York: The Macmillan Co.) 6s. 6d. net.

(8) *Some Aspects of the Woman's Movement.* By various writers. 239 pp. (Student Christian Movement.) 2s. 6d. net.

(1) In our day the direction of education is passing more and more from the Church to the State. Some may lament the fact; but the fact remains. And it becomes vastly important that in State schools and colleges the Christian religion, taken, of course, in the broadest of senses, should be a vital factor in the educational process. It is partly for that reason that we welcome the "lay sermons" now before us in print, delivered to the students of the women's training college at Bingley by its distinguished principal, Dr. Helen Wodehouse. Charm of style, depth of thought, keenness of observation, and pointed though discreet appeal to the thoughtful young mind, are all found in remarkable combination in these fine addresses. There is scarcely a page from which, had we the space, we should not be tempted to quote. We warmly commend the book, not only to young teachers for their own souls' good, but also to older persons whose positions in schools and colleges involve serious responsibilities towards young men and women. The book will help them in the attempt to cultivate "moral thoughtfulness" without priggishness.

(2) Principal A. Morgan's book on "Education and Social Progress" is a timely production, and it is well to know that such teaching as it embodies is going on in training colleges. The day has gone by for regarding the school as a place only for teaching in the narrow sense, and the schoolmaster as one whose sole function it is to impart knowledge, however well he may do it. As the writer remarks, "education, not in the old narrow sense of school teaching, but as comprising all the forces that develop the powers and form the minds and characters of the young, is now recognised as the most important method of social intervention, and the most powerful means by which democracy can secure the realisation of its ideals." Hence the breadth of outlook which marks this book. It deals suggestively, and as becomes a man of scientific training, with the causes of social diseases and the conditions of social progress, with the relation of education to practical life and to public health, with the education of defectives, and with the wider use of school plant.

(3) Mr. Knox's biography of Henry Coit is a worthy tribute to the memory of a great schoolmaster. Coit has been called the American Arnold, and the parallel is in a certain way just, though the two men were in many respects very dissimilar. Both had an enthusiasm for the moral education of youth, both believed

that a large school could exist without the vicious accompaniments that had been thought necessary evils, and both were convinced that the study of Greek and Latin classics is the best and only basis of a sound education. Here the general parallel ends, but to have said so much is to have said nearly everything that is vital. One can, for example, affirm with certainty that it might as well have been said of Arnold as of Coit, that "anything approaching the current fad of teaching sex-hygiene to the young in classes wholesale was absolutely foreign to his conception of the philosophy of education. He would not have scoffed at mere prudential chastity, but he was convinced that it presented no sure defence against the arguments of the flesh, if the religious motive was absent." This memoir provides most refreshing reading, and we commend it to the notice of British teachers.

(4) The name and work of John Dewey are well known in this country among progressive teachers of young children, but we doubt whether his work or even his name is much known among teachers of older boys and girls. One cause of this difference is that the education of young children presents the readier field for experiment. But Dewey's point of view ought to be more widely appreciated, and there is no reason why it should not be, seeing that several of his essays are now available in a convenient form, and that his little work entitled "The School and Society," which now appears in a revised and enlarged edition, sums up his position briefly and lucidly. His main thesis is that schools and universities tend to become isolated from life, by clinging to instruction-material which the world has really done with. The only hope lies in getting the school out of this isolation, and securing organic connection with the social life of the home, the country, and the place of business. That he does not mean premature trade and technical training, but a truly liberal education conceived on thoroughly practical lines, Dewey is at pains to demonstrate. We think that, so far at least as this country is concerned, he is at times quite unnecessarily severe in his strictures upon the established curriculum. But some exaggeration is pardonable when it is sought to bring important matters into bold relief. Dewey is a thinker to be reckoned with, and there are few teachers, however bound they may be by custom and usage, who would not do some of their work better after a careful reading of this book.

(5) In "Schools of To-morrow" we have a practical exemplification of the general lines of theory laid down by Dewey. With the help of Miss Dewey he has here given descriptive and reasoned accounts of certain American schools the work of which might be set down by an orthodox teacher as largely composed of "fads and frills." The writers intend, however, to suggest the practical meaning of some of "the more widely recognised and accepted views of educational reformers," when a teacher is not content to put them politely away as a portion of our "intellectual heritage," but has the effrontery to act upon them in his daily work. The schools described are those which show "tendencies towards greater freedom and an identification of the child's school life with his environment and outlook; and, even more, the recognition of the rôle education must play in a democracy." A large number of illustrations add to the value of this interesting and important book, which we commend especially to teachers of junior forms.

(6) Mr. G. A. Johnston's "Introduction to Ethics," written specially for students in training colleges, ought, we think, to reach the wider circle of teachers actually at work in the schools. The problems of moral education, about which so much is said and

written, would then be more intelligently discussed than is sometimes the case. The book differs from the ordinary manual of ethics in several important ways. It avoids, for instance, controversial details about ethical systems, and so deals little in the "hesitating qualifications and negative criticism" characteristic of such discussions. We cannot help feeling that this little book, written with a very practical and definite end in view, really provides a better introduction to the subject, not only for teachers, but for ordinary university students, than any of the textbooks conceived on the usual "academic" lines. The author has not made the mistake of including matter which ought to be relegated to the history of ethics. We like the book very much, and cordially recommend it.

(7) A few months ago we noticed a work by Dr. Curtis, formerly secretary of the Playground Association of America, on "Education through Play." In that work he dealt with the subject generally, as it affects administrators as well as teachers. In the present work, entitled "The Practical Conduct of Play," he treats of the detailed organization and management of playgrounds, and writes especially for parents, teachers, and playground directors. As most of our readers are probably aware, the playground movement in America, which owes its existence chiefly to the activities of the association mentioned above, is a definite and systematic attempt to overcome the obvious and calamitous disabilities of children in large towns. A good deal is being done in this country in connection with public parks, but we have much to learn from America as regards organization, and Dr. Curtis's new book will throw a helpful light on the whole subject.

(8) The volume on "The Woman's Movement," published under the auspices of the Student Christian Movement, deals in a very broad sense with educational questions, almost throughout, though in the more usual sense only three or four of the nine essays bear closely enough on education to claim attention here. The longest, and in our opinion the most valuable, of these essays is contributed by Mr. Ernest Barker, who utters a timely warning against making hasty inferences from the history of the past. Miss C. M. Ady gives an interesting summary of the contribution of women to history, and Miss Clara E. Collett writes on the movement for intellectual training, beginning with the time of Mary Wollstonecraft, and coming down to recent events. Other papers on the "Economic Emancipation of Women," "The Moral Revolution," "The Woman's Movement considered in relation with the Christian Ethic and with the Family," make up a very sane and interesting volume, marked throughout by the presence of the religious point of view, and by the absence of rancour and bitterness.

PHILOLOGY FOR SCHOOLS.

A Short Historical Latin Grammar. By Prof. U. M. Lindsay. 128 pp. Second edition. (Clarendon Press.) 5s. 6d.

This book, the first edition of which appeared in 1895, appears to be an abridgment of the writer's well-known "Latin Language," a volume of perhaps four times the size. The larger book is perhaps sometimes used for continuous reading, but probably more often as a book of reference by more or less advanced students of philology. From this point of view the abridgment has little or no *raison d'être*, and it must be regarded as an elementary manual for beginners in philology "in the universities and higher forms of schools." If we venture to express our

hesitation as to its fitness for this purpose, the hesitation must be regarded as a tribute to the difficulty of the book rather than a disparagement of the work.

The problem of philology in schools is indeed difficult. There is no doubt that few things are more stimulating or illuminating to sixth form boys than the discovery of unexpected analogies between Latin and Greek. But if these are to be really understood, and not to be mere curiosities received with somewhat incredulous amusement, they must be based on a great deal of minute study, not to say drudgery, which often proves too great a tax both on the time and ability of the pupil. Prof. Lindsay incidentally admits this when he refers the readers of the abridgment to the larger book for "a detailed account of the evidence on which judgments in this book are grounded." Are the judgments, one may ask, of real value without the evidence? No doubt this objection is not valid throughout the book. Much of its contents are independent of what is commonly called philology. Other points again, such as the relation of "genēs" to γένους, can be explained very fully and easily to schoolboys. But there are others, such as the statement "'bos' is probably not a true Latin word, Ind-tur gw being represented in Latin by v, not b," which are meaningless and valueless except after a study of the complicated history of the "velar" sounds.

We venture also to think that the plan of the book goes wrong in another vital matter. Philology is nothing if not comparative, and we doubt whether a book on Latin philology is not a mistake—whether, in fact, the student should not be confined to those elements in Greek and Latin which are clearly related to each other. Again, we may call our readers' attention to a remarkable divergence between the larger and the smaller books. In the former the chapters on pronunciation and accentuation are followed at once by a discussion of the history of the Latin sounds. In the smaller book they are followed by a discussion of the noun, verb, etc., and the lore of sounds is postponed to chapter x. In fact, while in the large book the writer takes the usual course of basing morphology on phonology, in the abridgment he reverses the order. We are inclined to think that this is wrong in principle.

These criticisms are made with all hesitation. Prof. Lindsay is a distinguished philologist. He has probably considered all these points, and the reception of the first edition may have convinced him that his work is on the right lines. At any rate, apart from these criticisms we have nothing but what is good to say about the book. To say that it is philologically sound would be an impertinence. But we may be allowed to compliment the writer on the ability with which he has abridged his large book, on the interesting manner in which this mass of information is conveyed, and on the skill of the arrangement.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

French Verbs Made Easy. By J. L. Théodore-Getz. viii + 147 pp. (Blackie.) 1s. net.—This is not by any means the first book dealing with French verbs, which suggests that there is a demand, though it is not clear why teachers should not prefer a complete grammar. The multiplication of subsidiary books is not desirable, especially at a time when economy in education is a popular cry. This book has been carefully compiled. The facts are generally well stated, and there are some twenty-five pages of good exercises—the most valuable part of the book. As for the treatment of

the verbs, it is generally sound, and to ask for originality would be unfair, in matter so often treated before by competent teachers. It is regrettable that the discredited terms "passé défini" and "passé indéfini" have been retained. The occasional use of historical grammar to explain "irregularities" is to be commended; but the explanations are not always quite sound. It is misleading to say that the "t" in "a-t-il" was introduced "for the sake of euphony," or that "mute e" is not pronounced, or that "mute e" cannot occur in two successive syllables, or that in "aille" the vowel of the stem has been "changed to its corresponding diphthong ai." "Puisse, veuille, vaille" are stated to be derived from the participles "puissant, veillant, vaillant," whereas the latter are the derived forms.

First French Course. Phonetic transcript of the first twenty-eight lessons. By A. R. Florian. ii+60 pp. (Livingtons.) 1s. 4d.—In looking through this booklet we have not considered questions of method, but have paid attention solely to the correctness of the phonetic transcript. We are reluctantly compelled to say that the proof has been poorly read. There is apparently no settled principle in the treatment of the "mute e"—one of the serious difficulties in French pronunciation—and in representing the quantity of nasal vowels. Apart from many cases under these two headings where a change seems called for, we have counted more than a hundred misprints. In its present form the book cannot be recommended; it requires thorough revision.

French Composition for Students and Upper Forms. By G. W. F. R. Goodridge. 174 pp. (Oxford University Press.) 2s. 6d.—It is very pleasant to read a modest preface to what turns out to be a good, conscientious piece of work, at a time when so much slipshod work is being recommended to the modern language teacher with a flourish of trumpets. Each of the fifteen sections of Mr. Goodridge's book consists of a very clear and well-expressed chapter of French syntax, in French; short English sentences for oral translation, longer sentences for oral or written treatment, and four continuous passages skilfully written with a view to introducing as many instances as possible of the rules given at the beginning of the section. This kind of passage is very difficult to write—the style tends to become clumsy and unnatural; but Mr. Goodridge has been singularly successful. It seems a pity that he should have added to each section three subjects for free composition; they are quite out of place, for free composition cannot be taken as a side-issue, and no suggestion is made as to the treatment. On the other hand, the thirty-two English passages from standard authors at the end of the book are useful. Pupils preparing themselves for a senior examination, and those more advanced, will derive much benefit from working through this book.

Classics.

The Fall of Troy. By W. D. Lowe. 96 pp. (Clarendon Press.) 1s. 6d.—This should be very useful for those who find the second Æneid too long for one term's work with their classes. Æneid II. is an excellent book for boys; they ought to read it in its entirety, as Virgil wrote it, without any compressions or adaptations. But if there are any schoolmasters who find this impossible, Dr. Lowe's *réchauffé* will be welcome to them. He has compressed the second Æneid, adding a few lines to the beginning and end from other parts of Virgil, into 500 odd lines. The book is divided into short sections, the earliest of which contain not hexameters, but simple short sentences; but soon the language becomes Virgil's,

save for some slight simplifications. Much is lost by compression, e.g. (we quote at random) the last lines on Priam's death are cut down to "iacet hic sine nomine corpus." We suppose it may be necessary, but it seems hardly fair to our boys. There is an adequate introduction and vocabulary. The notes are good.

English.

The Peace of the Augustans. By George Saintsbury. 399 pp. (Bell.) 8s. 6d.—Prof. Saintsbury says somewhere in this book that when he retires he would like to do this and that. He has retired, but not apparently from work. Nevertheless, the mark of retirement is here. Always definite, even in his characteristic and indefinite phrases, he is in this curiously-named volume almost rollicking. He must be a thorn in the side of the academic critic; downright, slangy, unconventional, open in his loves and hates, and punctuating both. With him at any rate we know where we are. Gray, Collins, Dr. Johnson, Ossian, Percy, Warton, Vathek receive what we may call the closely-reasoned reward of common-sense judgment; and no ordinary mortal need be ashamed of admiring all or even of enthusing wildly over the "Ode to Evening." Average British opinion, too, is on the writer's side when he praises the study of Latin and Greek, curbs his worship of Wordsworth, and does not curb at all his dislike of spelling reform. The whole book is crammed with learning, and is much less like a school volume than some of the Professor's other writings. The author tells us that it is not a go-as-you-please book; but it is precisely because it bears this character that it will be popular with those who like personality and humour along with their criticism. And it is good to hear Mr. Matthew Arnold's judgments judged.

Marlborough and other Poems. By C. H. Sorley. 106 pp. (Cambridge University Press.) 3s. 6d.—Readers of the *Times Literary Supplement* must have been struck with the brief notice of Capt. Sorley's career and with the verses, "Expectans Expectavi," which were quoted in full. Now we have the unfinished poems, and though it is rare that the unrevised work of one who had not attained his majority will bear publication, all the reading world will be grateful for this sheaf. It would be easy to plead for recognition on the score of youth, personal charm, and heroic example; for here writes one of whose type all England is always proud. But there is no necessity for such plea when we read pieces like "The River," "Barbury Camp," "Deus Loquitur," "Failures," and the "Sonnet to Germany." "The River," with its reminiscences of two other distinguished poems, is yet entirely original in thought; and the vision of Cæsar's soldiers flying over us in wind and cloud and storm is a vision that no poet, so far as we remember, has seen. We hope this little volume will find its way far beyond the circle of friends by whom the triumphant memory is held holy; for we have here the first notes of a poet in the making. It is a treat, too, to find the young Apollo able to express deep thoughts of life in poems from which the sister deity Aphrodite is, no doubt to her chagrin, cheerfully excluded.

The Spirit of Man: an Anthology. Made by the Poet Laureate. No pagination. (Longmans.) 5s.—Mr. Bridges has stated on a singularly beautiful title-page that this anthology is made from the Philosophers and Poets. The whole world is thus his oyster; and if he neglects numbers of our special friends, and even many of those whose place is assured among the immortals, then the reviewer may, if he pleases, complain. But such complaints misunderstand this volume, and if we only view the collection as a dip made for a special purpose into Mr. Robert Bridges's

Commonplace Book, we shall better be able to judge the weighty preface. Man, says the preface, is a spiritual being, and has to conquer the material world and bring it into subjection to the spirit. Compiled in 1916, and dedicated to the King, the book is a literary restatement of the world's conscience against Germany.

It is peculiar in many ways; there is no paging, no writers' names are added to the extracts, and as we might expect a good deal that is quite unfamiliar takes its place by the side of the first chapter of St. John, Keats's Autumn, the Phædo, and Kubla Khan. Sometimes the extracts are but a line or two, and again, as in the amazing "translation" from Virgil, they are quite long. All these idiosyncrasies are defended in the preface or in the index, in which the writers' names are given. There is supposed to be a sequence in the passages, and many, but perhaps not quite enough, are from French literature; other literatures are for some reason banned. Throughout the book we have the finger of the poet, and it is mainly as the revelation of a poet's choices in choice literature that the book will be welcomed. It points to the ill-recognised fact that in spiritual literature there is neither time, nor place, nor politics. The form of the volume is aristocratic and serene, in consonance with its subject.

School Bible Readings. 509 pp. (Oxford University Press.) 2s. 6d.—Recommended by the Headmasters' Conference, and, indeed, prepared by its committee, this book is sure of a welcome; it contains no notes, is almost free from passages and phrases that the schoolmaster disapproves, and is well printed. But the word examination is writ large on it; and, except for those who work to the prescribed syllabus, it appears to be confused in its arrangement. The revised text is used, and the matter is mainly historical. There is no preface, no name of editors; all prophecy and all the Apocalypse are excluded; and though it may be a book of readings it is not a Bible, short or long. But for its purpose, which is to support a syllabus, it is excellent. From the whole mass of the epistles there are but two short quotations; and, of course, nothing from the Apocrypha.

The Thompson Seton Readers. In five volumes. About 120 pp. each. (Constable.) 1s. each.—The children of the people here have the immense privilege of reading the enchanting studies of wild life so well known already to their richer brothers and sisters. The silver fox, the big bear, the jack rabbit, the Winnipeg wolf, the slum cat, the white reindeer have their life-stories told in the familiar way that goes straight to the heart of children. There is but one word for these books; we wish that a millionaire would put a hundred copies of each in every school in the land.

History.

The National History of France. Vol. ii., *The Century of the Renaissance.* By Louis Batiffol; translated from the French by E. F. Buckley, with an Introduction by J. E. C. Bodley. xxx+428 pp. (Heinemann.) 7s. 6d. net.—It was an excellent idea to arrange for the translation into English of the six-volumed "Histoire de France racontée à tous," which M. Funck Brentano has edited and in part written. It is an authoritative work on France, learned yet popular. Written by half a dozen historians of eminence, summarising the results of the researches embodied in M. Lavisso's monumental history, it presents in sufficient detail for all except the specialist the story of the political evolution of France.

The volume before us—the first actually to appear in English form—covers the period from Louis XI. to

Henry IV. (1483-1610). It deals with the Italian expeditions of Charles VIII. and Louis XII.; with the ambitious schemes of Francis I.; with the Reformation movement in France; and with the tragic Wars of Religion. Mr. Bodley prefaces the work with a charming essay on the course of French history. Miss Buckley has done the translating excellently well. One forgets that English was not the original garb of the author's thought.

The Middle Period of European History. By J. H. Robinson. x+421 pp. (Ginn.) 5s.—Prof. Robinson, the well-known historian of Columbia University, regards the Middle Ages as prolonged to a much later date than is commonly supposed. The sixteenth and seventeenth centuries, he contends, were "more medieval than modern." Hence he includes within the scope of this work the whole period from the break-up of the Roman Empire to the opening of the eighteenth century. This little book is a section of Prof. Robinson's "Short History of Europe." It is introductory to the fuller narrative of the last two centuries, which constitutes the bulk of the "Short History." The usual features of Messrs. Ginn's publications are well exemplified in the volume before us, viz., good paper, clear print, numerous and excellent illustrations, valuable maps, a strong and attractive binding. With such a book in his hand the student's introduction to medieval European history is made as pleasant and easy as possible.

An Outline of Industrial History. By Edward Cressy. xiv+364 pp. (Macmillan.) 3s. 6d.—This sketch of industrial history has been written with a special purpose and from a clearly defined point of view. It is intended as "a small contribution to the efforts which are now being made to create a well-informed electorate," and consequently its point of view is that of "present-day problems." Hence the economic story of primitive man and ancient civilisation is very lightly sketched. The Middle Ages and the transition to modern times are treated but in outline. The narrative becomes full and detailed only with the agricultural and industrial revolutions of the eighteenth century. These movements and those of the nineteenth century are described and discussed in a series of valuable chapters under the headings:—(1) Scientific and technical progress; (2) commercial development; (3) industrial management. The last section of the book treats of a subject not usually found in books of this sort, viz., "Industry and Politics." It describes the extension of the franchise, shows how the conception of the State and its function has changed during recent years, and traces the growth of economic thought. The author has produced a fresh, original, and valuable book.

The Country of the White Rose: An Introduction to the History and Antiquities of Yorkshire. By A. C. Price. xii+403 pp. (Brown.) 2s. net.—Mr. A. C. Price is already favourably known to students of local history through his excellent little book on "Leeds and its Neighbourhood." The present volume applies the same method of treatment as was applied in the case of Leeds to the larger area of the important county of Yorkshire. That method is to treat fully in chronological order, and in strict subordination to the history of England, all the leading episodes of our island's story which fell topographically within the limits of the county; and, further, to illustrate all the main aspects of the social life of the nation from local examples. It makes a fascinating study, peculiarly attractive, of course, to those who live in Yorkshire and are able to visit the places described, but scarcely less interesting to general students of English history, because

they get an excellent picture of national development as seen from the point of view of one important locality. The accounts of the Yorkshire baronage in the Middle Ages, the Yorkshire religious houses, and Yorkshire's part in the great Civil War of the seventeenth century are particularly noteworthy.

Readings from Indian History. Part i. By Ethel R. Sykes. viii+245 pp. (London: C.L.S.I.) 2s. net.—The thirty-three readings in Indian history which this little book contains are intended primarily for children of the great Dependency who are learning the English language. They provide, however, a fairly complete outline of Indian history from the earliest times to the death of Aurangzeb in 1707, and so may serve a useful function in English schools.

The New Europe: Some Essays in Reconstruction. By Arnold Toynbee. 85 pp. (Dent.) 1s. 6d. net.—The seven essays contained in this little volume form a sequel to the author's large and important work on "Nationality and the War," which appeared about a year ago. They are less exuberantly optimistic in tone. The forces of evil have proved to be stronger than was expected, and it is no longer possible to feel the same confidence that the remaking of Europe will be wholly in the hands of the Allies. They deal with much the same themes as are treated in "Nationality and the War," but in a more general manner. They discuss, for instance, the difference between the German and the British idea of nationality; the danger of allowing historical sentiment to determine present-day problems; the relative importance of national and economic factors in the fixing of frontiers; the influence of language as an instrument of culture. One new and interesting national question is discussed in detail, viz., the question of the reunion of the Ukrainian or Ruthene peoples, who at present are divided between Russia and Austria, and between the Greek and Latin Churches. The book is well worth reading and pondering.

Geography.

The District of Panama. (Bacon.) 7s. 6d.—This small wall map contains four parts. The first shows the canal zone on the contour layer system as it was before the canal was cut. The second is political in appearance, but shows the waterway and its accessories in their present form. The third and fourth are pictorial views of the first and second portions. Teachers' notes are appended. The whole forms an extremely useful illustration of the changes made by human agency in the nature of the topography of the isthmus.

Bacon's Contour Atlas: (i) *East Anglia*; (ii) *Northern Wales*; (iii) *South-West England*. Each 36 plates; index. (Bacon.) 6d. net.—In each of these three editions there are four introductory maps which specialise the communications, geology, contours, and vegetation of the titular area; the remaining plates are common to all editions. All the plates are vividly coloured, and the atlases are cheap and useful for studies in topography.

Beginner's Regional Geography. The Americas. By J. B. Reynolds. 64 pp. 31 illustrations. (Black.) 1s.—Miss Reynolds continues the series of these interesting books. A page of letterpress deals with four or five points and is opposite an appropriate picture. This constitutes a lesson which is completed by suggestions for further activity on the part of the child. Half the pictures are beautifully coloured.

The Rambler Travel Books. The British Isles. By Lewis Marsh. 80 pp. 12 coloured plates and other illustrations. (Blackie.) 9d.—This series carries for-

ward the same idea as that used by Miss Reynolds for children who are slightly older. The text is longer and describes interesting features of the towns. Experience shows that small children revel in these books.

Science and Technology.

Historical Introduction to Chemistry. By T. M. Lowry. (Macmillan.) xv+581 pp. 8s. 6d. net.—This is a book of primary importance to the teacher of chemistry; it is more than a history of chemistry, since it can be, and surely will be, made use of as a guide to the laying down of a course of instruction. Prof. Armstrong's school has had a profound influence on the teaching of chemistry, and it is very fitting that one of Armstrong's most brilliant pupils should have carried the historical method a stage further. Unlike the ordinary cut-and-dried exposition of the subject, Dr. Lowry's book has been written in close contact with the original sources. Much of the narrative is a textual transcription, and this fact not only adds a great deal to the value of the book, but also makes the story authoritative and living. A leading feature is the detailed description of classical experiments, in many cases illustrated with woodcuts, replicas as near as may be of the original drawings. Thus Lavoisier's work on the calcination of mercury, Hale's experiments on burning, Priestley's apparatus for preparing gases, Dumas's apparatus for determining the composition of water (surely shown accurately for the first time—and *without* a bunsen burner!), Boyle's pneumatic engine or air pump, and Gay Lussac's experiment on the coefficient of expansion of gases are merely a few examples taken at random. The material which Dr. Lowry presents has been classified by subjects rather than by authors, so that the scheme is not in any way biographical; at the same time ample justice is done to the work of the individual experimenters, and the provision of a biographical index gives the necessary facts for the compilation of the achievements of the pioneers of the science. The chapters deal with raw materials; air; burning and the discovery of oxygen; chalk, lime and the alkalis; the study of gases; fixed air; inflammable air; sulphur, phosphorus; nitrogen, nitric acid, and nitre; muriatic acid and chlorine; the halogens; the atomic and molecular theories; molecular architecture; the classification of the elements; balanced actions; and dissociation. Since the later and more detailed achievements of chemistry are out of place in a record of fundamental facts and theories such as this, the advanced student is referred to the two volumes of memorial lectures published by the Chemical Society as a fitting sequel. The format, the printing, and the reproductions of old plates are admirable, and both Dr. Lowry and his publishers are to be congratulated on an excellent piece of work.

Physical Chemistry for Schools. By H. J. H. Fenton. 215 pp. (Cambridge University Press.) 3s. 6d. net.—Dr. Fenton has written an excellent introduction to the science of physical chemistry, well adapted for those reading for entrance scholarships, or, in point of fact, for pass degree men. The method is quite didactic, and the information is accurate and precise. The usual subdivisions of the subject are discussed: gases, solutions, balanced actions, thermochemistry, electrochemistry, radio-activity, and some applications of physical chemistry in a particularly clear and definitive manner. Although the author disclaims the use of mathematical formulæ in the preface, he has been careful not to divorce his text from that exact exposition which characterises physical science, and makes it perhaps more valuable educationally than the more descriptive systematic chemistry.

Modern Chemistry and its Wonders. By G. Martin. 351 pp. (Sampson Low, Marston and Co.) 7s. 6d. net.—Dr. Martin has already in his "Triumph and Wonders of Modern Chemistry" dealt with some of the marvels of science. The present volume is a companion, and follows the same popular treatment. The author points out that in no sense are these books intended for the examinee, but rather to interest the general reader in the wonderful achievements of modern chemistry. Certainly the time is ripe, and over-ripe, for the insistence of the importance and the value of scientific work, but Dr. Martin rather damps the ardour of the would-be devotee of science by his tirade on the scientific *status quo*. He states on p. 4 that "you can purchase the full-time services of a Doctor of Science, one who has discovered several new facts, and who has possibly written a couple of books, and who has, in a word, brains, ability, and ideas in abundance—for—I am ashamed to say it—about £130 a year." More disgruntled remarks occur on p. 11, "most professional chemists . . . are much more concerned about earning enough money to buy their wives nice hats" than striving for the benefit of the race! And on p. 13:—"They [men of science] are remarkably jealous of each other, referring to work other than their own as very ordinary." "Most eminent scientists in any one branch are deadly enemies." "Their ideas are usually distorted as regards the relative value of things." Chapter i. is occupied chiefly by such *obiter dicta*, which might well have been omitted, since even Dr. Martin probably claims to be a member of the scientific fraternity, and ought to respect the two ancient sayings concerned with the operation of laundry work in public and the respect that should be paid to one's own nest. The succeeding chapters deal with various subjects, treated in an interesting and enthusiastic manner. The romance of simple nitrogen compounds is concerned with synthetic ammonia and nitrates. The romance of explosives, radium, the periodic law, modern alchemy, hydrocarbons, alcohol, coal-tar, salt, and firestones follow in due sequence, and are described very brightly. Dr. Martin's book is excellently and profusely illustrated.

Chemistry of Familiar Things. By S. S. Sadtler. 322 pp. (Philadelphia: Lippincott Co.) 7s. 6d. net.—America seems anxious to introduce a shoddy form of learning in the guise of the knowledge of the phenomena of common everyday life. The present volume is typical of its class. Thirteen pages are taken up with a "brief chemical outline," in which the reader is at once introduced to symbols and formulæ, molecules and atoms, indicators, oxidation and reduction, and chemical affinity. Then follows an historical introduction which, appropriately enough, mentions Baekelite, but ignores Boyle. Chapter iii. opens as follows:—"Chemistry possesses a sort of revelation. It is called the Periodic System." On p. 39 we are introduced to the Society of Illumination Flies, the occupation of which seems to be the gathering of fire-flies, and in the same chapter are discussed spectrum analysis, coal-tar colours, electricity, electrochemical series, voltage and amperage, acetylene, matches, and pyrophoric alloys. The remaining chapters deal with ventilation, water, alkalis, salts, metals, evolution, soil food elements, fermentation, soaps, solvents, paints, textiles, leather, rubber, cements, silica, and glass. The final chapter is the most characteristic. In it are two pages, and on these the author defines adsorption, catalytic agents, enzyme action, colloid chemistry, eutectic alloys, and petrography. What is the sense of collecting together a mass of material like this and labelling it chemistry?

Miscellaneous.

Commercial Theory and Practice. By W. Abbott. 352 pp. (Murray.) 3s. 6d.—Mr. Abbott is lecturer in economics of commerce at the Municipal School of Commerce, Manchester, and his book evidences the fact that he is a skilled practical teacher. Without omitting any essentials, he provides a brief account of commercial operations in such a manner as to outline the economic principles which underlie commercial practice. It is a distinct relief to turn to Mr. Abbott's book from the more severely technical and comparatively uninteresting manuals which have been prepared for the use of commercial students. The illustrations of the operation of economic principles are apt and illuminating, and the diagrams give added point to the statements in the text. Mr. Abbott rightly gives more emphasis than has been customary to the place of organisation as one of the chief agents of production. Each chapter is followed by a set of questions, and a list of books recommended indicates the catholicity of the author's studies, which have been illuminated obviously by a considerable practical experience, both of commerce and of teaching.

School Homilies. By Arthur Sidgwick. First Series. 320 pp. (Sidgwick and Jackson.) 3s. 6d.—The printing of these homilies, spoken by a rare soul still on earth, has been a filial duty—and probably a delight. An introduction, much too short, tells us how and when they were delivered at Rugby half a century ago; the name and the work of the speaker of them need no praise. The subjects are varied, but are suited to the problems of a big school—e.g., Accepting a Low Standard, Opportunities, Drifting, Traditions, Secret Sins. The living voice, the face, is absent from the pages; this necessary loss is felt when we open the books of Arnold, Almond, Pécaut. On reading, one is insensibly led to compare the work with one so very different, the "Quinze Ans d'Education," also reprinted by a daughter, addresses given to girls in a college by a master-mind. The one book postulates God, the other Conscience. Masters in public schools who are competent to follow in the steps of these homilists, and who feel compelled to do so, for without the compulsion homilies are naught, have to ask themselves this telling question: How much may I postulate? Probably school sermons and the like fail of their effect mainly because, for the general, the postulate is too great. Bersot said in weighty words that the educator's duty was *Jeter l'ancre et laisser flotter*; but what shall be our anchor, and of what is the cable to be made? The decent have their anchor and their cable, the ill-found lack both; the average wire silently for help. Few can give it, but fortunately many give it without knowing. "How far that little candle throws his beams."

EDUCATIONAL BOOKS PUBLISHED DURING JANUARY, 1916.

(Compiled from information provided by the publishers.)

Classics.

"Cæsar and the Germans." Adapted from Cæsar, "De Bello Gallico," and edited by A. H. Davis. (Elementary Classics.) 198 pp. (Macmillan.) 1s. 6d.

English Language: Grammar and Composition.

"Précis Writing and Reproduction for Army Classics." By W. J. Griffith. viii+230 pp. (Edward Arnold.) 2s. 6d.

Blake: "Songs of Innocence." Introduction and Notes by Lily Fogerty. (Blackie's Smaller English Classics.) 32 pp. (Blackie.) Paper, 2d.; cloth, 3d.

"Lyrical Forms in English." By Norman Hepple. Second edition. xx+216 pp. (Cambridge University Press.) 2s. 6d. net.

"Julius Cæsar." Edited by J. H. Lobban. (The Granta Shakespeare.) xxiv+156 pp. (Cambridge University Press.) 1s.

"A Book of Verse for Children." By Alys Rodgers. Parts i.-iii. xii+116 pp. (Cambridge University Press.) Alteration in price, 1s. net, from January 17th.

"Catriona." By Robert Louis Stevenson. (Cassell's Continuous Readers.) 384 pp. (Cassell.) 1s. 6d.

"Shakespeare: 'The Winter's Tale.'" Edited by A. J. F. Collins. (The Tutorial Shakespeare.) xxxii+144 pp. (Clive.) 2s.

Defoe: "Robinson Crusoe." Abridged and edited for schools by J. Hutchison. 170 pp. (Macmillan.) 1s.

History.

"Chambers's Periodic Histories." Book V. "England under Tudor and Stewart Kings, 1485 to 1688." 272 pp. (Chambers.) 1s. 6d.

Geography.

"Australasia and Malayasia." Edited by Lewis Marsh. (The Rambler Travel Book.) Illustrated in colour and in black and white. 80 pp. (Blackie.) 9d.

"East Lothian." By J. S. Muir. (Cambridge County Geographies.) viii+118 pp. (Cambridge University Press.) 1s. 6d.

"A Junior Geography of the World." By B. C. Wallis. Re-issue in two parts. Part i., 148 pp. Part ii., 188 pp. (Macmillan.) 1s. 6d. each.

"Macmillan's Geographical Exercise Books." Key to Book I, "The British Isles." By B. C. Wallis. 48 pp. (Macmillan.) 2s. 6d. net.

"Meiklejohn's British Isles." 94 pp. (Meiklejohn.) 6d.

Mathematics.

"Elementary Applied Mechanics." By T. Alexander and A. W. Thomson. Third edition. 532 pp. (Macmillan.) 15s. net.

"Key to Bookkeeping for Evening Classes." By F. Oliver Thornton. 114 pp. (Macmillan.) 7s. 6d. net.

Science and Technology.

"Navigation Notes and Examples." By Naval Instructor S. F. Card. viii+235 pp. (Edward Arnold.) 8s. 6d. net.

"Physical Chemistry for Schools." By H. J. H. Fenton. viii+216 pp. (Cambridge University Press.) 3s. 6d. net.

"Elementary Text-Book of Economic Zoology and Entomology." By Vernon Lyman Kellogg and Rennie Wilbur Doane. 532+10 pp. (Constable.) 6s. 6d. net.

"Rutley's Elements of Mineralogy." Revised by H. H. Read, with Introduction by G. T. Holloway. xxii+394 pp. (Murby.) 3s. 6d. net.

Pedagogy.

"An Elementary Textbook of Psychology: Specially Arranged for Teachers in Training." By W. H. Spikes. (Blackie's Library of Pedagogies.) 174 pp. (Blackie.) 2s. 6d. net.

"Via Nova, or the Application of the Direct Method to Latin and Greek." By W. H. S. Jones. xii+176 pp. (Cambridge University Press.) 3s. 6d. net.

"The Discipline of the School." By Frances M. Morehouse. 360 pp. (Heath.) 3s. 6d. net.

"Education and Social Progress." By Alexander Morgan. 252 pp. (Longmans.) 3s. 6d. net.

"Dawn of Religion in the Mind of the Child." By Edith E. Read Mumford. 112 pp. (Longmans.) 1s. 6d. net.

"The School World." Vol. xvii., January-December, 1915. 488 pp. (Macmillan.) 7s. 6d. net.

Art.

"Landscapes for Army Class Drawing." By L. Bellin-Carter. 8 plates+2 pp. of instructions. (Edward Arnold.) 2s. net.

Miscellaneous.

"Outlines of Scripture History." By H. Clive Barnard. (Black's Educational Series.) 120 pp., with 22 illustrations and 3 maps. (Black.) 1s. 4d.

"Lassie and Laddie." By Mary D. Brine. 144 pp. (Chambers.) 8d.

"The London Matriculation Directory." No. 71. January, 1916. With articles on text-books. iv+137 pp. (Clive.) 1s. net.

"The Choirmaster and Organist's Ready Reference Register and Kalendar, 1916." Edited by the Rev. Theodore Johnson. 64 pp. (The Year Book Press.) 2s. 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.

War-Time Curricula in Public Schools.

You have honoured me by asking for a report of my speech at a recent meeting of the Association of Public School Science Masters. There is this reason why a literal report would be of no use for publication: my remarks were addressed to the members of the association, who were already aware of the scheme to which I referred; they would not be understood, unless amplified, by others. Will you, therefore, accept this letter instead?

The nature of the instruction which we give to boys in times of peace may be suitable to the ends in view; it will not do in times of war. What is the good of labouring to teach a boy the arts of peace if his chief business is to fight? We schoolmasters are proud, and justly so, of the spirit of the boys to-day; they make the great sacrifice without a waver; almost, *it seems*, without a thought. It is something to have helped to foster this spirit. But is it enough? May not the judgment of the future be, "They were ready to die, but their lives were sold too cheaply because they were not properly prepared to fight"? We may have much to answer for.

So soon as a boy is within measurable distance of military age, say, six or twelve months, he should be withdrawn from almost all instruction which has no bearing on his immediate future, in order that he may concentrate on the things that matter. This may not be easy with our depleted staffs, but a great deal can be done if we put our backs into it; probably the chief obstacle is tradition. But now, if ever, we have the opportunity of refuting the accusation, so often unjustly directed at us, that schoolmasters are "groovy."

In schools which have cadet corps, splendid work is being done in direct military training. But this is a war in which scientific materials and appliances are being used to an extent undreamt of before. It is our duty to see that the boys who leave school have as much knowledge as possible of these things, or at least have just that sort of knowledge which is readily applied to them. Science and mathematics at this time, for these boys, should be of a utilitarian kind, and every

facility should be given for the teaching of such things in the schools. Values have changed, and there are signs that those who are responsible for the curricula of schools are beginning to recognise the fact.

But my object in writing is not only to plead for extra time to be given to the teaching of science, but also to urge the teachers of that subject to use what time they get to the best advantage in the present circumstances. In November last I wrote to the War Office to find out whether teaching in schools the military applications of science would be of value to them. The reply was unhesitating, and I was asked to come to the War Office to discuss details of a scheme which is now in operation in many of the public schools. I am authorised to give this further publicity to the following letter:—

“WAR OFFICE,

“19th November, 1915.

“To the Secretary of the Association of Public School Science Masters.

“SIR,—I am directed to inform you that your offer to train future officers in various subjects is very much appreciated.

“I am also requested to inform you that the War Office is not in a position, and is not likely to be in a position, to render any assistance in the provision of funds, equipment, or instructors. Subject to these restrictions, it is suggested that the training should consist of the following subjects:—

“*Explosives.*—The nature of various explosives in use—methods of firing charges—care in handling—detonators—fuses—methods of lighting fuses—grenades.

“*Telephones.*—Detection and mending of breaks in cables—laying of lines—remedying faults in receivers and senders—reading and sending on the buzzer.

“*Poison Gases.*—Methods of combating same—first aid to men suffering from same.

“*Range Finding.*—Methods of taking range.

“I recommend that instruction in other subjects be from the Manual of Field Engineering, from the Training Manual, Signalling, as regards Telephones, and from the Musketry Regulations as regards Range Finding.

“I am to add that every possible assistance will be given to you, but that this department cannot undertake to communicate with all the public schools.

“(Signed) F. C. HEATH-CALDWELL,
“Director of Military Training.”

The usefulness of this special teaching being obvious, it remains to consider how it can best be accomplished. The full dose prescribed by the War Office is rather strong for any but well-equipped schools, but a considerable amount can be done without much trouble or expense. If you will grant the space in your next issue, I shall make it my business to see that it is filled with suggestions as to the lines along which the instruction can run. Fortunately I can count on the assistance of those who are better qualified than I am to give advice in this matter.

In conclusion, may I point out that it is not desirable to add to the present burden of the War Office by unnecessary correspondence? And the facts are already in my hands. If fellow-schoolmasters find that there is opportunity of putting these suggestions into practice immediately in their schools, I should gladly try to answer any questions they put to me. But if it is too late to make the change during the present term, they might consult the next issue of your magazine, if you will give the space for which I ask.

C. L. BRYANT.

Hillside, Harrow-on-the-Hill.

The Teaching of Civics.

A FEW months ago I wrote you asking your readers for information upon the teaching of civics. The inquiry I was then engaged in has been for some time completed; may I ask you for space to make known one of the results it is leading to?

It has been made quite clear to us: (1) that civics teaching should concern itself with the economic and voluntary organisation of our community, as well as its local and central government; (2) that its starting point should be the civic organisation of the local community with which the pupils are in contact; and (3) that many teachers who are trying to work on these lines already are much hindered by not knowing how to set about getting a knowledge of the social life of the districts where they live or work.

We want to give such teachers every assistance in our power; and we are therefore arranging to co-operate with the Committee for Regional Survey in a study meeting at Ludlow (Shropshire) at Easter this year. This meeting will give opportunities for the study of the life of the Ludlow region in all its aspects; one section will be devoted specially to the social life and organisation of the district. The study will be largely devoted to getting at facts first hand; there will be little of book work or formal lectures, but plenty of opportunities for discussion.

I think that many of those teachers who feel that more should be done for citizenship in our schools will be glad to know of this meeting. I shall be pleased to send full particulars to anyone who will forward name and address.

ALEXANDER FARQUHARSON,

Secretary.

The Moral Education League,

6, York Buildings, Adelphi, W.C.

Mathematical Fallacies.

IN connection with the remarks on pp. 39-40 of the January issue of THE SCHOOL WORLD, may I adduce in support of the advice offered by Prof. Bryan in his valuable note to the ingenious mathematical fallacy given by Mr. Carey the account of my own experience as given on pp. 318-23 in my “Study of Mathematical Education” (Clarendon Press)? In these pages I have worked out on Newtonian methods the underlying principles of a fallacy fundamentally identical but much simpler in form. These I have found of great value with schoolboys and young students. Your readers may also be interested to know that such a fallacy was actually committed by a professor of engineering of high repute in a published short “proof” of a well-known engineering formula.

The unexpected results of the experiments described at the opening of the chapter containing the above pages (“The Evolution of Axioms”) have been further supported by similar tests made by my colleague Dr. Ballard, the well-known authority on experimental school psychology; but the subject would well repay further careful research by mathematical teachers with some taste for logic and psychology.

The present somewhat unstable condition of mathematical education would seem to need some substantial attention in the way of the detection of fallacies in addition to the customary line of establishing truths or theorems. Let us not forget that Euclid composed a book of fallacies now unfortunately lost. On pp. 356-61 of the above-mentioned work a small beginning of a collection of useful fallacies has been attempted and their educational application suggested. I should be delighted to receive any new examples of fallacies deemed useful in school work. Some schools already recognise the importance of this line of geometrical

discipline as a much-needed supplement to looseness of thought at present perhaps too widely existing.

BENCHARA BRANFORD.

Strand School, Brixton Hill, S.W.

Politicians and Geographers.

UNDER this heading in THE SCHOOL WORLD of February appeared a characteristic and, to me, convincing rejoinder by Prof. Lyde to some remarks contained in a review of his "Frontiers of To-morrow." Appended was a note in answer by "The Reviewer," to which I wish, with the permission of the editors, to take strong exception.

"The Reviewer" states that Prof. Lyde gives three reasons why geographers before this awful war failed to convince the Government and the country what to expect:—(1) Geographers are few in number; (2) they are so ill-paid that they have no time for political excursions; (3) they did not quite know how. On which "The Reviewer" proceeds to comment sarcastically:—(1) "Few in number—as though a loud combined shout were necessary," but a loud combined shout is necessary in a democratic country like ours to get any attention at all; (2) "ill-paid—as though a man were influential in proportion to his salary," which is exactly what he usually is in a commercial nation like our own, though I do not suppose for a moment that the professor had in mind this particular rendering of his meaning; (3) "not know how—as though the means which Prof. Lyde has now employed so effectively had not always been open to him," which contains an innuendo as false as it is undeserved.

I beg to refer "The Reviewer" to Lyde's "The Continent of Europe," where, if he would like a special reference, let him read the opening paragraphs on Germany, and more particularly p. 285. "The Continent of Europe" was published in 1913, and reviewed in THE SCHOOL WORLD of December, 1913, when the then reviewer—the writer of this protest—specially pointed out the emphasis laid on military and strategic geography as one of the striking features of the book, noting at the same time the treatment of Germany and Belgium *passim*. "The Reviewer" can scarcely pretend that this was a case of knowledge *after* the event.

Geographers knew what was being prepared on the Belgian and other frontiers, but geographers are not politicians; and, furthermore, if people in the lump would not listen to Lord Roberts, how was it likely that they would give ear to the cry of a mere geographer?

Prof. Lyde mentioned definitely what occurred in his own lecture-room in 1911, and asked a question which I should like to press: "What would 'The Reviewer' have done—as student or teacher?"

E. R. WETHEY.

Bradford.

It is curious how eager geographers as a class appear to be to share with politicians the guilt of having foreseen the present war without forewarning their fellow-countrymen of its approach. If you try to console them by telling them that you really believe that they were as innocent as the rest of the non-political community, that they had no idea of what was coming, and that they are never likely to be accused of possessing prophetic foresight, they will have none of your consolation. "No," they say, "we knew all about it." In confirmation of their guilt they point to incriminating passages in their text-books, e.g., passages which show how far in excess of the demands of peaceful traffic were the capacities of the German railways along the Belgian frontier. They further

narrate painful episodes which occurred in their classrooms as far back as 1911, and describe how they made young ladies shudder at the spectre of war, and drove them forth in panic-stricken flight. Then, having convinced themselves of their complicity in the crime of the politicians, they laboriously seek for excuses for their wickedness. They were few; they were poor; they did not know how to obtain a hearing! They conclude by asking pathetically: What would "The Reviewer" have done in their distressing circumstances?

Let them not unduly perturb themselves. Their consciences are too sensitive. If they will search their text-books again, they will find that they give equally clear geographical indications that war is inevitable between Russia and Sweden; between Japan and the United States; between Great Britain and France. If they will refresh their memories they will probably recollect that their comments on the Fashoda incident drove out of their classrooms many modest maidens in 1898, and that their remarks on the North Sea episode had a similar effect in 1904.

The truth is, that geographers are very skilful in finding naturalistic explanations of events after they have occurred, but that they have no more claim than any other class of their fellow-creatures to rank among the sons of the prophets. YOUR REVIEWER.

"In Victorian Times."

WHILE thanking your reviewer for his notice of my book, "In Victorian Times," may I point out that the omission of literary men from the volume is explained in the preface, which states:—

"Owing to the vastness of the subject, it has been found impossible to include a section dealing with the literature of the period, but a separate volume on this point will be included in the series, 'Great Names in English Literature,' now in course of preparation."

EDITH L. ELIAS.

North Shore Road, Skegness.

THE entire omission of literary men from "In Victorian Times" is scarcely compensated for by the promise of their inclusion in a separate volume. It would have been better to render "In Victorian Times" complete by the treatment of a few representative writers of the period, even though it had been necessary to exclude a corresponding number of the twenty-six persons actually treated. For literature, above everything else, reveals the characteristic features of an era. If omissions had been necessary to provide room for literary men, could not such men as William IV. have been allowed to drop out? By what possible stretch of imagination can William IV. be regarded as a notable figure "In Victorian Times"?

YOUR REVIEWER.

The School World.

A Monthly Magazine of Educational Work and Progress.

EDITORIAL AND PUBLISHING OFFICERS.

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SIXPENCE.

THE UNIFICATION OF MODERN STUDIES.

By E. CREAGH KITTSON, B.A., B.-ès-L.

WHEN recently a manifesto appeared in the *Times* protesting that the comparative neglect of science in our educational system was a source of national weakness, a distinguished schoolmaster immediately wrote deprecating the discussion of controversial topics of this kind at such a time of crisis. It is, however, by no means clear why those of us who, for one reason or another, are cut off from active participation in the war should meanwhile prosecute our own not unimportant work less eagerly, or abstain from public discussion of the matters that interest us, where such discussion appears useful. It is not as though there were any likelihood of the minds of Cabinet Ministers being distracted, or their thoughts being turned aside from their urgent duties, by the utterances of educational enthusiasts; of this there is not much danger at any time. Moreover, we shall do well to bear in mind that the present conflict between this country and Germany began before August, 1914, and will continue—unless we are to assume that the German nation will be wholly annihilated—after peace has been signed. And since there can be no doubt that a struggle of this kind is finally decided by the fitness, moral, intellectual, and physical, of the peoples engaged—in putting moral qualities first I have in mind such virtues as fortitude, temperance, prudence, diligence—it is obvious that education must be a factor of the very first importance. Therefore I make no apology whatever for directing attention, as I intend to do in this article, to the fact that our comparative neglect of modern languages and the resulting ignorance of modern Europe amongst all persons from our statesmen downwards are also sources of national weakness.

That we pay less attention to the teaching

of modern languages than most other European countries hardly needs to be affirmed. We have never even attempted to solve the problem in any reasonable or systematic manner; the result is not, indeed, complete ignorance of French and German, but a remarkable scarcity of persons with a thoroughly competent knowledge of them; this applies particularly to knowledge of the spoken tongue and the life and institutions of the foreign nation. It is a rare thing to find an English official with a competent knowledge of either language. Prof. Kirkpatrick (in his pamphlet, "War Studies") tells us of an attaché at the British Embassy in Berlin who knew no German. I have myself known a young man, excellently qualified in other respects, but with no serious knowledge of modern languages, who, passing into the first division of the Civil Service, was presently set to translate foreign correspondence in French, German, and modern Greek, receiving for this work, I believe, extra remuneration. At the moment, he was trying to get up a knowledge of German from a grammar-book, *without even a teacher!* I won't deny that, being a youth of parts, the amount he had learnt was, in the circumstances, remarkable; but I will add that the department to which he belonged was emphatically one in which nothing should ever be entrusted to an amateur.

Some years before the war broke out it was publicly stated that there were only *ten* qualified interpreters for German in the whole British Navy. Some time after that, I believe, an attempt was made to teach German at Dartmouth. As the Admiralty now state that they need no interpreters, they must have got them from somewhere. The Navy, however, is a case apart, as it has its own schools—though a return to the old system of appointing cadets at the age of seventeen or eighteen was made in 1913. But with Army officers

it is different; they reflect the teaching of the public schools. Well, we are told that at present all the *officiers de liaison* on the western front are Frenchmen, our interpreters having proved unsatisfactory. At Christmas, 1914, I sent an inquiry to a friend in Paris regarding interpreterships in the French Army. He replied that there was no lack of properly qualified candidates; the vacancies were being filled by *competition*, and a competitive examination was, in fact, at that moment going on. The test by which, in normal times, one qualifies as interpreter in our own Army is, I am assured, very searching; but only a limited number of men take it, and there is no reason whatever why every officer should not possess a competent knowledge of two modern languages. This question is dealt with at length in an interesting book called "Public Schools and the Public Needs," by Mr. G. G. Coulton—published during the Boer War, but by no means out of date.

But it is not only officers of the Army and Navy who are affected by our half-hearted methods of teaching modern languages, but also business men, professional men, and the vast army of our civil officials; and if one considers the extraordinary extent to which intercourse between European countries has increased in recent years, it will be obvious that the ignorance complained of is in a thousand ways a disadvantage and a danger.

The matter has often been dismissed by saying that we are bad linguists. We are not bad linguists. The same was frequently said of the French before they reorganised their whole system of modern-language teaching, which is now as efficient as their artillery—if any one thing may be singled out for praise in that magnificent nation. In fact, a young Englishman nowadays who wanted to study his own literature might do so with great advantage at Paris University, where a school of literary criticism flourishes equal to any in England. The truth is that in the few cases where able teachers have been encouraged—and in some cases where there has been no encouragement—as good work has been done in English schools as in any other in Europe. When we hear the dulness of English boys blamed for the badness of our language work, we shall do well to bear in mind the old proverb which says that a bad workman quarrels with his tools.

The problem is not simple, and there are many causes for our backwardness. One undoubtedly is the use of unsuitable methods, and this difficulty will remain with us until we adopt some bold policy for the training of modern-language teachers. Heretofore we

have been relying on foreign holiday courses and such like—relying on others instead of taking the straightforward and sensible course of doing it for ourselves. But what I wish to direct attention to chiefly in this article is the way modern studies suffer by being consistently discouraged throughout our whole educational system. No boy can gain an entrance scholarship at the public schools without classics. At the universities the classical scholarships are both much more numerous and more valuable than the modern-language scholarships. Lastly, in the Civil Service examinations higher marks are given for classics than for modern languages. A man whose chief subject was modern languages could not, in fact, get in; and this explains why we never find a public official to be a modern-language man. If we consider how many of the cleverer men of every year go into the Civil Service, we shall realise what an enormous influence the Civil Service Commissioners have over education. The boy who wants to get on by his brains will not choose modern subjects, because it does not pay—it does not lead to anything. The result is that the modern side is starved, neglected, and despised; it lacks the opportunity to develop ideals and traditions.

Now there is not the slightest likelihood that either the preparatory schools, the public schools, or the universities will take the lead in reforming this state of things; but if the Civil Service Commissioners were to adopt the course of giving equal marks for both classics and modern languages, this reform would very soon react on the other three.

Such a reform would be opposed by the headmasters of most of the big schools. They would oppose it on the ground that ancient literature is superior to modern literature, and that Latin and Greek are superior to modern languages. These are points that I have no intention of arguing here. I hold no opinion on the relative values of ancient and modern literatures, nor do I feel that I am competent to form one. The greatness of the modern literatures can be questioned by nobody who is familiar with them, and that is sufficient for the purpose of my argument. As for the superiority of ancient languages over modern languages, it appears to be founded on the notion that inflected languages are more highly developed than isolating languages. This view I believe to be a pure prejudice; I have never heard any reasons advanced in favour of it that were worth the serious consideration of any thinking person. Jespersen, the Danish scholar, in his suggestive book, "Progress in Language," arrived at the opposite conclusion. When a classical person

pays some attention to a modern language he very soon notices that the features with which he is chiefly concerned in Latin and Greek are for the most part lacking; not finding what he seeks, he refuses to study what he finds. He discovers that inflexions are for the most part absent; therefore he pays no heed to the very interesting phenomena that actually are present. Hence such unspeakably absurd statements as that English has no grammar. To the same unscientific attitude is to be attributed the extraordinary jumble of nonsense produced some time ago by a committee on grammatical terminology; these energetic persons set out to draw up a common terminology for widely different languages; but this very soon involved them in the necessity—which they might have foreseen—of discovering in certain languages the presence of certain phenomena *when these phenomena were not there!* So long as misconceptions of this kind are prevalent it would be a waste of time to argue about the relative values of different languages.

But a more formidable argument might be adduced in favour of ancient classics by pointing out that they involve the study not only of the language and literature, but also of the history, thought, and institutions of the ancient world. This, in fact, is what makes Latin and Greek, when they are well taught, such an excellent instrument of education. And the absence of a liberally planned curriculum of this kind is a serious drawback to the modern side, where we teach, indeed, both modern languages and modern history, *but not to the same boy!* The aim of a modern education should be to impart an intelligent knowledge of the modern world. But the modern humanities are taught piecemeal; they will never flourish until they are unified.

Here again it is the universities that are responsible. They give separate scholarships for modern languages and modern history; this has a most pernicious effect on the higher forms in the schools by encouraging premature specialisation, so that we find boys studying modern history who know no modern languages, while others who study modern languages know no modern history. So far is this carried that it is actually possible at present to get a scholarship at Oxford in German alone! If scholarships were given for a combination of English, modern languages, and modern history, there can be little doubt that the effect on the secondary schools would be wholly good. Moreover, if in the past we had taught side by side with the classics of German literature—for which I personally have a keen admiration—the

history of Prussia and the growth and aims of the modern empire, we should perhaps not have so many persons suggesting that as soon as the war is over we should banish German from our schools. I know of boys who were taught in this spirit, who learnt German not without enthusiasm, and are now fighting, not without enthusiasm.

But, as I have pointed out, it is to the Civil Service Commissioners that we must look chiefly for any initiation of reform. They are not wholly blind to their responsibilities in the matter. In 1911 the Chief Commissioner called a small conference to deal with the question; I was present at this conference as a representative of the Modern Language Association. The suggestion was then put forward that equal marks might be given for classics and modern languages if the papers in the latter subject were made to contain questions on the history, institutions, etc., of the foreign country. The proposal met with such uncompromising opposition from the headmasters' representatives that the Commissioners concluded nothing could be done. It is because I believe it to be a matter of national as well as educational importance—if between the two things any distinction can be made—that I direct public attention to it once more.

PHONETIC SPELLING AND SIMPLIFIED SPELLING.

By Prof. WALTER RIPPMANN, M.A.

THE term "phonetic spelling" stands for the consistent representation, by means of signs, of the spoken language. The spelling may consist of signs that stand for whole words or for syllables or for single sounds; as long as the sign always represents the same word, syllable, or sound, the spelling is phonetic.

When a language is first committed to writing, the spelling is necessarily phonetic; it is an attempt to represent speech, uninfluenced by etymological considerations. The attempt is doubtless made by the most educated men of the time, but is not always equally successful. Perhaps the finest analysis of speech sounds in past times was that made by the unknown genius who devised the Sanskrit alphabet. In modern times there have been some notable attempts by missionaries to record languages never previously committed to writing.

The number of significant sounds in any one language is limited, but the aggregate of significant sounds in human speech is very large; and if every variation is taken into

account, as is essential for scientific purposes, the number of symbols required is considerable. Many "international" alphabets have been devised. Some scholars have tried to make symbols which by their shape should indicate the mode of production; but it is now recognised that so many adjustments of various vocal organs go to make a speech sound, that a symbol indicating them all would be intolerably complicated. It has been necessary, therefore, to use symbols which are mere labels. (Similarly, in the domain of grammatical terminology, we cannot regard such terms as "subjunctive, genitive" as adequately indicating by their intrinsic meaning the varied functions of the subjunctive mood or the genitive case; they are convenient labels.)

For scientific purposes it does not much matter what symbols we use; but when an alphabet is to serve for the purposes of communication, for everyday use, it is desirable that the symbols should be

- (a) Easy to read, that is to say—
 - (i) Distinctive, not too much alike;
 - (ii) Simple in form, so as to be readable even in small type;
 - (iii) Varied in height, because we read words as wholes, we recognise them more readily if their outline is characteristic, and it is difference in the height of the letters that lends variety to the outline.
- (b) Easy to write; that is, easily linked, so that nothing interrupts the flow of the pen when a word is being written. From this point of view, it is a drawback that we have to dot our i's and cross our t's, and "ee" is a better symbol than "i" or "i:". The presence of diacritics (marks above or below or at the side of a symbol) are a weakness in an alphabet intended for current use.
- (c) Easy to print; that is, requiring no excessive number of types. Simplicity of form is also important in the printed letter.

It would clearly be an advantage if the same alphabet could be used for all languages. No doubt a few sounds occur (with slight modifications) in almost all languages, and the same symbol might serve to designate them in every alphabet. The fact remains, however, that a sound may be common and significant in one language but entirely absent from another; and if we try to make up a national alphabet by drawing on the symbols of an international alphabet, we shall often find ourselves debarred from using what seems to us a convenient and familiar symbol, simply because those constructing the international alphabet and consequently guided by other considerations,

have appropriated that symbol for the representation of some other sound. Thus in the alphabet of the International Phonetic Association *j* is used for the first sound of our "yes," while we should prefer to use it for the first sound of "jet"; and *y* is used for the vowel sound in French "tu," for which the French would prefer to use *u*.

In selecting symbols for an English alphabet we naturally think first of the Latin alphabet, because of its wide diffusion. Many of the consonant symbols are good, if we apply the criteria suggested above. Some are superfluous (*q, x*); others are used with more than one value. The symbol *s* also stands for *z*, and *th* also stands for the voiced sound, which we might write *dh*. (Incidentally it may be mentioned that these are the only consonant sounds which give rise to imperfect rhymes, e.g., *praise: place* in Tennyson, *seas: peace* in Kipling, *underneath: breathe* in Keats.) The spelling of the consonants has also become inconsistent through neglect of changes in the pronunciation of *c* and *g* before *e* and *i* (*cell, city, gem, gin*) and of the development of the *sh* and *zh* sounds from older *si* and *zi* (*passion, action, ocean, sugar, censure, vision, leisure*).

The Latin symbols are fairly adequate for representing the short stressed vowels, except that there is no sign for that comparatively recent sound in our language, the stressed vowel in *mother*; if we use *u* to represent this, how are we to spell the short vowel in *put*? The Latin symbols are, however, quite inadequate when we come to consider the long vowels and diphthongs. Their use in our present spelling is hopelessly inconsistent; the same sound is spelled in a dozen different ways. That, more than anything else, makes our present spelling so bad.

Now an inconsistent, unphonetic spelling leads to uncertainty of pronunciation. The symbol *b* is used consistently, and its pronunciation is uniform; but *g* is sometimes *g* and sometimes *j*, and we are not always sure how it should be pronounced (as in *gibber, pedagogy*). The spelling alone offers no clue to the pronunciation of an unfamiliar word, with the result that often we hesitate to use it in speech. Frequently an attempt is made to follow the spelling, or at any rate the spelling is regarded as indicating the ideal pronunciation. Thus, because *age* is pronounced *aij*, it is thought that the same value should be given to the unstressed ending of *cottage*; and an attempt is made to distinguish the endings of *sailer* and *sailor, alter* and *altar*.

Owing to the inconsistency of our spelling there are many divergencies in our pronunciation which have no real significance and add nothing to the beauty of our speech. That

depends not on differences of pronunciation, but on good breathing, articulation, and intonation. Some still seem to think that the establishing of a standard speech would lead to monotony; as though we held a man's words to be the more expressive and interesting, the more his pronunciation differed from that of other people.

A rational spelling should represent standard speech, and we require some of the present meaningless varieties and uncertainties of pronunciation to be settled before we can determine the best spelling of all words. We may also desire to make our rational, national alphabet conform as far as possible with international usage; but no international alphabet can yet be regarded as perfect, and there is such widespread ignorance of phonetics in many countries that we cannot reckon, for a long time to come, on any general acceptance of even an approximation to international spelling. We are indeed making an ever-increasing use of the alphabet of the International Phonetic Association as a means of imparting the pronunciation of foreign languages; but it is a long, long way from that to the use of an international alphabet in everyday life.

Clearly we cannot wait for the adoption of an international alphabet, or even such an approximation to it as may be ultimately found possible. We can, however, secure a national spelling that is reasonably consistent. To this end we must discard all letters that represent no sounds at all. The use of the consonants and of the short vowels can be regularised without much trouble. It is when we come to the long vowels and diphthongs that those competent to judge find themselves most at variance. The chief question is whether the notation of the vowels should assign them what are (rather vaguely) called the "continental values," or whether we are to take into account our national habits of spelling. Those who urge the "continental values" are, by implication, familiar with one or more continental languages, and they are perhaps a little forgetful of the fact that the English child, when it learns to read and to write, knows nothing but its mother tongue; and it is, after all, the English child that we have principally to consider and from whom we want to lift the burden, and not the English student of foreign languages or the foreign student of English. These critics do not seem to realise that it does not much matter what symbol we use, as long as we use the symbol consistently. It is true that *ee* in *sweet* does not represent the sound of *e* in *pen* uttered twice; but if *ee* is always used to indicate the vowel sound in *sweet*, it may well do duty as a symbol; and, as has

been pointed out above, it is a better symbol (easier to write and also more distinctive) than any of those usually suggested to represent the sound "continentally," such as "i" or "i:" or "ii." If it were decided always to represent the sound by means of *ee*, printers would need this digraph much more frequently, and would cast it as a single type. The combination *th* does not spell the sound of *t* plus the sound of *h*; but as it is used fairly consistently, it gives us little trouble.

One of the strongest arguments in favour of adopting such digraphs as *ee*, in accordance with our present spelling habits, is that it helps to make the national alphabet "readable at sight"—that is, that it renders it reasonably consistent without departing too far from present usage. This is important because we want to make it easy for the older generation to read it—the decision as to its adoption rests with them; and children brought up on the new spelling will also need to read the old—though they will not have to learn it, which makes all the difference.

Our chief object, then, in attempting to devise a rational spelling, cannot be to represent the language with scientific accuracy. For scientific purposes—the comparison of sounds in different languages, the recording of hitherto unwritten languages, etc.—we must use such an alphabet as that of the International Phonetic Association. To construct a phonetic alphabet, with the use of new symbols, is unfortunately extremely easy; and some of the many attempts submitted to the Simplified Spelling Society are no doubt ingenious, even meritorious. However skilfully contrived, they are products of the study, and do not take into sufficient account the practical aspects of the problem. The most perfect alphabet is of no use if no one will use it.

As I have tried to show, we must devote ourselves to securing a rational, national alphabet. This is the object we have had before us in working out the scheme which has been put forward by the Simplified Spelling Society as a basis for discussion. It has received a good deal of discussion; since it was first published, the number of competent critics has grown considerably, and their suggestions have been of much value. Simplified spelling is not yet in its final form; but, even as it is, it is reasonably consistent, and a child can be taught to read it easily and quickly. Under conditions that were by no means favourable, a set of children who learnt simplified spelling for ten months and the ordinary spelling for four were able to read and write as well as another set of children (of equal capacity) who had worked for nineteen months at the ordinary spelling only. There was a gain of five months, and

also a marked superiority in clearness of speech. We are convinced that further experiments now being undertaken will show even better results.

At a time when economy and efficiency are alike important in our national education, it would surely be very unwise not to consider with the utmost care the question of spelling reform as a means of preventing waste and securing greater efficiency.

A SCHOOL LANTERN-SLIDE COLLECTION.

By GEO. H. RYDALL, B.Sc.
Cockburn High School, Leeds.

SOURCES OF SUPPLY.—A good collection of slides is necessary in every school where a lantern is being used. Hiring slides may have to be resorted to at times, but to be dependent on this means of supply incurs considerable expense and inconvenience.

From the manufacturer's point of view slides are undoubtedly loaned at cheap rates; indeed, the reason why more firms do not keep stocks of slides for hiring purposes is simply that, unless large numbers are required, and required often, the undertaking does not pay. From the borrower's point of view, to pay for hiring slides is too expensive to make a regular practice of it. It is more economical and more satisfactory in every way to build up a permanent collection of slides in a school. True, there are occasions when it is advisable to borrow a set of slides rather than to buy the slides. For instance, a class may be studying one of Shakespeare's plays. The play that is studied often varies from year to year according to the requirements for certain examinations. Obviously, a school collection cannot be of such a magnitude as to provide for all possible requirements in this respect. Fortunately, lantern-slide manufacturers are prepared to meet these requirements by loaning excellent slides at very reasonable rates. Messrs. Newton and Co., of 37 King Street, Covent Garden, London, W.C., have done much in the way of providing material for the teaching profession, and they are prepared to meet practically all demands which teachers are likely to make, for they have available nearly two hundred thousand carefully-selected slides of educational value to select from.

Messrs. Newton and Co. loan slides from most of their sets at 2s. per dozen for the first day, and charge half-price for every other day until the slides are received back again. In the case of country hirers, the slides are sent off, when possible, the previous day, without extra charge, and no additional charge is made for the day of return, provided they are sent

off by the first available train after use or by the first parcels post.

For an annual subscription of 42s., paid in advance, a reduced charge of 1s. 8d. per dozen for the first day and 10d. per dozen for each extra day is made. When these charges have exhausted the 42s., the subscriber may continue to hire slides at the reduced rate for twelve months from the date on which the subscription was paid. Where slides are likely to be borrowed frequently this arrangement effects a considerable saving in expense.

In connection with Shakespeare's plays, one of the most striking innovations has been the publishing of sets of slides illustrating the more important plays as they have recently been presented by the most famous of our modern actors and managers. In each case a large number of the scenes is portrayed, so that the best parts of each play can be read and adequately illustrated. This gives teachers an excellent opportunity of placing the real thing before their classes instead of mere drawings, for all these slides are made from direct photographs specially taken with the consent of the actors, and naturally the most striking scenes were selected for reproduction. These slides are supplied on loan at the same rates as other slides.

When slides are bought, the usual price is one shilling for an ordinary plain photographic slide. In cases where there has been some exceptional difficulty experienced in obtaining the negative for the slide, and consequently additional expense incurred, the price of the slide may be increased.

Slides illustrative of science, nature study, geography, history, industries, literature, and art may now be obtained at ordinary prices. Occasionally useful slides may be obtained from firms which do not cater directly for educational institutions. It may be possible to select from sets of slides illustrating tours, some slides which are very useful for teaching geography. Mr. G. M. Mason, of Stratford House, Dorset Street, Southampton, has several sets of this type to select from. These are sold at 4s. 6d. per dozen, and are good value for the money. Messrs. W. Butcher and Sons, Ltd., of Camera House, Farringdon Avenue, London, E.C., supply a cheap line of slides illustrative of nursery rhymes and such stories as "Dick Whittington," "Robinson Crusoe," "Water Babies," "Peter Pan," "Alice in Wonderland," etc. These slides are usually sold in sets of eight, and the price is 2s. or 2s. 6d. per set. They are produced in colours by an improved lithographic process, which almost entirely eliminates the grain, which hitherto has been the great objection to litho slides. The colouring

is very transparent, so that the slides give good results even with a low-power illuminant.

The Diagram Co. has recently published a series of map slides which include orographical maps, river basin maps, climatic maps, vegetation maps, and in addition a full series of political maps, and maps showing the chief lines of communication and commercial centres. They have also published some map slides dealing with economic questions, *e.g.*, food supply and raw material, and also a considerable number of historical maps. Wall maps of these types are expensive, even if procurable, so that these slides, which are effectively coloured, may with advantage be used in place of wall maps. They vary in price from 2s. to 4s. each. Messrs. Newton and Co. are the sole wholesale agents, and they allow a discount of 10 per cent. to all schools and 5 per cent. extra to members of the Geographical Association.

Diagrammatical slides are easily made, and by their own efforts teachers can provide a suitable and sufficient supply of these. An article in which the making of these was described appeared in the January, 1914, issue of THE SCHOOL WORLD.

THE SELECTION OF SLIDES.—It is unlikely that the selection of slides for the school stock will be made by one person only. Those who are specially qualified in different subjects would naturally be expected to make the selections for those subjects. But even then there is a danger that the teacher making the selection will be disposed to choose too many dealing with some favourite section, which will result in other sections being neglected, and the educational value of the slide collection being lessened. For instance, in selecting slides of the British Isles an ardent admirer of the Lake District might be in danger of overrating its importance from a geographical point of view and choosing too many slides of that district. Two heads are better than one in selecting slides, and perhaps three heads are still better.

Careful consideration will often result in one slide being of service on different occasions. It is possible, for example, to choose a slide of the Pass of Llanberis which will not only be illustrative of the mountainous nature of North Wales and a typical pass in this region, but which will also show the effects of river action, glacial action, and general weathering. A slide may be required to show the meandering of a river through a plain. By carefully choosing the slide one may be obtained which will show the "links" of Forth, with Stirling, a granitic mass rising out of the plain, and the Ochil Hills in the background. Such a slide would be valuable for

various purposes. Economy and efficiency can be effected by exercising discretion in choosing slides.

There is always a difficulty in selecting slides from a catalogue, as one cannot be certain what the slide will include and what it will omit. Slide manufacturers usually print slides to order, and cannot send them on approval. By communicating with the manufacturers and asking if a particular slide shows certain features, one can often avoid getting a slide which is disappointing. Messrs. Newton and Co. are prepared to send out a large number of slides to select from on condition that the customer pays the cost of carriage, is responsible for damage, and undertakes to keep a reasonable number of the slides sent. Such a practice is a boon, and will enable one to buy only the most suitable slides.

Before buying a set of slides, one has to decide on what will be the minimum number of slides to have in order that a subject may be well illustrated. In dealing with the geography of North America, sixty slides would be required in order that suitable lantern lessons could be given on North America. This number, well used, would be very valuable. More could be used with advantage; less would give an impoverished aspect to the lantern lessons, which is not advisable. These slides would be chosen to illustrate the physical features, productions, industries, towns, and communications of North America. It is well to wait until a suitable number of slides has been obtained before giving lantern lessons on a subject. The expense of a collection of slides may appear to be heavy, but when one bears in mind that such a collection is permanent school stock, and that the cost should be considered as being spread over many years, the expense is comparatively little.

THE STORAGE OF SLIDES.—Lantern slides must be stored carefully in order to be permanent, and for them to be made good use of they should be catalogued. To classify geographical slides simply according to countries is insufficient. Since a slide may be used for different purposes, it should be catalogued according to the various purposes for which it is suitable. For example, the slide of the Pass of Llanberis, previously referred to, should be catalogued under different headings, *viz.*, "North Wales," and in Physical Geography, "Passes," "Atmospheric Weathering Action," "River Action," "Glacial Action." In storing the slides, it is advisable to store those of one country together in alphabetical order. One teacher might arrange them in the order in which he wished to use them. Another teacher might not wish to use them

in the same order, so that probably an alphabetical arrangement is the simplest. The slides required for a lesson will be selected before the lesson commences, and replaced when the lesson is finished.

In storage, due regard should be given to simplicity and safety. Safety demands some arrangement by which the slides will be held firmly and prevented from touching one another. Simplicity demands that the required slide shall be easily found and readily removed. These demands will be met by storing slides in grooved boxes of such dimensions as to allow a slide to fit in the grooves easily, but not too loosely. Such boxes are sold with numbered grooves and a tablet in the lid for keeping a register, and are capable of accommodating fifty or a hundred slides. These are obtainable from Messrs. Newton and Co., Messrs. W. Butcher and Sons, Ltd., Mr. J. Mason, 13 Queen Victoria Street, Leeds, and at most photographic stores, for about 1s. 6d. each for the smaller size. They are good substantial boxes of neat appearance, and one or two spare cases should be kept for use in conveying selected slides from the store to the lantern. It is surprising how often slides are cracked or broken during this operation.

The boxes should be grouped according to subjects, and labelled, e.g., "North America," "Tudor Period," and stored in a cupboard in such a way as to be readily seen and easily accessible. As the slides can be numbered in the boxes and also indexed, the number in the catalogue will correspond to the number of the slide in the box. Suppose a particular illustration of glacial action is required. A substantial notebook, which serves as a catalogue, will be consulted, and the "Physical Geography" section referred to. The heading "Glacial Action" will be sought. Under this heading will be found catalogued "Llanberis Pass"—box "Wales," slide number 12. In this way the slide will quickly be arrived at.

Instead of boxes, unit slide cabinets may be used for storing lantern slides. These are strongly-made drawers sliding into outer cases. The drawers, which hold about sixty slides each, have a brass handle, with a place for a label fitted. They are fitted with slots into which card or metal leaves can be placed, and the drawers can be piled one upon the other to form a cabinet, just as in building up the unit bookcases. Additional drawers can therefore be added at any time. The whole is well finished in polished pine, and is of good appearance. Messrs. Newton and Co. supply these at 3s. 6d. per single drawer box. Cabinets can be supplied with any number of drawers. The drawers are similar to those

described, but a slide cabinet is cheaper than the equivalent number of drawer boxes. A cabinet comprising twelve drawers would be obtained for about 34s. If desired, the cabinet can be combined with a cupboard or shelves below, so that the slide drawers are at a convenient height to stand at without stooping. To make use of anything of the nature of cardboard for storing slides is false economy. Cardboard does not stand much wear, and if the bottom of the slide receptacle falls out, the result is disastrous.

In addition to the lantern-slide manufacturers mentioned, the following list of firms of photographers who prepare slides for sale may be of service:—Reynolds and Branson, Ltd., Commercial Street, Leeds; City Sale and Exchange, 90-94 Fleet Street, London; Flatters and Garnett, Ltd., 309 Oxford Road, Manchester (microscopical and natural history); Flatters, Milborne, and McKechnie, Ltd., 18 Church Road, Longsight, Manchester; H. Luscombe Toms, 52 Queen Victoria Street, E.C.; G. P. Abraham, Keswick (views); W. S. Berridge, F.Z.S., 24 Fortismere Avenue, Muswell Hill, N. (birds and beasts); Coates and Co., 79 Ashley Road, Bristol (views, especially West of England, and general); F. Frith and Co., Ltd., Reigate (views); Grove and Boulton, 174 Brompton Road, W. (antiquities); F. R. Hinkins and Son, Lyndhurst, New Forest (nature-study); L. R. J. Horn, Woodton, near Bungay (nature and scientific); C. Stanley Johnson, 15 Queen's Road, Leytonstone (small countryside animals, fishes, reptiles, pond and seashore life); W. A. Mansell and Co., 405 Oxford Street, W. (views and picture galleries); Photochrom Co., Ltd., 7-10 Old Bailey, E.C. (views and picture galleries); Charles Reid, The Studio, Wishaw, Scotland (animal studies); W. Ritchie and Sons, Ltd., Elder Street, Edinburgh (views); Rotary Photo Co., Ltd., 24 Rope-maker Street, E.C. (general); W. M. Spooner and Co., 379 Strand, W.C. (foreign views); Valentine and Sons, 154 Perth Road, Dundee (views); Emery Walker, Ltd., 16 Clifford's Inn, Fleet Street, E.C. (National Gallery and National Portrait Gallery collections, portraits, and historical subjects); Wilson Bros., 2 St. Swithin Street, Aberdeen (home and foreign views).

A complete list of slides which are loaned free of charge by the various railway companies will be sent from the *Schoolmaster* Travel Bureau, 3 Racquet Court, Fleet Street, E.C., in return for a P.O. for 6d. and stamped (2d.) addressed foolscap envelope and coupon from current issue of the *Schoolmaster*.

Questions and Numerical Exercises in Physics and Chemistry. By D. Baird. 103 pp. (Blackie.) 1s. net.—The exercises are selected to cover the ground for the intermediate leaving certificate in science of the Scotch Education Department. In most of the sections the author has added brief explanatory notes, so that the book will be found most useful for revision. The questions deal with simple measurements, specific gravity, Boyle's law, expansion, specific and latent heat, physical and chemical change, solution, air, water, chalk, and equivalents.

REWARDS AND PUNISHMENTS.

By CHARLOTTE M. WATERS, B.A.

Formerly Headmistress of the County School for Girls,
Bromley, Kent.

PART II. PUNISHMENTS.

LET me say at once that my remarks are confined to schools and do not refer to society at large; the latter finds itself forced to defend itself against its criminals, whether by its own fault or no I shall not discuss here; but the school has only criminals of its own making, and my contention is that they need not be made.

Now punishment is supposed to act in two ways, as payment of a debt and as a means of reformation. I do not believe that punishment ever reformed anybody, certainly it has no such effect on a child. And my quarrel with it in school life is just that idea of payment. It is a false morality that teaches that you can wipe out an act by paying a penalty. That you will pay and pay heavily for every mistake and every shortcoming is true, and school life should teach this along with its other truths; but that you can close the incident, wipe out the fault, by writing so many lines or undergoing so much deprivation of freedom or pleasure or by suffering so much physical pain is untrue, both to morality and to life. If we only drove home more sternly in youth how "The moving finger writes," our social system might in time cease to be the crude chaos of retributive injustice it now is.

Again, any given punishment is regarded by the child as just or unjust, and on this point youth is very critical and its judgment differs from that of the adult. But the idea of a just punishment involves exactly that notion of "payment" that seems to me so immoral, and the feeling of injustice produces one of two serious evils. Either the culprit resents the injustice and so vitiates his relation with his master, or he accepts it with a stolid callousness that accounts in later years for much adult indifference to social wrongs.

At this point I shall be asked if I really imagine that school life can go on on the principle of no punishment? Surely there must come a time when the teacher has to fall back on *something*? What about neglected work? How do you meet open defiance? Repeated bad behaviour? Surely there must be *some* deterrent? My answer is, "Try and see." For more than ten years I have conducted a school without punishment, with results testified as satisfactory by more than one inspector. I think I once punished by detention for an hour an upper third form, half of whom were recent entrants from ele-

mentary schools, but they took care not to incur the disgrace twice. The shame of not responding to any better stimulus was what worked, and children of eleven and twelve as they were, they understood the point. As for neglected work, naturally it has to be made up; that is not punishment; but adding to it as a penalty is not allowed. Open defiance you simply do not get. What need to defy, if every grievance is patiently listened to and carefully considered? Difficult cases sometimes arise from the mismanagement of a mistress, who has allowed herself to be put in a position of open antagonism to her pupil, but I have never yet found the girl who would not respond to the civic appeal, and admit that authority, right or wrong, must be maintained. There is no need to discuss with the girl the action of the teacher: she obeys when the necessity for obedience in a corporate body is made clear to her.

At this point I should perhaps explain that, in my opinion, a mistress who realises she is in the wrong will lose nothing and gain much if she admits it to her pupil. I know the head of a school who, in its early days, lost her temper with a girl of fourteen in rather exasperating circumstances, and who had the sense and the justice to apologise to the pupil. That apology not only secured the loyal devotion to the school of a girl previously inclined to be critical, but went far to establish the feeling of trust and honour for which the school became marked. Deliberate and repeated misconduct can only finally be met by expulsion, whether punished or not punished at each offence. Punishment does not altogether eliminate it in any school, and I believe it is rarer where punishment does not exist. In any case, the expulsion of a pupil is a confession of weakness on the part of the school and can usually be avoided.

In girls' schools the penalties are of a very slight order, except in a few where "detention" reaches most undesirable lengths. "Order marks" and "conduct marks" are the usual resort, but the idea of a penalty vitiates their morality just as seriously as it does that of more drastic punishments. "Order marks" (to the uninitiate I should explain that these are penalties for the minor sins of untidiness, unpunctuality, forgetfulness, etc.) have always seemed to me entirely futile and silly. They may make the tidy girl undesirably fussy or the punctual one careful to be late not even once, but that they have any effect on the really slipshod or slapdash I do not believe. She generally adopts the attitude "Oh! I can't help losing order marks!"

The "conduct mark" is usually a more

serious affair, and in most schools is given rarely enough to make it regarded with respect. My chief objection to it, apart from the general question of having any penalty at all, is that it is impossible to secure a standard for which the penalty shall be inflicted. Mistresses vary so in their estimate of "good" and "bad" conduct that there is very little justice about the business, and hence inevitably ill-feeling. "Detention," except to complete neglected work, is undesirable from the health point of view, and its chief effect is to substitute the motive of escaping it for higher incentives to work and conduct.

The whole question of discipline may be summed up in the statement that children behave as you expect them to behave. If you expect disorder you will get it; assume that your business is restraint and suppression and boys and girls will give you plenty to occupy you. In discussing this question of punishment lately with a schoolmaster I was met by the assertion that, while you *could* leave girls in a room unsupervised and trust to their honour to work as if you were there, boys resented such an action "as taking a mean advantage of them." I admit this is true as a rule, but is it not due to the unfortunate tradition of our boys' schools, which regards the master as one whose business it is to *make* a boy work and to *keep* him out of mischief? And in this tradition the masters acquiesce; they make no effort to change the relationship to one of guidance and help in a task the boy himself wills to do.

The following extract from a recent book on public-school life admirably sums up the attitude:—"The average schoolboy, contemplating the elaborate arrangements made by those in authority for protecting him from himself—rules, roll-calls, bounds, lock-ups, magisterial discipline, and prefectorial supervision—decides that the ordering and management of the school can be maintained without any active assistance from him; and he plunges joyously into opposition with all the abandon of a good sportsman, who knows that the odds are heavily against him. He breaks the law, or is broken by the law with equal cheerfulness." Now as educators are we satisfied with this attitude? It seems to me the very antithesis of what should be our aim. We want the boy or girl to learn that the school *can't* do without their co-operation, that they *are* the school, and its success depends in varying degree on every one of them; that to be of the "Opposition" is to be disloyal and to waste energy that, put to proper use, may bring honour and glory to all.

This brings me to the question of what substitute can be found for punishment. If we dispense with penalties and with regulations, what control can we keep? The answer is, *self-control*, and it is wonderful what a lot of it you can call up, even in children under twelve. Make the one rule the question, "If the whole 200 or 300 did what you want to do could we carry on? No! Then don't be a nuisance," and you practically solve all problems. Make corporate units responsible for order, regard the behaviour of the individual as a reflection on his form or his house, and you enlist on the side of law and order the whole weight of public opinion. Rules and punishments are merely challenges to the high-spirited: they simply go out of the way to ask for trouble. This being so, the fallacy of the usual belief that punishment in schools acts as a deterrent need not be further exposed.

There is one school offence that has to be dealt with which is, perhaps, more difficult to meet than others without punishment. I mean calculated insolence. Now just because this offence is difficult to deal with, punishment seems a short cut out of the dilemma, but is it a way out at all? Does it not often result in a nice calculation on the part of the pupil whether the game of "baiting old so-and-so" is not worth the candle of the penalty involved? I believe you can secure better results by cultivating public opinion against the practice. And where this fails, I should get rid of the teacher. For the teacher is the crux of the whole thing. Punishment is the fetish of the weak master: it is so much easier to punish than to secure respect. It appears to settle so much, when all the while it settles nothing. Jones minor throws indiarubber at his neighbour and is rude when checked, whereupon the master gives Jones a hundred lines to write or some equally futile penalty, and the incident closes, both parties apparently satisfied. Has Jones minor learnt anything, except the desirability of playing rather less openly next time and being more discreet if detected? Has he learnt respect for the hours of work, or the rudeness of inattention to one who is teaching, or consideration for the desires of members of the class who may wish to work quietly? Not one of these matters occurs to him, nor does the master apparently expect it of him. He, indeed, has done no more than establish the authority of the big stick. But the man or woman who commands respect, and secures order by force of his or her personality, has no need to punish, and those who cannot do this are best away from children. It is obvious, of course, that an education conducted on these lines

demands much more of its teachers than the more ordinary organisation. That it produces and will produce something far finer in the resulting men and women, ten years' experience has, each year, convinced me more deeply.

PERSONAL PARAGRAPHS.

LIEUTENANT J. D. TOMBS, 7th Border Regiment, who was recently killed at the Front, was the son of Mr. J. S. O. Tombs, of Greenwood House, Fishguard. He was educated at Haverfordwest School, where his father was headmaster, and at Durham School. From Durham he went to Keble College, Oxford, and on graduating obtained an appointment as a master. He held it for only a short time before obtaining a commission in the 7th Border Regiment. He was a keen Rugby football player and represented Durham School on many occasions.

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DR. MCDOWALL, formerly headmaster of Wilson's Grammar School, Camberwell, died recently at Clacton at the age of seventy-four. Dr. McDowall was a student in Saltley Training College during the session 1860-61. He afterwards went up to Oxford, where he graduated in arts, and later took his D.D. degree in 1897. From 1864 to 1877 he was a master at the King Edward Middle School, Norwich. From 1877 to 1883 he was headmaster at the Kedrick Middle School, Reading. He then became headmaster of Wilson's Grammar School and held the appointment until 1909. Dr. McDowall was an able and energetic headmaster and a capable organiser.

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CAPTAIN E. R. L. HOLLINS, 9th Royal Lancaster Regiment, was educated at The Grange, Wimborne, and at Malvern College, where he obtained a mathematical entrance scholarship. From Malvern he went up to Emmanuel College, Cambridge, where he took his degree. For four years he was a master at The Grange. In September, 1914, he joined the Royal Lancaster Regiment, and passed through the Staff College, Camberley, in May, 1915. He went out to the Western Front last autumn and was subsequently invalided home with enteritis. In February he returned to his regiment in Flanders and was wounded on March 2nd, and died the following day. Captain Hollins was a well-known cricketer.

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THE A.M.A. announces the loss of Mr. Richard Pym, of Hulme Grammar School,

Oldham, who died on January 30th, at the age of fifty-four, after an operation for appendicitis. Mr. Pym joined the Assistant-masters' Association in 1896, and for nearly twenty years was an ardent supporter of every movement for the good of secondary teachers. He was one of the enthusiasts who expanded the Lancashire and Cheshire branch of some fifty members into the five present branches with a membership of over 500. He was a faithful friend, a pleasing personality, and an unselfish worker for the good of his fellows. His death leaves a gap which it will be hard to fill.

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MR. GEORGE FOWLER, of the Mercers' School, Holborn, died at the age of forty-eight on March 11th. Mr. Fowler was educated at Merchant Taylors' School, Charterhouse Square, and at St. Catherine's College, Cambridge. For two years he was a master at Blackburn Grammar School, and since 1899 has been a master at the Mercers' School. Mr. Fowler has for many years been an active and hard-working member of the Assistant-masters' Association. He was one of the men who was instrumental in making a strong united branch of those men resident in London. He was a man of attractive personality and was admired by everyone who knew him.

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CAPTAIN F. B. ROBERTS, of the 9th Rifle Brigade, was killed in France on February 8th. He left Wellington College, where he was tutor of the Beresford dormitory, to take up a commission in the 9th Rifle Brigade in December, 1914.

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MR. J. J. LLOYD-WILLIAMS was buried at Lampeter on March 6th. Mr. Lloyd-Williams was educated at Jesus College, Oxford, and became classical and English lecturer at St. David's College, Lampeter. In 1884 he was appointed first headmaster of Lampeter College School, an appointment that he held until 1887. From 1887 to 1892 he was headmaster of Queen Elizabeth's Grammar School, Carmarthen. He then went to Oswestry as headmaster, where he remained until 1909. From 1909 to 1912 he was headmaster of Ruthin.

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THE war has claimed also Captain P. D. Forrett, 5th Battalion Northumberland Fusiliers. Capt. Forrett had been connected with the Territorial Force for some years. He was educated at Chesterfield Grammar School, and held masterships at Sleaford and Ashby

de la Zouch Grammar Schools. In 1907 he became science master at Allan's Endowed School, Newcastle-on-Tyne.

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CAPTAIN J. C. HODGSON, 10th Battalion Border Regiment, was killed at the Dardanelles. He was a master at Penzance County School from 1910 until 1914, when he obtained a commission and was promoted Captain in December of that year. Mr. Hodgson was educated at Keswick School and Chester Training College.

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FEW people will remember that the Rev. H. G. Heaven, "King" of Lundy Island, who died at the end of February in his ninetyeth year, was formerly a schoolmaster. He graduated at Oxford in 1851, was ordained in the following year, and was a master at Ilminster Grammar School and Taunton College for twelve years. He then returned to Lundy as curate in 1864 and in 1886 became vicar. Mr. Heaven was lord of the manor and sole landowner in Lundy; after his father's death in 1887 he administered the affairs of the community until about five years ago.

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THE Council of Girton has appointed Miss K. Jex-Blake as mistress of Girton in succession to Miss Constance Jones, who is retiring at Easter. Miss Jex-Blake is a daughter of the late Very Rev. T. W. Jex-Blake, formerly headmaster of Rugby. She entered Girton as a student in 1879 and was appointed lecturer in classics in 1885. Since 1903 Miss Jex-Blake has held the position of vice-mistress.

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MR. WILLIAM EDWARDS, headmaster of Heath Grammar School, Halifax, has been appointed headmaster of Bradford Grammar School in succession to the Rev. W. H. Keeling. Mr. Edwards was educated at King Edward's School, Birmingham, and Pembroke College, Cambridge. For three years he was a master at King William's College, Isle of Man, and from 1900 to 1908 was classical master at Bradford Grammar School. Since 1908 he has been headmaster of Heath Grammar School.

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MR. NORMAN L. FRAZER has been appointed headmaster of the Ilkley Grammar School, where he will succeed the late Mr. C. W. Atkinson. Mr. Frazer was educated at St. Olave's Grammar School, London, and Corpus Christi College, Cambridge. His first mastership was at St. Leonard's School, St. Leonard's-on-Sea, after which he went for a

short time to Alte Burg, Hanover. On his return he took an appointment at New College, Eastbourne, from which he went, in 1899, to the Cardiff Intermediate School. He left Cardiff in 1903 to go to Whitgift Grammar School, Croydon, and there he remained until he obtained the headmastership of Batley Grammar School in 1908. Mr. Frazer has been a prominent member of the Modern Language Association, the English Association, and the Historical Association. He has long been a contributor to THE SCHOOL WORLD.

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DR. J. D. FALCONER, lecturer in geography in Glasgow University and Swiney lecturer in geology at the British Museum, has been appointed temporary assistant district officer in the Northern Provinces of Nigeria.

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PROF. W. A. KNIGHT, formerly professor of moral philosophy at St. Andrews University, died at his residence at Keswick on March 4th. Prof. Knight is probably better known for his studies of Wordsworth than for his work as a teacher. Though called to the Free Church of Scotland he became a lecturer in metaphysics at St. Andrews, and later was appointed to the University Chair of moral philosophy. In addition to being a well-known personality in Scotland and a recognised authority on Wordsworth, he was also a great friend to the higher education of women. The work he did in connection with the inauguration of the L.L.A. degree for women will give him as great a reputation as the many articles and anthologies that he published.

* * *

A CORRESPONDENT who worked with the late Mr. R. W. White-Thomson for ten years writes:—"May I take a little space in THE SCHOOL WORLD to add somewhat to the appreciative note in the last issue on the work of Mr. R. W. White-Thomson? I know I am only voicing the feeling of all who worked with him when I say that he was something more than a successful inspector. His high ideal of work, coupled with an ever-ready sympathy for the humblest efforts, made his official visits not merely a pleasure, but an inspiration. Many of us owed it to him that our strenuous and difficult work was made possible at all, and his help was constant and ungrudging. Above all else, his perfect courtesy of thought and deed meant much to members of a profession that suffers too frequently from its opposite. In all the years he worked with us I never heard, from any teacher in his district, a word of him that was not praise. His loss is keenly felt by all of us."

ONLOOKER.

SCHOOL INSTRUCTION IN SCIENCE FOR MILITARY PURPOSES.

By C. L. BRYANT, M.A., B.Sc.,
Harrow School, Honorary Secretary of the Association
of Public School Science Masters.

FOLLOWING the publication of a letter on this subject in the last issue of *THE SCHOOL WORLD*, I propose to offer some suggestions as to the way in which the teaching of science to our older pupils may be modified in the direction which the Director of Military Training has said will be useful to the Army.

Communications on this subject have already appeared in *Nature* (Jan. 20th, p. 564; Feb. 10th, p. 650) from the pen of Mr. C. R. Darling, Instructor in Science at R.M.A., Woolwich. On the latter date he gave syllabuses "covering the essential points to be taught to officers, N.C.O.'s, and men who have only a limited time at their disposal taken from other military duties." Science masters who have time and opportunity should offer their services in this respect to the Officers Commanding their districts. Already, in many cases, this has been done and welcomed. The Editor of *Nature* and Mr. Darling have allowed me to make use of this article in setting out the information given below.

I.—EXPLOSIVES.

Books.

"Explosives" (A. Marshall; Churchill, 24s.) is complete and up to date.

"A Manual on Explosives" (A. Ramsay and Weston; Routledge, 1s.) is an excellent little book of a non-technical sort on the nature and manufacture of explosives, as well as their applications in war.

"The Journal of the Royal Society of Arts" for August 6th, 1915 (6d.) is strongly recommended; it contains lectures by Prof. V. Lewes on explosives and poisonous gases.

Nature of February 3rd, 1916, is also recommended. It contains an introductory chapter for another book (as yet unpublished) by Mr. A. Marshall on this subject.

The method of use of explosives in demolitions is described in "The Manual of Field Engineering," reprint, 1914 (Stationery Office; Wyman, 6d.)

"A Course of Practical Chemistry" (J. Young; Stationery Office; Wyman, 5s.) contains detailed descriptions of laboratory tests and preparations of explosives. The author (instructor in science, R.M.A., Woolwich) has kindly supplied the notes given below; these should be used in conjunction with his book. It is scarcely necessary to add that experimenting with explosives is dangerous work.

Demonstrations.

A useful piece of apparatus is a hammer and anvil, the latter any solid iron mass with a smooth surface.

Heat ammonium dichromate in a tube: illustrates a bad explosive; weak; too much residue.

Powder one part of sugar and two parts of potass-

ium chlorate separately and mix them cautiously together. Explodes by flame, sulphuric acid, or percussion.

Mix cautiously eight parts of Mg or Al powder with two parts potassium chlorate. Flash by flame or percussion.

Home-made gun-cotton is satisfactory.

Nitro-glycerine. The quantities mentioned may be increased, but do not keep more than half an ounce. For hammering, use enough to wet a filter-paper half an inch round. For heating use a drop of the size of a pea. Treat it with great respect.

Good cordite may be made easily and safely.

Amorphous phosphorus (a tiny pinch) mixed cautiously with potassium chlorate is terrifying.

Fulminate. Keep the main supply wet. Some may be dried quickly by washing with alcohol and ether. Treat the dry stuff with extreme caution.

Lectures.

Mr. Young has also kindly sent the following suggestions for a lecture course.

Energy depends on heat alone; *useful work* on heat and gas. Comparative energies are proportional to temperature \times volumes of gas at N.T.P. These may be determined in a bomb calorimeter.

Propellants.—Gunpowder, cordite.

High Explosives.—Nitro-glycerine, guncotton, picric acid, T.N.T.

Detonator.—Mercury fulminate.

Maximum *pressure* depends on quantity, gas, temperature, and rate of combustion. Propellants have a slow rate; disruptives a high rate.

Explosion is merely rapid combustion.

Rate of combustion depends on size of grains, rods, etc.

Time of combustion is that necessary to burn one rod, etc., through half its diameter.

Detonation is a different thing altogether; it is a falling to pieces of the compounds with rearrangement of the atoms. Great velocity. Brought about by shock or heat.

Explosive Wave.—Nature: different waves for different substances. Sympathetic detonation. Transmission of wave depends on physical condition of material, which should be dense and homogeneous. Mixtures as a rule do not detonate.

A substance may either burn or simply detonate. Illustrate with guncotton, nitro-glycerine, fulminate, etc.

Qualities necessary in military explosives; description of the composition, character, and use of the substances mentioned above and others.

Methods of Firing Charges.—Percussion, fuses, hand dynamos.

Miscellaneous.—Incendiary bombs, etc.

II.—FIELD TELEPHONES.

Books.

"Journal of the Royal Society of Arts" (September 3rd, 1915; Bell and Sons, 6d.) contains a lecture by Mr. Darling on "Field Telephones in General."

"Field Artillery Telephone," a pamphlet by Mr. Young, gives detailed descriptions of Service patterns.

The only retailer (at *qd.*) is Mr. Cattermole, Wellington Street, Woolwich.

"The Training Manual, Signalling," part ii., 1914 (Wyman, *6d.*), gives instruction as regards drill.

Instruments.

The chief Service pattern is D. Mk. 3. I believe that the War Office is taking the whole of the output of this instrument at the present time.

The nearest approach to this pattern is known as the portable buzzer type. This is manufactured by Siemens, Woolwich. (There may be other makers.)

A great number of the Stevens portable telephones is being used to supplement the other kind. It can be bought from the makers, the International Electric Co., Kilburn, N.W. A complete set, with accessories, spares, etc., costs about £14.

Lectures.

The most important thing from a military point of view is for the boys to get a good working knowledge of the Morse code. Next in importance is the ability to adjust the instruments and to detect and remedy faults.

The following syllabus has been found useful in explaining the working of the instruments:—

Nature of Sound.—Contrast of gramophone with telephone.

Conductors and Insulator.

Effects of Current.—Heating, magnetic, chemical.

Current depends on (a convenient standard of current may here be taken as ability to blow a fuse of No. 40 copper wire embedded in gunpowder):—

(a) *The Number of Cells.*—Cells in series; voltmeter; E.M.F.; Leclanche and storage cells.

(b) *Resistance.*—What this depends upon.

Ammeters.—Ampere; current capacity.

Ohm's Law.—Simple numerical examples.

Magnetism.—First law; permanent magnets; electromagnets; polarised electromagnets.

Microphone and Receiver.

Direct and Alternating Currents.

Induction of Currents.—Induction coils in telephones.

Condensers.—Their use (in telephones).

The Essential Telephone; Description of Special Types; Tests of the Instruments; Practice in Using Them; Faults.

III.—METHODS OF COMBATING POISON GASES.

Books.

In the absence of official publications on this subject, "The Poison War" (Roberts; Heinemann, *5s.*) may be consulted.

"The Journal of the Royal Society of Arts" of August 6th, 1915 (*6d.*), is strongly recommended.

Lectures.

"Syllabus for Course in Physiology," suggested by Dr. D. Cow, of Cambridge.

Physiology of Respiration and Oxygenation of Tissues.—Mechanism of respiration; nervous control; depth and frequency of movements; bronchiolar control; broncho-constriction; broncho-dilatation; hæmoglobin and its function; carboxy-hæmoglobin; methæmoglobin.

Normal Respiration depends on—Supply of oxygen; proportion of carbon dioxide; pulmonary epithelium; hæmoglobin; circulation—both pulmonary and systemic, and hence, (a) integrity of heart and vasomotor system, and (b) nervous system.

Possible Harmful Effects of Poison Gases.—Converse of above. (a) Strong concentration producing asphyxia, though themselves inert, *e.g.*, nitrogen.

(b) Irritant causing broncho-constriction: expiration violent, resembling asthma and passing into asphyxia, *e.g.*, chlorine or bromine.

(c) Irritant causing inflammation of pulmonary alveoli: followed by exudations causing further obstruction, *e.g.*, chlorine or bromine.

The exudation may be so copious as to fill the lungs completely.

(d) Chemical combination with hæmoglobin, making it inefficient: *e.g.*, CO forms CO-hæmoglobin; amyl nitrite forms methæmoglobin.

(e) Vaso-constriction of pulmonary arterioles, hence asphyxia, *e.g.*, chlorine and bromine.

(f) Direct poisoning of the heart, which stops beating: death.

(g) Poisoning of medullary respiration centre, which becomes paralysed, and respiration stops.

Treatment.—(a) Remove patient to pure air.

(b) Dilate air passages. Therefore, if possible, paralyse vagal nerve-endings and stimulate sympathetic nerve-endings in bronchioles. By some authorities atropine is said to do this, injected subcutaneously or intravenously, or by inhalation from burning stramonium leaves. Adrenalin is also recommended. But both are violent poisons if given wrongly, and can only be administered by a medical man.

(c) Practically resembles acute pneumonia. Make the patient vomit by giving him half a pint of salt and water, and expectorate by giving sodium carbonate. Give inhalations of oxygen by letting compressed oxygen escape a few inches in front of his face.

(d) Inhalation of oxygen as in (c).

(e) Medical (atropine, etc.). Inhalation of oxygen.

(f) No treatment is of use.

(g) If the gas is such a one as nitrous oxide, artificial respiration in pure air may restore the patient.

First Aid for Any and All.

(1) Send for a doctor.

(2) Remove patient from poison area.

(3) Place patient in position easiest for breathing—determined empirically by observation. Patients often wish to lie with their heads over the sides of the stretchers, in order to get rid of exudation.

(4) Loosen all chest and abdominal clothing.

(5) Keep warm with blankets, hot-water bottles, etc., giving plenty of air.

(6) Give salt and water emetic.

(7) If breathing stops keep artificial respiration going for at least an hour if necessary. Schäfer's method is better than Sylvester's because fluid may be more readily discharged in that way.

Oxygen inhalations if available.

SYLLABUS FOR CHEMISTRY.

Since no official list of poisons used by Germans has been published, lecturers must use their own judgment

as to which they will deal with. The following method of treatment is being adopted by Mr. R. G. Durrant, of Marlborough College :—

Lectures.

- (1) Chlorine.
- (2) Chlorine (continued) and bromine.
- (3) Nitric peroxide and sulphur dioxide.
- (4) Prussic acid and cyanogen. (There is great danger in experimenting with these.)
- (5) Phosphorus and arsenic.
- (6) Formaldehyde and carbon monoxide.
- (7) Gas helmets.
- (8) Methods of detecting poisons in air and water.

Method of dealing with (1) to (6) inclusive :—

- A. The properties, physical, chemical, and physiological.
- B. The best method of detecting each poison.
- C. The best method of counteracting each.
- D. The best first-aid treatment of a poisoned comrade.

Boys should be made familiar with the colours and smells of the various poisons (except the deadly ones!). Ability to describe a gas has very real value.

In lecturing the points to be insisted on are :—

- (1) It is safer to remain still and use helmets or respirators than to run.
- (2) Smoke helmets are preferable to respirators if both are available.
- (3) The principles which govern the choice of a respirator substance, *e.g.*, an acid gas, requires an alkali.
- (4) Fairly efficient respirators may be improvised (*e.g.*, a sock filled with moist earth or one saturated with water, urine, tea, or soda solution, etc.).

LECTURE DEMONSTRATIONS.

(Suggested by Mr. J. Young.)

Chlorine.—Show gas-jar full. Pour in soda carbonate solution; shake. Colour immediately disappears and partial vacuum is formed. Only after much shaking is the gas fit to breathe.

Repeat with hypo solution; precipitate of sulphur and smell of sulphur dioxide. Add some soda carbonate; smell goes quickly.

The mixture is best for this gas.

Expose a jar of chlorine for an hour or so to the air; even then the mixture is not tolerable. Moral, gassed dug-outs.

Bromine.—Pour a drop into a jar to show rapid evaporation.

Oxides of Nitrogen.—Add a drop of nitric acid to copper in a cylinder. Show solubility by adding water or sodium carbonate and shaking.

Phosgene.—Make from potassium dichromate, sulphuric, and chloroform. Use plenty, and do not heat much. Wash through sulphuric. Show cloud on opening.

IV.—RANGE FINDING.

Books.

"Musketry Regulations," part i., reprint, 1914 (Wyman, 6d.) Chapter v., for training in vision without instruments.

"Handbook of Artillery Instruments" (Wyman, 1s. 6d.), describes Service instruments fully. It is strongly recommended.

Lectures.

These should be directed chiefly to an understanding of the "one-man" range-finder.

Syllabus.—Illumination. Reflection from plane surfaces. Reflecting prisms. Refraction by prisms and lenses. The human apparatus for judgment of distance. *Binoculars.* Magnification. Field of view. Brightness. Reason for preference for low magnification types for general purposes. *Mekometers.* *Barr and Stroud instrument.*

The foregoing does not exhaust the possibilities of giving instruction in schools which would be of special value just now. But perhaps enough has been said for the present. Instruction in telephones and poisons is probably of greater importance than in explosives and range-finders.

If these things are to be taught, time will have to be found for doing so. Some of this could be got by curtailing the time usually spent in elaborate proving of facts and theories in chemistry, on thermometry and coefficients of expansion in heat, and on formulæ in light.

The teaching of science suffers little, if at all, by adopting these proposals: the added interest of the boys more than makes up for the loss of traditional methods.

I should be grateful for any suggestions or corrections which may be sent to me at Hill-side, Harrow-on-the-Hill.

THE EMPLOYMENT OF SCHOOL CHILDREN IN AGRICULTURE.

WAR is a sharp tutor, and many long-cherished opinions are being modified by it. Half a century ago young children were regularly employed at farm work, and many old farmers lament the passing of Acts of Parliament which prevented their employment. A demand for a return to the old state of things is being put forward as a necessity of the time. If it is a real necessity, of course it ought to be acceded to, for the good of the country stands paramount to the good of the individual; but is it? Has every possible effort been made to supply the shortage of labour on farms by calling up female labour and by employing the labour of those incapacitated for military service, or is the demand for child labour merely another device for swelling the profits of the farmers by the use of cheap labour? It is asserted by many country dwellers that an ample supply of female and other labourers can be obtained by farmers if they will pay a proper price for it, and if that

is so, the education of school children ought not to be interfered with. If, on the other hand, money, even good money, fails to obtain further supplies from all sources of labour, then children should be called upon to sacrifice a portion of their schooling—but not until then.

A system of part-time exemption for farm labour might be organised in country districts and the educational system and curriculum remodelled in such a way that the work on the farm might be made educative as well as useful. Organisation and a drastic reform of present educational notions would be necessary, but the change should not be all loss.

The Board of Education has issued instructions (Circular 943) to local education authorities for their guidance in this matter, but no hint as to the possibility of recasting the rural educational system is given. School holidays should be made to coincide with the periods of maximum agricultural activity, and every effort made to minimise the educational loss to the children who may be employed.

The following extracts from Circular 943 give the chief suggestions made by the Board of Education:—

Representations have been made to the Board that one of the obstacles to the extended employment of women in agriculture is the difficulty which women experience in looking after their homes and their younger children while so employed. If, in order to meet this difficulty, local education authorities thought it proper to excuse girls of thirteen, and even twelve years of age, from attendance at school on days or half-days in order to look after the home and care for the younger children while the mother was working on the land, the Board would regard cases of this kind as falling within the spirit of Circular 898, assuming, of course, that the conditions inserted in that Circular, so far as they are applicable, are fulfilled. The Board will rely upon local education authorities to take care that a concession of this kind shall only be granted where the authority are satisfied of its absolute necessity, and that it will be withdrawn as soon as the necessity ceases. They hope also that in cases of this kind every endeavour will be made to enable the girls excused to attend instruction in cookery and domestic subjects, owing to the special importance of these forms of instruction at the present time.

Subject to this modification it should be understood that no exemptions should be granted except in accordance with the conditions laid down in Circular 898, and the following suggestions, which are the result of experience, are made for the practical administration of that Circular:—

(a) Children under twelve years of age should never be excused unless the circumstances are entirely exceptional and then only for very short periods.

(b) Persons desiring to employ in agriculture children liable to attend school should be asked to furnish particulars of the character of the employment con-

templated, the wages offered, and the period for which the labour is required. They should also be required to satisfy the authority that they have made adequate efforts, supported by the offer of reasonable wages, to secure the labour required in other directions, and more particularly by employing women.

(c) It is suggested that the urgency of the need for the labour of school children may to a certain extent be tested by the amount of the wages offered, and as a general rule it may be taken that if the labour of a boy of school age is not worth at least 6s. a week to the farmer, the benefit derived from the boy's employment is not sufficient to compensate for the loss involved by the interruption of the boy's education.

(d) A register should be kept of children exempted, and all exemptions should be reviewed at intervals not exceeding three months in order to ascertain that the conditions on which the exemption was granted still exist.

(e) It is important that the Education Committee should exercise direct control over the matter, that no general resolutions on the subject should be adopted by the County Council until the views of the Education Committee have been carefully considered, as required by statute, and that the work of excusing the individual children should be closely supervised by the Education Committee. It has been found that a policy of giving district committees an unfettered control in the matter, or of giving to school attendance officers or other persons a discretion to excuse children when they think fit, involves great divergency in practice and gives rise to considerable laxity of administration.

THE TEACHING OF GEOGRAPHY IN AMERICAN SCHOOLS.¹

It is no longer believed that "teachers are born, not made." They must be born and made, trained in their subject, in methods of imparting it, and in the practice of educational principles, if they are to be successful from the start. Others may survive and succeed. By trial and error, by experiment and adaptation, using classes as unresisting but by no means willing laboratory material, ignorant of the relative values of possible methods of teaching a given subject, perhaps even ignorant that there is any other subject except their hobby, some may become teachers of worth, but many fall by the wayside, fortunately for the cause. To-day few of us believe that we can be *teachers* of geography if we think only of presenting our favourite subject in a logical sequence and leave out of account the men and women, or youths and maids, on whose effective training to meet their life problems our success as teachers depends. Consciously or unconsciously, we make use of some of the established theorems of educational psychology and of the proved principles of education.

As Geikie long ago expressed it:—

"In the teaching of geography, as in instruction of every kind, the fundamental condition for success is that the teacher has so thoroughly mastered the sub-

¹ Extracts from the presidential address delivered by Prof. Richard E. Dodge before the Association of American Geographers, Washington meeting, December, 1915, and printed in *School and Society*, February 19, 1916.

ject himself and takes so much interest in it, that he can speak to his pupils about it, not in the set phrases of a class book, but out of the fulness of his own knowledge, being quick to draw his most effective illustrations from the daily experiences of those to whom he addresses himself."

In other words, a knowledge of children's interests and of the best methods of making connections between the known and the unknown, the basis of modern educational practice, are both necessary.

Initial steps have already been taken to determine the minimum essentials of geography in the elementary schools, which may form a basis on which may be constituted a fuller and more vital course in geography. So far attention has been given only to listing the isolated facts of geography any person should know and be able to use. Inasmuch as one may be a gazetteer of information and not be a geographer, or even educated in geography, it is sincerely to be hoped that the studies will be carried on until we have a minimum set of vital geographical relationships to supplement the jackstraw groups of facts, for the flesh and not the bones of our science is what gives it usefulness, form, beauty, strength, and individuality. Any willingness on the part of educators or geographers to confine their attention to items of location, or of industrial products, can only result in strengthening the impression, unfortunately so general, that the content of geography is purely informational in character. Few geographers could subscribe to the following statement of the content of elementary-school geography, copied from a recent prominent book on teaching, and to the implication as to the content of more advanced geography:—

"A student knows his geography well when he knows the location of all the important places and products, and can tell why these are where they are; and when he knows all the important geographical facts, as every person should by the time he finishes the geography course."

Such inadequate summaries, indicating a narrow perspective and a lack of knowledge of the real character of geography, hurt the cause of education, of geography, and of education through geography. The content, scope, and possibilities of geography are primarily a question for geographers; the adaptability of certain phases of geography to pupils of a given age may be measured scientifically by trained educators; the best methods of teaching may be similarly tested, and we must accept and use the conclusions. This does not mean that we can subscribe to or must support every opinion published by a worker in education. We can accept his conclusions only when we can approve his methods of work as scientific and accurate.

We must look forward, and if we believe geography can be aroused from the state of arrested development in which it has so long lain dormant, we must join forces with all who can contribute scientific truth or accurately tested experience to the solving of the problems of such deep interest to all, and work for success as never before. Geography will come to its own when it is *proved* to be worth while in education. To make geography worth while we must

not only scrutinise our methods of teaching from the educational point of view, re-evaluate its parts, and perhaps the subject as a whole, but also pay attention to the educational movements that educational leaders, professional and political, are actively and effectively promoting.

If the geographers do not help in this reorganisation and redirection of geography, the task will be taken from our hands and chaos may result. A study of the literature of geography teaching shows that many educational leaders do not realise the significance of the beauties of the subject. They accept the table of contents of the formal texts on physical and commercial geography (of which nearly thirty different ones are now in use) as a digest of geography, not of special phases thereof, and either discard the subject as beyond redemption or accept it as something that must be endured. Few realise that there is any other geography than the physical and commercial geography of the last few years, though several reports advocating the development of regional geography, and the humanising of physical geography, have been widely distributed and much discussed in recent years.

Excursions and field work are offered in but few schools, laboratory work is noted but rarely. The most favourable fact is that in more than half the schools giving geography, five hours a week are devoted to it, a fact more characteristic of business courses than of other courses. The dry facts as to the status of geography are sufficiently discouraging, but the detailed reasons for the facts, as given by teachers and superintendents, are even more so. We can draw many conclusions, according to our interests and points of view, as to why geography teaching is not more successful in secondary schools. We would all probably agree that geography in secondary schools suffers because it is not tied up with the earlier work and leads nowhere. Geography in schools lacks unity and purpose, and hence strength. We as geographers have been putting our approval on a type of secondary-school geography in no way related to or based on the earlier school work. Students in the stress of secondary schools can have no working use of the details of their earlier work, unless those details are used in their regular work. When pupils have been exposed to no locational work for five or six years, certainly since they left the seventh grade of the elementary school, have college and normal school teachers a right to charge ignorance of location as the chief geographic weakness of high-school graduates? Have we been consistent or far-sighted? When teachers are seemingly unaware, as their replies would indicate, that there is anything new in methods of geography teaching, or that they need pay attention to educational principles or movements, can we wonder that geography is not, to put it mildly, a universally sought elective?

We lament the poor teaching of geography in high schools, and yet do not aid in its betterment either by showing how to get the real spirit of geography into the formal work, or by paying heed to the tendencies of educational thought. We cannot play ostriches any longer and be self-satisfied in our exposed isolation. Neither can we rightly criticise geography teaching

in secondary schools as being bad when in most high schools, outside of a few large cities, the geography work is not sufficient to demand the full time of an adequately trained teacher. To-day, as shown by the replies received from questionnaires, the *special* teacher of geography is rare. The specially trained teacher of geography is even rarer. Usually the teacher of geography teaches one or more other sciences, or some other subjects, perhaps physical training or stenography. The usual teacher of geography is a teacher of science or commercial subjects.

The lack of trained teachers of geography in the high schools is not due to lack of supply so much as to a lack of demand. An increased demand will bring a supply. We must put a new spirit and a new content into high-school geography. The testimony secured from all available sources shows that for the country as a whole high-school geography is to-day in a slough of despond as deep as was the case before the revolutionary report of the Committee of Ten in 1893.

Meanwhile the old content of physical geography for secondary schools has persisted with but little change, or, if we have included any phases of applied geography in our texts, we have often done so in a forced or perhaps even apologetic way. In recent years some teachers and writers have made significant advances in humanising physical geography, but so great is the inertia of the past that no one has as yet put forth any complete constructive programme for the future high-school geography, which must be educationally sound, geographically strong and broad, and really worth studying for the usability of its content. It is in part due to the demand that geography shall be worth while that we owe the present tremendous significance of commercial geography, as yet not wholly devoid of its list of "furs, feathers, gums, and resins."

Whether it be in physical or commercial geography, pupils in secondary schools are to-day largely memorising facts and principles, often with no conception of their relative significance or relationships, even when accompanied by so-called laboratory work. In fact, the character of the often forced laboratory work has been, and still is, a large factor in making secondary-school geography formal and remote. When a school programme calls for two or three class periods a week, and a double laboratory period, as is often the case, work must be ready for the laboratory period whether it is useful, pertinent, or just "busy work." Laboratory work for secondary-school courses in physical and commercial geography is often a strange mixture of the pertinent and the impertinent. One problem may be too severe for a trained university graduate student to perform in the required time, and the next may be so simple and obvious that it would be solved off-hand by a bright child in the fourth grade of the elementary school. Exercises devoted to the identification of minerals and rocks, to the blind copying of maps from a text, or to the drawing of layers in a sandbank, so common in college entrance notebooks, indicate how abundant is "busy work" with no relation to the course of study or the text-book. Certainly separate laboratory periods in the early years of the high-school course are pedagogically unwise. In these formative years training in how to study with

the least waste, but not necessarily with the least expenditure of energy, is a vital part of school work.

Geography for secondary schools will in time be geography—and geography is not a synonym for physical geography or commercial geography. Geography is a human as much as it is an earth science. Its larger problems are human problems that involve a study not only of the influencing conditions of the physical environment, but of the economic and social conditions that may be as basic as the physical conditions. These larger problems are not wholly commercial or industrial. Commercial geography bears about the same relation to human geography that the physiography of the land or water does to physical geography. It is only a special phase of the larger subject, but a phase that cannot be ignored in any complete study.

Some problems of human geography are so inclusive and involved that they can only be efficiently handled by a past-master in the subject. Others are so simple and personal and appealing that they have long formed a part of the work in the early years of the elementary school. It is possible to select a series of problems in human geography, adapted to the needs, interests, and abilities of adolescent pupils, and through the study of such problems to develop the principles of human and physical geography. Real problems, appreciated by the pupils as worth solving at the time, need not be merely of temporary interest or value. The simpler and more personal problems may serve as an introduction to larger, less personal, but no less interesting national or international problems until one comes to the limits of powers of secondary pupils. Pupils who leave the secondary school with an interest in the larger problems still before them, and with a knowledge of how to approach these problems in later years, are, at least in part, prepared for their life task, which will consist of solving problems. An interest in and an ability to attack problems of the intellect are contributions to life preparation and life satisfactions devoutly to be sought as purposes in education. Geography is a vibrant and not a static science. Its scope and limits are not fixed; it is a life science dealing with living things and evolutionary forces.

The problem method of approach enables us to deal with the same basal content, so as to make it a life-giving and thought-provoking subject. Further, this method will minimise the deadening influence of pure memory work which so long was considered the main phase of teaching. Facts and principles will be remembered because they are useful and because they are properly associated psychologically. "Discipline" will be secured through the efficient training of the inquiring mind in solving scientific problems, and the methods of work employed will make easier the study of other sciences approached in the same way.

Geography cannot be what it should if educational leaders, untrained in geography, are to direct its future course. Neither can a geographer develop his subject to its highest degree if he looks at it only from the window that has given him the most pleasing vistas of the science and pays no heed to the subject as a whole, or to the new conditions that modern

educational science has brought about. Knowledge is becoming more and more specialised; progress is being made so fast in all sciences that the all-round naturalist, able to teach any science well, is almost an impossibility. Modern education is a science and an art. It is the necessary handmaid of all subjects that should enter into the training of youth. Let us then seek its aid. With our eyes turned ever toward the ideal, and yet recognising that it is a practical problem before us, let us take such steps into the future as the best testimony of all interested, specially trained experts in the several co-operating sciences, warrants. Then geography, being proved of value and not merely taken on authority, will come into its own in all phases of education.

RETRENCHMENT IN PUBLIC EXPENDITURE ON EDUCATION.¹

THE total Vote of the Board of Education—which includes various museums and other services as well as elementary and other education—has risen from £9,593,000 in 1900-01 to nearly £15,500,000 in the current year, the increase being almost entirely due to additional grants to local education authorities, etc., for elementary and higher education and the training of teachers.

There is a special difficulty in economising on educational expenditure, as there is a feeling in many quarters that educational economies are dangerous, and may in the long run be unremunerative. But, nevertheless, we are strongly of opinion that every step should be taken to effect such reductions as are possible without a material loss of educational efficiency, and we are glad to learn that many education authorities have already taken steps accordingly by postponing or reducing capital expenditure on new buildings or alterations (which might normally amount to as much as £3,000,000 a year) and expenditure on decorations, repairs, furniture, apparatus, stationery, etc. Similar steps should, in our opinion, be taken by all authorities without delay.

ELEMENTARY EDUCATION.—Of the expenditure of £15,500,000 included in the Board of Education Estimate for 1915-16, £12,400,000 is in respect of grants to local education authorities for elementary education; and, on the basis of the latest returns available, a sum of about £15,000,000 will probably be expended in addition by the various authorities out of their own funds, making a total expenditure of more than £27,000,000 a year on elementary education.

After careful consideration we have arrived at the conclusion that a really substantial permanent decrease in this expenditure can only be secured, without a loss of efficiency, by altering the present school ages so as to reduce the number of children in the schools. Fewer pupils mean in the long run fewer teachers and smaller expenditure on buildings, furniture, stationery, and all maintenance charges.

It would, in our opinion, be contrary to the public interest to lower the leaving age, which is in practice

fourteen in London and a few other areas, and between thirteen and fourteen elsewhere. But we think a good case can be made out for excluding from school all children under five years of age, except in very poor town areas, and for withdrawing all grants in respect of such children, legislation being obtained for this purpose so far as is necessary. We understand that the Board of Education would not regard the aggregate loss of intellectual training directly involved by this change as a serious matter.

At present parents are not compelled to send children to school below the age of five; but they may send them if the local education authority chooses to admit them, and large numbers are, in fact, admitted by certain authorities. From five onwards attendance is compulsory. On January 31st, 1914, the school registers contained 290,000 children in England and Wales in attendance below the age of five, 900,000 below six, and 1,600,000 below seven. In Germany, on the other hand, the minimum age is six, and on the Continent generally it varies between six and seven, though there are in some cases special schools for younger children in certain districts, such as the *écoles maternelles* in France.

It has been pointed out to us that the exclusion of children below five in areas where they are now admitted would be unpopular with many parents, and that it would be open to serious objection on hygienic and general grounds as regards very poor town areas, where many mothers go out to work each day, and where attendance at school secures for the children medical examination and treatment, food so far as necessary, and training in habits of cleanliness and order which they would not always acquire at home. But the former objection cannot be pressed very far, in view of the fact that children below five are already excluded in many districts, including, *e.g.*, so poor a district as East Ham; and we consider that the latter objection would be sufficiently met—instead of by the provision of special schools, as in France—by continuing as at present to allow an option to local education authorities of admitting, at their discretion, children below the age of five, on the understanding that such admission will only be allowed in very poor town districts, where exclusion would, in the opinion of the authority, clearly be prejudicial to the health and welfare of the children. As these cases would be comparatively few in number, and the districts in question would either be wealthy towns or "necessitous areas"—in respect of which the Board pay special grants, which were increased in amount last year—we consider that there would be no hardship to local authorities if the Board withdrew all grants in respect of children under five, even in special areas where admission is allowed exceptionally. We are informed that the Board could not undertake to discriminate between the various areas or schools and to pay grants in respect of children under five in those cases only where they considered that their admission is necessary.

In view of Continental precedents, there appears to us to be much to be said for the permanent introduction of a normal minimum age of six in future (with an option to local authorities of allowing earlier admission in very poor town areas), as there can be little

¹ Extracted from the Final Report of the Committee on Retrenchment in the Public Expenditure (Cd. 8200).

doubt that money spent on younger children must in the main be wasted so far as education is concerned. But any such change would require very careful consideration, and would also necessitate legislation, and we therefore recommend that the whole matter should be the subject of special inquiry by the Board of Education, with a view to such action as is thought desirable being taken at the earliest possible opportunity.

METHOD OF CALCULATING GRANTS AND CONTROLLING LOCAL EXPENDITURE.—For the purpose of enforcing the Regulations and calculating education grants, the Board of Education are supplied each year with detailed returns as to attendances, etc., in respect of every school in the country, and after examining these returns, and ascertaining thereby that all the requirements of the Regulations have been met in the case of each school, they calculate the various grants payable, which vary to some extent—but not as a rule to a very material extent—from year to year according to the fluctuations in attendances.

We consider that the clerical labour which this system involves in normal times is altogether excessive, and that, after the war, a simpler system of annual grants should be devised which, while involving no material change in the average rate of grant, would abolish the necessity for verifying and checking detailed annual returns from every school, and would leave the Board free to deal with each *area* as a whole, and to reduce as far as possible the amount of detailed supervision exercised over the various authorities, and especially over large authorities like the London County Council. We have been supplied with specimens of the forms which the authorities are at present required to fill in and send to the Board for various purposes, and we have been much struck by their number and complexity. We feel confident that it would be possible to devise a less elaborate and expensive means of securing that the State gets proper value for its grants, especially as regards the larger and more responsible authorities. The Board's normal peace-time administrative staff includes nearly 1,000 individuals, in addition to an inspecting staff of nearly 400; a considerable reduction of cost should become possible, in future, if a radical alteration of system is introduced on the lines suggested above, and if the amount of statistical work, which is unusually large, is cut down at the same time. We understand, however, that no further saving of expenditure could be effected during the war, as the work has already been reduced temporarily to a minimum, and a large proportion of the staff has been lent to other departments or set free for military duties.

INSPECTING STAFF.—It has been represented to us that there is a large amount of overlapping owing to the fact that inspectors are appointed both by the Board of Education and by local education authorities. We understand, however, from the Board of Education that only 49 of the 319 local authorities employ inspectors at all, and that in most cases these are not educational inspectors, but administrative officers dealing with questions of supplies and appointments. And it appears that in most of the other cases the Board have arranged to leave the detailed inspection of indi-

vidual teachers and departments to the local inspectors, and to employ their own inspectors on the investigation of the broad aspects of the educational system and on inspections held in connection with general inquiries into methods of teaching, etc. We recommend that in any cases where a clear differentiation of function has not already been definitely arranged, immediate steps should be taken to avoid duplication of expenditure.

SALARIES OF ADMINISTRATIVE STAFF.—We observe that the heads of branches (principal assistant secretaries) and junior examiners in this department draw salaries in excess of those of the corresponding grades in other departments, and we recommend that their scales of salary be reduced on the occurrence of future vacancies.

It also appears to be unusual to have two grades, on scales of £650-£800 and £850-£1,000 respectively, between the junior examiners and the heads of branches, and we recommend that, unless there is some special reason of which we are not aware for this arrangement, the number of grades should be reduced to three, which is the normal number in the principal departments.

MEDICAL WORK.—We understand that the activities of the Board of Education and the Local Government Board overlap to a considerable extent as regards arrangements for the health of mothers and young children under school age, and that the two departments have found it very difficult to settle a clear line of demarcation between their respective spheres. It is in our opinion most unsatisfactory that two Government departments should deal with what is essentially the same problem, and it can only lead to disputes and an unnecessary inflation of staff.

It is a difficult problem to decide between the two departments in this matter; but so long as there continue to be two medical branches, we consider that, in all the circumstances, the only satisfactory solution would be that the control of all institutions (including schools for mothers and day nurseries) providing in any way for the welfare, from the health point of view, of mothers or children under school age should be handed over by the Board of Education entirely to the Local Government Board for them to administer in connection with their public health work generally, and in co-operation with the local health authorities. This plan is being adopted in Scotland, and we see no satisfactory alternative to it in present circumstances. The Board of Education could, of course, still continue to pay grants, if necessary, in respect of purely educational classes in cooking, needlework, etc., held in any of the institutions or by local education authorities elsewhere, but the duties of the Board's medical branch should, in our opinion, not extend beyond the supervision of the health work carried out for children of school age who are being educated in elementary, etc., schools under the Board's control.

The above arrangement would, of course, be merely a makeshift, and it is very desirable, in our opinion, that the first opportunity should be taken of amalgamating the medical branches of the two departments altogether.

TOYMAKING.¹

By RUBY K. POLKINGHORNE, B.A.
County Secondary School, Streatham.

IN deciding upon a curriculum for children, we may roughly divide the subjects to be considered into two groups:—

(1) Subjects that must be learnt by the children, whether they have any real bearing upon their mental, moral, or physical development or not; for example, reading, writing, arithmetic, and the elements of history and geography, etc.

(2) Subjects that need not be learnt by the children because they do not seem, at first sight, to have the usefulness in after-life that reading or arithmetic has; but these subjects may play an important part in the real development of the child—for example, games, toymaking, etc.

Now it is possible for a curriculum based on the first group of subjects alone to produce a well-informed but unintelligent child—unintelligent in this sense, that it will never have properly awakened to its surroundings, a child accustomed to discipline imposed from without, but not prepared to impose it on itself.

It is comparatively easy for strong-minded parents and teachers to train children to be careful and obedient, but what these children will be as men and women depends wholly on how much this training has fitted in with their natural development, on how far they have done their youthful good deeds spontaneously and gladly. The unconscious attitude of strictly brought-up childhood often is, "All these hard things I have to do because I am a child; when I am a man I will do otherwise and play all day." The attitude of the child who has been allowed freedom often is, "I play because I am a child; when I am a man I will work." And so they wait with different ideals in view for the fancied liberty of grown-up days. This point, however, cannot be pressed too far, because all children are not divisible into two types only, nor is it altogether a sound argument in favour of unlimited freedom; but there is enough truth in it to warn one against extremes—particularly against over-regulating the child's life. One has to recognise the fact that the children who obey and work at their set tasks often, when grown up, renounce both obedience and industry.

All work is of value if (a) the worker enjoys doing it, or (b) there is some good reason that makes him submit willingly to the disagreeableness of it, supposing it is disagreeable. All other work is of no value. The sad effect of being forced to do unpleasing work for no apparent reason is to make the worker disagreeable.

Now most children love making toys; all the effort, pain, and disappointment involved in the making they bear gladly, because they see the reason for it. They can think out ways and means for themselves; they need not wait to be told every step. The toy produced, and each step towards its production, is within the childish understanding, so that they can criticise

their own work and, as it were, set their own standard and not follow a standard imposed from without.

In teaching children and in training them we cannot always give them the reason for each thing we ask them to do; we must sometimes make them do things we know are good for them which they think are not, but it is desirable that every curriculum should contain at least one subject which, making a direct appeal to the child, leads to natural and happy development.

The little toymaker seems at first content with a low standard of achievement; the strong imagination of childhood, its power of make-belief, leads to a seeming carelessness. It is as years go on that the critical faculty is developed and the child begins to distinguish between the ideal and the real. When once it realises how inferior the toy it has made is to the toy it planned to make, it must not be content. Persistent and intelligent labour must try to make perfect what once imagination perfected. It is very necessary to distinguish between the inaccurate work of a child due to imagination, and the inaccurate work of a child due to carelessness. The age of a child often helps us to decide this matter.

Get someone who loves making things to help your children to make toys, but not necessarily a teacher. A teacher has often too many aims and too many theories, and makes the work too formal. The best plan, indeed, is to give the child some waste material and liberty to make a mess, and a book that tells it how to make things. Tidy rooms are often the cause of idleness and the signs of idleness. A child's thoughts are expressed in its toys, and we can best understand and guide these thoughts when they are expressed naturally, when they show the child's stage of development and not so much our own ideas. The child, too, thinks best and to most advantage when pursuing some end of its own, and toymaking provides for this. The neatly-worked page of sums, the well-learnt lesson, do not necessarily mean much. We may easily overvalue them; so while not undervaluing them, we must remember that they stand mainly for what we have taught the child, not what the child has taught itself. Self-taught lessons are generally the most valuable. "We are good because we will, not because we must"—that is the secret of all moral training; though, unfortunately, the "must" plays and has to play a large part in education.

A girl's education often tends to be too academic, and the manual work she is, as a rule, restricted to—needlework and cooking—are only of limited educational value. The repetition of principally one action in sewing tends indeed to have a deadening effect on the mind, and to some extent encourages a lazy attitude, for there is such a great deal of sewing that requires no thought. A boy is more often allowed to use tools. He can design and make boats, aeroplanes, what he wills; he is not confined to making only the things we wear and eat. He seeks his models in a wider world, his thoughts are often wider. Now there is no reason why both boy and girl should not enter this wider world. Simple toys lead to more difficult toys. Thought and ingenuity are required in making even a pulley work. Each new toy means the

¹ From a paper read to the London Branch of the Parents' National Educational Union.

understanding of a new principle, new materials, and often new tools. The toymaker must understand the things around him. He wants to know why lifts go up and down, why Tower Bridge opens and shuts, how a pump works, so that he can make his toy work somewhat in the same way. Books will give him much information, observation will help, and questions put to those who know.

Toymaking, then, provides a wide field of interests and plenty of work for leisure moments. We want no system of education to be so rigorous as to leave no opportunity for healthy hobbies.

We must take care, while encouraging habits of work in the child, not to draw too largely upon its energy. We do not want that reaction to come that we have already alluded to; we do not want the hard-working child to become the listless, unenterprising man. That a reaction does come we know, if we follow the careers of some of those men and women who have been unwisely encouraged in their youth to gain firsts in many examinations.

Someone writing very wisely has said:—"If education at school means nothing more to the children than a respectable routine and a few examinations successfully circumvented, then education is a failure; if besides that it has enlivened the years and counted for something in the general joy of growing, then it has a real value—a value that entitles it to a place among happy memories, perhaps the highest place of all."

ITEMS OF INTEREST.

GENERAL.

THE annual conference of the Association of Headmistresses will be held on Saturday, June 3rd, at Wycombe Abbey, Bucks.

THE annual service in St. Paul's Cathedral for members of the teaching profession will be held on the evening of Ascension Day, June 1st, at 6 p.m. The sermon will be preached by the Rev. Canon Nairne. Tickets of admission are not required, and there will be no reserved seats.

A SHORT summer meeting is to be held this year at Cambridge from August 2nd to August 14th. The inaugural lecture will be delivered at 11.30 a.m. by Lord Robert Cecil. The main subject of study at the meeting will be the history, modern life, literature, and art of Russia. It is hoped that several of the leading scholars in Russia will attend the meeting and deliver lectures. A full programme of the meeting will be ready in May or early in June. Forms of entry will be supplied by the Rev. Dr. Cranage, Syndicate Buildings, Cambridge.

THE Teachers' Guild has arranged a conference on educational reform to be held on Saturday, April 8th. Specialists in various grades of education have been invited and well-known leaders in industry and commerce. The chair will be taken by Sir Henry Miers, F.R.S., and the draft to be submitted to the conference for approval suggests the following subjects to be dealt with by committees of experts:—(a) Reforms in administration, including medical service; (b) the

relation of technical colleges, university courses, and research scholarships to manufactures; (c) training of women for industry; (d) improvements in the curricula of schools and in instructional materials and methods, so as to make them more purposeful and adaptable to after-life; (e) extension of educational facilities to all juveniles after fourteen; (f) training of teachers and research in education; (g) character training and training for leisure; (h) reform of examinations for promotion within educational institutions or for public appointments.

THE Society of Education will hold its next meeting in the library of the Teachers' Guild at 9 Brunswick Square, W.C., on Friday, April 14th, at 8 p.m., when a paper will be read by Miss Saxby on "Some Effects of Training Children's Power of Observation." This will be followed by a discussion. Non-members may obtain tickets of admission by applying to the honorary secretary at 9 Brunswick Square, W.C.

A LECTURE will be given under the auspices of the Montessori Society, on Saturday, April 8th, at 3 p.m., at the London University Club, 19 Gower Street, W.C., on "Montessori in the Home," by Miss Lidbetter. Tickets for non-members are obtainable beforehand from Dr. Jessie White, 49 Gordon Mansions, W.C.

ARRANGEMENTS have been made for the usual short summer course in geography at Oxford for teachers and others, but the meeting will not take place this year unless a prescribed minimum number of applications is received by the middle of April. Names should be sent to the Vacation Course Secretary, School of Geography, 40 Broad Street, Oxford.

A VACATION course will be held at the Training College, Bingley, from August 2nd to August 16th inclusive. It will not be limited to West Riding teachers, but will be open to all on payment of the fee. The aim is to stimulate teachers and to give them opportunities of studying new methods of teaching various subjects. The following courses will be included among those offered:—A course on education, by Prof. John Adams; the teaching of English, by Miss M. E. Paine, lecturer in English at the Goldsmiths' College, London; the teaching of reading and speaking with story-telling, by Mr. Arthur Burrell, late principal of the Borough Road Training College; the teaching of handwork, by Miss I. Suddards, organiser for educational handwork to the West Riding Education Committee; animal life, by Prof. W. Garstang, professor of zoology, Leeds University; and plant life, by Dr. O. V. Darbishire, head of the botanical department, Bristol University. The fee charged for the course, including tuition, board and residence in the college, will be £4 10s. Full particulars can be obtained from the Education Department (Secondary Branch), County Hall, Wakefield.

THE University of Grenoble advertises that it will hold the usual holiday course from July to October this year. Founded in 1897, these courses have been held annually without a break since that date. Last year those who attended the course numbered less than sixty, and this partial success justifies the offer

of the course in 1916. Should circumstances prove favourable, immediate steps will be taken to enlarge the scope of the suggested lectures, etc., to a considerable degree, yet the course at present arranged provides a complete and systematic instruction in the French language. Fares at reduced rates are available on the P.L.M. Railway, and board and lodging costs from five to eight pounds a month. The director of the course for foreign students is M. Paul Besson.

MR. LEWIS, Parliamentary Secretary to the Board of Education, speaking at the annual general meeting of the Representative Managers of London County Council Elementary Schools on February 28th, said at the present time there is an urgent and proper demand for economy. The cost of the war is so enormous, so unprecedented, that there must be a great reduction in the national expenditure if the State is to bear, without disaster, the gigantic burden placed upon it. There are some things the nation will be much better without and others that it can afford to do without, and there are some things that are indispensable to the well-being of the nation. To injure these will be to do irreparable harm. And education for the masses falls within the last category. That the economy movement is good and excellent all agree, but there is a true and a false economy. And it will be a false economy that endangers the health or efficiency of the children, who in a few years will become the industrial workers in the competition between the nations after the war—a competition so severe that we shall have much to do to hold our own.

MR. LEWIS, speaking recently at the prize-giving of the Stanley Technical Trade School, South Norwood, referred to the success of the junior technical schools and to the important function which they take in the educational machinery of the country. The Board has recognised about fifty of these schools, in which courses lasting over two or three years are provided in preparation for the engineering, building, cabinet-making, dressmaking trades, and for domestic service. In such schools some members of the Advisory Body and some members of the staff are required to have had practical experience in the trades for which the school caters, and parents are required to certify that the pupils are intended to enter such trades. More is to be expected in reference to the future prosperity of Britain from such schools and from the consequent industrial efficiency of the British workman and workwoman than from free trade, or tariff reform, or retaliation, or Imperial preference, or any economic system or shibboleth.

REPLYING to a question in the House of Commons recently, the President of the Board of Education stated that the number of the Board's officers actually serving in the naval or military forces is: from the administrative staff, 22; from the inspectorate, 25; from the clerical staff, 272; from the technical staff (museums), 20; and 164 attendants, messengers, labourers, etc. The number of the Board's staff who have joined the forces is largely in excess of the number of temporary employes engaged. At the same time the Board has been able to assist other Govern-

ment departments by the loan of 135 members of its staff.

CHAOS is gradually yielding place to a semblance of order. The schoolmaster faced with the question of enlisting has had many rebuffs and has encountered considerable uncertainty of treatment, more especially if he is unfit to fight in the trenches. Towards the end of last year, perchance, he was rejected when he offered himself under the Derby scheme; quite recently he has found that it was open to him to re-offer himself. He visits the recruiting office and most probably is accepted for some form of military service; he reaches the lowest limit if he finds that he is allotted to sedentary work. He awaits his call, and, at the moment of writing, he hears that the authorities appear at last to have come to a decision. The shilly-shally period is apparently over; unless the schoolmaster can fight, he is to stay at school. There is, it would appear, to be no question of facing a tribunal, or of applying to be put in a later group; he is not wanted in the Army.

MESSRS. A. GALLENKAMP AND Co., 19 Sun Street, Finsbury Square, E.C., have been quick to recognise the need for special apparatus for the teaching of military science, which is being taken up in so many schools. They have recently issued a circular describing models which they are making to explain the construction of the D. Mk. 3 field telephone, and they intend to publish further lists in the near future, so as to meet a demand created by this special teaching in the schools. In the circular referred to, four models are described:—(1) Diagram model of service field telephone; (2) dissectable model of telephone receiver; (3) dissectable model of microphone transmitter; (4) board of wires to show method of repairing a break in a telephone cable. It is doubtful if any expedient, other than a working model, is much better than a series of good sketches, especially if the parts are not in true proportion. The first model fails in this respect. But anyone who has been faced with the difficulty of explaining to a large class the construction of the receivers and microphones by reference to the objects themselves will appreciate the advantage of having big wooden models of these small and intricate parts. And in an instant model No. 4 shows clearly what it is intended to show. Messrs. Gallenkamp and Co. are to be congratulated on their initiative, and teachers who are interested in these subjects will watch for their further progress along these lines.

MESSRS. CONSTABLE AND Co. have issued in pamphlet form, under the title "The Nation's Servants," three essays by Prof. Spenser Wilkinson on the education of officers, the essays being a re-issue of part of his volume, "The Nation's Need." We need scarcely say that the pamphlet contains many suggestive remarks. If, for instance, the analogy of other professions counts for anything, the writer is surely on firm ground when he says:—"It seems to me a mistake to begin the officer's professional training by a college course of theories about his duties, for a theory that is of value for practical work must have its roots in thinking

over the practical difficulties with which a man is acquainted." On one important point, however, we fail to understand Prof. Wilkinson. He thinks it absurd to send a boy who is to be a naval officer to a public school, for these schools "do not at present establish that unity between a boy's lessons and his life, which is, after all, the great aim of school instruction. The Navy, therefore, must take its boys at the age when they leave the preparatory school." Yet the future Army officer "will be for a long time to come the ordinary public-school boy," and in his case we must wait until that "first and fundamental reform needed in the public schools" is realised, viz., the bringing of instruction into "direct relation with the boy's personality and with his life." It seems to us that some explanation of this difference ought at least to have been attempted, especially in a book obviously designed to influence the man in the street.

AN interesting report comes to hand on secondary and technical education in the borough of Plymouth. It is written by Mr. C. A. Buckmaster, late chief inspector and assistant-secretary of the Board of Education, and is based upon an inquiry undertaken by him last autumn. Evidently the educational facilities of Plymouth, though good in many ways, need strengthening and consolidation in certain very important respects. Take, for instance, the question of first-grade secondary schools, where pupils can normally remain until the age of eighteen. Unlike many historic towns, Plymouth has no ancient foundation to help her here. There is a good proprietary school for boys, and another for girls. The former has to a certain extent been linked up with the educational system of the borough, but needs further extension and development. The latter has not so been linked up, and is, moreover, financially embarrassed. If an understanding could be reached by the proprietors and the Education Committee, it would have the happy effect of relieving the school of its burden and of giving poor but clever girls a chance of reaching the school. Secondary education of the second grade is better provided for, especially in the case of boys. Mr. Buckmaster wisely counsels delay in starting a training college for teachers, and recommends that if such an enterprise should be undertaken, Cornwall and Devon should be invited to join. His remarks on technical education point to the need of co-ordination and invigoration rather than of new departures.

STILL more interesting to the non-local reader are some of Mr. Buckmaster's *obiter dicta* concerning education in general. He points out with great force, for instance, what a very poor return the country gets for all the time, efforts, and money spent on elementary education, if it remains unsupplemented by further training of some sort. "Elementary education," he says, "is in some way analogous to a mine where the shafts have been sunk until rich paying ore is in sight, but where the necessary further capital to raise this ore to the surface is still required." The greater the total percentage from the elementary school that can be traced to the secondary school, or to the trade or domestic school, or to the evening class, the greater

will be the success of the elementary-school system. Again, speaking of secondary schools, he says, "it is not possible to arrange the staffing by the simple process of dividing the total number of boys and girls by an arbitrary factor of 20, 25, or 30. Regard must be had to the character and variety of the subjects taught, bearing in mind that freshness and incisiveness in teaching cannot be secured unless the teaching staff have time to prepare their instruction and deepen their own knowledge." All this is sound doctrine, which can scarcely be "rubbed in" too often.

THE recently issued year-book of the Association of Teachers of Domestic Subjects contains the general report for 1915, from which we learn that the membership of the association has reached 1,548. A very useful piece of work has just been completed for the association. An inquiry has been made throughout the country as to the bursaries and scholarships offered to, or available for, would-be teachers of domestic subjects. The inquiry brought to light the fact that not only were the scholarships offered not always known even in their own areas, but that in some cases local education authorities were unaware of their powers of allowing bursaries to be used for students of domestic subjects. The association is pursuing the subject, and hopes to obtain further scholarships for students; such help is much wanted, and will be even more so owing to the financial stress on the professional classes caused by the war. The year-book contains also a number of answers to questions submitted to the Science Committee of the association by various members. These answers clear up many of the difficulties which confront science teachers anxious to co-ordinate their laboratory work with the lessons in the school kitchen and laundry, and should prove of real service. Sets of these answers can be had (price 2½d., post free) on application to Miss K. M. Buck, 10, Hastings House, Norfolk Street, Strand, London, W.C., who is the honorary secretary to the association.

MR. EDMUND GOSSE'S presidential address to the Modern Language Association is printed in *Modern Language Teaching* for February. The most sensational question before the Association as a practical body lies in the determination whether German is to be relegated to a place entirely subordinate to that of the languages of the Allies. The teaching of a modern foreign language is necessarily biassed by political considerations. In Germany there are two groups of opinion; one group admits that international enmity must not be allowed a place in the field of scholarship and research, and the other group demands reserve and no undue haste in the resumption of international work of this kind. In North Germany, it is suggested, English may be retained, but French must go; in South Germany, French, not English, is desired. Germany has, after a year of struggle, tacitly abandoned the hope of forcing the whole world to accept her form of intellectual training. The intellectual future of the thousands of gallant young men is a matter for anxiety; they are forced into a sort of mental exile. It is our task to preserve the treasures of intelligence; each of them carries in a frail vessel, in this time of incredible hurtling and

hustling, a little of the supreme light by which life is guided, and each must watch that the vessel is not broken and the sacred light quenched.

THE Educational Supplement of the *Times* for March is largely devoted to the memorial on the neglect of science to which we referred last month, and to expressions of opinion upon the position represented by it. On one side we have Mr. T. E. Page, Dr. W. H. D. Rouse, Dr. J. H. E. Crees, and Mr. A. L. Francis making effective remarks on the claims of the memorial; and on the other, Prof. H. H. Turner, Sir Bryan Donkin, Sir Henry Morris, Sir Joseph Larmor, Principal Griffiths, Mr. P. J. Hartog, and Sir E. A. Schäfer urge that increased attention to science in secondary schools would be both an educational and a national advantage. Sir William Mather and Sir Norman Lockyer announce that the British Science Guild is deliberating a national programme in which educational needs will be considered, and Mr. Nowell Smith states that one of his first acts as a headmaster was to insist that all boys, whether "classical" or "modern," should take an elementary course in practical science. It is easy to find weak places in the armour of both sets of champions, yet little is gained by shooting the sharp arrows of criticism into them. The main question is whether the curriculum of the public schools, with a predominating attention to classical and literary studies, ought to be maintained because it provides the best educational course for most boys, or whether it exists merely because of a disinclination to depart from traditional methods. In biological terms, does it represent the survival of the fittest, or an organism in which characters are preserved that serve no useful purpose in the existing environment? If attention could be concentrated upon these points, we should be able to contemplate the construction of a curriculum in which educational worth alone decided the place and periods of a subject in it.

SIR JAMES YOXALL has contributed to the *Manchester Guardian* a summary of the educational crimes which are being committed in the name of economy. School clinics, cookery centres, laundry centres, domestic economy centres, schools of art and technical schools, evening schools, and evening classes have been closed. School meals are withdrawn, supplies of school dentistry and eyeglasses are stopped, school medical inspection is curtailed. Because we are spending five millions a day on war, let us joyfully suppress the one thing which could speed up and double our earning capacity in the future. Let us save a quarter of a million so that it may help to justify a reduction of threepence in the rates. A boy can earn £3 a week at Woolwich; why should he stay at a secondary school? "I will not say that education is being wounded in the house of its friends, for it has never had any friends in this country; let me rather say that education here is being treated very much as though it were Louvain."

THE *Education Gazette* for New South Wales notes that a lesson on fresh-water fishes is to be given in all inland schools in order to explain the restrictions

which have been imposed upon fresh-water fishing. As a general rule the indigenous fish of the Murray river system differ from those of the rivers on the eastern slopes. Rainbow, brown, and Loch Leven trout have been liberated in both sets of rivers, and must not be retained if under a length of 10 inches. The best food-fish is Murray cod, of which the legal length is determined as 15 inches. It is the largest fresh-water fish, is extremely voracious, grows to a weight of more than 100 lb., and swallows fishes up to half its own size at a gulp. In the west, October and November are established as a close season, during which the fisherman is limited to the use of one line with one hook attached. A special close season from April 14th to October 31st has been determined for trout, and during this period no kind of trout may be fished for or captured by any means.

IN the Cape of Good Hope Province the decade since 1904 has shown a marked increase in educational efficiency. In 1904 the total white enrolment was 63,000; by 1915 it had increased to 104,000—an increase in the proportion of 3 to 5. To estimate the value of this increase, the *Education Gazette* for the Cape Province records that the numbers of European children were respectively, in thousands, 135 and 141, which shows an increase of less than 5 per cent. These figures relate to the public schools, and a considerable number of children are being taught in private schools. In relation to the total white population, 11 per cent. were children in public schools in 1904, a proportion which had increased to 18 per cent. by 1915.

AN American view of the terms "secondary" and "elementary" as applied to education is contained in an article on "The Term 'Secondary' in American Education," by Mr. B. F. Pittenger, in *The School Review*. American usage varies considerably; "secondary" may merely mark the second school entered by the public school child as it advances in age from the days when it leaves the kindergarten; it may, however, be just a synonym for public high school, and so betoken a difference in character as well as the chronological sequence. Some writers hold that elementary education deals with the tools or "conventionalities" of learning, and that secondary and higher education aim respectively at culture and at training for professional efficiency respectively. Yet another view is based upon method of instruction, since the adolescent mind is more capable and should be differently taught than that of a younger child. Finally, it is stated that the typical European distinction which regards elementary education as the necessary training of the proletariat and secondary education as a luxury for the better classes still persists in a few cases.

THE influence of the war on German universities is shown in an article in *School and Society*. Out of 3,702 teachers of all grades in the universities, 1,111, or 30 per cent., were on war duty in the session 1914-15; only at Berlin and Rostock is there no record in the Kalendars of the death at the front of a member of the university staff. The courses have

been modified by the war, especially in the medical faculties; there are, for example, courses in war-surgery or hygiene at eight of the twenty-two universities. Foreign students have declined in numbers to a quarter of the pre-war total of five thousand; there are two Britons, one Belgian, but no Frenchmen. Approximately 60 per cent. of the students are with the armies, and probably this total includes all the physically fit men. It is stated that in some German universities a majority of the students were rejected for military service on account of disease superinduced by immorality. The International Student-Union, of which Prof. Hugo Munsterberg is one of the leaders, which aimed at the furthering of friendly relations among students of all nations, the strengthening of general interest in problems of international culture, and the mutual understanding of the different national cultures, has dissolved.

THE American Boy Scouts are prepared to correspond with boys in all countries. Arrangements are in progress with scout organisations to enable an American boy to send letters abroad to boys who are likely to send back as interesting a letter as they receive. The scheme is already in operation, and has resulted in the receipt from young Chinese lads of letters which were written interestingly in quaint but correct English. The editor of *Boys' Life*, 200 Fifth Avenue, New York, undertakes to forward the first letter which a boy writes, but subsequent letters are sent direct from correspondent to correspondent. Teachers in this country should send him a few letters in a package accompanied by the requisite amount to cover postage in America from New York to the several destinations.

AN article by Mr. G. W. A. Luckey on "Research as a Means of Teacher-training" is published in *School and Society*. Either consciously or unconsciously, teaching now aims at three different ideals: the humanistic, by which the individual is fashioned in the image of the best of past times; the utilitarian or vocational, which seeks to fit the individual for the present; and the scientific, which assists nature through nurture in order to enable the individual to find himself and to become a man. The teacher should study the nature of mind as seen in the development of the individual and of the race, so that he may quicken his efforts towards the scientific ideal. To permit such study it is essential that the field of teaching should be thoroughly surveyed and mapped so that the fundamental elements stand out in bold relief. No realm of scientific inquiry offers better opportunity for study and research; meanwhile, the teacher may proceed carefully and slowly and learn through his experiences, considered and modified in the light of the best work on the nature of education with which he is acquainted.

DR. ADRAIN BLEYER, in a recent lecture on "The Relation of Industrial Occupations to Child Welfare," stated that although 400,000 fewer children are employed now than fifteen years ago, still one million children form part of the total army of forty million workers in the United States. More than half the

children are employed on farms, nearly a quarter in factories, and about one-sixth in domestic service. There are still child labourers in the coal-mines of Pennsylvania and in the cotton mills of the south, and these occupations are injurious to health. South Carolina has the highest proportion of child labour, and there one worker in eight is a child; in North Carolina the proportion is almost equally high. The town occupations, *i.e.*, as messengers and newsboys, are distinctly injurious in their effect upon the morals of the children. A striking picture of newsboy life is contained in Gene Stratton Porter's novel, "Michael O'Halloran."

"MR. A. R. Cox, District Magistrate, passed judgment in the action for defamation filed by Miss Marjory Kelly, a student, against Mr. V. R. Ayangar, proprietor of a local shorthand and typewriting school, who was charged with notifying to his class of girls that the complainant, who was one of them, was a conceited creature, etc. The court found that the accused had not made special reference to complainant by name; that he had no intention of lowering her reputation; that there was an absence of malice; and that, as master of his own school and bound to maintain discipline, he was privileged to notify to his class the shortcomings of one of them. The court, therefore, acquitted him."—*Indian Education*.

SCOTTISH.

THE Secretary for Scotland, Mr. McKinnon Wood, M.P., replying to a question in the House of Commons, said that the total number of teachers who had entered or attested under the group system was 2,275 out of a possible 3,736. Teachers in this respect had given a splendid lead to the rest of the country. The deficiency had been made good partly by a rearrangement of school staff and classes, and partly by calling in the services of superannuated teachers and of married lady teachers. It was inevitable that education should suffer at the present time, but he was satisfied there would be no serious or permanent loss.

At a meeting of the Glasgow Branch of the Teachers' Guild, Prof. Latta introduced a discussion on "Commercial Education." He said that a great deal of abuse was heard at the present time in regard to German trade and commerce, and German organisation and education were decried as being in large measure responsible for the war. But while both had their defects, both were things good in themselves which had been applied to bad ends. The lesson which we should learn from them was not to distrust organisation and education, but to develop them to the highest and to use them to wise purposes. The great difficulty was to persuade business people that commercial education was really valuable. Till they learned that lesson they would always fail in trade competition with Germany. Prof. Scott, the newly appointed professor of political economy in Glasgow University, in the course of an interesting contribution to the subject, emphasised Prof. Latta's appeal to the community to recognise the need for definite commercial education. No doubt

there was much of business practice that could only be learned in an office, but there was also a large part that could be much better and more intelligently acquired in a good commercial school. Commercial education meant the application of knowledge to business, and comprised acquaintance with the conditions of industry at home and abroad, the peculiarities of life in foreign countries, their customs and language, and a knowledge of general economic principles. At a meeting of Glasgow School Board the subject of commercial education also came up for discussion; it was agreed to call a meeting of representatives of the Chamber of Commerce and Merchants' House to consider the matter with them.

THE proposals for uniting the various educational associations in Scotland into one strong professional union have, after prolonged consideration by a joint committee representing all the different interests, at length been made public. Disappointment has on several occasions been expressed by ardent unionists at the tardy appearance of the report, but the committee very wisely refused to be hurried, and the proposals now issued bear the fullest testimony to the mature deliberation that has been given to every aspect of this difficult and thorny problem. The Educational Institute through its council has already approved generally of the proposals, while the executive committees of the Secondary Association and the Class Teachers' Association have accepted them practically *en bloc*. In view of the big problems that will come up for settlement after the war, it is well that teachers should be able to speak with a united voice, and have behind them the necessary driving power for making that voice heard in high places.

AT a meeting of the governors of the Royal Technical College, Glasgow, Mr. H. F. Stockdale, Director of Education, reported that in the department of chemistry every lecturer and every student was engaged either in the preparation of intermediate products required in the manufacture of drugs or upon work connected with the Ministry of Munitions for the extraction of benzene and toluene from coal-gas. Since November of last year the natural philosophy department has been engaged examining for the Government field-glasses, telescopes, and other optical instruments held in stock by dealers in Scotland. The preliminary instruction of volunteer munition workers had also been entrusted to the college authorities, and in this way large numbers had already been trained and drafted to various centres.

THE new lighting regulations which have come into force for the greater part of Scotland have resulted in the closing down of most of the evening continuation classes. Fortunately, the work of the session was in any case nearing an end, and only a few weeks in the great majority of cases have been cut off the normal session. In Edinburgh the classes have been continued on Saturday afternoons, and 75 per cent. of the usual numbers are found in attendance, while in other centres special arrangements

have been made for carrying on the work of the technical classes and of classes preparing for the Society of Arts examinations. It is hoped that arrangements will be made at an early date to enable the evening school work to be carried on unhampered during next winter session.

TEACHERS, like others, have been appearing before the tribunals charged with determining whether exemption should be given or not, and have experienced the most diverse treatment at the hands of these arbitrary bodies. By an arrangement between the military authorities and the Education Department, the cases of teachers will in future be withdrawn from the local tribunals, and determined by the Army Council in consultation with the Department. In this way greater equality of treatment will be secured, and the interests of education will be conserved so far as that is possible in view of the national needs.

PROPOSALS for regulating the conduct of the preliminary examinations of the Scottish universities were once again before the Court of Glasgow University. The subject has now been under review at Court and Council for several years, but such is the partiality of university authorities for hair-splitting disputations that no decision has yet been arrived at. The chief point at issue appears to be the constitution and powers of the new Entrance Board. The present Joint Board has come in for much criticism because of its perfunctory discharge of its duties, and it was hoped that the new body would, by being made directly responsible to the university courts, give a guarantee for the more efficient conduct of the examinations. Dr. Hutchison and Sir David McVail protested against setting up this new body, and advocated the formation of an Examination Board representing the Education Department, the universities, and teachers, to have control over both the school leaving certificate examinations and the university preliminary examinations. The motion to proceed with the formation of the new Entrance Board was carried by five votes to four, but the ordinance has yet to come before the Privy Council for consideration.

THE Committee of Council on Education in Scotland has issued a minute providing that the code of regulations for day schools for 1915 shall continue in operation for the session of 1916 with the addition of the following article:—"In the case of a breach of any of the conditions of this code, the Department may, where there are special circumstances which would justify it, pay the full grant, or a portion of it, notwithstanding anything in this code to the contrary." These are wide and unusual powers, but in the exceptional conditions of the country they are entirely necessary.

IRISH.

THE Treasury proposals for abolishing or reducing various grants for Irish education have for the present fallen through, and the general position now is "as you were." The Department states that in view of its representation the grants for the teaching of experi-

mental science and drawing in day secondary schools will continue as in the current year. That part of the programme (Section III.) for technical schools and classes which was to be suspended is now to continue in operation, and the classes already accepted under the terms of this section will be recognised for grants. The summer courses of instruction for teachers will also be held as usual in July and August, and provided that the number of candidates is sufficient the Department will arrange for an examination in the principles, methods and history of education, with special reference to science teaching, to be held on June 24th, and a special examination for teachers' qualifications in manual training (woodwork) on June 13th and 14th. The Birrell grant of £40,000 has been paid to the schools, and appears again on the estimates for 1916-17. There has apparently been some difficulty about the conditions for distributing it, concerning which two remarks may be made. First, the conditions, whatever they are to be, should be clearly stated to the schools at the beginning of the school year; and, secondly, there can be no permanent conditions until a definite scheme of registration of teachers has been drawn up by the Registration Council and approved by the Government.

WITH regard to registration, the *Times* Educational Supplement for March, in its "Irish Letter," contains a sentence which is likely to be very misleading. Discussing the improvement of Irish intermediate education and the possibility of an efficient profession of secondary-school teachers, it says:—"The formation of a register of secondary teachers is a real advance; but the qualification demanded is merely a degree of experience in teaching (bad or good) rather than knowledge of applied method." As a matter of fact, no register exists and no conditions of registration have been laid down. The actual state of affairs was clearly explained in the February issue of THE SCHOOL WORLD. A registration council exists, has met twice, and has adjourned *sine die*, because the Government which created it has decided to alter its constitution. Rules for this purpose were to have been laid on the table of the House of Commons at its meeting in February, but up to the time of writing this has not been done. The cynicism of the following is also wide of the truth and of little help towards reform:—"The intermediate examination, however enslaving to teachers and cramping to pupils, is genuinely popular with parents and schools. It supplies a stimulus which enables the most incompetent teacher to get work out of his class, and stirs up the boy of brains to find out for himself what his master gets the credit of teaching him." The popularity of the system, if it is popular, is created by the necessity of Irish schools receiving money for their maintenance, and the Intermediate Board is the chief source of school grants. All examination systems are faulty, but good teaching is not inconsistent even with the most faulty of them.

THE scale of payment of the intermediate school grant for 1915 was as follows. For the sake of comparison the scale of 1914 is also given.

	FOR EACH PASS.					
	1915			1914		
	£	s.	d.	£	s.	d.
Junior Grade ...	4	14	8	5	8	0
Middle Grade ...	7	2	0	8	2	0
Senior Grade ...	10	13	0	12	3	0

FOR EACH PASS WITH HONOURS.

Junior Grade ...	7	2	0	8	2	0
Middle Grade ...	10	13	0	12	3	0
Senior Grade ...	15	19	6	18	4	6

THE Intermediate Board in the rules for 1916 states that in addition to the normal school grant payable on the results of the examinations, a bonus grant of twenty per cent. extra may be paid for special efficiency, having regard to five things:—(a) The efficiency of the teaching; (b) the sufficiency of the staff; (c) sanitary conditions; (d) provision for recreation and exercise; and (e) equipment in natural and experimental science. During the past month a list of twelve principles to be followed in awarding this bonus has been issued; these go into much detail as to the number of classes and pupils in a class, the number of hours of class teaching and study work, the teachers' hours, the percentage of passes in the actual examination, the inspectors' reports, etc. It is not stated whether these are to replace the printed rules, which could not, however, be done without the sanction of the Lord Lieutenant, or are merely to explain and amplify them, in which case they are not altogether following the same lines, e.g., there is no reference to the equipment for science purposes, while, on the other hand, there is a reference to the preparatory grade not in the printed rules; nor, again, is it stated whether they are to be retrospective. In fact, there are several features about these twelve principles which require explanation.

THE Central Association of Irish Schoolmistresses held its annual general meeting in Alexandra College, Dublin, on February 10th, when Prof. Cole gave an interesting lecture on "Regional Methods in the Teaching of Geography." The Association has affiliated itself to the "Union of Women Workers."

THE Department announces summer courses of instruction for teachers, which will, with one exception, be held from July 4th to July 28th. The exception is that in rural science, which will be held from August 8th to September 1st. The courses will be in (1) water for industrial purposes, intended mainly for teachers of chemistry in technical schools, who should hold a university degree in chemistry or equivalent qualifications; (2) practical electrical testing and measurements, for teachers of electro-technology and physics in technical schools, and for teachers of the special course in physics for day secondary schools; (3) internal-combustion engines and motor-car mechanism, for teachers of mechanical engineering in technical schools; (4) technology, for teachers of introductory English and mathematics in technical schools; (5) commercial arithmetic and economic geography, for the same teachers as (4); (6) practical mathematics and mechanics, for teachers of building trades and engineering subjects in technical schools and for manual instructors; (7) furniture design, for teachers of cabinet-making

and woodwork; (8) life drawing and figure composition, for teachers in schools of art and art classes in technical schools; (9) lithography, for those who have previously attended a similar course; (10) lettering and process work, for teachers in schools of art and art classes in technical schools; (11) ornamental leather work, for similar teachers; (12) advanced housewifery, for teachers holding the diploma of the Irish Training School of Domestic Economy or similar diploma; (13) advanced dressmaking, for similar teachers; (14) hygiene and sick nursing, primarily for teachers of domestic economy, but applications will be considered from district nurses; (15) experimental science, for teachers in day secondary schools in each of the special courses of the Department's programme; (16) drawing and modelling, for a limited number of teachers in day secondary schools, not residing or teaching within ten miles of Dublin, Belfast, Cork, Londonderry, Limerick, or Waterford; (17) domestic economy, for teachers already provisionally recognised to give instruction in the preliminary course of experimental science of the Department's programme; (18) manual training (woodwork), for teachers in day secondary schools; and (19) rural science, including school gardening, for national school teachers who have successfully attended a course in the first year syllabus of rural science.

THE Department's *Quarterly Journal*, published in January, contains the vice-president's annual address, delivered in November, and interesting articles on the "Reclamation of Bog Land," "Allotment Gardening in Belfast," and other subjects.

WELSH.

ST. DAVID'S DAY was celebrated both inside and outside Wales in most varied and interesting ways. Londoners were strongly impressed by the performance of the band of the newly-formed regiment of the Welsh Guards at Buckingham Palace, the Flag Day, and the Welsh gathering at the London Opera House. In the schools of Wales there were patriotic addresses, the singing of Welsh songs, eisteddfodau, the reading of rolls of honour, historical tableaux, pilgrimages to places of historic interest, visits, gifts in hand, to war hospitals, and the like. In one school, after the celebration, volunteers were called for to undertake a practical piece of social service by clearing away from a mountain road the snowdrifts that had blocked traffic for the greater part of a week.

THE National Museum of Wales has arranged an exhibition of portraits of eminent Welshmen, to be displayed at the City Hall, Cardiff. It is to be open for several weeks.

ATTENTION has several times been directed in these notes to the evidences of pressure on the financial resources of the Welsh intermediate schools—a pressure the existence of which has been officially denied. In addition to the case of Ebbw Vale, mentioned last month, it is now stated that at a recent meeting of the governors of the Porth Intermediate School the chairman, Mr. Tom John, gave notice of motion:—"That owing to the inadequacy of the funds provided by the Glamorgan County Council to maintain the school, the governors resign *en bloc*." Following

on this, a letter from the Porth governors was read at the monthly meeting of the Pontypridd governors, who were to join in a deputation to the County Council, asking that adequate provision should be made for the needs of the separated Boys' and Girls' Schools. It was decided not to join in sending the deputation, the time being inopportune, and it being unlikely, owing to the war, that any real consideration would be given to the request. The Glamorgan County Council recently divided the mixed schools at Aberdare, Barry, Pontypridd, and Porth; as the schools had reached the average number of four hundred pupils—the point where, under modern conditions, a complete staff is most economically employed—their action in dividing the schools instead of extending them came in for some severe criticism on the score both of the motives and the result of the policy.

MR. T. J. BENJAMIN, a native of Ynysir, and an assistant master at the Council School, Pontrhydfendigaid, Cardiganshire, became a student at Bristol University, and from there enlisted in the 6th Gloucester Regiment. He has been promoted to sergeant's rank on the field and twice recommended for the D.C.M. In a competition held last September behind the firing line in France he won a bronze medal for a half-mile race and for bomb-throwing.

SOME strong remarks were made at the last meeting of the Radnorshire Insurance Committee. It was stated that though fourteen deaths had occurred from tuberculosis during the quarter ending last June, only four cases had been notified to the medical officer. This state of things was stultifying the work of the National Memorial Association and utterly disregarding the lessons enforced in its educational campaign.

THE Royal Commission on Welsh Monuments met on February 23rd for the first time since the death of its late chairman, Sir John Rhys, who is succeeded by Sir E. Vincent Evans. The volume of reports on Carmarthenshire monuments is in the hands of the printers, and will appear shortly.

THE question whether an education authority is entitled to require its teachers to reside within a given distance of their work is to be tested in the courts. The necessity for an undertaking on this point is insisted on by the Glamorgan Education Sub-Committee, but is resisted by the National Union of Teachers as an undue interference with personal liberty, and as likely to lead to the imposition of extraneous duties; it has been decided to grant maintenance to the threatened teachers, and to call on members of the N.U.T. to refuse to replace them if the recommendation of the sub-committee is adopted.

William Pitt and the National Revival. By J. Holland Rose. xii+655 pp. (Bell.) 7s. 6d. net.—We have pleasure in directing attention to this cheap edition of Dr. Holland Rose's standard work on the early political career of the younger Pitt. It forms the prelude to Dr. Rose's study of "Pitt and the Great War," of which a similar cheap reprint was issued last year. The two volumes together constitute the most authoritative biography of the great English statesman which we possess.

THE DIRECT METHOD OF TEACHING LATIN.

Via Nova, or the Application of the Direct Method to Latin and Greek. By W. H. S. Jones. xii+175 pp. (Cambridge University Press.) 3s. 6d. net.

This interesting volume is a valuable contribution to the series of "Cambridge Handbooks for Teachers" which is being issued under the editorship of Mr. S. S. F. Fletcher. Apart from his special purpose, the author has done good service to the teaching of foreign languages in general by his skillful exposition and defence of the "direct method." Indeed, his virtual definition of this method in broad terms as the combination of all devices which will help the learner to think in the foreign tongue goes far to disarm opposition, if it does not place the whole question beyond the reach of controversy. Opinions may differ as to the degree in which this aim can be attained in any given circumstances, and as to the exact choice of means, but not even the most hide-bound pedagogue can deny that the effort is worth making.

In advocating the extension of the direct method to the study of dead languages, Mr. Jones has the advantage of being able to buttress his theory by citing the results of his long experience of its use in the teaching of Latin and Greek in the Perse School, to which he is well justified in appealing, as he does in all modesty. Like all true reformers, he is anxious to throw the fruits of his experiments into the common stock, and he has taken great pains to explain in detail the precise plan which he has come to regard as best fitted to secure the desired end. In setting this forth he has made it appear that his practice has been based on sound educational maxims. An excellent case is certainly made out, not only for teaching Latin and Greek as far as possible as if they were living tongues, but for adopting in its general outlines the procedure recommended.

Some of the inherent difficulties are fully recognised, and no extravagant claims are put forward as to the results which may reasonably be anticipated. It is admitted that the attempt to re-animate the dry bones of a dead language is necessarily artificial, and that at the best success can only be partial. There will be general sympathy with the author's protest in regard to some of the removable obstacles, such as the tendency shown in the character of junior examinations and otherwise to impose tests of progress prematurely. It would appear, indeed, that too generous a confidence is felt in the possibility of finding a supply of teachers capable of doing even moderate justice to the task. It can be but rarely that the necessary combination of gifts will be available under such inducements as are at all likely to be offered.

It is only, however, when we confront the author's second thesis that serious misgivings arise. It is one thing to maintain that where Latin and Greek are taught the direct method should be adopted, and quite another thing to contend that the use of the direct method makes the study so interesting and so fruitful that it justifies the retention of a classical course as the true medium of a liberal education. Public opinion will not have patience much longer with a curriculum which appropriates nearly half the school time between the ages of twelve and sixteen to the study of foreign languages, whether dead or living. The allowance of nearly two-thirds of the whole school time, which Mr. Jones demands, for Latin and Greek alone during the years of specialisation from sixteen to nineteen, may be all right for those who mean to

be classical teachers, or for those who can afford to gratify their personal tastes, but it can no longer be accepted that, even under the most fruitful methods of teaching, a study of the classical tongues, or even of Latin alone, forms a necessary preparation for ordinary professional life.

RECENT SCHOOL BOOKS ON PHYSIOLOGY AND HYGIENE.

(1) *The Health Series of Physiology and Hygiene.* By M. V. O'Shea and J. H. Kellogg. (i) *Health Habits.* xii+216 pp. 2s. (ii) *Health and Cleanliness.* xii+301 pp. 3s. (iii) *The Body in Health.* ix+324 pp. 3s. 6d. (iv) *Making the Most of Life.* ix+298 pp. 3s. 6d. (New York: The Macmillan Co.)

(2) *First Book of Physiology and Hygiene.* By Gertrude D. Cathcart. viii+158. (Macmillan.) 1s. 6d. net.

(3) *Domestic Work for Rural Schools.* By P. H. Arch. xiv+243 pp. (Pitman.) 2s. 6d. net.

(4) *Lessons and Experiments on Scientific Hygiene and Temperance.* By Helen Coomber. xx+163 pp. (Macmillan.) 1s. net.

(5) *Personal Hygiene for Boys.* By D. L. Anderson and L. McNicoll. xiv+130 pp. (Cassell.) 1s. 6d.

(6) *Keeping in Condition.* By Harry H. Moore. xvii+137 pp. (New York: The Macmillan Co.) 3s. 6d. net.

(1) "THE Health Series of Physiology and Hygiene" succeeds in presenting in an attractive form for pupils in the elementary school an accurate account of the physiology relating to the general hygiene of everyday life. The first book of the series is intended to lead average children of from nine to twelve years of age to acquire healthful habits of walking, sitting, eating, working, and playing. In the second book, pupils are taught to understand the dependence of health upon protection against infection by germ life, and the significance of cleanliness as a safeguard against disease. In the third book, foods and beverages are considered in detail, and topics concerning the elimination of poisons from the body, and the work of the nervous system, are also given a prominent place. The last book of the series shows the relation between health and efficiency, and discusses the problems to be considered in maintaining bodily vigour and resisting disease and fatigue. At least one interesting and practical original exercise is suggested in illustration of every law of health enunciated. Pupils who work out these problems cannot fail to be impressed with the real importance of conforming to the rules of healthy living. All the books are written in clear and vigorous language, and are furnished with an abundance of arresting and helpful illustrations. The paper, printing, and binding merit a special word of commendation.

For somewhat older pupils, the "First Book of Physiology and Hygiene" (2) could scarcely be bettered. Less colloquial in treatment than the books just considered, it is nevertheless thoroughly interesting. The author groups her facts round certain central ideas, and thus gives them a coherence which is distinctly helpful to the reader. The subject-matter is presented simply, with an avoidance of unnecessary technical terms, and is illustrated by sixty-five excellent figures. Numerous practical exercises and a large number of questions set in University Local Examinations in physiology and hygiene add materially to the value of the book for class work.

A practical and straightforward handbook on the

simple essentials of housekeeping for use in elementary schools is provided by Mr. Arch's book (3). As Mr. Christopher Turnor points out in a foreword, elaborately fitted domestic-subject centres may have a positively injurious effect upon certain girls, by making them discontented with the simple, though adequate, arrangements which are alone available in their homes. Mr. Arch has performed a real service to the community by working out a course of instruction in domestic economy really suitable for working-class families. The book is attractively printed and illustrated.

Miss Coomber's book (4) is based on the matter contained in the Board of Education syllabus, "Lessons on Temperance." It gives instructions for a large number of simple experiments illustrating the facts outlined in the syllabus, together with detailed suggestions for associated oral and written work to be performed by the pupils. Parts of the syllabus which cannot be taught experimentally are dealt with by questions designed to lead the children to find out as much as possible for themselves. The course outlined is really educational, and will be welcomed by many teachers.

No. (5) is evidently intended for boys up to the age of twelve or thereabout. It contains very little formal physiology, and inculcates the rules of healthy living in a way which, we think, will secure the respectful attention of its young readers. The book gives sound and manly advice on the subjects of food and beverages, fresh air, cleanliness, exercise and games, etc. It is well got-up and illustrated, and deserves to become popular.

"Keeping in Condition" (6) is a book which we should like to put into the hands of every boy of fourteen. It is "an attempt to set up an ideal of vigorous manhood, and to supply the youth with the information necessary for its achievement." It deals frankly and wisely with the special needs and difficulties of adolescent boys. As Prof. Hetherington remarks in the introduction, "it shifts a large part of sex hygiene from a position of awkward isolation to its natural place as a phase of an idealised yet practical programme of training." The difficulties inherent in the task are obvious, but we have nothing but praise for the way in which it has been carried out.

THE TEACHING OF AGRICULTURE.

(1) *Soils and Manures*. By Dr. E. J. Russell. 206 + ix pp. (Cambridge University Press.) 3s. 6d. net.

(2) *The Essentials of Agriculture*. By H. J. Waters. 455 + xlvi pp. (Ginn.) 5s. 6d.

(3) *A Manual of Soil Physics*. By P. B. Barker and H. J. Young. 101 + vi pp. (Ginn.) 3s.

(1) THIS small student's manual by the director of the Rothamsted Experimental Station includes, amongst other matter, the results of recent important investigations carried out under his guidance. It is a stimulating book, thoroughly up to date, and the work of the master-hand is visible throughout. Part i. gives a lucid account of the soil, its history, composition, varieties, etc. Part ii. deals with the control of various soils and the effects of cultivation, cropping, draining, and the like, on fertility, and part iii. treats of the different substances used as fertilisers or manures, the whole being treated in a practical fashion. An appendix supplies details of the analysis of soils and manures. A short bibliography and an index complete the manual. It is well printed and

illustrated with diagrams and copies of photographs, but unfortunately several of the latter are so poorly reproduced as to be scarcely recognisable, even to one well acquainted with the spot depicted.

(2) The preface of this book tells us that "The American people have definitely decided that so far as is consistent with a reasonably liberal culture the training of the student shall relate intimately to the life he expects to lead," and that "Agriculture, wherever well taught, has proved to be a source of strength to the school, whether a one-teacher country school, a high school, a college, or a university. . . . This book is for students who desire a practical working knowledge of the essentials of agriculture." America has gone far ahead of England in the extent to which agricultural science is admitted to the ordinary school curriculum, consequently there is hardly likely to be a demand for a text-book such as this for secondary schools in this country, though it might be of great service in farm institutes and agricultural colleges. The author has done his work well and produced a manual which gives a clear statement of the principles underlying practically every branch of successful farming. It is written entirely from the American point of view, and deals with American crops and conditions. The book is well got up and illustrated profusely, though a few of the illustrations seem to be purposeless, and might well have been omitted. At the close of each chapter there is a useful set of questions, problems, exercises, and references.

(3) The authors are professors of agronomy in the University of Nebraska, and we presume this manual contains a portion of the course worked by their students. In the preface they tell us that "these exercises are the outcome of ten years' experience in teaching the important physical properties of soils," and that they "are intended to give the student an understanding of the origin, composition, and physical properties of soils, and to show the relations of these properties to methods of soil management." The manual contains forty-four exercises, each of which is followed by a list of references to other works and by a set of questions to be answered by the student—we suppose, after he has read up the passages referred to, for they cannot usually be answered from the experiment or experiments proposed.

The directions for working the experiments are often of a meagre description, and the exercises are not always well planned to attain the object set out at the beginning—e.g., Ex. xxii., "Power of Soils to Absorb Salts," where no "salts" are used in the experiment, but merely "eosin solution." They would have been much more useful to students outside the professors' own classes had fuller descriptions of the special pieces of apparatus used been added. The book is not bound, but consists of loose sheets enclosed in a patent biflex binder case, and a quantity of blank paper is included at the end. The arrangement has certain advantages, but we are not sure that they are not outweighed by the disadvantages.

Landscapes for Army Class Drawing. By L. Bellin Carter. (Arnold.) 2s. net.—This series of eight sketches has been prepared by the art master at Wellington College. They are on the same lines as the sketches supplied in the Army entrance examinations, and directions are supplied to guide the student who uses them. They should, therefore, prove useful to the somewhat limited number of students who need practice in sketching landscapes for topographical purposes.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Deutsche Lektionen nach der Gouin Methode. Von F. Thémin und R. O. Gercke. viii+120 pp. (Hachette.) 1s. 6d. net.—This volume is an "erstes Buch für Kinder," and is arranged on the now familiar lines. Each page as a rule contains a "series" and a little grammar section. The text is divided into lines of varying length; in the earlier part of the book the division is rational, later it is meaningless; thus on p. 96 the first line runs, "Fast jeder gesunde Mann muss in," and the second "Deutschland Soldat werden." There is something to be said for dividing a beginner's text into breath groups, but such arbitrary division is positively misleading. A more serious drawback to the book is the absence of exercises; insufficient attention is devoted to the repetition of new words; and there is no word list at the end. The twelve pictures are of little practical value, as they almost all represent activities that can be easily exemplified in the classroom. There are few misprints, and the type is good. The grammatical rules are not always well stated (e.g., "Im Fragesatz beginnt das Zeitwort den Satz"), and it is distressing to find the accusative given as the fourth case. We do not know who was first responsible for this ridiculous arrangement of the cases, but it is about time that it disappeared.

Chapters from German History. By A. Meyrick. 121 pp. (Oxford University Press.) 2s.—It is not easy to write about German history in German "sufficiently simple to be mastered by English pupils after a couple of terms' work at the elements of the language." Although these "Bilder aus der deutschen Geschichte" are indeed very skilfully put together in simple German, we think that it would require very intensive work during the first "couple of terms" to make pupils ready to read them with any ease. We are inclined to doubt whether German history should be introduced at so early a stage; we should prefer to use the book with third-year pupils, who would doubtless read it with interest and pleasure, as it deals with striking figures like Hermann, Charlemagne, Frederick Barbarossa, Maximilian I., and Luther. There are no footnotes and (which seems a pity) no illustrations; but there are German questions on the text and a German-English vocabulary. The type is large and clear; the spelling is not always in accordance with the latest reforms (e.g., "von einander, Nichts, u.s.w., Keiner"). The style is simple and straightforward, and only occasionally is there a lapse in idiom.

Black's First German Book. By L. H. Althaus. xv+135 pp. (Black.) 2s. 6d.—Miss Althaus is well known as an enthusiastic teacher of modern languages, and she has done much good work as organising mistress in modern languages at the West Riding Education Committee. Perhaps it is due to the multiplicity of her activities that she has not been able to devote to the preparation of this book all the time that was required. We could forgive the rather numerous misprints, trying as they are in a school book; we appreciate the copious opportunities for phonetic drill; but in point of method we regard the book as scarcely satisfactory. The vocabulary has not been selected with sufficient care; new words are not always well explained, and heavy type is not consistently used to indicate them when they first appear. The selection of grammatical features to be taught does not seem to be based on any well-considered plan; and the exercises

are far too scanty. The absence of an alphabetical word list with phonetic transcriptions and grammatical details is also a weakness. Some lesson notes for teachers are supplied gratis; but they cover only eight pages, and a good deal that is intended only for the teacher appears in the pupils' book, which is a serious mistake. The text, of the early lessons in particular, is dull, and even such playful devices as throwing chocolates about in the classroom or seizing a pupil's nose fail to render the book animated. Occasionally, too, the language is unidiomatic. It is incorrect to speak of "ein Satz im Nominativ," or to say "Schreibe den Satz in den Singular," or "An dem Sattel bindet man die Bügel." It is stated that an edition in phonetic script of the first thirty lessons has been published separately; no copy of this has reached us. We conclude by quoting the excellent advice Miss Althaus gives in her preface: "Let the bricks with which you build all be sound before you put them in place," to which we would add, "and be quite sure that you put them in the right place," as we recall that the present of "sein" does not appear until lesson xxiv. of her book, and the possessive adjectives not until lesson xlv.

German Unseens. Selected and arranged by A. R. Florian. iii+184 pp. (Rivingtons.) 3s.—It is a moot question whether selections of short extracts should be read; it may well be urged that continuous texts are preferable. Those who think that the reading of short extracts is essential as a preparation for examinations will find this a serviceable book. It contains 162 passages, of gradually increasing difficulty, taken from many authors, and including some poetry. The type is good, and there are not many troublesome misprints; but the use of capitals is not always in agreement with current practice, and such old-fashioned spellings as "thut," "an's," "giebt," have occasionally been retained. Awkward mistakes are "Stecken" for "Flecken" (No. 35, l. 6), "Laub" for "Laut" (No. 45, l. 7), "Ealesche" for "Calesche" (No. 68, l. 8), "er" for "es" (No. 86, l. 21), "kreift" for "kreist" (No. 91, l. 9), "unabhänzige" for "unabhängige" (No. 104, l. 26), "Schwach" for "Schmach" (No. 111, l. 18), "gesteckt" for "gestreckt" (No. 118, l. 15), "Borstellung" for "Vorstellung" (No. 130, l. 29), "Eab" for "Cab" (No. 159, l. 12).

Ein praktischer Anfang. By M. E. Manfred. xxvi+326 pp. (Heath.) 2s. 6d.—It is very satisfactory to find that at last the reform method is beginning to make headway in the United States. Mr. Manfred, who is "Head of the German Department, Richmond Hill High School, New York City," has written a very careful introduction to German, with plentiful exercises. It is on reform lines, except that there is some translation of English sentences and there are German-English vocabularies. In a beginner's book the meaning of the words should be clear from their form (e.g., "lang"), from the context, or from an illustration, and no English renderings should be required. The book has been very well and carefully printed, and there are helpful illustrations. Considerable ground is covered, both in vocabulary and grammar. The only weak part of the book is the introduction, in which there is much confusion of sounds and symbols; "sch" is called an "s sound," "ch" a "compound consonant," etc. We are told that "a vowel is narrow or wide, according to the degree in which the tongue is narrowed in pronouncing it." They have not yet gone very far in applying phonetics to the teaching of modern languages across the water, when an otherwise meritorious book can be disfigured by such inadequate treatment of the pronunciation.

Classics.

Initium: A First Latin Course on the Direct Method. By R. B. Appleton and W. H. S. Jones. 96 pp. (Cambridge University Press.)

Teacher's Companion to 'Initium.' By R. B. Appleton. 36 pp. (Cambridge University Press.) 1s. net.

Teachers of Latin who have any desire to try the direct method will be grateful to the authors of these two little volumes, which make public the results of their experience in the Perse School. In the "Companion" a full explanation is given of the general introduction and preliminary oral teaching which it has been found desirable to supply before the text-book is put into the hands of the pupils. Useful hints are also given in regard to the use of the text-book itself. The "Initium" is written entirely in Latin, and consists of stories, dialogues, poems, and short plays, along with suitable questions and answers on the text, paradigms, and vocabularies. The choice of material is such as to combine a maximum of interest with steady progress in mastering the difficulties of the language. The full benefit of these books will not be gained by teachers who follow them slavishly, for they are intended rather to stimulate independent effort, but they will form an admirable substratum on which to build up the colloquial proficiency that is to be aimed at along with accurate knowledge.

English.

The Art of Writing. By Sir Arthur Quiller-Couch. 252 pp. (Cambridge University Press.) 7s. 6d.—One heard, dimly, that these lectures were being given; but beyond trying to imagine Q. in that galley we passed the news by. Here we have the lectures, vivid, learned, occasionally flippant, generally serious; but always without the living voice. If "teaching" there be in the volume, *absit omen*, it is this: that to learn to write you must write; that plays are meant to be acted, lyrics to be sung, words to be treated with care and accuracy, jargon and journalese to be shunned; further, that style has more to do with manners than with man. If the delightful author had to take three books with him to teach English withal, he would take Homer first, and, after, the A.V. and Shakespeare. The limits of a short notice do not allow us to say how full of good things this book is; things as far removed from the subject as they decently may be without being total irrelevances. The lecturer has few hates, but many loves; his sole obsession is his fixed belief that the roll and music of the 1611 Bible is due to Jacobean times and committees. Leaving Tyndale and his miracle alone, one has only to turn to Geneva Barker Bibles (1560-1580) to find all the majestic passages quoted by our lecturer almost always identical. The question where the music of the A.V. came from is not yet decided, but it is no more Elizabethan and wholly English than it is Welsh; probably it is a mixture of Hebrew thought and Tudor translation, refined by the special taste of a few men, not 1611 committee-men, who lived, as Froude says, with the sword hanging over their heads. You find traces of the music in Drummond of Hawthornden, in Hakluyt, in Bacon, and in despised Mandeville; but it is not in **Caxton**, nor **Malory**, nor **Hooker**. Its nearest relation is that early, simple, popular English prose which Q. wholeheartedly despises. This beautifully printed volume, in which all the Greek is immaculate, is disfigured in two places by a bad misquotation from Gray's "Elegy"—a misquotation to which this magazine has directed attention a dozen times, and to which it will continue to direct attention so long as the editors allow. Gray never wrote, "Await alike th' inevitable hour"; the line makes nonsense.

Metaphor in Poetry. By J. G. Jennings. 94 pp. (Blackie.) 2s. 6d.—We have waited long for this book, and the author will not misunderstand when we say that the book is in size inadequate. Twenty-nine pages are taken up with Aristotle, Quintilian, and others who tell us what metaphor is; but Mr. Jennings and we want to know what it does that it should thus be the background of poetry, even if it be not more. This little book gets near the secret, but because only a few writers are touched, and that scantily, it does not get close. To begin with, metaphor is not simile, though in this book no distinction is made; and to go on with, metaphor must fit like a lady's glove, though in this book Virgil is praised through two ill-to-be-spared pages for a comparison of which a fifth-form boy would be ashamed. Anyone who takes up "Romeo and Juliet" or "King Lear" and carefully examines a couple of scenes will add that metaphor must also be unconscious. Shakespeare and Shelley, two brilliant metaphorists, are unconscious; Tennyson, equally beautiful and more exact, is not. We want a full book on metaphor, for, when we find the unconscious author excelling in it we find a key that has not been tried by the critic. The pages of Mr. Jennings's book are full of wisdom and of exquisite insight; and that is why they are so unsatisfactory. "The half hath not been told us."

The Study of Shakespeare. By H. T. Stephenson. 300 pp. (Bell.) 4s. 6d.—Some extremely good and helpful criticism of the plays has come from the States, and no one will soon forget R. G. White's "Studies in Shakespeare." Let us say at once that the present volume will make young students think. It is more thoroughgoing than Mr. Masefield's little book, but with it it points to the new view of the democratic critic, i.e., that the plays are open to a new generation for the exercise of new thought. If Shakespeare had no "view" then he is, as has been said, what we make of him. A shock will be felt by older readers to find Cordelia treated as "pig-headed" and Hamlet as entirely resolute. Mr. Stephenson is, of course, no idolater; but he comes perilously near it when he seems to wish to make characterisation the distinguishing mark of Shakespeare's powers. It is to be hoped that a second edition will, as the writer says, see many additions; a chapter on the Sonnets would be welcome. Meanwhile, this book and Hazlitt will afford much thought for any class.

A Literary Middle English Reader. By A. S. Cook. 554 pp. (Ginn.) 8s. 6d.—Prof. Cook, whose name is well known as the editor of older work, now turns to Middle English; and though his contention that his extracts can be read as easily as Elizabethan English will not be maintained by anyone but himself, yet for those who have some acquaintance with Chaucer's immediate predecessors this is a delightful volume. It may, too, be recommended to schools, being carefully edited, with the necessary loss of the grossness inseparable from all medieval work. In this matter of the reverence for youth American editors shine. The introduction is too short, and for the school too academic and allusive; why should editors always have one eye on their brother critics, as though the text alone were for the student? Indeed, an introduction often requires more notes than a text. No objection can be taken to any statement in this introduction unless we protest against the remark, "Piers Plowman leads us nowhere"; Jusserand has written a most entrancing volume to prove the contrary. And can the "Canterbury Tales" be called a torso? A torso is a maimed, not an unfinished statue. We direct attention for the third or fourth time to the want of

exactness in all statements on the pronunciation of the final and medial *e* in Middle English verse; Mr. Cook tells us to pronounce it as we please; how would he scan the first line of the *Clerkes Tale*? The extracts are very varied, and we miss none of great importance; but the prosy Barbour and Gower get, as usual, too much space and the songs too little. The second reading of this book will be a delight to the beginner; the first reading will be more tiresome. All explanations are at the foot of the page, as they should be.

History.

The Interpretation of History. By L. Cecil Jane. viii+348 pp. (Dent.) 5s. net.—This is a bold and ambitious work. It aims at a philosophy of history, that is to say, it seeks to discover a clue which shall interpret the past in such a clear and intelligible way as to make a forecast of the future possible. The desired clue Mr. Jane finds in "the secular conflict between Universalism and Individualism" (p. 42). Neither of these terms, however, does Mr. Jane employ in its ordinary sense. "Universalism," he says, "has an external and an internal aspect. Externally, it implies the subordination of the interest of any particular State to that of the world at large. . . . Internally, it implies the subordination of the individual to the community." The converse of this is Individualism. It is the desire to rule. "In its external aspect, Individualism implies the adoption by a State of an entirely independent attitude towards other States. . . . Internally, it implies the restriction of the province of government within the narrowest possible limits." Mr. Jane holds that "every State tends to become wholly [that is, both externally and internally] universalist or wholly individualist"; but neither his arguments nor his examples bear out his thesis. He himself, indeed, makes the destructive admission (p. 55): "For the assumption of an independent attitude towards foreign powers, a strong government at home is almost essential." It is much to be regretted that Mr. Jane has confused his thesis by the inclusion within his special terms "Universalism" and "Individualism" of these diverse elements, external and internal, which in truth have no necessary connection at all. If he had limited himself to the elucidation of the conflict between the principles of Cosmopolitanism and Nationality during the last two thousand years he would have produced a work both more easily comprehensible and more valuable.

The People in Adventure. By Stanley Leathes. xxiv+311 pp. (Heinemann.) 2s. 6d.—This volume is the second of the three parts of Mr. Stanley Leathes's notable history of "The People of England." It gives a brief but eminently readable and masterly survey of the political, economic, and social development of the English nation from 1485 to 1789. It describes the many activities of the youth and early maturity of that political personage later known as John Bull who had been born in the fifteenth century as the product of the travail of the Middle Ages. It tells of the adventures of the English seamen, the experiments of agriculturists, the efforts of literary men and men of science, the achievement of pioneers of industry and commerce. Those who have read the first part, "The People in the Making," will eagerly welcome this worthy sequel, and will look forward with keen anticipation to the concluding part, "The People on Trial."

A Primer of London Citizenship. By F. Swann. x+118 pp. (King.) 2s.—Mr. Swann's "Primer of English Citizenship" is well known and widely used. It gives a summary sketch of the actual working of the British Constitution. The book before us forms

a sequel to it, and its origin was due to the fact that "Citizenship in London is affected by many conditions and considerations which do not prevail elsewhere in the country." In eight chapters, remarkable for clearness of arrangement and lucidity of statement, Mr. Swann describes the growth of London, the government of the City, the work of the County Council with the various subordinate councils and boards, and the control of the Thames. Finally, he discusses several metropolitan problems, suggests solutions, and propounds a series of "questions for Londoners" to answer which would puzzle the immense majority of City men who have not read this valuable primer. The book should be of great service to all students of civic affairs.

Bibliography of Ancient History. By M. O. B. Caspari. (Published by the Historical Association, and issued gratis to members from 22 Russell Square, London, W.C.)—Mr. Caspari, of University College, London, has rendered a real service to all students of ancient history by the preparation of this scholarly, exhaustive, and well-arranged bibliography. The ground covered is vast, the number of authorities mentioned great, the critical commentary upon them illuminating and valuable. A brief summary of the contents of the bibliography will best indicate its worth.

Section A treats of sources classified under six heads. Section B deals with general histories of antiquity. Sections C-E cover respectively Oriental, Greek, and Roman history. Sections F-G give lists of books on special periods of Greek and Roman history. Sections H and I discuss, the one, special geographical regions, e.g., Britain; the other, special topics, e.g., religion. The concluding section, K, is devoted to reference books and periodicals.

The Historical Association is doing excellent work by providing students with these authoritative guides.

A Short History of Belgium. By L. van der Essen. 168 pp. (Cambridge University Press.) 4s. net.

The Destruction of Belgium. By E. G. Mears. 38 pp. (Heinemann.) 3d. net.

The tragic fate of Belgium at the hands of the Germans has aroused an interest in the history of that heroic but unhappy kingdom such as has never been known in this country before. The presence of tens of thousands of Belgian refugees in our midst has given to the inhabitants of this comparatively sheltered island the most vivid and poignant realisation of the horrors of war which has as yet been vouchsafed to them. Hence any works of an authoritative character dealing with Belgium are extremely welcome. Both the works before us answer that description.

Prof. van der Essen, of the University of Louvain, is one of the most eminent of those Belgian scholars who have sought the hospitality of Britain and America. He has become widely known to audiences on both sides of the Atlantic as an able exponent of his country's history. The present sketch is based on a course of lectures delivered in the University of Chicago towards the close of 1915. It is a lucid and interesting sketch, written with an admirable command of idiomatic English which many a native might envy. Its narrative is fullest for the mediæval and early modern period. A somewhat more detailed account of the century 1815-1915 could have been desired. A number of fine photographs illustrative of the splendid buildings which adorned Belgium before the descent of the barbarians laid it waste add materially to the charm of the volume.

Mr. E. G. Mears, one of the joint secretaries to the committee on the alleged German outrages, writes a

reply to the German White Book on the conduct of the German troops in Belgium. He has no difficulty, alas, in showing that the horrors described in the Bryce Report actually took place, and that the German attempts to explain them away, and to defend them where they have to be admitted, are equally worthless.

Geography.

Macmillan's Geographical Exercise Books. By B. C. Wallis. (1) No. IV., *The Americas.* 6d. (2) Key to No. I., *The British Isles.* 2s. 6d. net.—As in the other books of this excellent series, carefully prepared questions are printed on the right-hand page, and the pupil is required to record the answers on the map opposite to the questions. In the case of North and South America the ground covered by the questions is extensive; Mr. Wallis assumes that, where necessary, oral explanations are given by the teacher, and that reference to text-books is made by the pupil. The wording of some questions should be revised, e.g., question 7, p. 35. This geographical exercise book (No. IV.) can be recommended, as it provides a systematic course of study, the completed results of which appear on the various maps.

The key to "The British Isles" is intended to save the time of the busy teacher when correcting the exercises. The answers are given in concise form, and hints are provided for class discussion.

Mathematics.

Rural Arithmetic. By A. G. Ruston. xi+431 pp. (Clive.) 3s. 6d.—The principles of abstract arithmetic are, of course, independent of the nature of the subject to which they may be applied, and therefore a considerable amount of the matter in this book is necessarily the same as that in the unspecialised text-books. That which gives the book its distinctive character is the fact that the exercises almost without exception relate to calculations which may be expected to arise in connection with farming operations. An additional value is given to the problems in that they are not based upon merely hypothetical data, but have in many instances been derived from the records of the work done at the Leeds University Farm.

The book is divided into four parts. The first, on general arithmetic, deals with the fundamental operations. Prominence is given to decimal fractions and to approximations, but we regret to see the inverted multiplier in multiplication. Other sections deal with household accounts, commercial arithmetic, and the farm, and the author here, as well as in the following parts, furnishes a considerable amount of information relating to the technical aspects of the subject. The titles of the chapters—Soils; Manures; Crops; Live Stock; Foodstuffs; Dairying—give some indication of the contents. Part iii., on mensuration, and part iv., on workshop arithmetic and farm engineering, include chapters on such subjects as levelling, brickwork, and building construction, water supply, work, and power. The book appears very opportunely, and although it is too much to expect that the older generation of farmers will profit by it, it is to be hoped that the rising farmers will learn from it or from similar works the advantages of applying the methods of exact science to industry.

Napier Tercentenary Memorial Volume. Edited by C. G. Knott. xii+441 pp. (Longmans.) 21s. net.—This handsome volume, published under the auspices of the Royal Society of Edinburgh, is a worthy memorial of the homage paid to the genius of Napier at what proved to be the last International Congress held before the outbreak of the war. The addresses and essays here printed fall into two groups—one deal-

ing with the life and work of Napier, and the other with developments of the logarithmic idea. The promoters of the congress were happy in securing Lord Moulton to deliver the inaugural address, and his reconstruction of the steps by which Napier was led to his great discovery is in itself a most valuable contribution to the history of science. Prof. Hume Brown gives a very interesting account of what is known of Napier's private life. It seems that, like Roger Bacon in an earlier age, he passed among the people of his time for a dealer in the black arts. This attitude of mind, which regards the results of scientific research to be more productive of evil than of good, is not altogether unknown at the present day, and to judge by some recent correspondence in the daily papers, even prevails amongst persons who claim to be highly educated.

It is impossible in a short notice to do more than mention the papers by Dr. Glaisher, Prof. D. E. Smith, Prof. F. Cajori, and Prof. G. A. Gibson, all of which treat of some of the historical aspects of the development of logarithms in a detailed and informative manner. Other contributions of value are those by Prof. Bauschinger, on spherical harmonic analysis; by Dr. J. R. Milne, on the arrangement of mathematical tables; by Prof. Steggall, on economy of entries in tables; and by Dr. Sheppard, on the extension of the accuracy of tables.

In looking through the congratulatory addresses, we notice that that from the University of Strassburg contains the sentence:—"Der Gedanke, der vor drei Jahrhunderten im Schlosse zu Merchiston keimte, ist Gemeingut aller Kulturvölker geworden." This suggests a saner view of the nature of kultur than appears to prevail in Germany at the present time. The volume is enriched by reproductions in colour of a portrait of Napier, and of a painting of Merchiston Castle; also by facsimiles of pages from Napier's works.

Science and Technology.

Experimental Physics. By Harold A. Wilson. 405 pp. (Cambridge University Press.) 10s. net.—This book is intended for first year students, to be used in conjunction with a course of experimental lectures. The branches of physics included are mechanics, properties of matter, heat, sound, and light. The author, in his preface, refers to his endeavour to leave out everything not of fundamental importance, and the text indicates this intention quite clearly. The physical phenomena selected are treated with much clearness, and, in several cases, with unusual fulness; but students may find it inconvenient that so many points are not referred to. To take one example, vapour pressure of liquids is discussed fully, but there is no reference to dew-point and hygrometry. The chapter on the mechanics of rigid bodies and on sound are particularly good. No experiments are described in detail, but as a rule the text gives enough practical information to enable an intelligent student to carry out the experiments. Questions and exercises are omitted. The illustrations are simple, but sufficient; in some cases they appear to be unduly large; thus a whole page is used for an illustration of a Centigrade and a Fahrenheit thermometer. The printing and style of the volume are excellent.

Richter's Organic Chemistry. Vol. i. *The Aliphatic Series.* Translated, after the third American edition, from the eighth German edition, by P. E. Spielmann. (Kegan Paul, Trench, Trübner and Co.) 719 pp. 21s. net.—Dr. Spielmann is cordially to be congratulated on the appearance of the first English translation of this well-known text-book. Edited by Profs. Anschütz and Schroeter, "Richter's Organic

Chemistry" has become perhaps the most widely read manual of its kind, and the present translation promises to be as successful here as the original has been. The introduction, occupying sixty-eight pages, deals with the determination of the constitution of carbon compounds; nomenclature; physical properties in relation to chemical constitution; heat of combustion; effects of light and of electricity on organic compounds and classification. The aliphatic compounds are next described in considerable detail. The system is based on the alcohols and their oxidation products. Thus, under the chapter heading of dihydric alcohols we find glycol, its ethers, thio-compounds, and nitrogen derivatives, aldehyde alcohols, ketone alcohols, oxy acids, aldehyde acids, ketone acids, carbonic acid and its derivatives, and the dibasic acids in general. Every homologous series is taken in detail, general methods of formation are given, and the deportment of the series as a whole is described. Then, in addition, follow the preparation and behaviour of every important member of the series. It is safe to say that if an organic compound is not mentioned by Richter, then it is either of slight general interest or else of very recent discovery. Whilst as a work of reference Richter is unequalled considering its size, yet, more than this, it is an excellent descriptive manual. It goes a great deal further than would a mere catalogue of the amazing number of organic compounds known to the chemist. It is a useful and trustworthy guide in the preparation of many important derivatives and in the technique of organic determinations.

The translator has succeeded in bringing the edition well up to date, although Sabatier's excellent method of preparing ketones by passing the vapour of the fatty acid over heated thoria seems to have been passed over. The sections on the sugars and the uric acid group are excellent, and the displayed formulæ are clear and comprehensible. The American translation only occupies 625 pages, and has a smaller format; a careful comparison is all in favour of the present volume. Altogether, it is a book which will prove quite indispensable, both to the student and the teacher, and the issue of the second volume will be looked for with interest and expectation.

The British Journal Photographic Almanac (1916). 982 pp. Edited by G. E. Brown. (Greenwood.) 1s. net; cloth, 2s. net.—This publication maintains its reputation for supplying to photographers a most useful and complete collection of information. In the volume for this year, apart from the trade advertisements, the printed matter occupies 350 pp. The leading contribution, written by the editor, consists of practical notes on printing processes, and it is a remarkably complete treatment of a wide subject. With this as his guide, the amateur photographer has no need to refer to the many separate text-books on this branch of work. The editor also gives a long and opportune article on British resources in the manufacture of photographic materials and apparatus, together with a full list of booklets published by British manufacturers. The remainder of the space is devoted, as usual, to the formulæ for all photographic processes, and to useful tables for conversion of units, etc.

(1) *Elements of General Science*. By O. W. Caldwell and W. L. Eikenberry. xiv+308 pp. (Ginn.) 4s. 6d.

(2) *A Laboratory Manual for Work in General Science*. By O. W. Caldwell, W. L. Eikenberry, and C. J. Pieper. xii+134 pp. (Ginn.) 4s. 6d.

It appears that science instruction in secondary schools of the United States has been hampered

seriously in the past by the smallness of the beginners' fund of information about the common phenomena of nature. The same difficulty is not unknown in our own schools, and British teachers will find much to interest them in the course of work presented in these two books, which attempts to solve the problem. It is based upon six years of experimental teaching in the School of Education of the University of Chicago. The object of the authors has been to get at the point of view of the relatively uninformed pupil, and "to develop a more usable fund of knowledge about common things and a more scientific attitude in interpreting common problems, and to discover and to utilise interest and ability in such ways that more effective and more profitable work may thereafter be done in the differentiated sciences." The topics dealt with are arranged under five major headings: the air, water and its uses, work and energy, the earth's crust, and life upon the earth. The course thus includes a little of each of several sciences, but no attempt has been made to distinguish between these. On the contrary, the books are noteworthy chiefly because they are likely to make young pupils realise the logical connection between topics of a wide range of general interest and importance. They fit into an appropriate context such diverse matters as the work of the United States Weather Bureau, sewage disposal, the commercial importance of the Great Lakes, the principle of the steam engine, the hygienic aspects of nutrition, and the results of natural and artificial selection on races of plants and animals. The first-mentioned book is descriptive, the style being clear without undue avoidance of useful technical terms. The book is attractively printed and contains 137 interesting and well-produced illustrations.

The Laboratory Manual (2), a quarto volume to be had also in loose-leaf form, is intended to be used in conjunction with the Reader, and provides instructions for ninety-four related experiments and demonstrations, with blank paper for the noting of results and conclusions. Naturally, most of the exercises are already well known to teachers, but others are of a type not common in school books. They are all well thought-out, and calculated to train pupils in habits of accurate observation and clear thinking.

Miscellaneous.

Outlines of Scripture History. By H. Clive Barnard. vi+120 pp. (Black.) 1s. 4d.—In this little book the author attempts the task, almost impossible in the brief space at his disposal, of giving a survey of the whole course of history as contained in the Bible. The inevitable result is a poor compromise between a summary and a narrative. It is pointed out in the preface that the volume is designed for children aged about eleven to thirteen. Lack of detail makes it doubtful whether children of these ages would find much of delight or help in such a meagre treatment of the Bible story. The book is beautifully produced, and contains numerous reproductions of old masters, and three good maps. The interpretation adopted is evidently literal, and, to the detriment of his work, Mr. Barnard has carefully avoided the results of any form of modern or rational commentating.

The Story of the Hebrew Patriarchs. By Mrs. Frederic Green. xi+171 pp. (Methuen.) 1s. 6d. net.—Mrs. Green bravely and successfully attempts a sympathetic and modern interpretation of the Genesis story in the light of the accepted results of recent research. The book purports to be written for girls and boys, and it is eminently suited to their needs; nevertheless, it will be equally acceptable to older readers, who

will more fully appreciate the admirable reasoning and skilful interpretation which are marked features of the book. Quotations from various authorities are frequent. Clearly the author owes much to the work of Dr. Driver, a debt which is fully acknowledged. The only flaws in the book are certain faults in style. A few loosely-constructed sentences occur, most of them in the earlier sections of the book, which should be corrected in a subsequent edition. Altogether this "story" is a sheer delight, and we strongly recommend it.

The Cradle of Christianity. By S. P. T. Prideaux. iv+178 pp. (Pitman.) 2s. net.—This unassuming little book deserves to be very widely known. It attempts, with marked success, to give a clear glimpse of the Palestinian world into which the Messiah was born. Mr. Prideaux has given us so much in a small volume that it savours of ungraciousness to hint at more. But the thought obtrudes, that if he could have added to the excellent group of chapters vi.–viii. some notice of the leading religious systems of the Gentile world, the glimpse would have been more complete and the *motif* of the book strengthened. The work is scholarly and trustworthy, and at the same time clear and readable. Careful writing and painstaking research are evidenced in every chapter, and many references are given to standard works, making the book a useful introduction to a further course of study of this important period.

The Way of the Cross. By Doroshevitch. 139 pp. (Constable.) 2s. 6d.—This is a veritable document, a leaf torn out of the volume of the war. The writer, well known as a Russian journalist, left Moscow to meet the solid wall of fugitives driven by the exigencies of war before the German advance at the close of 1915. The way of the cross describes these human locusts who ate up, stole, destroyed, burnt, all that lay in their way, and fell, raising cemeteries without number. The book is as a picture; its short, sharp, unparaphrasable sentences bring the misery and the heroism, the calm and the sobriety before any reader. Mr. Stephen Graham, the translator, contributes a brief preface to his excellent work. If we can get translations like this we should no longer be repelled by the curiosities of Russian diction. But even in a bad translation the story would glow and glare even as the fugitives' bonfires. "The Kinges hyeway of the crosse," à Kempis would have called it; but what stations are these "stopping-places," and what a Golgotha!

EDUCATIONAL BOOKS PUBLISHED DURING FEBRUARY, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

"Le Livre Bleu." A second book of French in Coloured Pictures. By E. Magee. 136 pp. With 16 full-page, coloured, and many other pictures. (Blackie.) 2s.

"Lower Grade Syntax and Composition." Being part i. section ii. of "An Intermediate French Course." By James M. Moore. (Blackie.) 1s. net.

"Chapters from German History: an Elementary Reader." By A. Meyrick. 122 pp. (Clarendon Press.) 2s.

"Haltenhoff's Science German Course." By Prof. A. G. Haltenhoff. Graduated Readings, specially prepared, on Mathematics, Chemistry, Physics, Geology, Zoology, Botany, Physiology, Psychology, Political

Economy, etc., with Grammatical Rules and Hints based on the Text Matter and Questions from Science Papers recently set for the London University Examinations. (Hachette.) 2s. 6d. net.

"German-English Dictionary." By Prof. A. G. Haltenhoff. Printed entirely in Roman type. A New and Up-to-date Compilation for the use of Schools, Science, and Commercial Students, General Purposes, etc., and adapted to meet the Requirements of Candidates for the University, the Civil Service, Army and Navy, and other Professional Examinations. (Hachette.) 4s. net. German Course and Dictionary bound together, 6s. 6d. net.

Classics.

"Initium: A First Latin Course on the Direct Method." By R. B. Appleton and W. H. S. Jones. vi+96 pp. (Cambridge University Press.) 1s. 6d.

"Teacher's Companion to 'Initium.'" By R. B. Appleton. 36 pp. (Cambridge University Press.) 1s. net.

"Pocket Lexicon to the Greek Testament." By A. Souter. 290 pp. (Clarendon Press.) 5s. 6d. net.

English: Grammar, Composition, Literature.

"Précis Writing and Reproduction for Army Classes." By W. J. Griffith. 240 pp. (Edward Arnold.) 2s. 6d.

"On the Art of Writing: Lectures delivered in the University of Cambridge, 1913-14." By Sir Arthur Quiller-Couch. viii+252 pp. (Cambridge University Press.) 7s. 6d. net.

"Visits to Monasteries in the Levant." By the Hon. Robert Curzon. With Introduction by D. G. Hogarth. (Oxford Library of Prose and Poetry.) 440 pp.; illustrated. (Clarendon Press.) 2s. 6d. net.

"Coronata." A Book of Poems in Rhyme and Rhythm. With eight coloured illustrations. By R. Wilson. 256 pp. (Dent.) 1s. 6d.

"The Story-Tellers' Hall." An English Reading Book for Junior Forms. With eight coloured plates and numerous illustrations in line. By R. Wilson. 256 pp. (Dent.) 1s. 6d.

"Treasure Trove." An English Reading Book for Junior and Middle Forms. With eight coloured plates and numerous illustrations in line. By R. Wilson. 256 pp. (Dent.) 1s. 6d.

History.

"The History of South Africa." Vols. i. and ii., from 1795 to 1872. By Dr. G. McCall Theal. (Allen and Unwin.) 7s. 6d. net each.

"The Lands of the Scottish Kings in England." By Margaret F. Moore. (Allen and Unwin.) 5s. net.

"History of the Modern World." By Oscar Brown-ing. 1024 pp. (Cassell.) 7s. 6d. net.

"Historical Readers." Books I. and II. Book I., "The Tale of Ancient Peoples." 128 pp. 10d. net. Book II., "The Tale of the Nations." 160 pp. 1s. net. (Cassell.)

"Matriculation History and Geography Papers. Fifteen Papers in Modern History Set at the Matriculation Examination of the University of London, with Papers in History and Geography Set in 1910-16, and Model Answers to the Paper of January, 1916." 88 pp. (Clive.) 1s. 6d.

"Life in the Homeric Age." By T. D. Seymour. New and cheaper edition. 720 pp. (Macmillan.) 12s. 6d. net.

Geography.

"A Map of World, showing Forest Regions and Geographical Distribution of Timber Trees." By J. Hudson Davies. Size, 34 in. x 28 in. (Johnston.) 6s. net.

"Practical Geography Notebooks." By Franklin

and Shearmur. "British Isles." 40 pp. 4d. net.
"Europe." 40 pp. 4d. net. "Africa." 40 pp. 4d.
net. (Johnston.)

"Map of Middle East, illustrating the Campaigns in
Mesopotamia, Persia, and the Caucasus." 35 in. x
23 in. (Johnston.) Paper, 6d. net; cloth, 1s. 6d. net.

"Macmillan's Geographical Exercise Books." IV.,
"The Americas." With Questions by B. C. Wallis.
48 pp. (Macmillan.) 6d.

"Map of Eurasia. Geographical Terms." (Mac-
millan.) 2s. 6d.

Mathematics.

"Rural Arithmetic." By A. G. Ruston. xi + 431 pp.
(Clive.) 3s. 6d.

"Mathematical Papers for Admission into the Royal
Military Academy and the Royal Military College,
September-November, 1915." Edited by R. M. Milne.
32 pp. (Macmillan.) 1s. net.

"The Mathematical Theory of Probabilities and its
Application to Frequency Curves and Statistical
Methods." Vol. i. By Arne Fisher. 192 pp. (Mac-
millan.) 8s. 6d. net.

Science and Technology.

"A Course of Physics." By Charles H. Draper.
I., "Elementary Physical Science, Mechanics, Heat."
II., "Sound, Light, Magnetism, and Electricity."
(Blackie.) In two vols., price 2s. 6d. each.

"Ships, Shipping, and Fishing, with Some Account
of our Seaports and their Industries." By George F.
Bosworth. (Cambridge Industrial and Commercial
Series. viii + 80 pp. (Cambridge University Press.)
1s. 6d.

"Trade and Commerce, with Some Account of our
Coinage, Weights, and Measures, Banks and Ex-
changes." By A. J. Dicks. (Cambridge Industrial and
Commercial Series.) viii + 94 pp. (Cambridge Uni-
versity Press.) 1s. 6d.

"Factories and Great Industries, with Some Account
of Trade Unions, Old-age Pensions, State Insurance,
the Relief of Distress, Hospitals." By F. A. Farrar.
(Cambridge Industrial and Commercial Series.) x +
90 pp. (Cambridge University Press.) 1s. 6d.

"A Handbook of Colloid Chemistry." By Dr. W.
Ostwald. 290 pp. (Churchill.) 12s. 6d. net.

"Elementary Lessons in Sound." By D. E. Jones.
62 pp. (Macmillan.) 1s.

Pedagogy.

Pestalozzi's "How Gertrude Teaches her Children."
New edition. (Allen and Unwin.) 3s. net.

"Autobiography of Friedrich Froebel." New edition.
(Allen and Unwin.) 2s. 6d.

"Mysteries of Life." By Stanley De Brath. (Allen
and Unwin.) 4s. 6d. net.

"Music as a Language: Lectures to Music
Students." By E. Home. 82 pp. (Clarendon Press.)
3s. 6d. net.

"The Home Governess." By L. H. M. Soulsby.
(Longmans.) 3d. net.

"Suggestions in regard to the Teaching of School
Gardening." By A. B. Lamont. 38 pp. (Macmillan.)
6d.

"Suggestions in regard to Nature-Study." By A. B.
Lamont. 136 pp. (Macmillan.) 1s.

Miscellaneous.

"The Problem of Knowledge." By Douglas Clyde
Macintosh. (Allen and Unwin.) 10s. 6d. net.

"Nights and Days and other Lay Sermons." By
H. Wodehouse. (Allen and Unwin.) 4s. 6d. net.

"Arbitration and Conciliation in Australasia." By
Mary Theresa Rankin. (Allen and Unwin.) 5s. net.

"Introduction to the Study of Philosophy." By Prof.
Oswald Kulp. New edition. (Allen and Unwin.)
6s. net.

"The Books of Chronicles." (In the Revised Ver-
sion.) With maps, notes, and introduction by W. A. L.
Elmslie. (Cambridge Bible for Schools and Colleges.)
1x + 362 pp. (Cambridge University Press.) 4s. 6d.
net.

"The Old Testament for Schools." Arranged and
edited by Canon Morley Stevenson and C. W. Bailey.
526 pp. (Dent.) 2s. 6d.

"Portrait of H.M. the King in Colours." (Mac-
millan.) 1s.

"Keeping Physically Fit: Common-sense Exercises
for the Whole Family." By W. J. Cromie. 156 pp.
(Macmillan.) 4s. 6d. net.

"Four Motets for the Group called 'Songs of Fare-
well.'" Composed by C. Hubert H. Parry. I., 8 pp.,
6d. II., 4 pp., 3d. III., 8 pp., 6d. IV., 8 pp., 6d.
(The Year Book Press.)

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 publica-
tion, so that the criticism and reply may appear
together.*

The Shakespeare Tercentenary.

IN the statement recently issued by us, on behalf
of the Executive Committee, it was proposed that
Wednesday, May 3rd (new style corresponding to
April 23rd old style), should be observed as Shakespeare
Day, and should be as widely as possible adopted by
the schools throughout the Empire.

Should this date, in some cases, fall within the
Easter holidays, it is hoped that the nearest con-
venient day will be selected, rather than that there
should be no observance in the schools of the Shake-
speare Tercentenary.

In the letter in which we detailed the general plan
for the Commemoration, a promise was made of a
further statement in the Press, setting out suggestions
as to the form the School Commemorations might
take. We learn with very great pleasure that many
schools have already acted upon our proposal and
are actively preparing for the due observance of the
Tercentenary. It is a matter of no small satisfaction
that many schools have on their staffs teachers well
trained and expert in Shakespearean knowledge, able,
with the co-operation of those in authority, to carry
out well-conceived programmes for the Tercentenary
Commemoration.

It may be useful to point out that much may be
done, through the ordinary school channels, to prepare
the school children to approach the Commemoration
in a spirit of reverent sympathy and intelligent
interest. Lessons in English literature, in recitation,
in history, in geography, and in singing may well
during this school term be brought into close relation
with Shakespeare, and help the pupils to realise some-
thing of what that name stands for in the life of the
nation and of the Empire. In this way the impres-
sion left by the Commemoration may be made strong
and lasting.

As to the programme for Shakespeare Day, for the
schools that may wish to avail themselves of sug-
gestions, we would indicate some such programme as
the following:—

In schools where the day starts with hymns or prayers it is suggested that the ordinary course should be followed on Shakespeare Day, unless it is desired to mark the occasion by some special hymn or prayer. The reading from Ecclesiasticus, "Let us now praise famous men," might introduce the Commemoration.

A discourse on Shakespeare, dwelling more particularly on the significance of the day, the poet's ideals of patriotism, and love of his native country, should form a prominent feature of the observance.

The singing of Shakespeare songs by the pupils might precede and follow the discourse.

The recitation by the pupils of scenes or passages from the plays should, we think, be included in the programme.

For the purpose of observing Shakespeare Day, the necessary departures from time tables of public elementary schools in England and Wales may be made during the period of the observance. The general sanction of the Board of Education for this has been obtained, and individual application to H.M. Inspectors is not necessary.

In order to save the expense of a separate communication, we venture to appeal to local education authorities to be good enough to accept this statement as addressed to them, in the hope of securing their valued co-operation.

In making these suggestions the Executive has had the assistance of a sub-committee consisting of leading representatives of education.

The authorities of libraries throughout the country might well, as is already being done in several noteworthy cases, arrange for exhibitions of Shakespearean books and pictures during the Tercentenary week, and so quicken interest, and co-operate with the education authorities. The exhibitions might be supplemented by public lectures, and by the preparation of lists of books on Shakespearean subjects suitable for teachers and school pupils.

It is hoped that there may be services on Sunday, April 30th, and that universities, colleges, and literary societies may arrange for the due observance of the Tercentenary on May 3rd, or on such day as may be convenient.

We are glad to be able to state that a special committee of the Education Department of the Y.M.C.A. is making arrangements for the observance of the Tercentenary, and, in connection therewith, for the reading of plays of Shakespeare in the huts of training camps, in munition areas, as well as for our men in France. This should prove to be not the least attractive item of the Tercentenary programme. It is heartily welcomed and called for at home and at the front.

PLYMOUTH,
Chairman;

I. GOLLANCZ,
Hon. Secretary.

King's College, London, W.C.

Urgent Problems of Education.

WE desire to direct the attention of your readers to certain of the many urgent problems of education which arise in consequence of the war, and which demand the careful study of all who wish to secure the future welfare of our country.

(1) Great numbers of children, some of them so young as eleven, are being withdrawn from school to take part in industry. If they do not soon return, and no other provision is made for them, a great social problem is being created for the future by

allowing them thus to drift away from educational influences.

(2) As a result of the war there is an increasing number of orphans and of fatherless children, many children having lost their natural protectors at the age when they most need them. The public goodwill towards these is, we are sure, limitless, and not a few societies are interested in some aspects of the question, and endeavouring to give them the help they need. But there is no general co-ordination of effort, and there is no full and accurate knowledge of the extent of the problem and of the adequacy of existing agencies for dealing with it.

We are, therefore, as a society initiating an inquiry into each of these subjects, with the object of helping both the Government and the country in their consideration of the policy and the measures which may prove to be necessary, and the council will gratefully welcome the co-operation of all who are interested in the subject.

Communications may be addressed to the hon. secretary at the House of Commons.

J. HEREFORD,
President,

J. H. WHITEHOUSE,
Hon. Secretary,

The National League of Workers with Boys,
House of Commons.

Appreciation in Science.

MOST teachers of science will agree that it is most important to give to boys the feeling-tone that accompanies the laborious quest of truth. There is an appreciation of science just as much as there is an appreciation of literature. And just as certainly it cannot be directly taught.

Our theoretical lessons in science are too apt to be merely the hurling at a class of a multitude of textbook facts. Our practical lessons, similarly, are generally only the working through of certain experiments following precisely carefully detailed instructions. In neither theory nor practice does the boy gain any appreciation of the minutely controlled searchings of the founders and extenders of the subject.

The "heuristic" method set out to attain this very desirable end. But in schools it will not work. Most boys require too much watching to avoid danger to allow them anything in the nature of a free use of apparatus or reagents. Moreover, the successful working of the heuristic method requires the absence of certain bits of knowledge on the part of the boy; which absence, in these days of newspapers and popular periodicals, it is impossible to guarantee. And then there is the time question.

But if this element of research be impracticable for the junior boys in a school, let it not be put out of reach of some of the elder boys. It may be objected that the useful results gained by such research will be *nil*. Naturally enough, far-reaching results of scientific consequence cannot be expected from boys, but is the aim to get such results? Is it not, rather, intended as a means to teach indirectly to the boy an appreciation of the labours of men of science, to teach him their methods and their patience and their care?

A few instances of the types of problems set to his senior boys in science will illustrate the writer's meaning. In working with steam, the ordinary type of steam trap furnished by the manufacturers was found to be inadequate if the steam be needed to pass for some time. The boy of fourteen who was conducting the experiment was given the task of making a steam trap which should be suitable for the purpose.

Out of odds and ends of apparatus he produced one which, when later on submitted to a firm of apparatus manufacturers, earned their unqualified commendation. The boy was face to face with a real need; a need which had to be supplied if the experiment were to go on. There was an appeal to the utilitarian motive and the whole was suffused with keen interest.

A more complicated piece of work was prescribed to a pair of boys whose average age was fifteen, and who had had nearly three years at chemistry. They were set to collect from all possible sources as many "recipes" for "invisible" or "sympathetic" inks as they could. Then they prepared samples from the twelve formulæ discovered. The next stage was to experiment with each sample and to determine the degree of its success as a "sympathetic" ink, making careful notes of the same. The last stage was to write a full account of the experiments, supplying in each case the chemical theory of the ink's working. Here the boys were presented with a most interesting subject. Then they had to hunt in books—this searching in books being a most valuable habit for boys to learn. At the same time, they were taught the value of adding the book reference to the particular formula. Next followed the experiments with the inks and the varying degrees of success. Finally, the collection of all the results into a "readable" monograph was not without its own value.

Very often, indeed, statements occurring in text-books will furnish ample material for an interesting and instructive "research." To give one example. In speaking of the conversion of sugar into alcohol by means of yeast, "The Complete School Chemistry" (Oldham) makes the following statement:—"The temperature of the solution should be between 5° and 30° C., for beyond these limits the plant stops growing, and consequently fermentation ceases." The investigation of the limits prescribed in this sentence is a very suitable one for a senior boy to undertake.

That boys find this sort of work most interesting will be apparent to any teacher who will give it a trial. They feel a real, personal responsibility for the particular work in which they are engaged, and in consequence they will take much care to secure good results. They gain a much clearer conception of the value of statements; their critical faculties become trained. They gain in power and in manipulation of apparatus. Text-book descriptions cease from being mere words and become, much more than formerly, something which the imagination can adequately visualise. Above all, they gain an appreciation of science and of the labours of men of science which alters their whole mental outlook.

WILLIAM H. PICK.

Queen's School, Basingstoke.

Qualitative Analysis as a School Subject.

ON opening THE SCHOOL WORLD for February I was disappointed to find that Mr. Thomas J. Kirkland's letter on "Qualitative Analysis as a School Subject" had not proved sufficiently stimulating to arouse discussion. It remains, therefore, for one who found much pleasure in a secondary school twelve years ago to add some words of encouragement.

Mr. Kirkland makes out a very strong case for the consideration of science masters, but he is careful to state quite clearly that everything depends on the way in which such a subject as this is presented.

Qualitative analysis properly taught calls for:—(1) Exactness in description; (2) the exercise of keenness in observation to detect minute changes; (3) the sifting and comparison of evidence; (4) habits of tidiness and cleanliness.

In addition to all this, a time comes in a boy's life, if he is to do anything more than play at chemistry,

when he must become acquainted with a considerable number of substances and learn to classify reactions.

In my experience there is no better approach to this stage than through qualitative analysis. In fact, in my day the chemistry of the metals as required for the advanced stage of the South Kensington papers was taken very largely and with much success in connection with the analytical course. The so-called dry tests were worked through most carefully, and wherever possible the chemistry of the reactions was explained; moreover, every lesson in the laboratory commenced with about ten minutes' work devoted to answering questions (requiring very brief answers) on the analytical work.

In these days, I believe, it is not unknown for boys of fifteen and a half to be commencing the preparation of oxygen. In confirmation of Mr. Kirkland's statement that qualitative analysis never fails to create interest, I can offer recent evidence. A young lady in whom I am much interested came home from school one day in high glee, and said:—"We have had an awfully interesting lesson in chemistry this morning. We were given three white substances and three black ones, and told to find out what they were. It was great fun!" To a lover of science this news, conveyed by a person who had never previously taken any interest in the subject, was very welcome.

N. T. E. C.

Correspondence with Chinese Students.

Will you be so kind as to introduce us to some of the schools or colleges in Great Britain?

I suggest that we shall have regular correspondence with English schools. Letters shall be sent bimonthly by correspondents in both countries. Short stories, news, or any other interesting subjects (except politics) may be talked about in such correspondence. The object of such a union is to make Chinese students interested in learning English by letters from abroad, and to develop social relations between British and Chinese students.

WU FAN-SËN.

Nanchang Ki, China,
January, 1916.

[Any of our readers who may be inclined to co-operate with our correspondent should write direct to him.—EDITORS.]

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

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SIXPENCE.

SCIENTIFIC PREPARATION FOR THE FUTURE.

By F. G. DONNAN, F.R.S.

Professor of Inorganic and Physical Chemistry in the University of London.

SINCE the beginning of the present war much has been written concerning British methods and ideas. As a nation we have never been afraid of criticism, recognising, perhaps, that an active fermentation is essential for the vigorous health of the body politic. But the inner fermentation of health is synthetic as well as analytic, and is co-ordinated, governed, and productive, thus differing from that of disease, which leads to nothing but fever and waste.

It is the most difficult thing in the world to make suggestions regarding the methods and ideas of a great nation, for such criticism should be helpful and constructive, and, above all, must be the fruit of knowledge; yet who amongst us can lay claim to any monopoly of wisdom? The spirit of the critic ought surely to be that of the Franciscan friar rather than the self-righteous Pharisee. The question as to how we can best prepare ourselves for the future is great and complex; and we must confine ourselves here to that part of it relating to science, which, properly speaking, is knowledge, learning. But knowledge of what? The answer is not easy to give, though almost everything hinges thereon. Let us understand by science that progressive and harmonious adaptation of the human spirit to its environment which more and more renders it the understanding friend and not the ignorant slave of circumstance.

Science is, therefore, no less than an emancipation of the spirit from the thralldom of ignorance, obtained through the laborious investigation and direction of the conditions and circumstances of its environment. Science as thus defined may be, it is true, only a part of civilisation. There must, indeed, exist an

inner light, an inner progressive unfolding of the spirit, whence come the highest aspirations of religion, art, and literature. Such questions are as old as philosophy itself. But however that may be, the important thing to perceive is that there can be no antagonism and there must be no divorce. This is the dominant—the solemn—note that peals throughout the world to-day as it pealed in the days of Galileo and Da Vinci. Science as thus rightly understood must be the heritage of every man, and not the cult of any special sect.

The error of British culture to-day is not so much the intentional neglect of science as a profound failure to realise the true meaning and to appreciate the true position of science in the fabric of civilisation. It is rare to find an educated man who will not, should the occasion occur, lend an attentive ear to the accounts of scientific discoveries. But the very politeness of the listener has a quality of detachment, as of one who might hearken to the strange and magical tales of a traveller from another planet. This curious intellectual indolence is almost a national characteristic. Science is regarded as a thing apart from the general intellectual life of the community, to be fostered and encouraged, perhaps, to some extent, either as a matter of *noblesse oblige*, or as an adjunct to the useful arts; but in no wise to be considered as one of the essential elements of all true culture and the cornerstone of modern civilisation.

We pride ourselves on being an eminently practical people, and we are wont to attribute our success to that, and to the fact that an all-wise Providence has dowered us with a superior share of common-sense. Scientific theories and scientific methods are, therefore, not believed to be necessary for the practical man of common-sense. Strange as it may appear, there are many who hold such views in this country at the present time. This is one of those fatal half-truths, born of ignorance

and unscientific education, which are of all delusions the most difficult to combat. For common-sense and practical skill are necessary for all successful enterprises, and these qualities in the past have carried us far. They are equally necessary for the future, but alone they are entirely insufficient. For the pace is too hot. We require every ounce of scientific theory and scientific training that we are capable of carrying. We require the flexibility and adaptability of thought, of method, and of institution that a real scientific training alone can give. Behind it all we want the *grand dessein*, the carefully thought-out and coherent plan directed towards an ideal of national perfection, founded on the facts, methods, and outlook of science, and not merely on pious sentiments and ancient shibboleths.

We suffer from the defects of our national virtues. In our admirable worship of character and will, of courage and determination, we are apt to forget that these cardinal qualities of the "inner light," however essential they may be, are unavailing and ineffective when divorced from the "outer light" of science. It is the sympathetic and harmonious co-operation of both that will constitute the inner strength of the great nations of the future; and it is the want of this perception that constitutes one of our fundamental weaknesses at the present day. It is of no use to seek for spasmodic forms of remedy, born of a desperate and disordered opportunism. There must come a radical change of spirit, leading to a wider perspective in the national outlook, a quickening and expansion of British perceptions. Our present outlook, and as a consequence our whole scheme of civilisation, are narrow and out of date. Not every man can or should devote himself to the serious study or advance of a special branch of science. But the method, the outlook, the spirit of science, must permeate all classes of the community, and must be harmoniously blended with the virtues and qualities that have for ages characterised our race. Otherwise our civilisation is assuredly bound to decay and disappear.

Our preparation for the future, indeed our very hope of the future, lies in this drastic renaissance of the British spirit. The false view that science dehumanises must be replaced by the conviction that without science there can be no rejuvenation of the ancient and tired spirit of humanity. It is the breath of science which alone can preserve us from our tortured self-consciousness; which, by carrying the spirit of man into the glowing world without, saves it from itself by preserving it from that in-breeding of thought which results in decay and death.

The ever-widening and expanding vision of

science must penetrate into the very core of our social fabric, bringing new hope to our race and new ideals. But it must be true science, and not that sorry travesty which has often masqueraded under the name in the columns of the daily papers and the mind of the general public. We are apt to mistake the spirit of our children, which is older than our own, and in our solemn wisdom to give them stones when they ask for bread. It is the science that finds its rightful place in the universal history of civilisation which alone can educate and rejoice the spirit.

Let us, then, prepare for the future by searching our own hearts and setting our own house in order. The brave sons of Britain fight to succour the weak and to defend the homes and ideals of ourselves and our faithful Allies. They fight in the just cause of national freedom and independence. But there must come a time when the scourge of war is gone, and the problem of humanity is to find a common term, a common goal, amidst the striving hopes, aspirations, and interests of different nationalities. What will it be, that sublimate of hope, that alkahest of difference? The greater vision, the wider outlook, born of science rightly understood and rightly used. Therein will be found the beginning of that greater civilisation of which our enemies have dreamed as well as we, and the building up of which must constitute the future work and the lasting bond of union of the nations of the world.

MILITARY TRAINING IN SCHOOLS.

By S. A. RICHARDS, M.A.

O.C. Hackney Downs School Battalion.

THE question of military training in schools is one which naturally claims our attention at the moment, and there is reason to believe that the War Office intends to consider the matter seriously after the war. Meanwhile, it is well that those concerned should endeavour to get clear ideas as to what is required and what system is likely to give the best results. There are three at present in vogue at different schools: the junior O.T.C., the cadet corps, and the ununiformed battalion.

The O.T.C. is an organisation which can be adopted only at a limited number of schools. For the present, the War Office refuses to sanction the formation of fresh contingents. Moreover, as its name indicates, its purpose is to train boys to be officers, whereas what is wanted, in addition to this, is a universal system of military training which may fit all boys in secondary schools to take part,

when called on, in the defence of their country, whether as officers or in the ranks. As a matter of fact, the O.T.C. largely failed in its object; the number of officers which it produced was negligibly small, and though under the abnormal conditions brought about by the war it has found a sphere of great usefulness, it is doubtful whether it would have been allowed to exist much longer had war not broken out.

At first sight, the cadet corps appears more closely to meet the needs of military training in schools, although its supporters are by no means content with its present status or the treatment meted out to it by the War Office. With their particular grievances I am not at present concerned, my object being rather to point out what are the inherent disadvantages which prevent the cadet corps system from lending itself to the purposes of *universal compulsory military training* in our schools, for I contend that we must aim at nothing short of this.

The attendant expense renders it impossible to make membership of a school cadet corps compulsory, and if the training is not compulsory it cannot form part of the ordinary curriculum, and must, therefore, take place outside of school hours. Only those who have had experience know the endless difficulty encountered in keeping up the numbers of the corps in a comparatively small school. At present, while the war is upon us, the difficulty is, of course, not felt to anything like the same extent, but we have to look ahead. During the Boer War there was a great recrudescence of martial ardour in our schools, and many new cadet corps came into being. How many still existed ten years later? Old hands will also agree with me in voting uniform, in the case of boys, and growing boys, an intolerable nuisance. The question of arms is another difficulty. Rifles are too heavy for the younger boys, who are yet old enough to benefit by military training, while carbines are the most awkward things imaginable to drill with. The supply of officers for a cadet corps is limited by the number of masters able and willing to act in that capacity; a system in which the company officers are chosen from among the senior boys not only allows of a proper supply, but also provides most valuable training for the elder members of the school.

Further, schools which, under the present system, can only raise a company or so, might, if training were compulsory, possess a battalion. The additional usefulness and interest thus imparted to the work are obvious. Composite battalions, formed of contingents of varying sizes drawn from different schools,

assembling for parade at long intervals, cannot compare for a moment with the homogeneous school battalion which is accustomed to drill frequently as such.

How, then, can these defects be remedied? How can efficient training be given to every boy of suitable age, unhampered by expense, and freed from conditions which, in peace time at any rate, tend to make it unpopular with many? Perhaps the best way of putting forward the writer's views on this point will be to give some account of the system which has obtained for many years at the Hackney Downs School. It was started in 1881 by the Rev. C. G. Gull, who came, as headmaster, from Dulwich College, where he had established a cadet corps in 1876. He realised at once that in a London day school, drawing its pupils mainly from a class of parents with limited incomes, a uniformed cadet corps, with its attendant expense, was out of the question. He had, indeed, experienced, in common with other commanding officers, the great difficulties which beset the maintenance of such an organisation in any school. In a lecture delivered at the United Service Institution in 1900, commenting on the limited measure of success then attained by uniformed cadet corps, he said:—

"The reason for this unsatisfactory state of things is obvious. Cadet corps in the past have not been part of the ordinary school training, and it is difficult to see how they can be made so in the future, because they necessarily involve expenditure for uniforms, in addition to the cost of ammunition and other incidental expenses. Consequently the military training cannot be made compulsory, and, therefore, cannot be given in school hours; and the average boy will not, under ordinary conditions, give up his free time to drill and manœuvre any more than the average man will think it necessary that he should join a volunteer corps. . . . Even those who have been most successful [in organising and carrying on cadet corps] will probably admit that success has been attained only at the cost of incessant labour, of unwearied tact, and of considerable self-sacrifice. The necessity of providing inducements, which may allure recruits, in the shape of marches out, camps, shooting matches, corps suppers and entertainments, has increased the expenditure to a point which has made the financial burden considerable."

These ideas had already taken shape in the formation of a non-uniformed battalion, comprising all the boys of the school except those of Forms I. and II., divided into six companies, each officered by senior boys, and drilling with wooden dummy rifles. The headmaster was in command, a member of the staff performed the duties of senior major, the physical instructor those of sergeant-major. All the forms received instruction in

squad drill as part of their physical exercises in the ordinary time-table. The battalion paraded frequently, both in the playground and on the Downs. On sports' day, in June, it was inspected. A drum and fife band was formed, to which bugles have since been added.

Subsequently, two miniature rifle ranges were provided, one in the gymnasium and the other, having a longer range, out of doors. Henceforward boys over fourteen years of age received regular musketry instruction.

Under the present headmaster the battalion, now commanded by the writer, has increased its scope in various directions. The house system, introduced in 1906, was immediately linked up with it. The school was divided into six "houses," and henceforth each house formed a company of the battalion, commanded by the house captain and drawing its remaining company officers and its non-commissioned officers from the house prefects. The advantages of such an organisation, both to the battalion and to the house system, have proved considerable; the gain in keenness and *esprit de corps* has been plainly noticeable.

This spirit was still further fostered at a later date by the institution of an annual inter-company competition, in which a cup is presented to the company which shows itself to be the smartest and most efficient on parade. In 1914 the competition was judged by Sergeant-Major Harrington, of the London Rifle Brigade, who made the following report: "The steadiness and general bearing of the cadets were excellent, in fact, quite marked, especially considering the extreme youthfulness of the great majority of those in the ranks. The manner in which the various companies swung-in on the parade-ground, heads erect, shoulders back, fours aligned and covered, rifles carried correctly, and everybody in step, was such as would have been creditable to regular soldiers. The style displayed in the drill which followed evidenced sound tuition by the instructors, and great keenness on the part of the cadets. Company commanders showed a knowledge and initiative which were most praiseworthy. Any one of them would be an acquisition to a Territorial regiment, in which he could scarcely do otherwise than prove a success." This is sufficient answer to those who think that boys need uniform in order to drill smartly, and is also evidence of the great value of boy officers.

In 1909 the battalion was presented with a regimental colour, and the trooping of the colour now forms one of the most attractive features of the annual inspection. A signallers' section has also been formed and efficiently trained.

The new infantry drill (August, 1914) necessitated some alteration in the organisation of the battalion, but this was effected without injury to the house system. The six companies were reformed into three double companies by grouping two houses together, but as each house forms a distinct half-company its individuality is not impaired. The two house captains occupy the positions of company commander and second in command respectively, according to seniority, while the old half-company commanders are now platoon commanders. The new platoon drill makes far greater demands upon the knowledge, intelligence, and initiative of these boys, who, however, quickly picked up their new duties. The ease with which boys became proficient in military training of this kind is far greater than that exhibited by the adult recruit.

The battalion parades are devoted chiefly to the close order movements of company and battalion drill and the ceremonial involved in the annual inspection, including the trooping of the colour. In the spring and summer terms, when parades are held on the Hackney Downs, regular instruction in extended order is also given. With regard to drill in close order, it may be pointed out that its value is strongly emphasised in the new Infantry Training, 1914: "Drill in close order is of first importance in producing discipline, cohesion, and the habits of absolute and instant obedience to the orders of a superior." High authorities at the Front have fully endorsed this, and, from their experience, have come to the conclusion that close-order drill, and plenty of it, constitutes the best training for recruits in preparation for active service.

The achievements of the school shooting team bear ample testimony to the efficiency of the musketry instruction. The experience of many of our boys who have attended the annual boys' camp at Bisley proves that those who can shoot with a miniature rifle very rapidly become proficient with the service rifle on long ranges.

The best testimony to the efficiency of the training afforded by the system I have endeavoured to describe is to be found in the unstinted praise accorded to the battalion year by year by the distinguished officers who have inspected it. The list includes such well-known names as General Lord Methuen, Major-General Sir Alfred Turner, Major-General Sir Alexander Tulloch, Major-General Lord Chevlesmore, and many others. Major-General Sir Alexander Tulloch, who had had much experience of Australian cadet corps, inspected the battalion in 1907 and was so impressed by what he saw that he devoted an

article in the *Nineteenth Century* to the subject. In it he said that "the cadet battalion moved and worked with the precision and steadiness of the Guards."

It may safely be said that our system of training is at least as thorough, and covers as wide a field, as that of the Junior O.T.C., while it offers the senior boys the very great advantage of learning to take efficient command. Any boy on leaving school, after a year or two in the ranks, would find recruit drills in a Territorial regiment superfluous, while a senior member of the school, after acting as company or platoon commander, would require little further training in order to become an efficient subaltern.

Again and again we hear from old boys, now serving with the colours, how the efficiency which they owed to their school training attracted immediate attention and earned them rapid promotion.

If the War Office would recognise and officially inspect such ununiformed corps, would allow the senior members to qualify for Certificate A or some equivalent, carrying with it substantial advantages and exemptions, and would further make a small annual grant to cover the cost of ammunition and the other trifling expenses involved, we should have ready to hand a thorough and efficient system of military training capable of universal adoption in our schools, embracing all boys of suitable age, and infinitely superior, in its results and facility of working, to cadet corps which can only include a fraction of our boys, and must, therefore, ever remain an excrescence rather than an integral part of school life.

SHOULD A HEADMASTER'S SONS BE EDUCATED AT HIS OWN SCHOOL?

Fiat experimentum in corpore vili.

"SAPERE ad sobrietatem" is an excellent maxim, never to be forgotten by the schoolmaster in his dealings with the outside world. And the modern schoolmaster has more concern with everyday life than his predecessors; he must be more the man of business without, if possible, being less of the scholar. His hardest lesson is to take the advice given by a wise headmaster to a head-elect: To suffer fools gladly, whether wise himself or not. He has to be the counsellor and consoler of many a parent, reduced to tears, perhaps, in the "doctor's" study on hearing of the conduct of a son till then thought to be perfect. He has also to meet the parent whom nothing will convince: the man who comes to complain that his son is not treated

fairly. "My son's model was not given proper credit; it was very well made; he's a good little chap." Confronted with the competing models the irate parent had to admit that his good son's was neither well made in comparison nor according to instructions. He had to shift his ground. "But where's the model classed first? My son described it, and he's a truthful lad. It must have been made by a much older boy." It was produced. "If a boy of about my son's age really made that, I'll give him a sovereign!" It was established that the boy was of a like age and had made it himself. "Well," says the parent, "let him come down to my amateur workshop and make as good a one again, and I'll give him—half-a-crown. I'll fix a day." The challenge was accepted. But in spite of reminders the day was never fixed, and the parent withdrew his son from school. Yet the head had done his best to suffer him gladly.

The more a schoolmaster sees of his fellow men the more he appreciates Molière's version of the quotation beginning this article:—

La parfaite raison fuit toute extrémité,
Et veut que l'on soit sage avec sobriété.

On the other hand, this experience is not without its disadvantages. Like the augur, the schoolmaster learns so much that he is in danger of becoming irresolute when faced with a private crux turning on school affairs. He finds it hard to see where lies the lesser evil, for sometimes he is reduced to fear that the greatest good is not to be found. His everyday experience shows him how the merchant explains to the schoolmaster the way a boy should be taught; the amateur criticises the soldier; the townsman displays, apparently, a greater knowledge of agriculture than the farmer. Each critic in turn seems to have some truth on his side. When all have so much inside information, without "specialising" in the subject, how is it that the expert, after years of study, is considered a failure? In his humble moments the schoolmaster loses faith in himself and even in his profession. Who is he to set up as a teacher to his son?

During the Franco-Prussian war of 1870 the common complaint made against the French generals was that they could not rise superior to petty details—a failing known in France as too great devotion to "le bouton de gùète." Commenting on the supposed lack of intelligence in their commanding officers, French pressmen of the period quoted with approval some words of the *Times* addressed to the soldiers of Napoleon III.: "You are lions led by asses." Here then we have a sufficiency of military material and bravery, as well as plenty of brains in the nation—or how could

critics have known what should be done?—and yet, failure on the part of those concerned in the business of the war. May not schoolmasters be thought to be in a position similar to that of the French generals? With half his mind turned on the above question to be solved in his holidays, as he dreamily glanced over the pages of F. Sarcey's diary written during the siege of Paris, or of the two Marguerites' lurid story of the Commune, a headmaster may be excused if his thoughts wandered to more familiar topics. For may not the chiefs of Paris, headed by General Trochu with his mysterious plan, always promised but never divulged, have reminded him of leaders of education, always talking, doing little?

C'est là qu'est l'plan de Trochu,
Plan, plan, plan, plan, plan,
Mon Dieu quel beau plan.
C'est là qu'est l'plan de Trochu,
Grâce à lui rien n'est perdu.

If he closed his eyes for a minute, education seemed in the like position with Paris amid the horrors of the siege and the succeeding civil war, with her quiet "bourgeois" and frantic "gardes nationaux." Schoolmasters took all sorts of appearances and won election to the "central committee," to help shortly in setting up the Commune; boys flitted round figuring as anachronistic pétroleuses. "Authorities" escorted Trochu to Whitehall, down which poured battalion after battalion of revolutionaries, while Thiers' incessant talk at last awoke the dreamer. Fantastic? But is not all education fantasy? "What do we know of the processes of the mind, in reality, anyway?" asked the American.

The headmaster, who was cudgelling his brains to decide where to send his son to school, worked away at his crux. Shall the boy have his "character formed" and be brought up in an atmosphere of class prejudice? Shall he be crammed full of information and prepared to face any examination he may fancy in company with the cleverest boys drawn from the elementary schools? Shall he go to a charlatan who professes to study each pupil and train him as his tastes need or his bent suggests? Can he find for him a republic, or has he no choice between the reactionaries of Versailles and the Communards of Belleville?

Each day of his vacation brought new ideas, conjured up old memories. Considering whether he shall admit his son into his own school or not, the headmaster remembers what business men consulting him about their own boys' future have often said. In reply to his question: "But why don't you start the lad in

your own office?" the usual answer has been: "It pays best to let strangers break a young man in. As soon as my boy has learnt the ways of an office and picked up business methods he shall come to me. At first he shall go to other offices, if he is to take up commerce. A solicitor rarely articles his son to himself." An incident may occur to him which reveals the peculiar attitude of some governors. Dear, good people as governors usually are, they are often as much in place as the civil commissioners whom the French Directoire sent to keep an eye on their generals. In one way or another peculiarities appear. It is not often that governors go so far as to hold their meetings in private, keep the headmaster out in the passage, and call him in at the close of the session to announce their decrees. But such a practice has been heard of. Even governors of a better class than these have their fancies. Witness one reason given by a governor—and a charming old gentleman, too, in private life—against a headmaster taking boarders: That he would favour a boarder and that day boys would suffer! Again, the same governor argued that it is far better to pay a headmaster by capitation fees than by a fixed sum, as the former plan insured keenness in getting a school full. A schoolmaster of the present day, knowing these strange whims, may well hesitate before he exposes himself to possible charges of nepotism.

A fresh thought struck the pondering pedagogue. The boy is a bit excitable. Suppose he fell out with Mr. So-and-so? So-and-so is apt to get himself into difficulties with boys. An awkward situation might arise—a triangular duel, in fact. On one hand "discipline must be preserved," on the other justice must not suffer. It might be a case of Brutus without an excuse, Abraham without a sacrifice, Draco confounded by a mistake arising from his own code.

He runs over in his mind the cases he has known of headmasters' sons at their fathers' schools. His old friend of Cambridge days, who complained that he had lost his father in the headmaster, misunderstood by the whole school and consequently by him as a member of it. What little he saw of him in private could not counteract his want of sympathy with the nervous man, unfitted for the harassing post conferred on him merely for the sake of his scholarship.

He remembers a speech day long ago, when a little girl visitor came up to a headmaster whose son was in the school and had just received a pile of prize books: "It is quite easy for your son to be top of his form, as you are the headmaster." What an oppor-

tunity for Philistine rejoicings had this remark been spread abroad among the audience!

Or he remembers an opposite case: that of a genial head with no sons of his own, who made up for his misfortune by choosing boys from time to time out of the school and adopting them during term. Full of love for boys, he generally spoils his foster-sons in turn and unintentionally made difficulties for his staff. Might not he, too, mused the puzzled parent, fall into one or other of these extremes? Searching for further instances, he recalls an unfortunate, "thing one would rather have left unsaid" due to a colleague of years ago. Their chief had married a second time. Two sons of the first marriage were in the school, both nice-looking boys. Wishing to be polite to the reigning headmistress, the new colleague, who knew nothing about the first wife, talked about the two boys: "What nice lads those two are, Mrs. X, and their deep brown eyes are so like yours!"

A reminiscence came to mind of another old friend who, recalling his own childhood, declared that one of the sights that troubled him most in his early years was the caning of a boy by his father, himself a headmaster, which he witnessed by chance, when sent into big school on a message. How would he fare in such a case as the one he remembered a fellow head describing to him? It had to do with a rather weak assistant, whose son was at the friend's school. The assistant had as much difficulty in dealing with his own son as with other boys, and had to send him up to the head from time to time to be rowed. What if our puzzled father found himself not only judge but plaintiff? He shook his head as one memory after another rose in his mind. Instead of a dream the task was more like a nightmare.

And if the choice fell on another man's school, it would have to be a boarding school. In that case it should be one well out in the country. It would be absurd to send a boy to live in a town when such variety offered. But this would mean separation from all home ties, and would be a loss to the boy's sister. The head sighed for the ideal school—he was aware of the existence of only one such—where boys spent the greater part of their school day, coming home between six and seven, with work nearly done, games played, and an almost free evening before them. Into the space of some nine or ten hours, work, preparation, meals, games, and all the side shows of a thriving school were fitted. But no similar school existed in the district where the dreamer lived.

Had not pride, thought the head, been prompting his dreamlike fancies? Was he

not thinking that no one managed a school as well as he? Whereas numbers of men might educate his son far better than he could? Perhaps. But what outsider can estimate the actual condition of an English school? It has been said that when the French imagine, rightly or wrongly, that they have discovered a truth they hasten to apply it; that Germans play with ideas for the sake of the ideas themselves, but shrink from the application of them. He wondered what the writer would have said of the Englishman. How many are open to new ideas? And how many, if schoolmasters, have any chance of carrying them out? With a start from his musings the head exclaimed: "That settles it." What settled it he did not explain: "The boy shall begin with me."

Of the horrors expected to happen only one, of little importance, occurred. So far as could be seen, neither boys nor masters made any change in their habits. Indeed, it appeared afterwards that one of the latter inflicted some judicious snubs. The new pupil got on as happily as any other in the school, and the head always declared that he never met a boy with so sensible a parent. The experiment was not carried out to the full end. For reasons quite apart from questions of parentage, the son did go to another school.

Still, the experiment stood the test of some years, and may be taken to show that relationship between head and pupil, though attended with difficulties, need not end in disaster.

THE TRAINING OF TEACHERS OF COMMERCIAL SUBJECTS.

By FRED CHARLES, B.A.
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AFTER the termination of the war another struggle will begin, a struggle that will be as keen as the present, but will last a great deal longer. In that struggle nations who are now our allies and nations who are now neutral will be among our keenest competitors. Nations now neutral will enter it armed with wealth accumulated during the war, while we shall be suffering from the loss occasioned by our present heavy expenditure. The succeeding generation will have to fight for our existence and to secure our position as the leading commercial nation of the future; it is, therefore, the duty of those who are now debarred by age and sex from taking a leading part in the present conflict to see that they are well prepared for the struggle to come.

A further change in attitude towards commerce and commercial education will have to take place. Commerce should be a profession which attracts some of the best brains in the country and a profession from which the best

brains should not be debarred by social prejudices. Surely it is better to fight one's country's battles in the field of commerce than to conduct the quarrels of individuals in the courts. A man should not be despised because of the work he does, but only because he does that work badly. Equal treatment should be given to commercial and secondary education; the Government should not give, as at present, a grant of £5 per pupil at a secondary school and only £3 per pupil at a technical school of commerce.

Educationists and employers are agreed that special training is necessary. There is some difference of opinion among educationists as to the ideal time and place of special training. It is little use discussing the ideal time, because in the majority of cases it is fixed by economic conditions over which neither education authorities nor teachers have any control. Probably the nearer twenty the training ends the better for the pupil in the long run, but that is an ideal that is not likely to be reached under the economic conditions of the present or the near future.

The training should follow a sound general school education; it should be given in special schools on account of the expense, the need for adaptation to local conditions, and the difficulty of staffing. Before the war there was a serious shortage of teachers of commercial subjects, and that shortage is now accentuated, and is likely to be still further accentuated, both by the absence of teachers and by the increased demand for the service of those qualified to teach commercial subjects.

The qualifications of the teachers fall into three main groups: character, ability to teach, and a knowledge of the subject taught. In the past there has been, perhaps, a tendency to lose sight of character and personality in the desire to secure a knowledge of the subject taught, but for all teachers this is the first and most important qualification. Without character and without personality the teacher is worse than useless. This, the primary qualification, is common to teachers in all schools. The provision of it is a matter for the home and for the school attended before the pupil specialises at all.

The ability to teach, if not a natural qualification, can to some extent be acquired by professional training, and however good the natural qualifications may be they can be improved by professional training. Although teachers of commercial subjects will be dealing mainly with pupils above sixteen years of age, yet in their early training they should have experience of pupils of all ages, especially of young pupils of immature and unformed minds. The absence of this early

training with young children has militated against the efficiency of some of the best teachers in the past; they have taught their subjects rather than their class, or rather they have lectured on their subjects with considerable skill, but they have failed to teach their pupils; they have been excellent teachers for adults, but have been unable to grasp, and deal effectively with, the difficulties found by younger pupils.

It is in the obtaining of the third group of qualifications that the training of teachers of commercial subjects must differ from that of teachers of other subjects. The school of commerce has to develop certain characteristics and habits of mind, as well as to train its pupils to think and to see that its pupils possess certain information. These characteristics should be those qualities that might be summed up under the name of the business virtues; for instance, punctuality, accuracy, attention to detail, clear thinking, and clear, matter-of-fact expression. The school of commerce must have an atmosphere, and it is this atmosphere that the teachers have to produce. Its work must be carried on in a business-like way, and to acquire the power of producing this atmosphere contact with, and appreciation of, business men, as well as an insight into the routine of business, are necessary.

The ideal teacher, in addition to character, personality, and sound general education, will have had a specialised preparation which may be considered under three heads: academic, professional, and practical. The academic will secure that he has a wide outlook and that his specialised preparation has a wide basis. It is an open question whether a degree in economics or commerce would give him a sufficiently wide outlook. It can reasonably be argued that such a degree would be too near his ordinary practical work. His professional training should occupy at least six months, and the methods of teaching science and mathematics would generally be the methods best adapted to his requirements. As has been said, he should teach under supervision young pupils, although the pupils he will have to deal with will generally be above sixteen years of age. Part of his practical work might well be in teaching his special subject in evening institutes, provided that that can be done under the direction of someone connected with the college at which he is taking his course of training. The practical part of his preparation should also last not less than six months. He should be employed in a business house under absolutely ordinary conditions. His hours should be those of the ordinary employees, work should not be made

easy for him. He should, so far as possible, be enabled to see the general organisation, but this should be done, not by making a special appointment for him, but by transferring him from one department to another.

The total time of preparation should be, if possible, four years, but it might be contracted to three. If the three parts are taken separately, then probably the above order, academic, professional, practical, would be the best order to adopt. The academic would be an ordinary three years' course at a university, the professional and practical coming in a postgraduate year. If monetary conditions required the shortening of the course to three years, then the professional and practical might be taken concurrently with the academic, but, of course, this would necessitate part of the work being done in the evenings. This would be impossible in the case of the practical work, and therefore the simplest arrangement would be for the academic, during, say, the latter half of the course, to be taken in the evenings. At the present time the most important part of the preparation, if one part can be said to be more important than another, is the practical. If commercial education is to be effective it must no longer be branded with the theory of the economist or the "unpracticalness" of the schoolmaster; it is essential that it should be recognised as practical by practical men.

These suggestions are based on the assumption that in the towns in which teachers are trained there is a university in which provision is made for modern languages, economics and commerce, and training of teachers; and that there is also opportunity for all but modern language teachers to have six months' business experience. Such a university would doubtless have on its governing body business men with an active interest in commerce and industry; they would be able to secure for the students in training as commercial subject teachers the practical experience of work in business houses which is an essential part of the preparation; they, too, could probably obtain for the modern language students letters of introduction to foreign business houses.

There are undoubtedly objections and difficulties to the establishment of such a scheme, but they should not be insuperable. It may be argued that the establishment of such a course is not necessary because the ground is already sufficiently covered by existing associations and diplomas, but it appears to me that the standing of the examining bodies is not unassailable. Professional training does not always form a part of their requirements, and the standard of general education required is not sufficiently high.

The much more real difficulty will be that of placing a man in a business house for a short period. The firm may reasonably object to training an employee by whose services the firm will not directly benefit. Its benefit will accrue later when the product of the new commercial education is placed.

Perhaps the greatest difficulty of all is connected with money. The immediate cost of the scheme to the teacher in training is considerable. He has to maintain himself for four years and, unless they are otherwise provided, he will have to pay the fees for training. The remuneration that he is likely to receive will not be sufficiently high to warrant this outlay unless salaries appreciably increase. His training will be at least as costly as that of other teachers, and therefore his salary should be at least as high as theirs. His salary must be comparable, not only with the salaries of other teachers, but with those of men of his own calibre in other occupations. During the practical part of his preparation he will have an opportunity of ascertaining his worth in business, and his worth there may be so much greater than his worth as a teacher that he will sacrifice his ideals and the training that he has already received. A similar result may be brought about in another way. The business man, always on the look-out for suitable agents, will be brought into contact with a type of man of whom he has seen comparatively little in the past. He will recognise the great advantage to him and to his business of having university-trained men, and in order to keep them there may offer them considerable inducements to remain.

The advantages of such a scheme are that the teacher will benefit by his wider knowledge and by his improved salary. The pupils will undoubtedly derive an advantage by being taught by men who know something of the world of business in which they, the pupils, are to be employed. Nothing but good can arise from the *rapprochement* of the school and the world of business. The business man will learn to appreciate the university man, the university man will learn to appreciate the business man, and education will undoubtedly gain in reality and recognition.

As the various occupations can be grouped, so the teachers can be classified according to the groups of subjects that they are likely to teach. The foregoing, however, is a general scheme in broad outline and can be adapted to particular cases. At the risk of reiteration a few typical cases may be considered. The teacher of modern languages should have resided in, and have a thorough knowledge of the language and literature of, the country the language of which he is to teach; during

his residence he should aim at acquiring as much information as possible with regard to the commercial methods and markets of the country in which he is residing. Hitherto teachers have devoted the greater part of their attention while abroad to acquiring a degree at a foreign university. A degree at a foreign university may be, in itself, desirable, but if the teacher of commercial subjects has not time to acquire a knowledge of the commerce of the nation whose visitor he is, and also a degree, he should place the former before the latter. His teaching is to have a definite commercial bias, and consequently his knowledge of the country should, too, have that definite commercial bias. The teacher of book-keeping should not be merely an accountant. He should have both character and professional training as a teacher. There is, in fact, no necessity for him to be a professional accountant. He must have a knowledge of accountancy and must have had practical business experience, preferably on the financial side of business. And so with the teacher of shorthand. While his knowledge of, and ability to write, shorthand must be above reproach, he need not necessarily be an expert reporter.

All that has been said applies to women as well as to men. No doubt the present time is an admirable opportunity for women teachers. There must now be many women whose character and experience fit them to become teachers. There are, too, some teachers who have had professional training and who now wish to take up temporarily some more definitely war work. Women are being admitted to businesses formerly closed to them, and their withdrawal at the end of the war will be necessitated by the return of those whose places they are taking. They will then be qualified at the termination of the war to return to their former profession with an experience of city life which will make them more all-round women and better teachers. In fact, they should have become the ideal teacher of commercial subjects.

A FEDERATION OF TEACHERS.

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THE widespread dissatisfaction with the multiplicity of associations of secondary school teachers, each concerned primarily with matters of sectional importance only, has recently found expression, and by no means for the first time. The council of the Association of Assistant-masters, last January, passed a resolution "That the formation of an association representing all branches of secondary

school teachers is advisable," and in the March issue of the official organ of the association, Mr. W. H. Lovel, of Emanuel School, Wandsworth Common, emphasises the advantages which would accrue to secondary education from the existence of a powerful united association.

Such a unification of secondary school associations is well worth working for, and it may be hoped that the lead of the Assistant-masters may be followed by the Associations of Headmasters and of Head- and Assistant-mistresses; but it is important at the outset of activities in this direction that this object should be regarded merely as a step towards the inauguration of a powerful organisation of all workers engaged in teaching, of whatever grade, from the universities at one end to the elementary school at the other, and of all who are employed in the administration of the various spheres of educational activity. It will be possible in this article to direct attention only to the question of the federation of teachers.

The interested layman, convinced of the paramount importance of education to the nation, not only fails to understand why heads and assistants meet separately to confer about their work; why university teachers have few or no dealings with their contemporaries in secondary schools; and both of these nothing to do with the workers in elementary schools; but is inclined to see, in what appears to him a perverse and wrong-headed condition of things, evidence of a subordination by teachers of the claims of educational efficiency to such personal and parochial considerations as social status, security of tenure, scales of remuneration, and so on. And he may well be forgiven.

This thoughtful observer discovers among other professional bodies a better state of affairs. The Chemical Society, to name one scientific society only, demands of its members merely that they have a knowledge of and interest in chemistry; it is not concerned as to whether a candidate for admission to its corporation is a professor or a demonstrator. Much the same is true of many educational associations. The English, Classical, Modern Language, and other associations have in view only the improvement of the teaching of the respective subjects in which they are interested. A helpful contribution to the discussion of the questions with which the association is concerned is welcomed, whether it is from a head- or assistant-teacher. Until incongruities of the kind which separate the heads of secondary schools from their colleagues in professional deliberations are got rid of, the tax- and rate-paying public are likely to continue to doubt

that the first aim of these teachers is the good of education.

Despite sporadic attempts to assist national economy at the expense of educational efficiency, there has, on the whole, never been a time when the value of education to the nation has received such general recognition. A general stocktaking is beginning; educational ideals are being reviewed; our methods of education, our different types of schools, our curricula, are all being challenged. With the coming of peace, educationists, whether administrators or teachers, will be confronted with a thousand and one new problems, which for their effective solution will require all the available wisdom and much concerted, charitable, and broad-minded discussion. Where is the educational organisation to which such problems can be referred for solution? There is, unfortunately, no such body whose decisions on questions referred to it by Parliament or the Board of Education would meet with instant approbation and ready obedience as being the considered opinion of the whole teaching profession.

Teachers ought long since to have been able to bring such an organisation into existence, and while separate bodies of teachers are a law unto themselves and encourage independence of equally important sections of the working community to which they belong, it is not surprising that teaching is regarded in many influential quarters as something quite other than a profession. It is useless for schoolmasters and schoolmistresses to regard teaching as a profession when they themselves continue to behave unprofessionally.

It is well to remember that one attempt to form a teachers' register failed, and the compilation of the second is still beset with irritating and unnecessary difficulties. Even after what some have called an unseemly amount of advertisement and circularising, the number of teachers who have been willing to expend a guinea in support of the inspiring idea of forming a roll of competent educational practitioners is still but a small fraction of the whole body of workers in education.

Of course, this want of unity among teachers has been recognised for many years and experiments have been made to remedy it. The second attempt to form a comprehensive teachers' register, which is being watched from all quarters with anxious solicitude, has brought into existence the Teachers' Registration Council, and this, though it falls far short of perfection, really is a body comprising representatives of all grades and kinds of teachers. But suitable though the council may be for its special purpose of adjudicating

upon a teacher's claim to be registered, it would hardly arrogate to itself the right to represent and to speak on behalf of the whole army of educational workers on questions of the kind adumbrated.

At the time of its inauguration the founders of the National Union of Teachers appear to have had in mind just this need for a great federation of teachers. Their object evidently was, at least so far as teachers were concerned, to bring into existence just such an educational parliament as is required to-day. The Union, which dates from 1870, was formed with the following among other objects in view: to associate and unite the teachers of England and Wales; to provide means for the co-operation of teachers and the expression of their collective opinion upon matters affecting the interests of education and the teaching profession; to improve the condition of education in the country, and to obtain the establishment of a national system of education, co-ordinated and complete; to afford to His Majesty's Government, the Board of Education, the local authorities for education, and other organisations—public or private—which have relation to educational affairs, the advice and experience of the associated teachers; to secure the compilation of a comprehensive register of teachers; and to secure the solidarity and extend the influence of the teaching profession. If such an association really existed there would be little need for anxiety as to the solution of the educational problems which will confront us after the war. But powerful, useful, and important though the National Union of Teachers undoubtedly is, and notwithstanding the fact that it numbers among its members many secondary-school teachers of light and learning, it speaks with authority only on behalf of the workers in elementary schools.

The Teachers' Guild, again, represents another attempt to secure educational unity. For more than a quarter of a century it has been trying, though it must be admitted not very effectually, to obtain for the whole body of teachers the status of a learned profession. Its membership is comprehensive and teachers of all grades are admitted, but it is not too much to say that it is scarcely known, even by name, to the great majority of British teachers.

More recently, the Educational Science Section of the British Association, the British Science Guild, and many other bodies have come into existence with the hope and intention, among other objects, of bringing together on a common footing all who are able and willing to improve our national education. But though each and all were at the outset more or less inspired by the right ideal, none has succeeded in developing and sustaining

that widespread confidence which is necessary to make teachers forget all else but that they are engaged upon one of the most important forms of work for their country, and that, compared with the efficiency of our national education, all personal considerations are of minor importance.

Do these more or less abortive attempts to bring about the unification of educational effort mean that the task is impossible? Are university dons, secondary- and elementary-school teachers by nature mutually exclusive? Do they, like certain atomic bodies, exert a mutual repulsion? Or is it that among the noble army of our teachers there are few, if any, men and women with true constructive statesmanship?

These are questions which teachers will do well to ponder. But it seems fair to suggest that, if teachers really do lack the power to form themselves into a united profession, they must not repine if they enjoy none of the privileges and satisfactions of belonging to a strong, well-organised professional body. The hint may be hazarded, however, that if doctors, lawyers, and the clergy managed long ago to solve similar difficulties, it will not be exactly to the credit of teachers if they continue to wander, as it were, "as sheep without a shepherd," and continue to meet with scant courtesy and little consideration from our legislators.

The resolution of the assistant-masters does, as we have said, suggest a first step. They may well continue to work to secure the union of all teachers in secondary schools. Let them first show their headmasters, by tempering their enthusiasm with sweet reasonableness, that they are as capable and as willing to work for educational efficiency as their superior officers. One cannot help thinking, for example, of the experience and knowledge of the ruling chairman of the Assistant-masters' Association and comparing these with the restricted outlook and domestic instincts of the headmasters of many small provincial towns, and seeing in the comparison a happy augury for the success of an earnest attempt to secure unity and coherence. And as none of us requires at this date to be persuaded as to the reality of women's success and power in education, no difficulty need be anticipated in securing the co-operation of headmistresses and assistant-mistresses in a scheme of federation. The formation of a union of all secondary-school teachers, using the term in its most comprehensive sense, may, then, without undue optimism, be regarded as well within the sphere of practical politics.

The energetic and sometimes wisely aggressive National Union of Teachers we have with us already. Perhaps it may make a greater

demand upon our optimism to believe in the possibility of a friendly and complete co-operation between the already flourishing National Union and our visionary federation of secondary-school teachers; but the war has taught us many lessons. We are all filled with admiration of the part the "old boys" of the elementary schools have taken in the war and of the patriotic share their teachers are taking. We have, in fact, begun to understand one another. Our elementary schools and our secondary schools overlap so extensively nowadays, we have made so many steps in giving brains their full chance, and social barriers are so palpably breaking down in every direction, that the eye of faith experiences no difficulty in perceiving on the horizon a complete harmony and understanding between all teachers of our boys and girls from whatever homes they may happen to come.

The final step would be to unite school teachers with those in the universities, and that becomes easier as the years pass. The boys from elementary and secondary schools eventually occupy the seats of the mighty in the universities, and if they, when at school, are taught by men in whom there is no partisanship, men who are members of a great teaching brotherhood, their sympathies and instincts will prompt just the union which is wanted. But fortunately, even to-day our universities abound in broad-minded and sympathetic educators who would, as soon as school teachers had led the way in the manner indicated, welcome the opportunity of bringing about the completion of the scheme of unification we have attempted to outline.

With a representative and comprehensive council of every grade of teacher in existence, it would be possible to accomplish much which has long remained undone; but without representatives of the administrative side of education the educational parliament we have in mind would be incomplete. The discussion of how to weld teachers and administrators must, however, be left for another occasion.

CAMBRIDGE LOCAL EXAMINATIONS, 1915.

HINTS TO TEACHERS FROM THE EXAMINERS' REPORTS.

COMPULSORY SECTION.—*Arithmetic*.—Many mistakes were made by *Preliminary* candidates in elementary processes, especially in long division, G.C.M., and L.C.M. The questions involving the metric system and the relations between corresponding denominations in linear and cubic measure were not properly grasped. Problems were sensibly dealt with, but rough checks to test the correctness of answers were not sufficiently employed.

Many *Junior* candidates paid no attention whatever to the sense of the questions: the contents of the outer shell of a vessel 9 inches in diameter by 7 inches in height were given at anything up to 2,000,000 pints, and a very large number of candidates stated that one man did a piece of work in one-sixteenth of the time sixteen men took to do the same.

ENGLISH SECTIONS.—*English Grammar*:—Parsing was mostly fair, but many *Preliminary* candidates failed in dealing with an infinitive and a gerund. There was some uncertainty with regard to pronouns and ordinal numbers.

Few *Junior* candidates dealt satisfactorily with a question on inflexion: a large number did not even attempt it. The answers to questions on affixes and suffixes and on accent showed considerable ignorance of common words.

English Composition.—There was often unnecessary deviation by *Junior* candidates from the subjects set, e.g. the description of a farmhouse and its surroundings frequently took the form of an essay on Life at a Farm. At some centres many of the old faults appeared—a plethora of inconsequent and trivial details, misapplication of words, and in some cases utter neglect of punctuation and paragraphing. There were, however, fewer attempts to indulge in humour. The question on punctuation was very fairly done, the commonest fault being the omission or misplacing of inverted commas. Comparatively few candidates tried the alternative question on synonyms, but the majority of those who took it did remarkably well.

In July the *précis* passage was treated by *Senior* candidates in a satisfactory manner by comparatively few. Quite 70 per cent. of the summaries seemed to show that *précis* writing is not adequately taught; the characteristic answer was a mere "cutting down" of the original, with little alteration in either vocabulary or style. On the whole the candidates kept to the prescribed limit better than in previous years, but the search for an appropriate title was in half the cases neglected and, where attempted, was for the most part fantastic or incomplete. In December similar weakness was shown in the *précis*, but the rendering of a passage into modern prose was fairly well done, although there was often a failure to break up the passage into sentences and to recognise that words have changed in meaning.

On the whole a good general knowledge of *Shakespeare's* "*Merchant of Venice*" was shown by *Junior* candidates at both examinations, but the impression produced in December was that candidates had read what had been written about the play more carefully than

they had studied the text of the play itself. The answers to a question on the Trial Scene were, as a rule, lacking in detail and confused as to the correct order of events. The questions involving identification of passages and contexts were well done in both examinations. The answers giving descriptions of character were in December rather poor. The versions of the passage for paraphrase seemed to point to the necessity of teaching the pupils more carefully to understand the meaning of the text. A similar inference may be drawn from the writing out of passages from memory. A good general knowledge of the play was shown by most of the *Senior* candidates. Passages set for identification and explanation were, as a rule, successfully treated in July, but in December the explanatory notes were very poor, diffuse paraphrase being often substituted for annotation. Questions involving knowledge of the text and the various situations in the play were often well answered; but where the application of the candidates' knowledge was involved the answers were less satisfactory. Many papers would have benefited by revision, of which there were few signs.

English Literature.—The questions least well answered by *Senior* candidates were those that called for some constructive power, such as, for instance, the question relating to Shakespeare's fairy world, and in many cases the tendency to answer by rote was clearly marked. Little was known of such writers as Ben Jonson, Boswell, and Hazlitt; and but a scant acquaintance was shown with English metres. On the other hand, some interesting accounts were given of Addison, Defoe, Cowper, and Burns, illustrative quotations being supplied, though not always with discretion. The questions relating to dramatic characters were also, as a rule, well done, the main fault being a tendency to rest content with giving a mere narrative account of the plot.

In *English History* the work of *Preliminary* candidates was, as a rule, very poor: though some centres showed an intelligent knowledge of their period. A very large number of the candidates had the vaguest ideas of time and place, and, in attempting biography, they often confused the lives of two or more people. As a rule, the questions asking for reasons or character were either ignored or dealt with very inadequately, and in general it may be said that the answers, even where they earned fair marks, were more conspicuous for memory than for thought. Comparatively few candidates attempted the third period.

Junior candidates who spread their work over the whole paper produced less valuable results than those who confined their attention to a single period. A frequent mistake was

to confuse one character with another, *e.g.* Henry VII. and Henry VIII. Many candidates exhibited a hopeless ignorance of chronology. Answers were often marked by a false historical perspective (*e.g.* events at sea that led up to the battle of Trafalgar were made to commence with the battle of Beachy Head), by irrelevance, or by an incorrect use of terms.

A few of the *Senior* candidates were really good, but too many of them depended on reproductions of text-books and notes, and were unable to deal satisfactorily with questions demanding thought as well as memory. The facts were for the most part stated with an admirable correctness, and there was less confusion of personages than usual.

The answers of the *Junior* candidates to the general questions in *Geography* were again rather unsatisfactory in some respects: a considerable proportion of the candidates had an inadequate knowledge of the reasons for the variation of the position of the overhead sun, and very few indeed showed a fair knowledge of general questions on climate. In general more careful teaching of the nature of physical processes (*e.g.* the causes of rainfall) seems necessary. The weakest part of the regional geography was the description of the different types of country in large regions such as Russia or Australia: the teaching should not deal only with specific places, industries, etc., but should also include broad descriptions of areas, so that the candidates may have a general knowledge of what the areas are like, and how they affect the ways of living of their inhabitants.

Except at a few centres, where there was evidence of excellent teaching, the knowledge shown of the general principles of physical geography by *Senior* candidates was poor; this was seen especially in the accounts of the forms of valleys. Even such a fundamentally important subject as the character and causes of the trade winds was seldom fully understood, and many serious mistakes were made. Something was known by almost all candidates concerning insular and continental climates, but only a few gave a full and clear explanation. The questions on regional and economic geography, such as those on the Hungarian plain and the great lakes of North America, were often fairly well answered; but the accounts of the basin of the Elbe and the geographical structure of Scotland were less satisfactory. The maps of special regions still formed an unsatisfactory feature of the papers. It was remarkable how few candidates were able to give even a fairly accurate representation of the eastern frontier of France with the positions of the contiguous countries; similarly, it was surprising to find a great want of know-

ledge of the constituent states of the German Empire.

CLASSICAL SECTION.—In the *Latin* of *Junior* candidates the most general fault in translation was weakness of English style; the failing next in order of frequency was that of not grasping the Latin construction; but the general sense of the passages was seldom missed. Some candidates who attempted one or both of the alternative unprepared passages would have been better advised to take the set books. The papers from the colonial centres were on the whole superior to those sent up at the home centres. In *Accidence* the answers were on the whole satisfactory, though at some centres all or nearly all the candidates failed. The harder declensions of nouns and the comparisons of adjectives and adverbs were not seldom weak. Much inaccuracy was shown in the irregular verbs.

The unprepared translation of *Senior* candidates at home centres was still not satisfactory; many of the candidates failed to grasp the sense of the passage as a whole, and much nonsense was written on one or two sentences. Still, there was improvement on last year's performances: in particular, more attention was paid to the grammar of the English renderings. The greater part of the candidates failed to make any serious attempt at the composition and were not successful in rendering the English sentences into Latin: the short Latin passages for translation and grammatical comment were relatively much better done. The work of very few candidates was entirely free from serious mistakes in syntax, especially with regard to voice and mood; several compositions which were otherwise quite meritorious were spoiled by gross blunders of this kind.

MODERN LANGUAGES SECTION.—*French*:—Few *Junior* candidates took free composition, and, with very few exceptions, their work was worthless. The continuous passage of English was satisfactorily done by many candidates, very well by a few; there was still a good deal of carelessness, especially in spelling, and ignorance of syntax. In *Spoken French*, the results were singularly uneven. The reading was fairly good; in some schools distinct improvement was shown, whereas in other schools changes in the teaching staff caused by the war had lowered the standard observable in previous years. The conversation was moderately good; while most candidates could understand the questions put to them, few showed any facility in expressing themselves. A great fault was the constant misuse of tenses. In the opinion of several examiners many candidates who did not offer a book as a basis of conversation would have been better advised

to do so; as it was, they often had read very little French and possessed little or no vocabulary. This restricted reading probably affected the dictation, which, although showing some improvement, was still written very badly in schools where insufficient practice had been given in this valuable exercise.

The general impression conveyed by the grammar answers of *Senior* candidates was that mechanical rules had been acquired somewhat at the expense of practice in the living language. Candidates had been well drilled in their irregular verbs, and showed a creditable acquaintance with the proper use of past tenses. Knowledge of the rules for past participles varied very widely. In the construction of sentences very few candidates showed any acquaintance with the harder idioms; and blunders on simple points, especially in concord and in the genders of common words, were numerous. In translation the great majority of the candidates had a sufficient vocabulary to have obtained fair marks, but very few of them were able to put their words together so as to produce a readable version. The rendering of phrases that were at all idiomatic was singularly wooden and unintelligent. There were fewer failures in composition than usual in the easier passage, but ignorance of ordinary verb forms was very noticeable. A deplorably large number of candidates showed no notion of concords. The harder passage, of which there were few really good renderings, was written moderately well by many candidates. The vocabulary possessed by a large number of the candidates was surprisingly limited: such ordinary words as "grandson" and "to smoke" were frequently not known. The free compositions were often too long and contained grotesque misstatements. It was astonishing to find candidates writing on subjects connected with the war who did not know the French for Belgium or Germany.

In spoken French mistakes in concords and the use of tenses were still very noticeable. Allowance must be made in some schools for the inevitable change of teaching owing to the absence of masters on military service. Many candidates would do better to offer a book as a basis of conversation, and the book should be a prose work by a modern author, as affording better matter for conversation than a classical drama.

MATHEMATICAL SECTION.—N.B. *It is the opinion of the Examiners that the practical work in Geometry is better done than the theoretical proofs and that perhaps the former is receiving disproportionate attention in the schools.*

In the theoretical questions in the proofs of

the congruence of triangles essential details were frequently omitted in the answers of *Junior* candidates. Attempts at demonstrating, by drawing equidistant parallel lines, that the segments of the sides of a triangle, made by a line drawn parallel to the base, are proportional, were nearly always practically worthless: few of the candidates seem to have understood this method of proof. Attempts at demonstrating theorems by the "method of limits" were also unsatisfactory.

The bookwork of *Senior* candidates was, on the whole, well and carefully written out; on the other hand, many candidates, particularly among the girls, seemed to have no power of attacking even the simplest riders. Difficulty was often found in translating geometrical theorems into algebraic language and *vice versa*. Although more solutions than usual of the solid geometry questions were sent in, many of the candidates failed to distinguish a circle from a sphere. Graphical constructions were neatly done, especially by the girls. It sometimes happened, however, that when a constructed line had to be measured mistakes in measurement were made, although the figure shown was perfectly correct. The examiners are of opinion that, in order to prove that the rectangle contained by the segments of a line, drawn from an external point to cut a circle, is constant, it is not adequate merely to quote the theorem that the rectangle is equal to the square on the tangent from the point.

The elementary work in *Algebra* was fairly well done by *Junior* candidates, but there was the usual carelessness in the performance of simple operations. This fault was especially noticeable in the simplification of fractions, where there was a good deal of random cancelling. Simultaneous equations written in the form of a double equality still seemed to present difficulties to many candidates. Questions on indices and logarithms were badly done, except at a few centres, while many candidates who attempted these questions failed to show that they understood the meaning of the symbols used. Graphs were generally drawn carefully, but few candidates showed that they had been trained to use them; and in finding maximum and minimum values candidates seldom tested their results by plotting extra points on the graphs. In the advanced part of the papers the work showed little improvement. Questions on variation were seldom attempted, and the answers were often lacking in intelligence. The bookwork and formulæ connected with the progressions were well known, but many mistakes were made in applying the formulæ. The problems in the advanced parts of the papers were

attempted by a fair number of candidates, but the attempts were seldom of much value.

Many *Senior* candidates found it difficult to translate easy problems into algebraical terms, while some showed that they had not mastered the principles of quadratic equations, or did not recognise that they had a quadratic equation to deal with. Arithmetical and algebraical inaccuracies were frequent. A common error was to put $o \times a = a$; some put $o/a = \infty$. Both the easy and the more difficult graphs were usually well done, although some candidates seemed to be unaware that a linear equation represents a straight line. The binomial theorem was fairly well known; but questions on compound interest, series, theory of quadratic equations, and combinations were not well done.

NATURAL SCIENCES SECTION.—In *Theoretical Chemistry* weakness was shown by *Junior* candidates in experimental proofs that air consists of a number of substances. Many candidates failed to describe an experimental verification of the law of combination in definite proportions. The calculation was badly done; very few candidates answered the question dealing with the combustion of coal-gas. Few described an experimental verification of the law of combination in multiple proportions. Generally speaking, the questions dealing with the preparation of various substances and their reactions with other substances were fairly well answered.

The *Senior* candidates did not pay sufficient attention to the questions, and much matter was written in both examinations that was not asked for. A question on elementary gas analysis was widely attempted, but very few of the candidates seemed to have any notion of the kind of apparatus used for measuring gases. The meaning of the term "allotropy" was not understood.

The qualitative analysis of *Senior* candidates was on the whole very disappointing. Few of the candidates gave any information as to how solution was obtained, and it was quite general to find a precipitate described as the result of adding a solution to a solid. The constituents of the mixture given were often correctly indicated without any information as to the way in which the conclusions were reached. The weakest point of all was the inadequacy of the so-called confirmatory tests. The volumetric analysis was very much better done, and some excellent results were sent in, but many candidates were unable to calculate the results of their titrations. Questions on the identification of gases brought practically no answers of any value.

Botany.—The botanical description of specimens provided by *Senior* candidates was

usually correct, but the sketches, though often satisfactory, were frequently left unlabelled or were labelled insufficiently. On the other hand, diagrams and sketches were much too seldom used in the other answers, and, notwithstanding the special instruction at the head of the paper, were frequently on much too small a scale. Many candidates had evidently received no satisfactory instruction in the construction of floral diagrams, and it was usually not realised that a longitudinal section of a flower should show clearly the point of origin of the various parts of the flower. It was evident from the large number of mistakes made in classifying the flower specimens that systematic botany had been badly taught in many schools. Some improvement was noted in the answers to physiological questions, but it was still evident that a large number of the candidates had not been taught to perform the experiments for themselves. The physiology of irritability was not treated satisfactorily. Knowledge of British plants was meagre and inaccurate. Most of the candidates had evidently not had sufficient opportunity of gaining this sort of information at first hand. The life-histories of common trees, the flowering-time and fruiting-time of common plants, the dispersal of wild fruits were very inadequately known. The special morphology of tubers, corms, roots, etc., was badly done. Less than 25 per cent. of the candidates in July knew one end of a potato from the other, or had any idea that a carrot, like any other primary root, bears secondary roots endogenously and in vertical rows. More than 50 per cent. of the candidates in December were ignorant of the precise meaning of the term "node." In December many candidates, in describing the root-system, freely used the terms epiblemma, calyptrogen, dermatogen, plerome, and periblem with almost no knowledge of their meaning. These terms were both superfluous and often incorrectly used. On the other hand, such a simple but essential fact as the advantage to a plant of a long and much-branched root-system was almost invariably omitted.

In the *Physical Geography* of *Junior* candidates questions relating to climate and the movements of the atmosphere were in general well done, but in a large number of centres the majority of candidates knew little about topography and especially about the form and mode of origin of valleys. Definitions of terms were generally loose and inaccurate, and the figures drawn to illustrate them were in many cases unsatisfactory. Although diagrams illustrating the seasonal changes were reproduced successfully, very few could explain clearly how those changes affected the heating of the earth's

surface by the sun, or why day and night at the equator are always of the same length. In the drawing of sections across a simple contoured map the tendency to exaggerate the vertical scale is gradually diminishing. A warning, however, is necessary against an error committed by almost all candidates: a contoured map was set oriented north and south, and candidates were asked to draw a section along a line from south-west to north-east. There were very few candidates that did not project the points of intersection of the contour lines with the line of section, on to the base of the map (*i.e.* an east and west line), this having the effect of altering the horizontal scale of the section. It was commonly stated that as the atmosphere becomes lighter the barometer should *rise*. Few candidates referred to the part played by earth-movements in the formation of estuaries, and distinction was rarely drawn between a mountain range and a dissected plateau.

A considerable proportion of the *Senior* candidates appeared to have received little teaching in the subject; the work of the remainder was satisfactory, and in a number of cases good. There was a lamentable want of knowledge concerning the origin of physical features, such as tablelands, cliffs, and sand dunes, and concerning the work of rivers and glaciers. More attention should be paid to the conditions obtaining in areas of inland drainage, and to climates in different parts of the world.

PERSONAL PARAGRAPHS.

DR. LYTTTELTON'S resignation would have been less of a surprise if it had been announced last year. Eton is much in the limelight of the halfpenny Press, which can always make "copy" out of the athletic performances of its royal alumni, or the utterances of its headmaster. Whatever opinions may be held as to the wisdom of some of the latter, there can be no question of the personal charm of the speaker. Coming to Eton in succession to Dr. Warre, he had a difficult task which he has performed with admirable patience and good humour. No headmaster surely has ever been more accessible, both to his staff and to the boys. His unvarying good temper is, perhaps, the most remarkable feature of an interesting personality, and it might be profitable to inquire into the correlation between this characteristic and success in games. Dr. Lyttelton's athletic record at Cambridge was only beaten by that of his younger brother, and he was the only man to make a hundred runs against the famous Australian eleven of 1878, when he performed this feat for the Gentlemen of England. Of late years, fives, in which he has

always been an expert, and golf, in which, despite his gifts of eye and temper, he is not a scratch player, have been his relaxations. Not golf, however, but the ministry is his chief concern, and his earnestness and eloquence will find a fitting field elsewhere, though there are many at Eton who will regret his departure.

* * *

THE resignation of the Vice-Provost of Eton was also announced on April 4th. Mr. Warre Cornish's health has been a cause of anxiety for some months to his friends, who have missed his familiar figure in chapel. An Eton Colleger, a Fellow of King's, 3rd Classic in 1861, from that year till 1893 assistant-master at Eton, and since then Vice-Provost, his connection with King Henry VI.'s foundation has approached in duration of time to that of some of the Fellows of the ancient *régime*; but there the resemblance ceases. Few schoolmasters have had wider interests, and fewer still have such a literary record. He has combined loving care of the treasures of the past in the college library with many excursions of his own in modern literature and history—a Life of Oliver Cromwell, a History of Chivalry, a History of the English Church, and, in lighter vein, "Sunningwell," "Darwell Stories," and a charming appreciation of Jane Austen in the "English Men of Letters" series. His literary taste had its influence on his pupils, and "A Day of my Life at Eton," now almost a classic, was written by a member of his house. A short poem in the *Eton Chronicle* of April 5th recalls the strong house feeling which once introduced the football cry of "Cornish's" as an obligato to a well-known hymn.

* * *

MR. E. C. AUSTEN LEIGH, formerly lower master at Eton, will be greatly missed, not only by his wide circle of friends, but on many councils and committees where his sound judgment and kindly wisdom gave him a place which will be hard to fill. His connection with the school itself was longer than that of his friend and contemporary, Mr. Cornish, for after being assistant-master from 1862 he became lower master in 1887, and retained that position till 1905. Not only as a schoolmaster and housemaster, but as a magistrate, a member of the County Council, a sportsman and player of most games, he touched life at many points, and he maintained his keen interest and sympathy right up to the short illness which terminated his active and useful life. His remarkable gift of direct and humorous speech was a recurring source of benefit and enjoyment to his hearers, and a reminder on occasions of the speaker's family connection with Jane Austen.

DR. KEELING, for forty-four years headmaster of Bradford Grammar School, died on March 29th at Southport. Keeling, who was a native of Manchester, was educated at Manchester Grammar School and Wadham College, Oxford. His first mastership was at Bromsgrove School, where he remained two years. He then went to Rossall. He was appointed headmaster at Northampton Grammar School, and after holding that office for four years became headmaster of Bradford Grammar School in 1871. During his long reign as headmaster the school had grown from about 100 to more than 600 pupils, a remarkable growth considering that the education was classical in an industrial district. Dr. Keeling was made a freeman of the City of Manchester in 1912, on the 250th anniversary of the granting of the Charter to the school.

* * *

AN old pupil of Dr. Keeling writes to the *Times*: "The announcement of Dr. Keeling's death in the *Times* revives feelings in many minds which date back much further than most of us care to think about. Many generations of Bradford boys will feel that the big hall at the Grammar School is permanently poorer by the absence of the figure with flying gown and hands in pockets which during school hours rapidly paraded its entire length, eager to bring within its orbit any bird of passage flitting from one class to another. His triumph at Bradford was essentially one of personality. Without being himself conspicuous as a teacher, he revived the success of an old foundation by the sheer power of picking out good men and discovering and bringing forward likely recruits for the school. . . . Severe as he might seem at first sight, he had the invaluable quality of humour. None who were present could forget how, suffering violently from hay fever, as he often did, he sat on the Monday morning taking the VIth in Divinity, smelling salts in one hand and a handkerchief in the other, and how, shaken by a violent series of sneezes—always carefully counted by those present to see if he would beat his previous record—he fixed one boy with a not unhumorous look, and said: 'Yes, Farrow, that was nineteen, wasn't it?' Or, how, after inveighing violently against the evil practice of storing football clothes on the shelves of the library, he discovered that they were those of his own son."

* * *

THE retirement of Dr. H. J. Spenser from the headmastership of University College School is announced. Dr. Spenser was educated at the Nottingham High School and St. John's College, Cambridge. His first appoint-

ment was as headmaster's assistant at Nottingham High School; he then went to Scotland, where for five years he was a master at Edinburgh Academy, and afterwards rector of the High School, Glasgow. He was appointed headmaster of University College School in 1903; upon him rested the duty of transferring University College School from Gower Street to Frognal, a removal that was carried out with great skill, to the lasting good of the school. Dr. Spenser has been an active member of the Headmasters' Association; he is keen to appreciate other people's point of view, and through the use of that faculty has been of great use to the association.

* * *

CAPTAIN A. H. BURROWS, 6th Northampton Regiment, for about six months first form master at Mercers' School, was killed in France on March 12th. His Colonel writes: "He was a most conscientious and reliable officer, and had come on most markedly as a soldier during the last two months. As he combined with it a quiet daring, he was sure to have won distinction had he been spared."

* * *

CAPTAIN G. C. WATSON, 6th Devon Regiment, was killed on March 8th in Mesopotamia. Mr. Watson was an exhibitor of King's College, Cambridge, 1907-9. He went to Crediton Grammar School as classical master on leaving Cambridge, and in 1911 was appointed senior master at Colston School, Bristol. On the outbreak of war he was in training with his regiment and went with it to India in October, 1914.

* * *

MR. A. G. AYLES, for eighteen years headmaster of the Warehousemen, Clerks, and Drapers' School, Purley, Surrey, died recently at Anerley in his 74th year.

* * *

MR. H. M. FRASER, of the Grammar School, Dudley, has been appointed headmaster of the Grammar School, Stone. Mr. Fraser was educated at Emanuel School, Wandsworth, and obtained an arts degree at London University in 1900. In 1902 he went to Horsham Grammar School as a master, and was appointed to Dudley in 1904.

* * *

MR. F. MUNFORD, of the Chester-le-Street Secondary School, has been appointed headmaster of the same school. Mr. Munford was educated at the Borough Road College, and in 1898 went as a master to Firs Hill School, Sheffield, and afterwards to Bettenham Road School.

MR. H. J. CAPE, headmaster of Sir Joseph Williamson School, Rochester, has been appointed headmaster of the Colchester Royal Grammar School. Mr. Cape was educated at Magdalen College, Oxford, and has graduated both in arts and science at the University of London. He was a master at King's School, Canterbury, from 1901-10. Mr. Cape is the joint author of "Schola Regia Cantuariensis," and has written a history of England for use in schools, which was published by Methuen in 1911.

* * *

MR. C. H. TREMLETT, for fourteen years a master at Fettes College, has been appointed headmaster of the King's School, Bruton, Somerset. Mr. Tremlett was educated at Harrow and Clare College, Cambridge, from which he went to Fettes.

* * *

MR. J. L. NORTON has resigned the secretaryship of the Lancashire and Cheshire Branch of the I.A.A.M., an office that he has held for more than twenty years. In that capacity he has been one of the chief movers in the organisation of the teachers in secondary schools in Lancashire. It has been decided to raise a testimonial in appreciation of his long and invaluable services to the association, and Mr. S. B. Hartley writes from "The Cliff," Broughton, Manchester, appealing for subscriptions for this purpose, particularly to members of the branch who have reaped the fruits of his knowledge in the past, and wish to testify in a practical form to the effective nature of his labours.

* * *

SIR JOHN GORST died on April 4th. He was a native of Preston, and was educated at Preston Grammar School and at St. John's College, Cambridge; he was third wrangler in the Mathematical Tripos of 1857, and was elected to a Fellowship of his College. After working for some time in New Zealand he returned to this country, was called to the Bar, and began his political career by organising the party machine for Disraeli. He held various offices, and on the return of the Unionists to power in 1895 became Vice-President of the Committee of Council of Education, a committee which had at that time the administration of grants for education. In 1899 an Act was passed providing for the establishment of a Board of Education with a President at its head; in 1902 Sir John Gorst retired and a Parliamentary Secretaryship was substituted for his office. He was the first President of the Educational Science Section of the British Association.

MR. R. L. AGER, a master at Manchester Grammar School, has been appointed headmaster of Batley Grammar School in succession to Mr. N. L. Frazer, who has been appointed headmaster of Ilkley Grammar School. Mr. Ager was a scholar at Rugby School, and is a graduate of Corpus Christi College, Oxford. He was formerly a master at Bishop's Stortford College, and later headmaster of Tettenham College, before going to Manchester as a master.

* * *

LIEUT. C. W. WALLACE, who was killed on March 8th, was educated at St. Edmunds School, Canterbury, and when the war broke out was a master at Bishop Cotton School, Bangalore, India. He received a commission in November, 1914, was attached to the 47th Sikhs, and went to France in March, 1915. ONLOOKER.

RECENT ESTIMATES OF PUBLIC EXPENDITURE ON EDUCATION.

THE following extracts from the "Estimates for Civil Services for the year ending 31 March, 1917," are of interest as showing the extent to which economies have been effected for the present year. The decrease on the total grant for education, science, and art is £526,441, the gross totals of the Estimates being, for 1916-17, £20,448,508, as compared with £20,974,949 for 1915-16.

United Kingdom and England.

BOARD OF EDUCATION.

	1916-17	1915-16
	£	£
Administration	203,667	209,551
Inspection and examination	222,578	252,458
Grants in respect of public elementary schools, etc....	12,640,528	12,696,815
Grants for training of teachers	408,282	577,000
Grants towards expenditure on secondary schools and pupil teachers and bursars, etc.	919,800	863,050
Grants towards expenditure on other aided institutions, schools, and classes, and on assistance in choice of employment	659,110	731,660
Imperial College of Science and Technology and Chelsea Physic Garden (grants in aid)	30,150	30,150
Royal College of Art	8,494	10,300
Victoria and Albert Museum	63,375	70,459
Science Museum	13,943	18,892
Geological Museum... ..	3,212	3,805
Geological Survey of Great Britain	14,718	16,820
Bethnal Green Museum	2,735	5,433
Gross total... ..	£15,490,592	£15,486,393
Deduct—		
Appropriations in aid	3,860	5,015
Net total	£15,186,732	£15,481,378

UNIVERSITIES AND COLLEGES.

Universities and Colleges, Great Britain.

	1916-17	1915-16
Grants in aid—	£	£
University of London ...	8,000	8,000
Victoria University of Manchester ...	2,000	2,000
University of Birmingham ...	2,000	2,000
University of Wales ...	4,000	4,000
University of Liverpool ...	2,000	2,000
Leeds University ...	2,000	2,000
Sheffield University ...	2,000	2,000
Bristol University ...	2,000	2,000
Durham University ...	2,000	2,000
Scottish Universities ...	84,000	84,000
Colleges, Great Britain ...	150,000	150,000
University Colleges, Wales ...	12,000	12,000
Welsh University and Colleges: additional grant...	20,500	15,000
Total for universities and colleges ...	£292,500	£287,000

Intermediate Education, Wales.

Examination and inspection, grant in aid ...	1,200	1,200
Grants in aid of schools ...	27,500	28,000
Total ...	£28,700	£29,200

Scotland.

PUBLIC EDUCATION.

Administration ...	28,969	28,935
Inspection ...	43,123	44,290
Elementary schools ...	2,073,489	2,081,435
Continuation classes and secondary schools ...	241,000	247,500
Royal Scottish Museum, Edinburgh ...	10,610	12,832
Training of Teachers ...	145,986	193,389
Examination of accounts ...	1,565	1,524
Total ...	£2,544,742	£2,609,905

Ireland.

PUBLIC EDUCATION.

Administration ...	30,004	29,526
Inspection ...	48,901	49,932
Training colleges ...	64,866	65,120
Model schools ...	3,861	3,861
National Schools ...	1,587,250	1,582,000
Manual and practical instruction ...	12,238	12,580
Teachers' residences ...	6,800	6,800
Superannuation, etc., of teachers (grants in aid) ...	59,484	56,800
Gross total ...	£1,813,404	£1,806,619
Deduct—		
Appropriations in aid ...	700	700
Net total ...	£1,812,704	£1,805,919

INTERMEDIATE EDUCATION.

To salaries of teachers, including cost of administration ...	40,000	40,000
Endowed Schools Commissioners ...	905	900
Total ...	£40,905	£40,900

SCIENCE AND ART.

	1916-17	1915-16
Institutions of science and art ...	£ 49,224	£ 50,136
Schools of science and art, etc. ...	99,350	94,950
Geological Survey ...	1,749	2,171
Examinations in courses of instruction conducted in technical schools ...	750	850
Gross total ...	£151,073	£148,107
Deduct—		
Appropriations in aid ...	1,620	1,820
Net total ...	£149,453	£146,287

UNIVERSITIES AND COLLEGES.

Grants—		
Queen's University of Belfast ...	18,000	18,000
University College, Dublin ...	32,000	32,000
University College, Cork ...	20,000	20,000
University College, Galway ...	12,000	12,000
National University of Ireland and University College, Dublin ...	30,000	40,000
Additional grant to University College, Galway ...	2,000	2,000
Total ...	£114,000	£124,000

THE ORIGIN OF ENGLISH MEASURES OF LENGTH.¹

ALTHOUGH there is considerable variety in the measures of length used by the different nations of the world, there can be no doubt that they are, for the most part, derived from a common origin, and that their ancestors, if the expression may be used, existed in times so remote that the date of their invention has been completely lost. But the study of what the original measures were is a matter of considerable historical importance, and the question can be investigated by an examination of the changes made in the course of generations by the people who have adopted them—changes, in some cases, apparently due to accident rather than design.

For the sake of clearness, it is convenient to divide the measures of length into four categories which are, to a certain extent, independent of one another, and may be defined as follows:—

(1) The shorter measures of length, used for building and manufacturing purposes, of which the more important in ancient times were the cubit, the palm, and the digit, or finger breadth, and the English representatives are the yard, the foot, and the inch.

(2) The shorter measures of distance, such as the foot, the yard, and the pace.

(3) The longer measures of distance, including the stadium, the mile, the parasang, the schoenos, the league, the hour's march, and the day's march.

(4) Measures of length used in connection with the calculation of land areas, of which the English representatives are the perch, the chain, and the furlong.

¹ From a paper by the late Sir Charles M. Watson, K.C.M.G., printed in the *Journal of the Royal Society of Arts*, December 31st, 1915.

As regards the first of these classes of measures, it is generally accepted that they were, from the earliest times, based on the proportions of the human body so that every man had his own scale to which he could work. As, however, men are not all of the same size, there is considerable variety in the length of the different units, but, with some exceptions, they may be included within the following limits:—

The digit { or finger } { breadth }	from	0.72 to 0.75	English in.
The palm,	„	2.88 to 3.00	„ „
The cubit,	„	17.28 to 18.00	„ „
The fathom,	„	5.50 to 6.00	English ft.

The palm is the width across the open hand at the base of the fingers; the cubit is the length of the arm from the elbow to the end of the middle finger; and the fathom the length of the out-stretched arms. There is no fixed relationship between these units.

There is no record as to when an attempt was first made to combine the measures in a standard scale, but it was probably at an early period, as it must have been found inconvenient for workers on the same building, for example, to use different lengths of palms and cubits, and, when a standard was fixed, it may have been some such scale as the following:—

1 digit =	0.7375	English in.
4 digits = 1 palm =	2.95	„ „
6 palms = 1 cubit =	17.70	„ „

The cubit of this scale may be called the "cubit of a man," to distinguish it from other cubits, which will be described hereafter.

In process of time it was found desirable to have a smaller unit than the digit, and this was made by taking it as equal to six grains of barley placed side by side. In the English scale, barleycorns were also used as the smallest measure of length, but in this case they were placed end to end, three barleycorns so placed being taken as equal to one inch.

There is no evidence that the foot was included originally among the units of the hand worker given above, and it may, perhaps, more properly be regarded as belonging to the second class of measures, derived from the distance covered by a man walking, and as a subdivision of the important unit, the pace. The pace is of two kinds, the first being the single pace, or distance covered by the step of one foot, and the second, the double pace, the distance covered by both feet one after the other.

In the case of the Roman double pace, a very important measure, the pace was taken as equal to five feet, but this was an artificial connection, as there is no fixed proportion between the length of a man's foot and the length of his pace.

There is nothing to show when the foot was added to the units of the mechanic's scale, but when this was done it was assumed to be equal to four palms, or two-thirds of a cubit.

The third class of measures of length is the most important, and the history of these is of particular interest, as they appear to have started in a state of

perfection, and to have been first used by a people who possessed a high degree of astronomical and mathematical knowledge, who were acquainted with the form of the earth, and were able to carry out accurate geodetical measurements. It is also remarkable that the changes made as regards these measures in the course of time have been changes for the worse, in consequence, apparently, of the origin of the measures having been forgotten. There can be no doubt that they are based on the angular division of the circle, and on the application of this division to terrestrial measurements.

The unit of angular measurement is the angle of an equilateral triangle, and this angle was divided by the ancient geometers, for purposes of calculation, into 60° , the best number possible, as $60 = 3 \times 4 \times 5$. Following the same principle, each degree was divided into 60 minutes, and each minute into 60 seconds. As the circle contains six times the angle of an equilateral triangle the circle was divided into 360° . This division of the circle, although so ancient that its origin is unknown, has never been improved upon, and is still in use by all nations. An attempt on the part of certain French mathematicians to substitute a division of the circle into 400° , on account of the supposed advantages of the decimal system, has proved a failure.

The manner in which the division of the circle into 360° was used by the ancients to determine the unit for terrestrial measures of distance was as follows. If a circle be described cutting the equator of the earth at right angles, and passing through the north and south poles, its circumference in angular measurement is equal to $360^\circ \times 60' = 21,600'$, and the length of one minute, measured on the surface of the globe, was taken as the unit, which is called a geographical mile at the present time. If the earth was a perfect sphere, every geographical mile would be of the same length, but, as the polar diameter is less than the equatorial diameter in the proportion of 7,900 to 7,926, the length of the geographical mile, measured on the meridian, is not the same in all latitudes, but increases in length from 6,046 English feet at the equator to 6,108 English feet at the poles. Whether the ancient astronomers were acquainted with this irregularity in the figure of the earth it is not possible to say, but it is certain that the value at which they fixed it must have been close to the actual mean value as determined by modern astronomers, which may be taken as about 6,075 English feet. The Greek stadion (the same as the Roman stadium), which was one-tenth of the geographical mile, was 600 Greek feet in length, and the Greek foot was about 12.15 of our present English inches.

The next step taken appears to have been with the view of assimilating the subdivisions of the geographical mile with the cubit, and it was not easy to do this, as the cubit of a man has no necessary connection with a geographical mile. The difficulty appears to have been solved by the invention of two new cubits, of which the smaller was very nearly equal to the cubit of a man, and was contained 4,000 times in the geographical mile. This, for the sake of dis-

tion, may be called the geographical cubit. The second cubit, afterwards known as the Babylonian Royal cubit, was longer, and was contained 3,600 times in the geographical mile. According to Herodotus, this second cubit was three digits longer than the other cubit. On these two cubits there appear to have been based two different divisions of the geographical mile, one in accordance with a decimal, and the other with a sexagesimal, system of calculation, but there is, so far as I know, no ancient record of these scales, and the following attempt to compose them is founded on inferences, drawn from the Babylonian, Greek and Roman measures, all of which, there can be little doubt, came from the same origin.

The first, based on the geographical cubit, which was rather longer than the average cubit of a man, is as follows:—

1 digit	= 0.729 English in.
25 digits = 1 geographical cubit	= 18.225 " "
100 " = 1 fathom	= 6.075 English ft.
100 fathoms = 1 stadion	= 607.5 " "
10 stadia = 1 geographical mile	= 6075 " "

The second, or sexagesimal, scale, based on the Babylonian Royal cubit, appears to have been as follows:—

1 digit	= 0.723 English in.
28 digits = 1 Royal cubit	= 20.25 " "
60 cubits = 1 plethron	= 101.25 English ft.
60 plethra = 1 geographical mile	= 6075 " "

It is matter of controversy whence the Greeks derived their measures of length, whether from Egypt or Babylonia; but the latter appears more probable, as their principal measure of distance, the stadion, was equal to one-tenth of a geographical mile of 6,075 English feet, and this was divided into 6 plethra, each of 100 Greek feet. The Greek scale appears to have been as follows:—

1 Greek foot	= 12.15 English in.
1½ Greek ft. = 1 cubit	= 18.225 " "
10 " " = 1 reed	= 101.25 English ft.
10 reeds = 1 plethron	= 1012.5 " "
6 plethra = 1 stadion	= 6075.0 " "
10 stadia = 1 geographical mile	= 60750 " "

There was another foot used in Greece, of which Petrie gives a number of instances, derived from old buildings, varying from 11.43 to 11.74, with a mean value of 11.60 English inches. This would appear to be a foot of 16 digits, used for building and manufactures, but not connected with measures of distance.

The Roman system of measures was based on the Greek, but while adopting the stadion—called by them stadium—as the fundamental measure of distance, they used the shorter Greek foot, and introduced another measure, the double pace. They also made the land mile to consist of 8 instead of 10 stadia, while retaining the geographical mile of 10 stadia for use at sea. As they had an affection for a duodecimal system of calculation, they also divided the foot into 12 inches, in addition to the old division into 16 digits. The Roman scale, which showed considerable ingenuity in assimilating a number of different measures which had no real relationship to one another, appears to have been as follows:—

1 digit	= 0.729 English in.
1 inch	= 0.972 " "
4 digits or	
3 inches = 1 palm	= 2.916 " "
4 palms = 1 foot	= 11.664 " "
6 " = 1 cubit	= 17.496 " "
5 feet = 1 pace	= 4.86 English ft.
125 paces = 1 stadion	= 607.5 " "
8 stadia = 1 land mile	= 4800 " "
10 " = 1 geographical or sea mile	= 6075 " "

The land mile was probably made up of 8 stadia in order to have it exactly 1,000 paces in length, or it may have been considered that eight was a more convenient number for dividing than ten; but it was necessary to retain the mile of 10 stadia for navigation.

The above remarks deal with the measures of distance used by the principal nations of antiquity up to and including the geographical mile, upon which they seem to have been based, but in addition to these there are certain longer measures of distance which must be referred to, such as the parasang, the schoenos, and the league. The fundamental idea of these measures was that they represented the distance which could be marched in a given time, such as one hour, and as the rate of marching naturally varied with the nature of the country, it was not easy to have a fixed length, and when there was made a theoretical unit it did not always agree with the actual distance.

An important application of measures of distance from the earliest times was for the calculation of areas of land, but there is considerable doubt as to what was the original unit, and whether this was a square, or in the form of a rectangle one stadium in length and one-tenth of a stadium in width. In the latter case there would have been ten measures in a square stadium, and 1,000 measures in a square geographical mile, and such a measure would seem quite in accord with the ancient system of measures of distance. Its area would have been 40×400 geographical cubits (36×360 Babylonian Royal cubits), or 0.847 English statute acre. There is a very widely distributed type of land measures based on a rectangle of this form, of which the English acre is an instance, as it measures 44×440 English cubits.

The Egyptian unit of land area appears to have been the "set," called "arura" by the Greeks, which was a square having a side of 100 Egyptian Royal cubits. A cubit of land was the 1/100 part of this, and was the area of a rectangle 1×100 cubits.

In the Greek system the unit of area was the square of a plethron or 100 Greek feet, equal to 0.235 English acre, of which there were 36 in a square stadion and 3,600 in a square geographical mile.

The Roman unit of land area, called the "jugerum," was a rectangle, 120×240 Roman feet, or 0.624 English acre, which was subdivided duodecimally, the uncia of land being the twelfth part of a jugerum, or the area of a rectangle measuring 10×240 Roman feet.

It will be seen from the above descriptions that from the earliest times the shorter measures of length were based on the proportions of the human body, and the longer on the geographical mile, and that at some

remote period an attempt was made to combine them into a continuous scale, from the digit to the geographical mile. When the digit was made the point of departure the decimal system of calculation appears to have been preferred, and when the scale was worked downwards from the mile the sexagesimal system was the most convenient, while in the Roman scale the duodecimal system was introduced. But it is to be regretted that the more ancient system was not retained, by which the geographical mile was the unit, and was divided into 10 stadia, each of 400 cubits, or 600 feet, as it is doubtful whether the changes made by succeeding generations can be regarded as improvements.

The modern measures of the civilised world are, with few exceptions, based on the ancient units, of which they may be regarded as the direct descendants. Of these exceptions the most important are the measures of the metric system, which were designed with the object of breaking away from the records of the past by the adoption of a new geographical mile, equal to $54/100$ of the true geographical mile.

The English measures of length are a good example of the modern representatives of the old units, and are worthy of study from this point of view. How the measures originally came to England it is not easy to say, but there can be no doubt that they were in use before the Roman invasion, having possibly been introduced by Phœnician traders, and were afterwards modified by the Romans, the Saxons, the Scandinavians, and the Normans, each of whom had measures, based on the old units, but altered in course of time. It was not until the thirteenth century that they were moulded by law into one uniform system.

The English scale, as authorised by statute, may be summarised as follows:—

	1 inch.
12 inches	= 1 foot.
3 feet	= 1 yard.
$5\frac{1}{2}$ yards	= 1 rod, pole, or perch.
4 perches	= 1 chain.
10 chains	= 1 furlong.
8 furlongs	= 1 English statute mile.

Of these units the inch is derived from the Roman system, being one-twelfth of the foot, but the foot, on the other hand, is equal approximately to the Greek foot, while the yard, which is simply a double cubit, comes from the Babylonian system, being approximately a double geographical cubit. The perch is the English representative of the Babylonian gar, and the furlong occupies a similar place to the stadium, while the mile is composed of eight stadia, apparently in imitation of the division of the Roman mile. For use at sea, however, the geographical mile, divided into ten stadia, or, as we call them, cable lengths, has been retained, as no other mile can be used for purposes of navigation.

In order fully to understand the connection between the English measures and the ancient measures of length, it is necessary to write the scale in a somewhat different manner, and to introduce some other units which are no longer used. The revised scale is as follows:—

	1 barleycorn.
3 barleycorns	= 1 inch.
3 inches	= 1 palm.
4 palms	= 1 foot.
6 "	= 1 cubit.
12 "	= 1 double cubit or yard.
11 cubits	= 1 perch.
405 "	= 1 cable's length.
4 perches	= 1 acre's breadth or chain.
10 chains	= 1 acre's length or furlong.
8 furlongs	= 1 English mile.
10 cables	= 1 geographical or sea mile.

The English inch is equal in length to 3 barleycorns set end to end, or to the width of 8 barleycorns set side by side. The barleycorn, as a measure, is forgotten, but the inch on carpenters' rulers is still divided into eight parts, while, on a shoemaker's tape, the sizes of boots and shoes increase by a barleycorn, or $\frac{1}{8}$ inch, for every size. For example: size No. 8 of a man's boot measures 11 inches; size No. 9, $11\frac{1}{8}$ inches; size No. 10, $11\frac{1}{4}$ inches, and so on. One would have thought that the sizes would increase by one quarter of an inch at a time, but the barleycorn has held its place to the present day.

The palm, which was originally composed of 4 digits or finger breadths, and, since the time of the Romans, of 3 inches or thumb breadths, is no longer used in England, and its place has to a certain extent been taken by a measure called the hand, composed of 4 inches, and employed in measuring the height of horses. The change may have been due to the fact that the number 4 was more convenient for division than 3, and that when the digit gave way to the inch the palm of 4 digits was replaced by the hand of 4 inches.

Prior to the thirteenth century, the length of the foot in England was uncertain, and there appear to have been several measures in use, varying from the Roman foot of 11.66 English inches to the Belgic foot of 13.12 English inches; but, by the Ordinance known as the Statute for Measuring Land, enacted in the reign of King Henry III., the relations of the inch, the foot, and the cubit to one another were definitely fixed, and have never since been altered. The cubit of this statute is the double cubit, afterwards called the yard.

It is interesting that, in this statute, the double cubit, thus accurately described, should have been called the cubit of the King, just as the longer cubits of Babylon and of Egypt were called Royal cubits to distinguish them from the shorter cubits of those countries. In the Latin original of the Ordinance the word used is "ulna," the usual word for cubit. The word "yard," to signify the English double cubit, occurs for the first time in the laws of England in a statute of 1483, which is written in French.

The perch, equal to 11 single or $5\frac{1}{2}$ double cubits, is a very ancient measure, but I cannot find at what period it was first used in England. It was employed principally in connection with the measurement of land, and I have already pointed out its likeness to the Babylonian measure, the gar, which was composed of 12 Babylonian cubits.

The two measures, the acre's breadth, afterwards

called the chain, and the acre's length, or furlong, have also been used from a very early period. The former is equal to 44 single cubits, 22 yards, or 66 English feet, while the latter is exactly ten times this, 440 cubits, 220 yards, or 660 feet. The furlong is the modern representative in our system of the ancient stadium, which had a length of 600 Greek feet, or 607.5 English feet, but the reason for its being longer than the stadium has, so far as I know, not been satisfactorily explained. But the change may have been due to the fact that other measures of distance were in use in England prior to the present statute mile, which varied in different parts of the country, and the mean of these was approximately equal to the Gallic league of 12 stadia, or 7,200 English feet. One-eleventh of this, 663 English feet, is approximately equal to the English furlong, and eight of these measures, following the Roman system, were combined to form the English statute mile.

But whether this is the origin or not, there appears little doubt that the mile, furlong, and chain, or acre's breadth, were in use in England in Anglo-Saxon times.

The chain, which was the invention of Prof. Gunter, has proved very convenient for the measurement of land acres, and is now always used. Since the introduction of the chain, the perch or rod has been less employed in connection with land measures, but is still used by builders for the measurement of brickwork. The common English stock brick is half a cubit in length, one-quarter of a cubit in width, and one-sixth of a cubit in thickness, or rather less than these dimensions, to allow for the thickness of the mortar joints, while a rod of brickwork, which is the unit for builders' work, is a mass of brickwork, one rod or 22 bricks in length, one rod or 66 bricks in height, and three bricks in thickness. The perch or rod of brickwork contains 4,356 bricks.

The English sea mile is exactly the same as the geographical mile of the Babylonian system, and its tenth part, the cable length, is identical with the stadium. In these measures there has been no change, and the only difference is that the cable length is 405 English cubits, whereas the stadium was 400 original cubits. This is due to the fact that the English cubit is a little shorter than the latter in consequence of the English foot, as fixed by law, being rather less than 1/6000 part of the geographical mile.

It will be seen from the above *résumé* that our English measures of length are no haphazard modern invention, as some people imagine, but have come down to us from prehistoric times.

Shakespeare Tercentenary Observance. 31 pp. (G. W. Jones, 6 Gough Square, Fleet Street, London.) *6d.*—This is an admirably prepared little booklet containing plenty of material for the suitable observance of May 3rd as Shakespeare's Day. It has a striking design on the cover, "Notes on Shakespeare, the Patriot," by Prof. Gollancz, and it is printed with a new-old fount. Whether the form of celebration suggested on p. 6 be followed or no, this booklet makes an excellent present for children at school, who will in after years interweave the memory of the great war and the celebration of the patriot-poet. "Let us now praise famous men."

ITEMS OF INTEREST.

GENERAL.

A LONG vacation course for students and teachers of French will be held at University College, London, from August 7th to August 26th, under the direction of Mr. Daniel Jones, University reader in phonetics. The course will include lectures on the methods of language teaching and on French phonetics, together with daily ear-training exercises and practical classes in pronunciation. Particulars may be obtained from the secretary of the college.

THE National League for Physical Education and Improvement has arranged a course of lectures "On the Care of the School Child," for school care committee workers, teachers, and others, which will be held at the London Day Training College, Southampton Row, W.C., on Wednesdays, from 5.30 to 6.30 p.m., from May 3rd to July 19th, 1916. Early application for tickets should be made to the secretary of the league at 4, Tavistock Square, London, W.C.

A SERIES of lectures on sex education will be given by Miss Norah March at the Burlington Girls' School, Old Burlington Street, Piccadilly, London, W., on Fridays, May 12th to June 2nd, at 6 p.m. Tickets may be obtained from Miss Trim, 5, Duke Street, Adelphi, W.C., or Miss Gruner, 59, Cambridge Street, Hyde Park, W.

THE Uplands Summer Meeting will be held this year from August 4th to August 21st, at the Normal College, Bangor, North Wales. A new feature of this year's programme is the invitation to parents to spend their seaside holiday at Bangor and join with teachers in the study of educational reform. The promoters are taking a new step by inviting parents to bring their children and combine study with recreation. The Normal College at Bangor (North Wales) has been chosen as the centre for these operations, since it affords the advantages of a quiet seaside resort with the necessary educational facilities. Among other lecturers three professors of education are lending their aid—Prof. E. T. Campagnac (Liverpool), Prof. J. J. Findlay (Manchester), and Prof. James Shelley (Southampton). All communications relating to the meeting to be addressed Miss A. F. Purvis, Lucerne, Knockdene Park, Belfast, Ireland.

THE Civic and Moral Education League has completed arrangements for a summer school of civics at Aberystwyth. The arrangements are made in co-operation with the University College, Aberystwyth, and the meeting will last for a fortnight, from August 5th to 19th. They include a course of lectures on the "Theory of the Citizen's Life and Duties," part of which is being given by Prof. J. H. Muirhead, of Birmingham University; and a course on the "Civic Institutions of Great Britain," by Mr. Alexander Farquharson, secretary of the Civic and Moral Education League. A series of evening lectures is being arranged. Further interest will be given to the meeting by the fact that the Welsh National Eisteddfod is to be held in the middle of August at Aberystwyth.

Arrangements are being made for students of the summer school to stay at the Alexandra Hall, which is the hostel in connection with the University College, at very moderate terms. Those who wish to take part in the meeting are asked to communicate as soon as possible with the Secretary, Civic and Moral Education League, 6, York Buildings, Adelphi, W.C.

If Sir Ernest Shackleton has been successful in his effort to cross Antarctica he should have been in the neighbourhood of the Pole on New Year's Day, and should have reached Ross Sea by the end of March. In that event he will find disappointing news; the *Aurora* is not there to bring him home, and Captain Macintosh, with nine companions, has been left stranded to acquaint his leader with the bad news. The *Aurora* broke loose almost a year ago, and has been adrift in the ice until March 14th last, when she cleared the ice pack; she is now safe in New Zealand. It is known that the weather conditions have been unfavourable, and, possibly, Sir Ernest was compelled to return to his original base on the shore of the Weddell Sea. In view of the lack of definite information about the main party of the expedition, attention has been concentrated on the Falkland Islands, where, it was hoped, the *Endurance* would arrive on her homeward journey from the Weddell Sea. No news is forthcoming, and the Antarctic winter has settled down on the situation, which can scarcely be illumined for several months. There is one important fact, food supplies are plentiful.

THE President of the Board of Education has appointed a Departmental Committee to consider what steps should be taken to make provision for the education and instruction of children and young persons after the war, regard being had particularly to the interest of those: (i) who have been abnormally employed during the war; (ii) who cannot immediately find advantageous employment; (iii) who require special training for employment. The Committee consists of: Mr. Herbert Lewis, M.P., Parliamentary Secretary, Board of Education (chairman); Mr. W. A. Appleton, secretary, General Federation of Trade Unions; Mr. R. A. Bray, L.C.C., chairman, London Juvenile Advisory Committee; Mr. F. W. Goldstone, M.P.; Mr. Spurley Hey, Director of Education, Manchester; Alderman Hinchcliffe, chairman, West Riding County Council; Miss C. Martineau, member, Birmingham City Council; Lady Edmund Talbot; Mr. H. M. Thompson, vice-chairman, Cardiff Education Committee; Mr. Christopher H. Turnor, member, Lincolnshire (Lindsey) County Council; together with the following representatives of the Government Departments concerned: Mr. C. E. B. Russell, of the Home Office; Mr. J. S. Nicholson, of the Board of Trade; Mr. A. B. Bruce, of the Board of Agriculture; Mr. E. K. Chambers, C.B.; and Mr. F. Pullinger, C.B., of the Board of Education. Mr. J. Owen, H.M. Inspector, will act as secretary to the Committee, and all communications should be addressed to him at the Board of Education, Whitehall, London, S.W.

WE have received a copy of the following resolution adopted by the Liverpool Education Committee on

March 27th, and approved by the Liverpool City Council on April 5th:—"That it be a recommendation to the council that in the opinion of this committee it is desirable in the national interest that a committee should be appointed to consider and report upon the entire question of the organisation of our educational system, and its adaptation to the various needs of the nation, and that such committee should be independent of any Government department; and that a copy of this resolution be forwarded to the Prime Minister." Sir Philip Magnus has for some time been urging the need for the appointment of a Royal Commission to inquire into the matters referred to in this resolution; and if other education committees and organisations would follow the example of Liverpool they would show that a large body of opinion is in favour of his proposal.

The report of the Conference on New Ideals in Education, which was held at Stratford-on-Avon in August last, is now published, and for the most part makes very interesting reading. This conference grew out of a conference on Montessori methods, held at Runtun in July, 1914, but was wider in its scope. It would be easy to wax merry over this gathering as a conference of cranks; but the world in general, and education in particular, owe a great deal to their cranks. We confess, indeed, to a certain dislike of the crude advocacy, by Dr. Kimmins and others, of what they are pleased to call "the Montessori method." The Montessorian principle (which, however, is no new thing) of greater freedom for the child may in a sense be called a "new ideal" well worth striving for, but why drag in the "didactic apparatus" as a new ideal? The report includes an article by Mr. Holmes on German and English ideals in life and education; a paper by Mr. Homer Lane on the faults and misdemeanours of children; two papers on rural education; suggestive notes on freedom and discipline, by Profs. Nunn and Bompas Smith; a good account by Mr. Tunaley of recent developments in the teaching of drawing; and various other papers. Copies of the report may be had from the secretary (24, Royal Avenue, Chelsea, London, S.W.) on receipt of 1s. 6d.

THE fourth volume of the annual report of the London County Council for 1914, which has now been published, deals with the education of the metropolis. Sir Robert Blair, in his report on elementary education, gives the following figures, which show the numbers of the teaching staff in Council and non-provided schools on March 27th, 1914, as compared with the corresponding figures, shown in brackets, for the previous year. The staff in Council schools on March 27th, 1914, consisted of 14,508 (14,139) teachers. Of this total 1,587 (1,579) were head teachers, 12,349 (12,031) permanent certificated assistant teachers, 354 (276) "unattached," 209 (243) "supply," and 9 (10) uncertificated teachers. As regards non-provided schools maintained by the Council, the total number of teachers employed on the same date was 4,301 (4,244). Of this total 755 (755) were head teachers and 3,019 (2,936) permanent certificated assistant teachers. The average salary of headmasters in Council schools was £314, and of headmistresses £227; while in non-provided schools the respective

amounts were £242 and £176. The average salary of assistant-masters in Council schools was £165 and of assistant-mistresses £121; while in non-provided schools certificated assistant-masters averaged £131 and certificated assistant-mistresses £106. The total amount paid in salaries in Council schools was £2,155,356, and in non-provided schools £531,551.

THE Education Committee of the Warwickshire County Council has published a pamphlet by Mr. Bolton King describing the share of the Warwickshire elementary schools in the war. It is an inspiring record of patriotism. We may quote one or two of the gratifying facts in the pamphlet. The number of ex-elementary boys who have obtained commissions includes one lieutenant-colonel, two majors, ten captains, one naval lieutenant, sixty-five lieutenants, seventy-five sub-lieutenants. Of these 154, 67 had all their education at the elementary, and sometimes perhaps the evening school. One school alone—at Rugby—boasts ten commissioned officers; another—in a mining district—six. Mr. King has no complete figures to show the number of non-commissioned officers. There is some evidence that the proportion is much higher among old boys of good schools. One such school has thirty-two N.C.O.'s out of 102 who have joined the colours; another has sixty-two out of 300; a small boys' school counts twenty; a country school has thirty out of 116. The old boys have a goodly share of honours—no fewer than twenty-eight D.C.M.'s, three Military Medals, one Croix de Guerre, three Médailles Militaires, one Russian medal. Five have been mentioned in despatches.

THE necessity of taking simple precautions to meet the possibility of air-raid fires has led the British Fire Prevention Committee to arrange for a further issue of their "Fire-Warnings" in circular and poster form. These notices are now again obtainable free upon written application to the Committee's Registrar, 8, Waterloo Place, London, S.W., with a large-sized addressed and stamped envelope enclosed, and the request should state if posters, the general circular, or the householders' circular are desired. Special air-raid or fire notices applicable to schools will be similarly issued to education authorities, headmasters and headmistresses only.

THE National Union of Teachers, which now numbers 55 county associations, 531 local associations, and 93,176 members, held its forty-sixth annual conference at Easter in Buxton, from April 26th to 28th inclusive. About 1,700 delegates were appointed to attend the conference by the various branches of the union. Mr. C. W. Crook, the new president, delivered his inaugural address, dealing with current questions of great educational interest. Debates upon questions of the war, schools after the war, teachers and military service, economy in education, staffing of schools, reduction of school age, regulations for secondary and elementary schools, higher education, teacher's certificate, teachers' salaries, etc., took place.

"Of course, we all want to win the war, but this is not enough. Every one of us has to make some sacrifice to win. Unless we understand something

of the causes for which we are fighting, we shall not be ready enough to give up things we like in order that we may help." Such are the introductory sentences of a pamphlet entitled, "How We Can All Help," issued by the London County Council, and intended to help teachers in preparing talks to children about the war. The sentences we have quoted well describe the aim of the pamphlet. If sacrifices are to be cheerfully made, they must be intelligently made. And this aim of getting children to understand something of what we are fighting for is well carried out by the writer. There are six talks, the successive subjects of them being: what we are fighting for; what we need to win the war; how we pay for our imports; useful things and useless things; some difficulties in the way; faithfulness in little things. Each subject is competently handled, and in the treatment there is an effective combination of reason and sentiment. A summary, intended to drive home the main points, is appended to each "talk." The price of the pamphlet is 1d., or 1½d. post free.

FROM statistics published in the report of the U.S. Commissioner of Education for 1910 we have made up the subjoined table showing the percentage of population attending elementary schools in various European countries, and the expenditure per head, this amount including, as a rule, both the cost of maintenance and the expenditure for permanent works. The elementary schools included in the table represent those provided by law or by the Governments of the respective nations for the instruction of children in the rudiments of knowledge. In most European countries the elementary schools form a system complete in itself, with courses of instruction attended chiefly by children of the labouring classes. The numbers in the table may, therefore, be fairly compared with one another.

Statistics of Elementary Education in European Countries.

Country	Population 1,000	Enrolment in Elementary Schools	Per cent. of Population Enrolled	Expenditure (in shillings) per capita of	
				Enrolment	Popula- tion
Austria	27,238	4,153	15.2	29	4
Belgium	7,386	915	12.3	37	4
Denmark	2,605	358	13.8	—	—
France	39,252	5,600	14.2	50	4
German Empire ...	60,641	10,224	17.0	50	8
England and Wales	35,349	6,060	17.1	75	12
Scotland	4,881	823	16.9	62	10
Ireland	4,363	704	16.1	46	8
Italy	34,270	2,733	8.0	20	1
Norway	2,240	365	16.3	37	6
Portugal	5,423	240	4.4	—	—
Russia	149,496	5,505	3.7	—	—
Finland	2,969	328	11.1	—	—
Spain	19,712	2,000	11.9	10	1
Sweden	5,430	772	14.2	50	7
Switzerland	3,642	706	16.6	66	12

Books are still needed for the use of British prisoners of war in Germany. The writer recently put the need to a test. All the books—text-books in many subjects, biographies, Anglo-Saxon, Middle English, Latin and Greek texts—which had, more or less ornamentally, adorned his shelves for a period

of at least ten years were offered to the authorities to the number of about two hundred. *They were all accepted.* Could there be stronger evidence of the need? Many teachers must have books they can spare; they should send a list to Miss L. K. Symon, Prisoners of War Camps Libraries, 45, Horseferry Road, S.W., and offer any or all of the books on the list. Experience shows that probably all the books will be acceptable, and the gratified donor has nothing more to do but to despatch the parcel to Miss Symon. The lot of some of our brave fellows will thereby be made decidedly easier. Perhaps one enthusiast in each school will take up the matter and send a school list and a school parcel from the contents of the masters' shelves!

THE *Review of Reviews* maintains its well-known and well-appreciated educational character—educational, that is, in the sense of stimulating men's minds—and although the price has been advanced to a shilling, this indispensable review should retain its circle of readers. In the March issue Sir T. H. Holdich explains the importance of our expeditions in Mesopotamia, and signalises the strategic importance of Kut. Mesopotamia, regenerated by irrigation and wealthy in natural resources of mineral oil, is a land of future importance, worth, to Germany, all her lost colonies. Dr. Sarolea writes on "The Soul of Russia," and the late editor, Mr. Alfred Stead, calls for vision in the conduct of affairs. Safety play never won a great victory, and never will. To think boldly is to gain the power to act boldly; and we want to win this war—not to arrive at a successful stalemate, with the bulk of Europe in the hands of the enemy to be bargained for as at a huckster's barrow.

THE *Educational Review*, of St. John, N.B., contains some important notes upon Canadian matters. Canada produces about three-quarters of the world's nickel, most of which has been refined elsewhere; efforts are to be made to keep the industry at home. The Hudson Bay railway scheme may be abandoned, as the engineer's reports are unfavourable. To obtain commercial fertilisers, which have formerly been obtained from Germany, a Canadian inventor has found a process of deriving the potash from ordinary felspar, and valuable deposits of phosphates have been found in the Rocky Mountains. There are three Government schools in Quebec Province for teaching the best way to make maple sugar. The annual output of maple sugar and syrup from Quebec is valued at £200,000. There are now more than thirty sanatoria in Canada for the treatment of tuberculosis, where there was but one twelve years ago; teachers are active in combating the disease in those areas where no other persons are able to undertake the good work.

THE Legislature of the State of New York has under consideration a Bill which involves important changes in regard to the conduct of the public schools of the State. The Bill is the result of more than two years' work by the Department of Education. All teachers who have served the full probationary period attached to their present posts will have in future permanent employment; after new teachers

have served a probationary term for one, two, or three years, as may be determined, they may be permanently elected by the Board of Education. In places with a population of fewer than 100,000, the minimum annual salaries are to be fixed at £90 and £120 for elementary- and secondary-school teachers respectively; where the population lies between one and four hundred thousand, the minima are £100 and £150; and in the places with population between four hundred thousand and a million, £120 and £160. No change is proposed in the salaries in the schools in New York City. The net result of the Bill appears to be the establishment of teachers as part of the civil service of the State.

DR. CHARLES W. ELIOT has prepared a paper dealing with "Changes Needed in American Secondary Education" for the General Education Board. The paper, which forcibly advocates increased attention to the training of the senses, is printed in *School and Society* for March 18th. American secondary schools of all kinds pay little attention to sense training; the pupils are not assisted in the acquisition of skill with hand, eye, or ear, and their courses do not develop in them any of the habits of accurate recording and cautious reasoning which are characteristic of all forms of modern scientific work. This result is in part due to the fact that many Americans regard the sense-training courses both as faddy and superfluous. On the other hand, the power of concentrated attention gained in carpentry or farm-work, for example, is, some urge, easily transferred to work in the three R's, or, at a later stage, to work in the memory-subjects such as history. This last opinion appears to be the key to the whole of the argument of this distinguished writer; how many schoolmasters will agree, as a result of experience, that ability to concentrate attention is thus independent of the subject-matter on which interest is focussed?

ANOTHER view—"New Problems in Secondary Education"—is put forward in an address, printed in *The School Review*, of Chicago, given by Mr. David Snedden, Commissioner of Education, Boston, Mass., before the Academic Principals' Association. The great problems of secondary education are problems of aim. There is lacking evidence that the Americans who have studied Latin are thereby better users of the vernacular; that science work does result in appreciation of scientific method; that cultural education does refine manners and ennoble spirits in a degree commensurate with the amount of energy expended. These points illustrate the general faith in educational aims, and it is time that faith gave place to certainty. It is time to inquire what are the really valid aims underlying the teaching of each subject. In French, for example, the present teaching methods are fundamentally aimless, traditional, and unscientific; many pupils establish a superficial contact with French language, French thought, and French life, but none are assured competence in these subjects. Algebra, again, under present conditions is a valuable and necessary study—for a few pupils; but it is almost compulsory for all.

A MODERN feature is supplied by commercial education, which, at present, is a mongrel thing; it pretends to be vocational, but in many cases it actually functions as a sort of second-rate general education. "In its essential characteristics it is typically American in its fostering of small illusions and misrepresentations, its permitting the shadow to be substituted for the substance, in the general slackness of its standards." Physical education is degenerate, it is spectacular, confined to specially trained pupils, dominated by the athletic coach; it fails to induce "vigorous, weather-defying, toil-enduring, adaptable physical hardihood." In general, education is becoming scientific, and efficiency is only possible on the basis of precisely formulated aims. Sound methods and the careful testing of results depend entirely upon conscious and definite attempts along carefully chosen lines. All education must therefore formulate and study the new objects which it sets out to achieve.

MR. CHARLES C. HUGHES has explained the purpose of the California law prohibiting home-work for elementary-school children under the age of fifteen in his annual report. His remarks are reprinted in *The School Review*. Pupils must be trained to study; to know how to study is more important than to be able to reproduce so much matter set for home-work. This important part of the child's training is the business of the school, not of the home, and the school has no right to shift the responsibility. In few homes are there proper facilities for study; in many cases, for physiological reasons, the child has no time after school hours which should be spent in study. Consequently, pupils usually fail to prepare home-work properly; the bright ones bluff their way through the teacher's test on home-work, the dull ones fail. There is, therefore, a considerable waste of valuable school time in testing such inadequate preparation of home-work. This time can be better spent in study in school under the direct guidance of the teacher.

MARKS and their attendant evils, tedious calculations for the teacher, sly dishonesties of some of the pupils, over-pressure exerted upon others, stand condemned. Mr. C. E. Preston, in the New York *Educational Review*, avers that marks are useless, since they compare a pupil with his class-mates; they imply "scratch," not "handicap," competitions. He suggests two possible improvements. The first comprises a regular monthly statement in answer to two questions: (a) How nearly, in your opinion, is this pupil making the best of his abilities as a scholar? (b) Is he, so far as you have observed this month, manly and straightforward in his dealings both with school officials and with his class-mates? Each teacher should reply for each pupil he teaches. The second is the use of fractions for marking, where marks are essential; let 10 be the maximum, then use a fraction, with the denominator to represent relative ability and the numerator to indicate achievement in comparison with that ability; thus $9/9$ would be a pupil of excellent ability who is working up to standard; $3/8$ would be a capable pupil who is far from doing his best.

A LECTURE delivered in the Mommsen Gymnasium at Charlottenburg by Herr Ernst Hoffmann on March 10th, 1915, is translated in the *Educational Review*. The title, "The Spirit of the Warring Nations," indicates the speaker's intention. He claims that since 1871 England has conquered Egypt and the Boer Republic; France gained Tunis, Indo-China, and a large section of Morocco; Russia added northern Manchuria and Mongolia to her territory; while Germany confined herself to increasing her colonial strength by treaties and agreements and other purely peaceful means. Suddenly the war came, and uninitiated Germans were almost driven to regard the fact that everyone was opposed to them as a joke in order to grasp it. But they had not realised what their ancestors knew a century ago, what Fichte, in particular, knew when he definitely divided the world into two parts—Germany and foreign countries, two parts dissimilar in size but equally closed to one another.

THIS opposition is explained through a long historical dissertation by reference to Latin and Greek culture. France, England, and Italy are the exponents of Latin civilisation, but Germany expresses the Hellenic ideal. Germans do not believe that the German will yields to the Latin spirit in firmness or the German understanding in clearness. But the will has another goal and the understanding another standard. The main characteristic of the German mind is its consciousness of ideas. In view of the differences between the foreign and the German spirit, it is important for them not to be hostile, but rather to supplement each other. On both sides there is the same tendency to set up one's own civilisation as the only true and lasting form of culture. The speaker concluded by quoting Fichte: "When the foreign spirit in its effort to expand all over the world seeks to destroy the freedom and independence of the German spirit which is shut away in the heart of Germany, then there is real cause for war"; and by the statement: "How the present war originated no one of us knows, and we shall not know for a long time. But that the war, once it has been undertaken, is being waged against us with the ultimate purpose of utter annihilation is openly acknowledged by our opponents."

SCHOOL geography in the United States is entering upon an upward movement. At the end of last year the final steps in the formation of the National Council of Geography Teachers were taken. The president, Prof. R. E. Dodge, of the Teachers' College, New York, and the vice-presidents, Prof. A. P. Brigham and Prof. C. R. Dyer, are geographers whose reputations extend into Europe. Thirty-eight State leaders focus the interests of each State, in which, in time, it is expected there will arise a subsidiary organisation. The National Council has received the support of the American Geographical Society, and will use the *Journal of Geography* for publication of its notices and accounts of meetings. It is to be hoped that the new organisation will benefit the teaching of geography to a degree comparable with the progress

made in Britain as a consequence of the work of the Geographical Association.

MR. PARKE R. KOLBE, of the University of Akron, writes in *School and Society* on "The Problem of the Competent." Probably at least one in ten young people could save from two to four years in the time necessary for their education if they were not grouped upon an age basis but with their intellectual equals and allowed to progress at a rate beyond that of the average student. Every school organisation which makes special arrangements for backward children is performing valuable work, but there is an equal necessity that similar arrangements should be made for the exceptional child at the higher end of the intellectual scale. The defective child is a hindrance to his fellow-pupils, and hence has been treated first, but the brilliant child is a source of pleasure, so that there is no immediate incentive to legislate specially for him. However, the problem of the competent child is of even greater human and economic importance than that of his deficient class-mate, and it calls for solution.

SCOTTISH.

THE leaving certificate examinations are now over for another year. The papers on the whole maintained the high level of previous years. The questions set were on thoroughly sound educational lines, and the number of questions that were transparently beyond the capacity of the candidates to understand was distinctly fewer than last year. No attempt, however, seems to have been made to make allowances for the difficult and harassing conditions under which school work was carried on last year. Doubtless consideration to these will be given in fixing the standard of pass, but it would be wiser to lower the standard of the questions and to keep the pass standard at the old level. Notwithstanding the thoroughness and care very evidently bestowed on the framing of the examination questions, discontent and dissatisfaction with the whole system of examinations in Scotland are rapidly growing. They dominate the whole educational course, and leave little or no room for initiative and individuality in teaching. From John o' Groats to Maidenkirk not a single educational experiment is being carried on. Educationally the schools are living a parasitic life on the results of experiments in the United States and Germany. Everywhere a demand is being made for greater freedom, and the only answer of the Department is to suggest through Sir John Struther's report an additional paper in higher English. In the proposed English scheme of leaving certificates, provision is made for the representation of the teaching profession on the Board of Control, and with that example before them Scottish teachers should press for the institution of an examination board representative of all educational interests to control these national examinations.

SEVERAL cases of interest to teachers are at present before the law courts in Scotland. In one case which has been decided several important points emerged. While a class was being dismissed a boy by accident or design swung the door back on the next corner, who

in the attempt to ward it off put his hand through the Muranese glass panel, cutting his fingers severely and permanently injuring two of them. An action was brought against the Board by the boy's parents, and damages to the extent of £1,000 were asked for. Serious charges were made in the averments against the discipline of the teacher and the school generally, and against the Board for the faulty construction of the door and for the use of Muranese panels. The presiding judge, Lord Strathclyde, summed up strongly for the defendants, and completely exonerated the teacher and the School Board from all blame. The jury supported his conclusions regarding the teacher, but granted the prosecutor £350 damages because of the faulty construction of the door. School authorities who go in for Muranese glass panels would be well advised to pay heed to this judgment, as these panels are undoubtedly a danger to the pupils.

THE Education Estimates which have just been issued are reassuring after the startling rumours of wholesale reductions that have been current for some time. There is altogether a net decrease of £65,163 on last year's estimates. Building grants for training colleges show a large decrease, and in view of the scarcity of labour and the greatly increased cost of building material, no fault can be found with the Department for keeping the building operations as low as possible. The grants for medical treatment also show a considerable decrease, but it is automatically brought about by the absence of many school doctors on active service. The decrease does not portend any alteration in the Department's policy towards the physical care of school children.

FOR some time negotiations have been going on between the provincial committees and the Department in regard to the institution of a pension scheme for the training college staff. It was proposed at first to bring these lecturers under the English Universities' Insurance and Pension Scheme, but very wisely the staff expressed a strong preference for inclusion under the Teachers' Superannuation Scheme, 1912. There were difficulties in the way, but eventually the Department obtained a decision from its legal advisers in favour of this step, and a minute has just been issued providing for the inclusion under the Teachers' Superannuation Scheme of all lecturers and directors of studies under the provincial committees. The scheme becomes operative on April 1st, 1917.

A MINUTE has been issued by the Scotch Education Department stating that it has discussed with representatives of the School Boards Association and of Teachers' Associations the question of utilising to the fullest extent all available sources of supply for recruiting the depleted staff of the schools. The following suggestions are made:—(1) That all teachers due to retire this year on the ground of age should be retained in service. (2) That teachers who have already retired should be encouraged to return to school if physically and mentally fit. (3) That boards should invite the services of women teachers who retired from the profession on marriage. In this way women would render more valuable service to the

State than in almost any other capacity. (4) That school authorities should take advantage of the services of capable men and women graduates in the primary schools to take the place of men of military age in the intermediate and secondary schools. (5) That teachers and ex-teachers prepared to offer their services for the period of the war should send in their names to the Department, stating their age, last recorded service, and their preference (if any) for a particular district.

IRISH.

IN paying the Teachers' Salaries Grant, generally known as the Birrell Grant, this spring, the Intermediate Board forwarded to the managers of schools a note to the effect that if the next report on the application of the grant shows that the conditions as to the number of properly qualified lay teachers employed have not been complied with in the case of the two groups of schools, viz., the Roman Catholic and the non-Roman Catholic group, a new method of distribution will be prescribed in order to carry out more effectively the purposes of the grant. There can be no objection to new rules on these lines if proper notice is given to managers, and this should be at the beginning of the school year. It is sometimes very awkward for schools to carry out for a school year beginning in September conditions not issued until the following March.

As was predicted in our last issue, the "principles" of the Intermediate Board concerning a bonus school grant have met with considerable criticism and opposition. At the back of this criticism is the feeling that the policy of the Board is not clear. Some of the rules are stringent, and a school fulfilling them all will no doubt be an excellent institution. There are, however, many good schools, especially the smaller, of which Ireland has a considerable number, that cannot fulfil them. Is it the Board's policy deliberately to discourage these? Or, if not, what schools has it in mind particularly to penalise? If it replies that it does not wish to do this to any school, but rather by a bonus grant to encourage the best schools, it is faced with this awkward position, that it has already in recent years withdrawn money from the schools to pay for inspection, and it can only pay a bonus to some schools by reducing the grants still further to others. And so we shall be in a vicious circle. "From him that hath not shall be taken even that which he hath, and the last state of that man shall be worse than the first." The Board is anxious to improve intermediate education, but it takes no trouble to make clear its aims. It would lose nothing if, before striking out on new lines, it discussed its proposals with the representatives of the schools. A spirit of greater confidence is necessary.

THE Governing Body of University College, Cork, under power of the Irish Universities Act of 1908, has substituted the following provision for the original Clause 1 (2) of Statute IV. :—"That there should be the following lectureships in the College: In Ancient Classics, in History of Education, in Modern Irish,

in *Materia Medica*, in Mental Diseases, in Architecture, in Electrical Technology, in Accounting, in Spanish, in Dental Surgery, in Dental Mechanics, and in Veterinary Hygiene. The professorship of *Materia Medica* is to continue during the tenure of office of the present professor, and the professorship of Therapeutics and the lectureship in *Materia Medica* will only come into existence on his retirement. Other clauses of the new provision deal with the salaries of the professors and lecturers.

THE Department announces that a limited number of scholarships will be offered this summer for the session 1916-17 in agriculture, horticulture, forestry, and creamery management. Each scholarship includes free admission to the first year's course of instruction at the Royal College of Science, third-class railway fare to and from Dublin at the beginning and the end of the session, and free board and residence at the Albert Agricultural College. The scholarships are tenable for one year, but may be renewed for one or more years until the completion of a full course. Candidates must be between eighteen and thirty years of age, and must apply before the end of July. The examination will take place in Dublin on August 9th, 10th, and 11th. The Department also issues a leaflet dealing with the session 1916-17 at the Albert Agricultural College, Glasnevin, Dublin. The college has residence for sixty students in grounds of about four hundred acres, and provides courses of instruction for farmers and for gardeners. There are two distinct courses for farmers: (1) an intermediate course of agricultural education between that provided in the College of Science and that given at the agricultural stations, and (2) a course for farm apprentices. The session lasts from October till August. Students must be between seventeen and thirty years of age. The fees are: For students whose parents live by farming, £15; for others, £50. Applications for admission should be made before August 14th.

WELSH.

A ROYAL COMMISSION has been appointed on University Education in Wales. The terms of reference of the Commission are: "To inquire into the organisation and work of the University of Wales and its three constituent colleges, and into the relations of the university to those colleges and to other institutions in Wales providing education of a post-secondary nature, and to consider in what respects the present organisation of university education in Wales can be improved, and what changes, if any, are desirable in the constitution, functions, and powers of the university and its three colleges." The following are the names of the persons appointed to serve on the Commission:—Lord Haldane (chairman); Prof. W. H. Bragg, Quain Professor of Physics in the University of London; the Hon. W. N. Bruce, C.B., a Principal Assistant Secretary under the Board of Education; Sir Owen M. Edwards, Chief Inspector of the Welsh Department of the Board of Education; Dr. W. H. Hadow, Principal

of Armstrong College, Newcastle; Mr. A. D. Hall; Sir Henry Jones, Professor of Moral Philosophy in the University of Glasgow; Sir William Osler, Bart., Regius Professor of Medicine in the University of Oxford; and Miss Emily Penrose, Principal of Somerville College, Oxford. The secretary to the Commission is Mr. A. H. Kidd, of the Board of Education, to whom all communications should be addressed.

THE exhibition organised by the Welsh Language Society and the Union of Welsh Societies was opened at the Old University College, Cardiff, on March 17th, by the Lord Mayor, Dr. R. J. Smith, Mr. D. Lleufer Thomas being in the chair. The exhibition was intended to illustrate the methods available for fostering the study of Welsh. There were sections for Welsh text-books, Sunday-school apparatus and methods, children's handwork, historical tableaux, games, and antiquities from the National Museum. Demonstration lessons in Welsh and selections of Welsh music was given, together with pennillion singing, dancing, and dramatic performances.

THE Treasury grants for the purposes of intermediate education in Wales amount for 1916-17 to £28,700, an increase of £500 on last year. The grant to the University is £4,000, but there are additional grants to the University and the colleges amounting to £20,500, as compared with £15,000 last year. Of this sum the University is to receive £2,500; Bangor, £5,125; Cardiff, £7,750; and Aberystwyth, £5,125. The Welsh Library gets £3,200, instead of £8,200, and the National Museum £17,300, the same amount as last year. The permanent secretary to the Welsh Department of the Board of Education receives £1,200 and the assistant-secretary £1,000, the senior examiner £759, and the two juniors £1,049 between them.

CARNARVON Education Committee has established in Llandudno cookery classes for boys, to meet the great demand for waiters and chefs. The Carnarvonshire Retrenchment Committee opposed the formation of these classes, but was overruled, and they are now providing apprentices for the local hotels.

MOUNTAIN ASH Education Committee, which had decided to pay half salary to those of its employees who attested under the Derby scheme, has been considering what to do in the case of those who may be called up under the Military Service Act. It was finally decided by eight votes to five to take no action in their case. Teachers and college students seem rarely to have succeeded in cases where they have applied to the appeal courts.

THE question of the effects of the war on education is beginning to arouse much attention. At the time of writing it is announced that a Departmental Committee is to take the matter up; various associations of teachers have already considered it. Speaking at Newport at a conference under the auspices of the N.U.T., Sir James Yoxall moved a resolution in favour of an adequate supply of efficient teachers for all schools, in spite of the financial strain of the

war; that the supply of necessary material should not be curtailed; and that any further attempt to lower the age of exemption from attendance should be strenuously resisted. Economy should not be practised at the cost of the child; already juvenile crime had increased during the war, owing to the absence of many fathers from their homes, and of many teachers from the schools. War economy at the expense of education was false economy and false patriotism, and the need for such economy was nowhere in sight; the makers and the sellers of goods were not suffering, and the wealth of the country was as yet scarcely touched. Other resolutions were carried, including one calling for the maintenance of facilities for higher education, and one urging more expenditure on education and less on red tape and officialism.

AN important conference was held in Cardiff on March 18th, under the presidency of Lord Plymouth, to consider "kinema morals." It was shown that though there was a British Board of Film Censors, this was a voluntary association within the trade, and had no power over kinema proprietors; it was stated that the head of one industrial school had said that two-thirds of the boys in the school were there because they had done things which they had seen on the films. Good results had been secured in the Rhondda Valley by an arrangement between managers and the local licensing authorities, and the question of educational films was being considered. From the point of view of the teacher this suggestion presents certain difficulties: he will certainly have to be consulted if the exhibitions are to have any relation to the child's training or any real educational value; all who have worked with the lantern know that children enjoy a "show"—if it is interesting to them—but gain little permanent value from it unless they have first been instructed what to see, and fully informed as to the significance of what is to be put before them. The secretary of the Pontypridd Education Committee demands that educational films be shown within school hours and under the control of the teachers; but he adds that "the children don't want educational films."

THE new Technical College at Cardiff was opened by the Lord Mayor on March 13th. It is an imposing building, forming one of the magnificent group in Cathays Park, and replaces the old premises in Dumfries Place, which had long been outgrown by the development of the work. The Lord Mayor recalled the beginning of the classes fifty years ago, when the students sat on planks placed across barrels. Speaking at the luncheon in the City Hall, Lord Rhondda (even now better known as "D. A." Thomas) laid great stress on the need of a liberal education as the basis of a specialised technical training. Principal Griffiths welcomed the change in the attitude of industrial firms towards education which was being brought about by the war, and Mr. Coles, the principal of the college, urged business men to support the work, not only by giving it the benefit of their practical experience, but also by actively helping to increase the attendance of day students.

RECENT BOOKS FOR THE TEACHER'S LIBRARY.

(1) *What is Education?* By E. C. Moore. 357 pp. (Ginn.) 5s. net.

(2) *Changes Needed in American Secondary Education.* By C. W. Eliot. 29 pp. (General Education Board, New York.) Sent on request.

(3) *Report on the Fourth Annual Conference of Educational Associations, January, 1916.* 265 pp. (Darien Press, Edinburgh.) 1s. 6d.

(4) *Fourteenth Yearbook of the National Society for the Study of Education. Part i., Minimum Essentials in Elementary School Subjects.* 162 pp. (Cambridge University Press.) 3s.

(5) *The Athenæum Subject Index to Periodicals (1915). Education.* 16 pp. (Athenæum.) 1s. net.

(6) *Harvard.* By John H. Gardiner. 333 pp. 6s. 6d. net. (7) *Vassar.* By J. M. Taylor and E. H. Haight. 232 pp. 6s. 6d. net. (American College and University Series.) (Oxford University Press.)

(1) PROF. E. C. MOORE, of Harvard, in his volume entitled "What is Education?" has given us a most thorough, sincere, and able piece of work. The book is an attempt to discuss some of the fundamental presuppositions of education. It is a series of essays, somewhat closely related, upon a few of the subjects which the author believes that we who follow the profession of teaching must perpetually keep turning over in our minds. What Prof. Moore has to say on these matters is based upon a consistent philosophy of knowledge, which he expounds so that any educated reader can understand him. He presents a powerful case against the time-honoured doctrine that a general discipline of the mind, based upon certain traditional studies, is attainable. He is a good pragmatist in education, for he demolishes the distinction between "instrumental" and "cultural" studies, and contends that even such subjects as literature and history inevitably lose their value, by getting out of touch with the realities of life, unless they are regarded as "instrumental." He sees that we have no motive for *thinking*, except when we come up against a difficulty in *doing*; and that the cry, "Knowledge for the sake of knowledge," involves a bad philosophy, developed to justify the retention of subjects and methods which have lost their vitality. When, therefore, he comes to consider method, he takes up the strong position that the *problem*, which has been reserved for certain subjects, should, with its definite aim and its incitement to real thought, be a leading feature in the teaching of all subjects. Finally, though he sees value in the experimental work in pedagogy that is now being enthusiastically done, he warns the workers against trying to settle ideals by means of their experiments. We thank Prof. Moore for his scholarly, well-written, and timely volume.

(2) Anything that Dr. C. W. Eliot has to say about the changes needed in American secondary education deserves attention, not only in his own country, but in Britain also, for all principles, and many practical questions, are common to both. The trend of Dr. Eliot's scheme of reform is thoroughly modern, though we can scarcely say the same of the reasoning by which he backs it up. Phrases like "training the senses" and "cultivating accurate observation" are used in a manner which would probably cause Prof. Moore to shake his head. The changes which Dr. Eliot desiderates are "the introduction of more hand, ear, and eye work—such as drawing, carpentry, turning, music, sewing, and cooking—and the giving of more time to the sciences of observation—chemistry, physics, biology, and geography—not political, but geological and ethnographical geography." He dis-

agrees with those conservatives who would restrict the secondary school to English, Latin, history, and mathematics, with a dash of economics and civics, for this "would restrict the rising generation to memory studies." But would it? Not if Prof. Moore, whose volume we have just noticed, is right in his doctrine of method; not, that is to say, unless traditional methods are conserved as well as traditional subjects. Still, many good causes have been supported by indifferent arguments, and we think that this is the case with Dr. Eliot's plea for reform.

(3) Many who were present at one or more of the educational conferences at the University of London in January last, and many who were not able to be present, will no doubt be glad to possess a copy of the report. Sir Oliver Lodge's inaugural address is first given. Then follow reports of the meetings of no fewer than twenty educational associations, and, lastly, there are indexes of names and of subjects. The book has a present value, because it points the way to many needed reforms; and we think that it will also have a certain historical value, as showing how educational thought was tending in the midst of the great war. Copies of the report may be obtained from Mr. F. Fairman, of 9, Brunswick Square, W.C.

(4) The fourteenth year-book of the (American) National Society for the Study of Education deals with the question of economy of time in public elementary schools. There is a widespread feeling that much of the time spent on general education, especially in the elementary schools, is wasted, because of the inclusion of archaic and useless materials in the course of study. The subjects dealt with in the present report include reading, writing, spelling, composition and grammar, arithmetic, geography, history, and literature. The general conclusion is reached that if inessentials were eliminated from the course, a child could accomplish by his twelfth year what now occupies him until the fourteenth. We are quite prepared to believe this, and we think it might prove as true of English elementary education as of American. The committee goes on to infer that general elementary education should stop at the twelfth year. This is obviously a very different proposition, and, we think, far more doubtful. Issues are here raised which the statistical methods employed by the committee are incompetent to decide. We certainly think that in this country the elementary schools would be more attractive to children between twelve and fourteen years of age, and to their parents also, if modifications of the present curriculum, made with a view to the future occupations of the children, were tried. But that the general education of such children should cease we should not be prepared to admit, even if the statistical and other evidence given in this year-book could all be substantiated.

(5) We are glad to see that the subject index to periodicals issued by the *Athenæum* at the request of the council of the Library Association includes a section devoted to education. The issue for 1915 contains 517 index entries, selected from 103 journals, and distributed under 228 headings, with many references in addition. The list deals also with the subject of child welfare, and therefore embraces many entries referring to child psychology, employment of children, and their home life and management, all of which subjects have an indirect interest for educationists. The influence of the war on education generally, and its special influence on the teaching of modern languages, are naturally reflected in this comprehensive list. The idea of publishing such a list is excellent, and it has been well carried out. We heartily commend the index to the attention of teachers, administrators, and librarians.

(6) and (7) The American College and University Series, of which the volumes on Columbia and Princeton had already been issued, now includes those on Harvard and Vassar; and others are to follow. The aim of the series is to provide historical, descriptive, and critical accounts of the more important American colleges and universities. The history, traditions, equipment, and government of Harvard, which will soon reach the 280th year of its existence, are well described by one of its *alumni*. The story of Vassar, founded in 1861, is of interest, not only in itself, but also as part of the general movement in favour of the higher education of women during the past five or six decades. In America it was Vassar that bore the brunt of the new movement, meeting "every challenge as to the possibility of educating women to the men's level, every argument against her physical ability to sustain it, every prejudice that declared it would unsex her, every fear that the process would destroy faith, every anticipation that college would undermine devotion to the general interests of a woman's life." The volume on Vassar seems to us a worthy member of a worthy series. The books, we may add, are well illustrated and attractively bound, and are a pleasure to handle.

DR. LEAF ON HOMER.

Homer and History. By Walter Leaf. xvi+374 pp. With maps. (Macmillan.) 12s. net.

DR. LEAF has written a book which is both witty and wise. It is also prudent, for he leaves out not only the crucial question, whether Homer was Homer or a syndicate, but others which are matter for controversy, and confines himself to the title strictly. We gather that Dr. Leaf is still incredulous of one Homer, and this is not surprising, after his minute dissection given in the "Iliad" edition. Something depends on the type of a man's mind, and Dr. Leaf seems never to have regarded the composite theory as a thing to be accepted with regret because one must; so that he would not feel as others have felt, relief and satisfaction now that the evidence has been shown to be incomplete, and as destructive of one theory as of the other. In this book his guns are turned on the Catalogue, and he has made out a good case for its having been worked over and brought down to a later date, but he does not prove that the nucleus of it was not Homer's. Indeed, after what we know of Shakespeare, it would be neither surprising nor discreditable if Homer had used other material.

The case of the Catalogue is this. From the rest of the poems he deduces (quite rightly) that Greece was then under the rule of Agamemnon, exercised from Mycenæ, and supported by his brother in Sparta and other lesser kings, or barons, in Achæan castles, which were built in centres which they had conquered. In the Catalogue he finds this Achæan empire broken up into little bits, and the circumstances such as are not possible to reconcile with an empire ruled from Mycenæ. For example, Agamemnon sends many ships to Troy, but all his ports are in the possession of Diomedes or someone else; whilst in the "Iliad" Diomedes is an apologetic nobody; Agamemnon has no seaboard except the south shore of the Corinthian gulf, where there are no harbours at all. Again, Bœotia is important in the Catalogue, whereas in the rest of the "Iliad" there is no Bœotia and no Thebes, but Minyans and Orchomenians.

Another geographical problem is that of Ithaca; and Dr. Leaf supports Dörpfeld's theory of Leucas. We have not seen this theory put so well elsewhere, although some weak points are left, and he does not

remind us that Dörpfeld failed to find the remains in Leucas which he prophesied that he was going to find. The migration *en masse* from Leucas to Ithaca has left no echoes whatever in tradition, as we should expect if it were true, and it is a very crude idea to suppose that Leucas would go *en masse* to Ithaca, and Ithaca *en masse* to Cephallenia, when they were all friends. The case of Pylos is not parallel, for there is no reason to suppose that Pylos I. migrated or was driven to Pylos II., whereas it is always possible that there may be two Pyloi at the same time, as there were, and are, several places named Larissa. There is even a Larissa in Lesbos, but nobody has ever assumed a migration or a rout thither from Thessaly or Argos. As a matter of fact, there were actually three Pyloi—*ἔστι Πύλος πρὸ Πύλοιο, Πύλος γὰρ μὲν ἔστι καὶ ἄλλη*.

It must be admitted that the geography of Ithaca is inexplicable, whatever theory be taken. Dr. Leaf himself, with his cut and dried theory, has to assume a meaning of *χαμαλή* which is not supported in ancient Greek, and is not its natural meaning in the context; and to make *ζόφος* refer to the North, which is scarcely more likely.

More convincing is the theory, now put forward for the first time, that Taphos is Corcyra, and that the Taphian pirates, by keeping the seas northward, were the cause why Homeric knowledge does not extend to the west. It is a piece of very pretty reasoning, clear and fairly put. But for the Taphians, he holds, Agamemnon's coalition might have attacked the west and left Troy alone. The Trojan War he holds actually to have been fought, and in the general manner described, and that the leaders' names are also historical. This, the outcome of the book, seems to be made out, as far as such things can be.

We regret that a book, so wise and witty, should give currency to the newspaper vulgarism of *this much* and *that much*, which we venture to quote in the hope (perhaps vain) that some who read these lines may guard against it.

A RENEGADE'S WAR ESSAYS.

The Ravings of a Renegade: the War Essays of Houston Stewart Chamberlain. Translated from the German by Dr. Charles H. Clarke. 207 pp. (Jarrold.) 2s. 6d. net.

THIS book has the painful interest which often attaches itself to the outpourings of a deranged and unbalanced mind. It would be an amusing book, by reason of its grotesque caricatures of the truth, if it were not an ominous one, by reason of the fact that it expresses all too faithfully the distorted German view of current affairs. It demands the careful attention of all those who wish to realise the sort of dangerous lunacy which has possessed the German nation, a frenzy of self-deception the like of which has no parallel in the history of the world. Conquest by the Germany of H. S. Chamberlain would resemble conquest at the hands of the inmates of a criminal mad-house.

Six essays in all are here translated. The first deals with "Germany's love of peace." It contains the testimony that "in the whole of Germany during the last forty-three years not a single man has lived who desired war; no, not a single one." The present struggle is due, it appears, to the "criminal policy" of England, who "desired the war and brought it about." The second essay, the subject of which is "German Liberty," contends that liberty is unknown in England, which is enslaved by an "ignorance so immense that no German can form any idea of it." Only in

Germany does true liberty exist, and "the continuance and development of freedom on earth depends on the victory of the German arms." The third essay goes into raptures over the German language. All other tongues are degenerate. German must eliminate them all and become the universal medium of culture. "There will be no more important task," says Herr Chamberlain, "than to enforce the German language on the world." Obstinate aliens may object to abandon their inferior dialects, but "with the German language we make everyone an inestimable gift, and we need have no compunction as to the means by which we force it on them." Here we have a genuine revelation of the modern Germanic spirit.

In the fourth essay—on "Germany as the Leading Power in the World"—the writer makes the damning disclosure that "the whole of the present plan of campaign dates in its very details back to old Moltke," who died in 1891. This revelation may vindicate the foresight of the Great General Staff, but it makes sad havoc of the official explanations of the violation of Belgian neutrality advanced by the German Foreign Office in August, 1914. The last two essays compare England and Germany, and it is enough to say that the picture of each here presented is the phantasm of a fevered brain. The ignorance of English history which Herr Chamberlain displays is colossal, in spite of the fact that he refers to "the great historian Hobbes" and (unless his English translator does him an injustice) "Gibbons." The detailed descriptions which he gives of an English parliamentary election (pp. 127-9) and an English Christmas (pp. 141-2) are ludicrous in their malignant perversity. Sir Edward Grey is denounced as a Machiavellian intriguer who "for years has sought rapprochement to Germany, so that the honest German statesmen and diplomatists should not perceive the firm intention of the war of annihilation." As to the Germans, "if there is in the world a peaceful, well-behaved, pious people," it is they! Germany, indeed, is "the only country in Europe that seriously desires peace." To call her "militarist" is to utter a foul libel. Lord Haldane, who used the expression, is a "muddle-headed" talker of "incoherent nonsense" and a "false friend" to his spiritual home. Yet, in spite of Germany's pacific innocence, she is not loved. Herr Chamberlain sadly admits the fact. What does he advise? "I wish," he says, "the Germans could make up their minds for ten years not to read a line of what is written about them abroad. It would save them an enormous amount of time and annoyance."

A perusal of this raging rubbish—devoid of information and ideas as it is—should convince even the most benevolent of Englishmen of the hopelessness of influencing modern Germany except by means of high explosives.

ARISTOPHANES INTERPRETED.

The Clouds of Aristophanes. xlv + 230 pp. *The Wasps of Aristophanes.* lii + 316 pp. The Greek text revised, with a translation into corresponding metres, introduction, and commentary. By B. B. Rogers. (Bell.) 10s. 6d. each.

THE world of scholars will congratulate Dr. Rogers on the completion of his task, the greatest feat of translation done in our day. He keeps up the true English traditions of scholarship, the amateur as contrasted with the professional, and, as usual with the real English type, he can give the professional points and beat him. Such men do their work because they love it, not because they want a doctor's degree, or a reputation; ancient literature is part of their life

and being, not a thing to know facts about. Not that he does not know facts about Aristophanes; only he uses them to make us know Aristophanes, not to build a monument of the facts. The materials, for example, on which his text is made are given in the critical notes quite fully enough to let the reader form his own judgment, and the commentary is meant really to illustrate, not to pile up exhaustive lists of parallels. A sound common sense pervades all; for instance, he rejects Welcker's interpretation of "Clouds," 251, εἴπερ ἔστι γέ, which seems due to a desire to be unlike other people, yet has been often adopted since he made it; and see his explanation of *τερρεμίνω*, 294, as a stutter (which, however, is not reproduced in the translation).

The introduction to the "Clouds" discusses the relations of the two editions of the play; and Dr. Rogers makes an ingenious suggestion about the name of Hermes in the list of characters in V.; he assumes that in the original play Hermes answered the appeal of Strepsiades by appearing and setting fire to the Thinking-shop, and uttered lines 1508-9, which explains some little evidence of the confusion that has been noted. He concludes that the second edition was not a new play, but a revision. The choice of Socrates, he thinks, is due to the fact that he was the only Athenian who could be taken to represent the Sophists, although the resemblance was only superficial; his victims, who were many, would be sure to enjoy it. Plato's Euthydemus may be regarded as a counterblast to the "Clouds," fitting the cap upon the right head. A number of verbal parallels are quoted (xxviii.) which go to show that Plato had the "Clouds" before him. Another original point made is in the discussion why Cratinus won the prize (xxxv.). At the end of the "Clouds" is reprinted a clever skit on Lord John Russell's University Commission, by H. L. Mansel (1852), which has its applications to-day. Do not we still know to our cost

"the Peace Society, demanding
Protection for all cannibals and pirates,
And lasting infamy to him that wears
The base and bloodstained livery of a soldier,"

and

"The land which produced one Kant with a K,
And many Cants with a C"?

In the introduction to the "Wasps" he discusses the question whether Aristophanes exhibited this play in his own name. The statement in the arguments runs thus:—*ἐδιδάχθη ἐπὶ ἀρχόντος Ἀμμωνίου, διὰ Φιλωνίδου ἐν τῇ πόλει Ὀλυμπίαδι βῆσι εἰς Ἀθήνας καὶ ἐνίκα πρῶτος Φιλωνίδης Προγῶνι Λεύκων Προσβέσει τρίτος.* He accepts the correction *ἐν τῇ πθ' Ὀλυμπίαδι ἔτει β'*, after the usual formula; then suggests *καὶ ἐνίκα πρῶτος, Φιλωνίδης Προγῶνι <δευτέρως>*, . . . omitting *διὰ Φιλωνίδου* as due to a corruption made afterwards. He then assumes that Aristophanes exhibited this play in his own name, and also the "Rehearsal" in the name of Philonides. Certainly the poet speaks in this play as if his identity were known. The rest of the introduction describes the dicastic system, and the object of the play, which he takes to be an attempt to show that the demagogues were using the dicasts as tools.

But it is the translation which is the backbone of this work, so let us turn our attention to that. The "Clouds" was Dr. Rogers's first attempt in this line (1852); it is republished almost unchanged, as the author found on rewriting that the old was better. As in some of the other plays, the iambic dialogue is not the best part of it. Sometimes, indeed, it is inadequate; thus the jokes on *καρδοπος* and *καρδίτη*, and on

the names, are not such as an English writer would make if he jested on grammar, but they are forced. It is a difficult point, we admit, and opinions may differ; but the translation is intended to be enjoyed of itself. The quick metres, the rhymed lines, and the lyrics, these are Mr. Rogers's strength, and they are bright and airy as ever. In the "Clouds" he has a great opportunity, and he rises to it. In the "Wasps," which was first published in 1875, the translator's work is more equal, and the lyrics and paraisis again are worthy of Aristophanes at his best.

Whether Dr. Rogers will make Aristophanes known to a money-grubbing and Greekless age we do not know. The experiment is worth trying; the translation alone would make a fine gift-book. In any case, he has given keen pleasure to all scholars who have an ear and a taste for wit, and we doubt not that generations to come will render thanks.

THE TEACHING OF HISTORY.

The Teaching of History in Elementary Schools. By R. L. Archer, L. V. D. Owen, and A. E. Chapman. xii+263 pp. (Black.) 3s. 6d. net.

PROF. ARCHER and his colleagues are too modest in their title. Not only teachers in elementary schools, but all teachers of history who have to do with children of all classes up to the age of fourteen could not but profit by a study of the wise discussion of general principles and the skilful suggestions for their application contained in the book before us. The prime characteristic of the book is moderation and sanity. It advocates no revolutionary system; it criticises recent novelties, such as the source method and the dramatic method, alike with sympathy and sound discrimination.

The book is divided into two parts. The first treats of "General Principles of Method," under which are discussed such questions as the aim of history teaching, choice of subject-matter, arrangement of material, preparation of lessons, and conduct of the class. The second part gives detailed suggestions, very valuable to a non-specialist teacher, for the treatment of the seven or eight leading periods into which the history of the Christian era can conveniently be divided.

The authors emphasise the importance of history as a preparation for citizenship in a democratic State. They advocate the full and impressive treatment of critical epochs in the history of civilisation, rather than the impartation of a flat and lifeless outline of the whole. They maintain that "social conditions are the bedrock of history." They consider that British history usually supplies material adequate for the teacher's main purposes and requirements, but that occasionally, *i.e.*, when Great Britain lay outside the main current of civilisation, British history must be supplemented by general history. An admirable table (pp. 50-54) develops this scheme in detail. As to the arrangement of the history course, the authors emphatically condemn the concentric system, and argue convincingly for an application of the "culture-epoch" idea. They accept, that is to say, the view that early history suits childish minds, and that the study of recent events requires matured intelligence. It is curious that, in the light of this principle, they should advise teachers (p. 66) to pass lightly over wars and campaigns; for surely experience shows that children, or at any rate boys, are keenly interested in battles.

The book as a whole is very well written, and its reading cannot fail to be a source of inspiration and delight.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A First Russian Reader. By P. Dearmer and V. A. Tananevich. 80 pp. (Oxford University Press.) 1s. 6d. net.—There is undoubtedly a lack of Russian texts for beginners, and therefore this little reader is welcome, especially as it is provided with notes and a good vocabulary. The notes face the text and serve to clear up most difficulties. The text itself consists of a rather heterogeneous selection of bits from Tolstoy. Some are slightly modified fables of Æsop, in others a boy relates what happened to him, and the first (and by no means easiest) describes the life of the Eskimos. For private study it is quite a nice little book, but from the point of view of method it offers no novelty. Indeed, there does not seem to be a single book for teaching Russian that is not on entirely old-fashioned lines.

E. Laboulaye, Contes Bleus. Edited by C. W. Merryweather and H. Nicolson. viii+100 pp. (Longmans.) 1s. 6d.—Half a dozen short stories, simple in construction, occasionally a little difficult in vocabulary, have been provided, with notes which supply renderings and direct attention to grammatical points. There are also "Exercises and Reproductions": the former consist of sentences, based more or less on the text, the latter are continuous English passages for translation. In each section particular attention is paid to some special set of grammatical difficulties; and it may be said that the editors have done their work well. A French-English vocabulary completes the book, which will be found quite useful for revising the main rules of French syntax.

Tristapatte et Goret et autres contes. Edited by R. R. N. Baron. vii+129 pp. (Mills and Boon.) 1s.—The five simple stories contained in this book have been taken from the "Livres roses Larousse." Each is divided into short sections, and to each section there is an "Exercise," consisting of a set of French questions on the text, questions on grammar and vocabulary, and a subject for free composition. Mr. Baron has written several books which show him to be thoroughly sound in method, and the present volume will not fail to add to his reputation. Only occasionally is the form of the exercise not quite satisfactory; thus "Mettez sous la forme interrogative: La bise souffle dehors" can be answered by prefixing "est-ce que," and it is better to let the pupils ask for something that has been italicised. Similarly, the pupil is asked to give the opposite of "un cochon vivant," and may well ask what is the opposite of "cochon." Some of the illustrations are almost futurist in their extravagance. Do children really like such monstrosities as the pig on page 1?

Manuel de Lecture expliquée. (XIX^e siècle.) Edited by S. A. Richards. viii+89 pp. (Cambridge University Press.) 2s. 6d.—There has been so much talk about "lecture expliquée" in recent years that it is a little surprising that no one should have yet issued such a book as Mr. Richards has now put together. He has produced a thoughtful and interesting piece of work. A single page on the French literature of the nineteenth century is, to be sure, rather scanty measure; but the notes on the various authors represented in his selection are judicious and well expressed, and the representative extracts have been carefully selected. Mr. Richards begins with Chateaubriand, and ends with Victor Hugo—the second half of the nineteenth century is therefore scarcely dealt with. Each extract is provided with "notes et ques-

tions" which are suggestive and useful, an "examen de fond," or a discussion of the style, or an "analyse," and suggestions for free composition. The teacher of a good Sixth Form will find this a very helpful volume.

Classics.

A Companion to Greek Studies. Edited by Leonard Whibley. Third edition, revised and enlarged. xxxvi+787 pp. (Cambridge University Press.) 21s. net.—A second edition of this most valuable work appeared in 1906, just one year after the first appearance of the book. It is already too well known and appreciated by all classical students to need any commendation now, but they will all want this third edition. As the preface says:—"There is scarcely an article that has not been revised"; in particular, the work of Sir Arthur Evans during recent years has rendered necessary a revision of the chapters on the prehistoric age, and some subjects (*e.g.*, ethnology, bronzes, and jewelry) are now for the first time separately discussed. The names of Prof. Bosanquet and of Sir John Sandys, to mention only two of those who have revised the work of previous scholars, will be a sufficient indication that the work is now a more covetable volume than ever.

A Pocket Lexicon to the Greek New Testament. By Alexander Souter. viii+290 pp. (Clarendon Press.) 3s. net; or 5s. 6d. net on India paper.—This is a little work which was well worth compiling—it is handy in form, beautifully printed, neatly and yet strongly bound, and should be most welcome to any theological student. Even those who know classical Greek will be grateful for this handy compendium of words and forms which are peculiar to the *Kovuv*, while the average theological student, with perhaps rather less Greek than Divinity, will now be saved many a wearisome hunt in his "Liddell and Scott." We have tested the volume at random, and have found it both exhaustive and scholarly.

A Short Ancient History. By James Henry Breasted. pp. viii+334. (Ginn.) 4s. 6d.—This is the ancient-history section from "Outlines of European History" (part i.) which Mr. Breasted has previously written in collaboration with Mr. J. H. Robinson. It is now published as a separate volume, and it has been very well produced, with numerous illustrations, five beautiful coloured plates, and several good maps. When one considers that the period covered extends from the early Stone age to the triumph of Christianity in the Roman Empire, one cannot but admire the skill with which Mr. Breasted has both compressed and marshalled the tremendous amount of material with which he has had to deal. And the result is really very readable; the early pages on primitive man serve excellently to put what follows in its right perspective, and the whole book should prove a very useful instrument for developing in the student a correct "historical sense." A few Americanisms—*plow* (plough), *ax* (axe), *one hundred fifty*, etc.—offend the eye at times; but these are small blemishes. There are useful questions for revision at the end of each chapter, a comprehensive bibliography, and an index.

English.

English Verse Composition. By A. E. Roberts and A. Pratt. 150 pp. (Edward Arnold.) 2s. 6d.—The many experiments made in the class-room justify a really serious attempt to give advice on the subject of verse-writing; and it may well be that by a curious turn in the whirligig of Time we shall earn fresh hatred from the commercialists by substituting English for Latin verse. Everybody knows Mr. Cald-

well Cook's productions at the Perse School; but everybody does not know (nor does Mr. Cook) that scores of teachers have produced admirable results in the same line. Still, the fact remains that in most classes children have the very haziest idea of the meaning of "line," "prose," "rhyme," and are infinitely behind Mr. Silas Wegg in their knowledge of verse-mechanics. To remedy this ignorance, this useful little book has been written; it contains chapters on rhythm, rhyme, stress, time, metre, and offers advice, necessarily slight, on blank verse, translation, and the heroic couplet. Among the crowd of school primers it stands out for a humdrum originality. The teachers who know will wish it all success.

Essay Writing. By W. J. Addis. 98 pp. (Pitman.) 1s. 6d.—Mr. Addis is well-known for luminous work on English subjects and for a considerable success with pupils. As we should have expected, we find here hard common sense diversified with occasional suggestions that are brilliant. The value of the book lies in the implicit certainty that essay writing is not the easy business that many teachers and all school children take it to be, and examiners will have cause to bless those teachers who succeed in hammering care, and again care, and after-care into classes which to-day are quite content with unpunctuated slush. At the same time, no primer will be of any avail unless supported by reading, observation, and, in the higher classes, by the unremitting use of a notebook. R. L. S. crede, whose well-known essay might be burnt into the memories of fifth and sixth forms.

History.

The History Teachers' Magazine. Jan.—March, 1916. (The McKinley Publishing Co., U.S.A.) 20 cents each part.—The three numbers before us form the opening section of volume vii. of the *American History Teachers' Magazine*. They contain many articles of interest and value. In the January number Prof. Harding of Indiana deals ably with the Nature and Method of History. The same issue contains a "terrifying account of 'How I Handle Current Events,'" by a Rhode Island teacher. This teacher's unhappy pupils have to prepare abstracts of such topics as "The legal status of women in R.I.," or "The convict lease system and its evils" (for which they are required to "suggest remedies"!). The treatment of such topics in school certainly needs defence; but most readers of the article in question will probably think that the thirty-four arguments given here in numbered sequence are too many to be conclusive. The February number contains a fresh and informative article on "How the Furs Come Down from the North Country," by L. A. Chase. It is an admirable example of the way in which geography and history can be made to aid one another. Further, there are some valuable remarks on local history in D. W. Norton's article on "Standards for Community Circles." The March number deals largely with the teaching of very recent American and European history. For instance, Dr. E. E. Slosson treats of the use of newspapers as historical sources. He strongly urges the need "to give the student in history a chance to grapple with real problems snatched alive and kicking from the stream of time"! That a good many teachers do employ journals in their work is suggested by the statement that 25,000 copies of the *Literary Digest* are used every week in schools and colleges. All the numbers include reviews of refreshing candour. "Mr. Belloc is always interesting," says one reviewer; but, he adds, "Mr. Belloc's style cloaks a multitude of historical sins; he is profoundly unscientific and inaccurate."

Chambers' Periodic Histories. Book III., England in the Making. 208 pp. 1s. 3d. Book IV., England in the Middle Ages. 272 pp. 1s. 6d. Book V., England under Tudors and Stewarts. 272 pp. 1s. 6d. Book VI., Britain in Modern Times. 288 pp. 1s. 9d. (Chambers.)—These four readers cover the whole course of English history from the earliest times to the outbreak of the present war. Books I. and II. of the series have not yet appeared, and there is no indication in the volumes before us as to the nature of their contents. Presumably, however, they will be devoted to those legendary stories which are generally recognised as being the appropriate gateway to history proper. If that is the case we venture to suggest that one or two of the sections in the opening volumes of this historical sequence should be transferred to the introductory books. Such stories, for instance, as that of Blondel discovering the prison of Richard I. have no longer any place in authentic history. It is sad; but so it is. As a well-known novelist has recently made one of his characters say: "What is history, now that dull people are continually discovering that none of the best bits have ever happened?" Apart, however, from the uncritical selection of material, the four readers are excellent. They are nicely graded on the sound principle that the earliest periods of history are best suited to the intelligence of the youngest children, and more recent periods to that of pupils more mature. The illustrations throughout are numerous and attractive.

Geography.

Common Commodities of Commerce. Wheat. By A. Millar. 134 pp. (Pitman.) 2s. net.—"Wheat and its Products" maintains the character of this series of books—thoroughness and accuracy. Within a few pages very large quantities of valuable information are packed, and no one interested in wheat, its production, its varieties, its transport and merchandising, and its products, can fail to find sufficient information on any one of these points to satisfy any but the most minute inquiry. There are illustrative diagrams and photographs which make the text much clearer as they demonstrate the exact utility of technical devices.

Cambridge Industrial and Commercial Series. Ships, Shipping, and Fishing. By G. F. Bosworth. 86 pp. *Factories and Great Industries.* By F. A. Farrar. 90 pp. *Trade and Commerce.* By A. J. Dicks. 94 pp. (Cambridge University Press.) 1s. 6d. each.—These little books present to school children in an attractive and simple fashion the main features of those elements of our national life with which they deal. They are abundantly illustrated, and necessarily bring into prominence certain facts with which a well-educated child should be acquainted, yet which usually do not find a place in the school curriculum.

Science and Technology.

A Text-Book of Practical Physics. By H. S. Allen and H. Moore. 638 pp. (Macmillan.) 8s. 6d. net. Also in three parts, 3s. net each.—This volume is based upon manuscript books of instructions for experiments used in teaching practical physics at King's College London. The authors state that these manuscript books had been in use for several years; the volume under review must represent, therefore, the product of an extended experience in teaching the subject, and a brief examination suffices to verify this anticipation. The large number (261) of experiments described offers considerable elasticity to the course followed by any one student; and a teacher will have no difficulty in selecting a range of experimental work appropriate to students having very diverse re-

quirements. The volume has been designed primarily to cover the intermediate pass courses in science, engineering, and medicine of London University; it would perhaps be more correct to describe it as appropriate to pass degree candidates in science. Students with a bias towards engineering seldom receive in a physics course the special consideration which their subsequent work deserves. In this volume, however, the engineering student has his needs fully supplied; the chapters on statics, dynamics, and periodic motion are quite extensive and excellent, and reach a higher standard of individuality than is observed in some other sections. The method of the volume is to introduce each new experimental principle by means of a short theoretical discussion; this helps greatly to ensure that the student proceeds to an experiment with an intelligent idea as to what he is doing. In some sections this preliminary discussion is exceptionally good; as examples, we may mention the sections on the planimeter and on the graphic determinations of centres of gravity and moments of inertia of irregular areas. Another good feature of the book is the simplicity of the apparatus required. When there is so much to commend in a volume it seems inappropriate to offer criticism; but, in the use of a balance (p. 18), we would have preferred to see a much more complete treatment of the process of weighing by vibrations—a method which is appropriate even to the simplest physical balances; nor is there any reference to the sensibility of a balance.

A Treatise on Electricity. By F. B. Pidduck. 646 pp. (Cambridge University Press.) 14s. net.—A thoroughly sound knowledge of higher mathematics is required by students using this volume; but students who cannot follow all the mathematical portions may still derive a considerable amount of useful information both in pure and in applied electricity. It may be described as an advanced text-book suitable for students who have previously studied a good elementary treatise. The first eight chapters contain a condensed treatment of general principles; and the remaining six chapters are devoted to special subjects, including dynamos and motors, transformers, electric lighting, electrolysis, electric oscillations, conduction of electricity through gases, radio-activity, and the theory of electrons. In these later chapters we find a very clear exposition of recent experimental researches, and the value of this section is much increased by the excellent diagrams of the apparatus used.

Miscellaneous.

Chapel. The Story of a Welsh Family. By Miles Lewis. 344 pp. (Heinemann.) 6s.—We are told that this is a first novel. If so, it is almost a pity that it is so good, for the author has indeed put many eggs into his omelette. It may be doubted if there is enough praise of Wales in it to please the average Welsh reader; with a few omissions the story might be told of Yorkshire and Yorkshire people. The book lives in every page; opposed characters play out their fierce tournaments; and, though all is at the end happy ever after, the novelist knows well enough that in real life volcanoes are not lulled to rest by a baby's cry or stifled by a velvet fist. The novel is one of great promise; we hope that it will be long before the author publishes another, and that then he will tell us more about the Janes and the Besses, who are but sketched in, and who, beside the coarser protagonists, are as lace to canvas. As in so many first and good novels, there is material for half a dozen stories, in some of which the lamentable and rather inexplicable fall of Graig and the inner history of Jane might be more fully told and justified. It is probable that the Chapels, father

and son, are drawn from life, but this does not make either of them more pleasant. And life would, in fact, be not quite so kind to them as Mr. Lewis has been. The commercial morals are—commercial.

The Economy and Finance of the War. By A. C. Pigou. 96 pp. (Dent.) 1s. net.—Prof. Pigou says things which demand careful attention. He first discusses, in the light of universally recognised principles of political economy, the real cost of the war; that is to say, the actual drain upon the resources of the nation, as distinct from the mere monetary estimate of their value. He then passes to the more controversial question of the way in which these costs should be met. He advocates, as the result of a number of converging arguments, the diminution of the amount to be raised by loan, and the great increase of the amount to be raised by direct taxation on the well-to-do and rich.

The Business Girl's Handbook. By C. Chisholm and D. W. Walton. 160 pp. (Pitman.) 1s. 6d. net.—Racily written, redolent of the office and its multifarious activities, this little book is just the thing for the girl about to enter upon a commercial career. It provides practical advice, which is based upon abundant experience; it demonstrates the elements of interest which lie behind the office routine even when the latter appears most dull and uninspiring.

EDUCATIONAL BOOKS PUBLISHED DURING MARCH, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

"Nouvelles Soirées chez les Pascal." A second reading-book. By F. B. Kirkman, assisted by A. Lacourt. 64 pp. With 8 full-page illustrations in colour and tail-pieces in black and white. (Black.) 1s. 4d.

"Manual de Lecture Expliquée." XIX^e siècle. By S. A. Richards. (Cambridge Modern French Series: Senior Group.) viii+90 pp. (Cambridge University Press.) 2s. 6d.

"Le Français par l'exemple et les textes." En six livres. Livre III. By C. L. Albert Bonne. 304 pp. (Rivington.) 1s. 6d. net.

"German Unseens." By A. R. Florian. 188 pp. (Rivington.) 3s.

Classics.

"A Companion to Greek Studies." Edited by Leonard Whibley. xxxvi+788 pp. (Cambridge University Press.) 21s. net.

English: Grammar, Composition, Literature.

"English Verse Composition." By A. E. Roberts and A. Pratt. 150 pp. (Edward Arnold.) 2s. 6d.

"Blackie's New Systematic English Readers." Book VI. (Blackie.) 1s. 9d.

"A Concise Anglo-Saxon Dictionary for the Use of Students." By John R. Clark Hall. xiv+372 pp. (Cambridge University Press.) 15s. net.

"The Cambridge Book of Poetry for Children." Edited by Kenneth Grahame. In two parts. Part i., xii+118 pp. Part ii., viii+126 pp. (Cambridge University Press.) 1s. net each part; in one volume, cloth extra, 3s. net.

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CORRESPONDENCE.

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Line Diagrams in History.

IN the many middle-class schools of the country in which a matriculation standard marks the average level of attainments in the upper forms, and the Intermediate B.A. a special effort, the teaching of history presents its own difficulties. More particularly is this the case when the curriculum is crowded, and no more than two hours per week can be allowed to such a subject. If the passing of an examination is the paramount issue, the painful assimilation of a long array of facts, and the judicious redistribution of them on paper on the day of trial, may bring some success. But this makes the learning of history a mere matter of memory, and is probably a costly process.

Now, in mathematics, the value of a boy's training lies, not in some nebulous value of *x* or *y* which he may from time to time laboriously determine, but in the practice he gets in logical reasoning from known facts to certain conclusions. Granting this, most people are probably now ready, putting the examination business upon one side for the moment, to look upon the history lesson as the training ground where a boy may employ the same faculties of reasoning as in mathematics, using, however, as his working materials, not the arbitrary and constant quantities of units and right-angles, but the more varying and human elements of national needs and ambitions, and personal traits and bias.

But it is considerably more easy to formulate such an ideal than to get a class of boys to carry it out. Merely to talk about the laws of causation and to urge logical thought upon boys would be as useful as it would be simply to recite to them the theory of indices and leave them gasping. It is the constant working out of exercises that makes the algebraical rule intelligible, and it is by way of supplying a similar source of exercises on the historical side that the following system of line diagrams is suggested.

Suppose the subject to be put before the class to be the examination of the causes of the Crimean War. The general facts of the case will be read up in a text-book, or given in the form of notes—the interests in the Turkish Empire of the countries concerned being carried back as far as is considered necessary, and their points of collision being noted. A line diagram of cause and sequence might then be plotted out somewhat as here described:—

In explanation, it might be pointed out that the various events are related to each other somewhat as under:—

K, A, E are respectively proximate causes of L, B, F.

A, B, K, L are all remote causes of N.

C, G, D are not logical causes of N at all, but diplomatic excuses. They are very important nevertheless.

C and G are, of course, proximate causes of D.

H is a predisposing cause of trouble at any time.

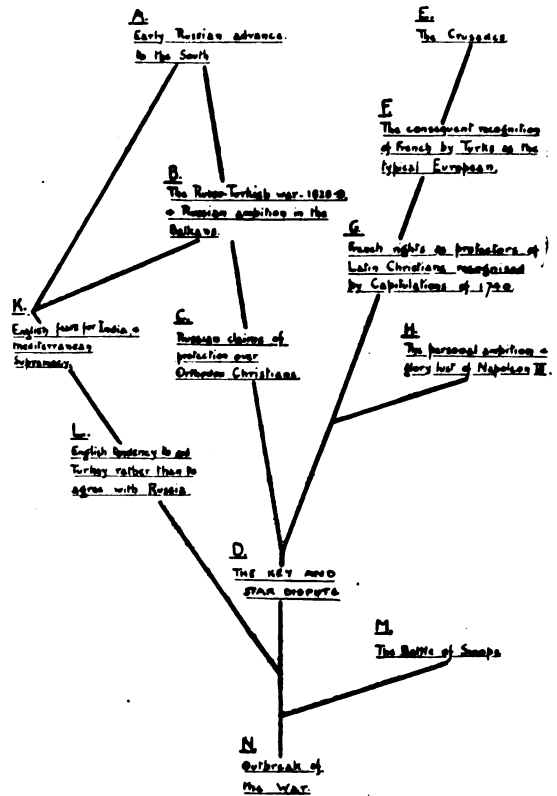
M is the exciting cause of N.

A preliminary explanation of the nature of a cause, and the possible relation of one cause to another, is, of course, necessary. But it need only be very elementary—the names are perhaps the worst stumbling-block—but, even so, one period of three-quarters of an

hour has been found sufficient to get quite dull boys (and girls too) to grasp the idea, and to begin to make easy examples for themselves.

Perhaps the most valuable side of the system comes out when a period of history is under revision. Practised in relation with the theory of the connection of ideas, it may be used to illustrate and impress upon the memory mere sequence, when causal connection is not being specifically looked for. Further, it saves a great deal of writing out.

But the writing of answers in essay form can never be neglected, and here the line diagram will again prove a help. The ends of the lines of national convergence in the diagram submitted are widely separated at K, A, and E. The obvious necessity of some form of introduction which is going to bring them under one head is immediately pressed upon a boy.



Then, each line deals with one nation's activities, and automatically suggests the need of a separate section dealing with each nation in the body of the essay. Most important thing of all, each line leads grimly to the point, and, if followed, will keep the essay fairly in that direction. Lastly, the lines all culminate in the conclusion, and show plainly that an essay ends when it is fairly finished, and not when we cannot think of anything further to say—a fact not always duly appreciated by the youthful essayist.

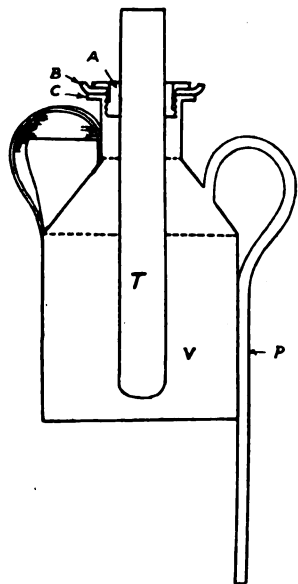
A. S. WALKER.

Halesowen Grammar School.

A New Form of Heater.

THE use of glassware for boiling of water, so often needed in a physical laboratory, is inadvisable. The diagram shows a useful can for experiments in heat. The base is of copper, 4 in. in diameter; the sides are of tinned iron of the kind used for making

oilcans; the outlet pipe P, the screw joint A, C, the closed tube T, are all of brass or copper; the washer B is of india-rubber.



The can serves as a heater in the experiments on specific heat—no leakage occurs when the can is inverted. The steam outlet pipe P is soldered to the side of the can along its length, thus preventing condensation when determining latent heat. It is sufficiently long to reach below the top of a tripod stand. A sheet of asbestos resting between the pipe and the tripod legs acts as a screen to the calorimeter. The side is capable of being well polished, and then the can may be used as a Leslie's cube, parts being lamp-blacked by holding the can over a flame from a small wad of cotton wool fixed in a piece of glass tubing,

after soaking with turpentine.

For ordinary purposes the tube T is screwed out.

These cans have a long life—those at present in use here having been made earlier than 1911. Leaks are easily made up with solder.

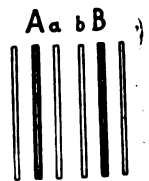
ERNEST L. COTTON.

Central Secondary School, Sheffield.

A Simple Diffraction Grating.

A SIMPLE diffraction grating capable of measuring the wave-length of blue and red light can be made at small cost as follows. Cut out a 3-in. square of silk, the sides of the square being parallel to the warp and woof, and place it between two lantern-slide cover glasses. Fix the cover glasses together, as if making a lantern-slide, and the grating is complete.

To find the average wave-length of white light, cut two parallel slits 1 cm. apart, each slit being 1 mm. wide, in sheet tin, and place the tin in a window so that the slits are illuminated by bright sky light. On looking at the slits through the grating, keeping the warp or woof parallel to the slits, the appearance will be as in the figure. A and B are the slits,



while *a* and *b* are first-order spectra. Second-order spectra may be faintly seen still further from the slits. Move backwards or forwards until *a* and *b* coincide, and then with a piece of string measure the distance, *L*, between the grating and the slits. The number of lines in 1 cm. of the grating may be counted with a reading micro-

scope or with a lens and metre rule. *L* will vary according as blue or red glass is placed in front of the slits, but the more intense light of a lantern may be necessary with coloured glasses.

Let *D*=distance apart of slits and *n*=number of lines per cm. of grating, then for coincidence of first orders of spectra it can easily be shown that the wave-length of the light used is $\lambda = D/2nL$.

n for a piece of silk lies between 50 and 70, so that *L* will be approximately 2 metres. The average wave-length of white light can be obtained to 4 or 5 per cent., and for blue or red light with almost equal accuracy.

The best results are obtained if narrow slits about 1 cm. apart are cut in thin tin foil and mounted between cover glasses. The slide thus made can be put in front of an intense illumination, such as a lantern, and the wave-length of blue, green, yellow, and red light can then be determined with coloured glasses placed in front of the slits.

GEORGE W. TODD.

Royal Grammar School, Newcastle-on-Tyne.

London University Examinations in Arts.

I SHOULD be much obliged if you would permit me to direct attention in your columns to a change in the Regulations of the University which it is desired to bring to the notice of secondary schools. In and after 1917, no student (other than a graduate of the University) will be permitted to enter for the Intermediate Examination in Arts of the University as an internal student with Latin as one of his subjects unless he has (not later than the January preceding the Intermediate Examination) passed, with Latin, either the Matriculation Examination of the University or an alternative examination approved in accordance with the Regulations, of which copies may be obtained on application.

P. J. HARTOG,

Academic Registrar.

University of London, S.W., March 31st.

Apparatus for the Teaching of Military Science.

WITH respect to your comments on No. 1 of our special "Apparatus for the Teaching of Military Science" (*THE SCHOOL WORLD*, April, 1916, p. 143), we should like to be permitted to direct attention to the following points:—

In any sketch of the D Mark III. Telephone, the difficulty arises of showing three separate windings on a single core. This is met in the published drawings either by showing the secondary of the induction coil at the side, or by indicating each winding as covering only a part of the core. Whilst either of these conventions is understood by those accustomed to electrical diagrams, they give rise to erroneous ideas in the minds of those whose knowledge of electricity is limited. The whole difficulty is overcome in our diagram-model by the use of coloured cords which stand out in relief; and in addition the movement of the buzzer armature may be demonstrated on the model. Our idea in designing this apparatus was to enable any student to see at a glance the correct disposition of the circuits, the location of the working parts, and the mechanism of the buzzer; and we believe its use will enable a correct idea of the telephone to be grasped in a much shorter time than is possible by the aid of sketches, and without any confusion regarding the circuits.

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The School World

A Monthly Magazine of Educational Work and Progress.

NO. 210.

JUNE, 1916.

SIXPENCE.

MANIPULATION OF THE CURRICULUM.

By JOHN ADAMS, M.A., B.Sc., LL.D.

Professor of Education in the University of London.

ONE of the most characteristic indiscretions of Dr. G. Stanley Hall is the word *Paidocentricism*, by which he means the tendency of the educator to lay stress upon the pupil rather than upon the subject studied. Without having heard of the term, most teachers of to-day are paidocentricists. They recognise that the pupil is the determining element in all that they do, and that subjects owe their importance to the effect they have on the pupil. None the less the subject still holds great importance in the eyes of the professional teacher, and notably so in the case of the specialist. Indeed, of the many ways in which the familiar sentence: "Teachers fall naturally into two great classes . . ." may be concluded, not the least significant is ". . . according to their attitude towards the curriculum." The *differentia* is to be found in the amount of choice left.

The current tendency is all in favour of leaving a wide choice to the pupil. The school is expected to provide a copious supply of subjects, and the selection is left more or less completely in the hands of the pupil. In its extreme form this scheme is, not inaptly, described by American writers as Education *à la carte*. It may be carried to any degree of detail. The pupil may be allowed literally to choose whatever he will. This extreme is more common in the United States than here, but it was in England that the other day a sixteen-year-old boy, leaving a public school for a two years' finishing course at one of the new *à la carte* institutions, mentioned that he was going to specialise in French and Spanish, and on inquiry explained that he meant what he said, which was that he was going to study these two

languages and nothing else. Less aggressively modern schools than this have indeed a *carte*, but the choice is limited by the course as it is in certain restaurants. Within each course the pupil, like the diner, may make his selection, but, unlike the diner, he must select something from each course. This combination of freedom and limitation is obviously a compromise, and therefore not disagreeable to English teachers as a whole, though there is still a certain body of die-hards who cling to the extreme limitation of choice that it may, perhaps, be permissible to call the *table d'hôte* system.

Few of the English secondary schools that are under any form of public control have gone to excess in the *à la carte* direction, but its dangers are sufficiently obvious, and if we are in any doubt on the matter the American educational magazines are willing to remove it. To be sure, some of our schools take a certain pride in arranging curriculum and time-table in such a way that each pupil can have practically whatever combination of subjects suits his particular case. The late W. H. Eve, for example, used to say that almost every boy at the University College School had a time-table peculiar to himself. But in cases like this the choice was made not by the boy himself, but by his masters in consultation with his guardians. Indeed, our danger in England has been rather in the *table d'hôte* direction. The sturdy defenders of this plan maintain that their restrictions are all for the pupil's ultimate good. Though at the time they seem to be grievous, yet the future will inevitably bring the reward of wholesome restraint. A good deal of the argumentation on this matter is of purely dialectic interest, but there are certain points of real practical importance involved in the theoretical contentions. For instance, the teacher has to determine whether it is for the interest of the pupils that they shall be com-

pelled to carry on subjects in which they are conspicuously weak. Some argue that it is obviously waste of time to keep pupils working at subjects in which they can never attain proficiency. Others say that the very fact that the pupil is weak in a subject is an argument in favour of his being compelled to face that subject at school. If he does not tackle it then, it is scarcely to be hoped that he will take it up of his own accord at a later stage. Taking it for granted that the subject is one that must be mastered to some degree if the pupil is to succeed in gaining an education at all, the working principle ought to be that he must continue it up to the required stage in any case, the question of carrying it still farther being settled according as the pupil's difficulty is caused by lack of ability or by lack of inclination. It does a pupil no harm to be made to continue a study which he dislikes, but the same cannot be said about a subject for which he has no capacity.

So far we have been regarding the curriculum from the teacher's standpoint, but the general public insists upon having its say in the matter. We are sometimes annoyed by the unintelligent criticisms offered to us by laymen, but there is something pleasing in the contradictions such criticisms frequently involve. Our mentors like to impress upon us how very little we influence the life of the nation, but our self-respect recovers from the shock when we note the absorbing desire of all promoters of new ideas to have their subjects included in the school curriculum. Temperance, eugenics, anti-vaccination, esperanto, imperialism, all clamour for a place in the curriculum. But fortunately most of the extreme views that make a claim are opposed by the equally extreme views of others, so that the teacher is fairly well protected. Sometimes, however, he is forced to give way and to introduce subjects, not because they are really valuable, but because there is a fairly unanimous public demand. Just as things have to be done in the war for political reasons even when they are of no military value, so in the schools we have sometimes to admit subjects that are educationally worthless but are socially or politically popular. The inherent conservatism of our profession makes it unlikely that the really eccentric will gain much hold on our curriculum, but there are some subjects that are in themselves desirable, and that the teacher would willingly introduce if the time-table were more elastic than it is. In the thirty or so available hours the progressive man is anxious to include as much as possible of the newer subjects. External pressure is constantly being brought to bear upon him to introduce such subjects as "civics," "nature

study," "field geography." Sometimes the pressure is so great that, aided by the teacher's own desire to be up to date, there is concession to the extent of setting apart a school period once a week to the new subject. This eases the conscience of the teacher in one direction, only to disturb it in another. He cannot but wonder whether the subject from which he has cut off the extra time will not suffer unduly, and whether at the same time the single period of forty-five, forty, or even only thirty minutes is enough to produce any good effect at all. May it not be the wiser plan, when sufficient time cannot be allocated to a subject, to cut it out ruthlessly? We are all aware that the results in teaching a given subject do not vary in direct ratio to the amount of time devoted to it. When the allocation of time to a particular subject reaches a certain amount, we are brought up against the law of diminishing returns. But, while there is a maximum of time for profitable work, there is also a minimum, and the minimum is more dangerous than the maximum, for it involves the risk not merely of getting an inadequate return, but actually no return at all. The practical question for the headmaster is whether any subject can be profitably treated in a single weekly period.

Something depends on the nature of the subject. Civics, for example, if to be taught at all, might be treated in a single period. The subject does not imply homework or wide reading. But it is doubtful whether such a subject as ancient history can be comfortably disposed of in a single period. Nature study is in the same position, since it demands a certain amount of laboratory and field work, if it is to be of any use at all. These three subjects, in fact, supply examples of how the problem should be solved. Each of them belongs to one of the recognised subjects of the curriculum. Civics would naturally fall to the department of history, nature study to science, and ancient history has affinities both with history in general and with the classics. It is true that the teacher of history, especially if he belongs to the newer scientific school, may look askance at civics, and regard it as none of his business; the classical master who is mainly a scholar may object to be troubled with mere history; while the science teacher may have hard things to say about the unscientific character of nature study. But if the experiment were made of offering each of these specialists the choice of having the total number of hours for his subject reduced by the school period in question, or of retaining his hours and incorporating the new subject, the chances are that in almost every case the specialist would decide for incorporation. The

objection may be raised that the specialist may accept incorporation and use it for the purpose of strangling the new subject. The promoters of civics, for example, maintain that what they want is that their subject should be treated by an enthusiast, and not by a man who is indifferent or even hostile. In any case, they do not want it slumped with something else. But it is precisely this slumping that justifies the incorporation. Civics is no longer treated as a thing apart. It comes in naturally as a part of the teaching of history. It does not occupy the whole attention of pupils between 3.30 and 4.10 on every Tuesday, but it permeates the whole of the history course, and comes forward prominently at significant points.

The argument of deliberate strangulation by a hostile teacher should carry little weight with those who respect the profession. All our arguments against the police aspect of the inspector's function should prevent us raising this point. A teacher is either to be trusted or dismissed. If the headmaster gives his teachers instructions to include nature study in science and civics in history, teachers must either accept these instructions or persuade him that they cannot be carried out without injuring the educational efficiency of the teaching. Failing this persuasion, they are bound in honour to carry out the prescribed scheme in the spirit as well as in the letter.

If any separate subject demands admission and yet is not capable of incorporation in one of the recognised subjects, it must either have more than one school period or be refused admission. Of course, the intensive method may be applied. One school period per week for a session would give three school periods per week during one term, or two during one term and one during the second. Some such plan might be adopted in cases where, for some definite purpose, a special subject has to be mastered. But this has nothing to do with the sort of advertisement-inclusion that is made to satisfy a public demand. A legitimate way of meeting this demand is to include the desired subject in the time-table, but always correlated with the subject with which it is incorporated. What possible harm can be done by calling the subject history and civics instead of merely history? This need not mean that civics is to be taken up specifically at every meeting of the history class, and yet it may be taught in the most effective way.

In this matter of the time-table it seems not an altogether unreasonable suggestion that the teacher is entitled to two time-tables, an exoteric and an esoteric. The exoteric should

be drawn up on as broad lines as those placed in authority will permit. The one word English, for example, should cover all the periods during which any subject is taught that could be included under this term. Science, mathematics, modern languages should be treated in the same way. Then the teacher in each case should have a private table that divides up the time according to the needs of the particular branches. This table may be modified as occasion arises without rousing external criticism, but not without raising questions of conscience for the teacher himself.

GERMAN SECONDARY SCHOOLS FOR GIRLS IN WAR-TIME.

By THOMAS F. A. SMITH, Ph.D.

Author of "The Soul of Germany" and "What Germany Thinks."

THIS article is based upon ninety-nine printed reports from higher schools for girls in German towns throughout the German Empire, with the exception of Bavaria. The reports under consideration deal with the school year ending at Easter, 1915. Without exception, there is a section in each booklet dealing with the influence of the war on that particular school. They give a vivid picture of the sudden transition from peace to war, the effect on the work and organisation of the school, and contain detailed accounts of what each school had done during the first eight months of hostilities to help the German armies in the field and the wounded in the Fatherland.

All German girls' schools under public control have a headmaster, and in every case a large proportion of the staff is recruited from the sterner sex. Hence the outbreak of war affected the staffs in a very serious manner. From the ninety-nine schools under consideration 11 headmasters and 316 masters had joined the colours, of whom 39 had been killed. These figures give a percentage of nearly ten killed, but in January the Prussian Minister of Education announced to the Diet that 7,000 Prussian masters had been called up, of whom over 1,000 were among the killed. So far as possible vacant places have been filled by appointing substitutes, and where these have not been available the lessons of absent masters have been divided among the remaining members of the staff, or by putting classes together. Considering that the German secondary-school master gives from sixteen to twenty lessons per week in peace-time and is not burdened and made inefficient by innumerable extraneous duties, it

is easy to see that in war-time he can take over a few extra lessons.

In every school report mention is made of the numerous letters and cards received from members of the staff, who kept their pupils and colleagues informed of their experiences at the front. Both the male and female teachers who remained behind seem to have devoted an enormous amount of time to directing the charitable work of their pupils, assisting in Red Cross work, etc., while most of them renounced a percentage of the monthly salary for the benefit of war charities. In all towns on the lines of communications refreshment-rooms were opened on the stations, and food and drink handed to the troops passing through, both by day and night. A large part of this work was done by teachers and pupils. A passage from the report of the Bismarck Lyzeum, Grunewald, Berlin, will illustrate the characteristic tone in all the reports:—

Inspired by the decrees issued by the authorities, we have directed the entire instruction into a channel which would enable our pupils to live through the great events of our time with feeling and understanding, so that they may obtain the highest moral profit. Very few lessons have been given which were not brought into touch with contemporary happenings. There were days when we could speak of nothing else; if we had not done so, then the girls would have begun themselves. The feeling was just as strong in them as in us, to pour out their overfilled hearts. Of course we endeavoured to exploit this systematically. History lessons turned mostly to the War of Liberation and the struggle of 1870-71. Subjects for composition were chosen to give the girls an opportunity of relating their inner experience or to induce them to think on the great questions of our time. Geography and divinity were also drawn into the common service. England's inhuman scheme of compelling our menfolk to yield by condemning their women and children to suffer hunger brought this blessing to the children, that they were drawn into the war as fellow-soldiers. While the needles were plied to make clothing and comforts for our troops, one or other of the teachers read suitable matter to the assembled classes. Letters from fathers and brothers at the front, as well as from unknown soldiers to whom we had sent parcels, were listened to with avidity.

It would be an impossible task to give a detailed account of the work done by the pupils. One school will serve as typical of them all. In the Elisabethenschule, Frankfurt a/M, 6,540 articles were made by the girls and despatched to the front. They included shirts, socks, body belts, ear warmers, gloves, scarves, handkerchiefs, etc. In most schools the girls collected the money to buy the materials or gave concerts, etc.

From September until January 15th, 1915, the pupils gave on an average 300 rolls daily for distribution to

the troops passing through Frankfurt. Since the middle of January they have given something from their weekly pocket money for the same purpose; these weekly mites amount up to the present to £27 10s. Under the direction of the staff numerous packets of food have been packed and sent to our soldiers, and hundreds of letters and postcards from the eastern and western fronts have arrived expressing the thankful joy of their recipients. In March the pupils participated in the changing of gold for paper money, as a result of which our school brought £2,500 in gold into the coffers of the Imperial Bank, and the girls were given a day's holiday. For the second war loan £3,000 was subscribed from the savings of the girls in the Elisabethenschule.

Many of the reports do not mention the exact sum of gold obtained in this manner, but the total sum for fifty-eight schools amounted to £85,000. A passage from Director Faehling's (State Lyzeum for Girls, Hamburg) report runs:—

The addresses of families in distress were obtained, and these sufferers were supplied with clothing by our pupils, whose greatest joy was to take the school-made articles and distribute them in the homes of soldiers' families. Knitting was permitted in all kinds of lessons, besides the special time allotted to it. But the climax of loving, patriotic diligence was attained as Christmas approached, for everyone felt it to be a sacred duty to send some of the joy of the festive season to our warriors in the trenches. What a coming and going in the school! Each class prepared a separate collection of gifts, and every girl contributed to the funds according to her station in life; the money-boxes were emptied and parents compelled to dive deep into their pockets. Some of the classes got up entertainments to swell the funds. A huge assortment of gifts was got together and the packing began. The German girl showed that she was able to give each parcel a personal affectionate touch. Everyone packed up her parcel as if it were meant for her own brother. Many a twig of evergreen and many a touching poetic greeting was contained beneath the tasteful ribands which bound up the packets, to show our soldiers what German girls thought of their splendid sacrifices.

Some of the reports give statistics of the number of fathers and brothers of the girls who were serving in the Kaiser's armies. A few instances will suffice to show how the war affects the German school in this respect.

Hildaschule, Coblenz: 530 girls on the books; 248 fathers and brothers in the field, 10 had been killed.

Auguste Victoriaschule, Trèves: 314 girls had 168 fathers and 223 brothers in the field, of whom 36 had fallen.

Sophienschule, Hanover: 253 girls had either father or brother at the front; 77 had gained the Iron Cross, 21 killed and 25 wounded.

Koenigstaedisches Lyzeum, Berlin: 98 fathers and 138 brothers with the colours; in one class of 34 girls, 24 were directly affected by the war.

Staedtisches Lyzeum, Remscheid: The director reports:—

One class made it their special task to help relieve the suffering in East Prussia. For months they collected new and old clothes, and when necessary repaired the latter. More than 100 large boxes of clothing were obtained in this way and despatched to Koenigsberg. Immediately war broke out the need for cultivating vegetables was recognised, and the work taken up. Two large plots of fallow land were placed at our disposal by neighbouring landowners. Throughout the autumn and winter the girls worked on the land digging, manuring, and planting various kinds of vegetables, and many poor families have been provided with vegetables as a result of their labours. When war broke out the crop of currants was still unpicked; the elder girls gathered them and made jelly for the wounded.

The report of the Koenigin Luiseschule, Tilsit, contains an interesting account of the Russian occupation of that town:—

At the commencement of the war the inhabitants were full of confidence, as the lesser Russian attacks had been repulsed with ease. But on August 19th, when the left wing of our army was thrown back at Kraupischken, and the entire Tilsit garrison retreated on the 21st, we spent a night of terror from the Friday to the Saturday. Men of military age who had not been called up left the town in steamers, the wounded were transported on specially constructed rafts, and all the civil authorities and bank officials fled. On the Saturday morning only twelve girls came to school, and were immediately sent home again. But the Russians did not appear till the Monday, when fifty cavalymen rode into the town. After reassuring us they destroyed the telegraph, blew up the railway in places, and retired. Meanwhile loud detonations could be heard from the Memel, where our pioneers were sinking ships to block the harbour. The real Russian occupation came on Wednesday, August 24th, when enemy troops under Lieut.-Col. Bogdanow occupied the town. To our great joy the Russian commander seemed to have imposed upon himself the task of proving that the Russians are a civilised people. For during the eighteen days that the enemy held the town there was absolutely no plundering, and a single Cossack who attempted to break into a house was shot by order of the commander. In the streets both soldiers and officers respectfully made way for us and molested no one. Hence the inhabitants willingly put up with the inconvenience of being compelled to remain indoors from 9 p.m. till 7 a.m., and gave up all weapons as ordered. We were especially pleased that the town was spared billeting, for the 40,000 Russians were put in the barracks or encamped outside the town. Still we were not free; the Russian flag fluttered over the Town Hall, and the burgomaster, together with several

leading citizens, were held as hostages. We were cut off from communication with the outside world, but managed to get information through secret channels. Yet the news of the great victory at Tannenberg sounded incredible till on Saturday, September 12th, the Russians—after some fighting before the town and unimportant street fighting—left the town in wild flight, closely pursued by our infantry. They were welcomed amid jubilation and tears of joy and overwhelmed with refreshing drinks and food.

In the same school the Kaiser's birthday was celebrated to the sound of heavy cannon fire.

An interesting sidelight on Germany's preparations for this war may be found in the report of the Ernestinenschule, Luebeck:—

We shall never forget the last weeks of July and the days which followed. On Sunday, July 26th, thousands of visitors poured into Travemuende to the horse races. Suddenly, in the midst of the racing, the sirens on twelve torpedo-boats near the neighbouring bank of the Trave began to hoot in an ear-breaking manner; fireballs were sent up, and the sirens, with ever-increasing shrillness, called back their officers and crews. Dense clouds of smoke poured from the funnels, hiding the whole town in darkness. The gangways were drawn in, and towards eight o'clock the torpedo flotilla steamed away at full speed. Masses of people were on the banks, men, women, and children waving their hands and shouting, "Auf Wiedersehen!" and singing the "Wacht am Rhein." That was a foretaste of what was to come. A wave of enthusiasm broke over our town, otherwise so calm! Till at last our overstrained expectations were confronted by stern facts—telegrams, the roll of drums and war proclamations, the rattling of departing machine-guns, and then the marching out of our garrison covered with flowers, struggling to make a way through the jubilant crowds.

The Tenth Class in the Lerchenfeld Lyzeum, Hamburg, included its own report in the general school report:—

When war broke out in the summer vacation each one of us felt a burning desire to serve the Fatherland. Our class organised itself for the common work, which, during the holidays, was limited to assisting the Hamburg War Committee. When school reopened the Tenth Class¹ opened a fund for voluntary contributions. We bought quantities of food and vegetables for preserving, the school cellar served as our larder, and everyone who knew a family in distress could take them supplies from our stores. In order to keep up the funds we gave three entertainments, and invited the wounded to the last of them. Each one of our wounded guests was given a packet containing Christmas cakes of our own baking, cigars, fruit, etc. On the Sunday before Christmas we visited the wounded in the Naval Hospital and distributed packets among them too. Several afternoons each week were devoted to packing and sending

¹ Average age of girls in this class would be about sixteen.

parcels to the front; they contained not only food but also woollen articles of clothing. Some of the wool was provided by the school, but a great deal of it we paid for out of our own funds. The articles were made in our sewing and knitting lessons, stored in a huge cupboard, and as soon as we had a stock of them they were despatched to the front.

Another school, the Victorienschule in Essen, in commenting on the modern language teaching, reports:—

We ordered a number of foreign newspapers: *Le Figaro* and *Le Matin*, via Geneva; and the *Times*, *Punch*, and *Illustrated London News*, via Holland. Thus we had excellent material for the teachers and were able to discuss themes in the lessons which aroused the interest of our girls.

German girls are evidently desirous of adding a warship to the Kaiser's navy. The report of the *Staedtisches Lyzeum*, Dortmund, refers to a collection being made in all girls' schools for that purpose. The school in question contributed £60, and the director adds:—

On the Kaiser's birthday (1915) a first instalment of £2,000 was handed to the Emperor. If all German schoolgirls work in this way, then the final total will not be such that the heads of the navy will despise it, although it may not run to a battle-cruiser.

Count Reventlow has written a great deal on naval questions; among other works an illustrated volume on the German navy, "*Deutschland zur See*." The book has found favour with the Emperor, and by his command a copy has been presented to every higher school for girls in Prussia.

It will suffice to quote two paragraphs from many recording the efforts of the teachers:—

Lerchenfeld Lyzeum, Hamburg.—The war work of the staff was not restricted to their patriotic endeavours in school. Nearly every member of the staff placed himself or herself at the disposition of one or other of the committees which stood in need of assistance and were utilised in caring for the poor, Red Cross work, feeding soldiers' children, and municipal tasks of all kinds. Some of the masters were engaged in training the *Jugendwehr* (which gives military training to boys up to seventeen years of age), while most of the mistresses helped in the hospitals. Furthermore, all helped in the instruction of maimed soldiers.

St. Johannis Lyzeum, Hamburg.—In the second month of the war the members of the staff decided to devote a part of their monthly salaries to war charities during the duration of the war. Up till the beginning of March, 1915, 5,971 marks (£298) had been derived from this source.

There are two points which the Germans emphasise in replying to the charges of "Hunnism" and "barbarism." The first is the reopening of the University of Warsaw

last autumn, and the second the reopening of the German school in Antwerp on January 11th, 1915. The seventy-fifth annual report of the latter was published at Antwerp last July, and records that the school was closed for the summer holidays before war broke out.

On August 4th, acting under the excitement caused by German soldiers crossing the Belgian frontier, the mob made a wild attack on the school. All the windows were smashed and the caretaker and his family only escaped with their lives by climbing over the walls of neighbouring premises. During the following days the school was plundered, together with the apartments of the director, etc. At the end of August the building was occupied by militia from Louvain, and afterwards by Belgian cavalry, who used the large hall as a stable. In October it served as a hospital, and afterwards as a place of refuge for the homeless.

On January 11th only 120 pupils presented themselves instead of 811. But at the time of writing the number has risen to 312.

On January 27th the Kaiser's birthday was celebrated in the school, the ceremony being attended by the Governor of Antwerp and many officers.

The director quotes from his own speech on that occasion, in which he expressed the hope that Flanders would become a part of Germany. Count von Bissing has also visited the school, and during the summer parties of the pupils have been conducted to various battlefields in the neighbourhood of Antwerp. Seventy-six old boys of the school were fighting in the German Army, five have been killed, seven wounded, and fifteen have received the Iron Cross. Before the war Belgian boys also attended the school, and the names of some of them are given who have fallen while defending their native land:—

We remember, too, our former Belgian pupils who have bled for their fatherland. All honour to them! They have fought for their country in fidelity to duty.

THE TEACHING OF LATIN IN RATE-AIDED SECONDARY SCHOOLS.

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

THE tradition that Latin is an essential element, if not also the natural medium, of a liberal education dies hard. The place it retains in the curriculum of almost every secondary school, at least for boys, is a matter of prestige, and is generally considered to require no justification on grounds of utility. To the grammar schools and other endowed secondary schools which have in recent years been constrained to accept public control as the condition of receiving subsidies from rates it would seem a betrayal of trust to give up their efforts at classical instruction, even when they are no longer able to treat the subject

with any reasonable justice. The new secondary schools called into life by municipal and county councils are in their turn afraid to depart from accepted models in a matter that seems to involve their standing in the public eye. It is surely time to do away with this superstition and to insist that Latin, like all other possible subjects in the curriculum, shall be valued solely on its merits, in relation to the future careers of the pupils to whom it is offered and in view of the facilities for teaching it effectively.

The notion that a systematic study of Latin is a necessary preliminary to a professional career is now exploded, though its influence still brings confusion into educational counsels. The more candid in the ranks of the learned professions—clergymen, physicians, and lawyers alike—admit that a sufficient knowledge of the technical Latin terms and phrases that form part of their stock-in-trade has little to do with the philological and literary study of the language provided for them at school and university, and could be easily and rapidly acquired as a part of their strictly professional training. It is well for the managers and heads of those secondary schools that enjoy a measure of freedom in moulding their curricula to realise that if they find reason to restrict, or even to abolish, the teaching of Latin, they are not thereby handicapping those of their pupils who may wish to enter the learned professions, except as regards the passing of the artificial and irrelevant tests that guard the entrance doors. These qualifying examinations cannot, of course, be ignored, but when they are of a factitious nature, as is the case with Latin, they need not be paid more than the necessary minimum of respect. Fortunately, no practical difficulty arises on this head; there is good ground for holding, as will presently be urged, that for those schools which have adequate resources the arrangement which is the best on purely educational grounds is one which would secure the required degree of success in examinations.

Another survival from the days when Latin was the chief vehicle of instruction is the widespread idea that the study of the language should be entered upon as early as possible. The preposterous practice, adopted by the preparatory schools that send up for the public schools' entrance scholarships, of setting little boys of nine or ten to Latin, before they have acquired any knowledge of French, and before they have had any adequate grounding in the study of their mother-tongue, is hardly ever found in so exaggerated a form in connection with the rate-aided secondary schools, but in the latter a beginning is sometimes made at

the age of eleven or twelve, French being taken up at the same time. Under the old conditions the early start was often justified on the plea, based on a shallow psychology, that the drudgery involved in memorising the Latin accidence was timely not only in its disciplinary effect, but in the economy of effort, as the tax on the memory would be greater when the mind was more fully stored. In one important respect the premature beginning is more harmful under the new conditions, when the total allowance of time for Latin in the curriculum has necessarily been reduced by the pressure of new subjects. The drudgery of the early stages of Latin study could be borne without intolerable weariness when there was enough concentration to bring some early reward in glimpses into Roman life and thought. When only two or three periods a week can be spared for Latin, the drudgery is apt to be long drawn out, and reasonable fruition is unduly delayed, unless the pupils are specially favoured in regard to the quality and methods of the teaching.

The disadvantage of taking up Latin at an early age is much increased where the subject is made compulsory without the chance of an alternative. The injustice of forcing upon every boy or girl the study of a dead language which the great majority of them will not be able to carry beyond the initial stages is not yet fully recognised. Nor is this the only evil. The progress of the brighter scholars is seriously retarded by the presence of those who have no liking or aptitude for the study, and whose difficulties absorb much attention from a conscientious teacher. The longer the course, the harder it is to keep the pupils of each form or set near the same level of attainment, for it is seldom possible, unless a considerable number of the staff are assumed to be competent to teach the subject, to secure more than a very partial re-classification for Latin. Schools which continue to force this dead language on all their pupils throughout a long course are retaining a framework which at the best could be justified only where Latin remains the staple subject of instruction, absorbing the lion's share of the available time, and where most of the staff are experts in teaching it.

The rate-aided secondary schools are faced with a new situation, to which many of them have not yet fully accommodated themselves. They have to decide in the first place whether they can afford to offer Latin at all. The answer will depend mainly on the proportion of pupils which each has a good prospect of retaining within its walls beyond the age of sixteen. In schools where this proportion is quite inconsiderable the decision should not

be difficult. It would obviously be unwise either to institute a full course which was to be carried to a profitable point by only one or two of those who embarked on it in each year, or to provide special coaching to these select pupils which would monopolise a good deal of the time of a competent master or mistress. A Latin course should be provided only when there is a fair chance of building up a sixth form, or at least an upper fifth, where more than a mere handful will reach the stage of passing the entrance examination to a university.

In rate-aided secondary schools, if a Latin course can be supplied, it must be modest in its aims and it must be optional. It is rarely that such schools can have fully organised classical and modern sides or any other definite line of bifurcation, but a certain choice of subjects is generally possible in the latter part of the curriculum. Latin and German are often offered as alternative subjects, and this is found to be a good arrangement, but for the benefit of those who would regard the acquisition of a second foreign language, classical or modern, as an educational luxury it is well, when possible, to give an additional choice.

It may now be asked what should be the extent and distribution of the Latin course. Reasons have already been stated why it should not be started at so early an age as twelve. It is desirable that no specialisation of any kind should be allowed before the age of fourteen, and there are good arguments for postponing it for a year beyond that. The later the choice has to be made, the more likely is it to be well considered and final, and the less will be the risk of imperfect classification through late entries and different rates of progress. Moreover, when the course is compressed into two years, or one year at the top of the school, the greater maturity of the pupils makes it possible to effect an economy of time. It is safe to say that a three years' course with five periods a week of class work, or a two years' course with seven periods, would be worth more than a four years' course with four periods. It has even been found possible, where the material is good and the lessons can be supplemented by a considerable amount of home work, to reach the desired standard in a single year with ten or twelve periods a week of teaching. Of course, the rule that postponement and concentration effect a saving in the total expenditure of time would apply to most subjects, but undoubtedly the gain is greatest in a subject like Latin, the study of which can be materially aided by a command of the mother-tongue and some familiarity with another living language such as French. It will probably be found that in

the majority of rate-aided secondary schools the most profitable arrangement will be to begin the Latin course at about the age of fourteen, spreading it over three years with four or five periods a week of class work, and about half as much of home preparation, so that the matriculation standard may be reached at about the age of seventeen.

The help which the Latin course may fairly claim from preliminary studies is of various kinds. Before the age of twelve, when the secondary course proper may be taken to begin, the language study should not go beyond the mother-tongue. By this time there should have been acquired not only readiness and accuracy in distinguishing and forming ordinary sounds, but ease and expressiveness in reading and recitation—gifts which are of great value when a foreign tongue is confronted. When the systematic study of English is relaxed to some extent at the age of twelve to allow of an intensive application to French, the opportunity is reached for introducing ideas of general grammar through a comparison of the structure of the two languages that are under review. The forms of the French verb are specially useful in paving the way for the understanding of a highly inflected language. When Latin comes into the foreground some of its difficulties will thus have been anticipated, while others will be attacked by a comparatively ripe intelligence.

What has been said so far concerns the place which Latin should be given in the curriculum. There remains to say a few words as to the method of teaching. This depends largely on the quality and training of the teachers available. It is clear that not many rate-aided secondary schools can command the services of classical specialists in the strict sense; they must often be content with teachers whose ability to teach Latin up to a certain point is only one of several qualifications which make their appointment desirable. This limitation of choice, however, is not a serious matter. For the purposes of such schools ripe scholarship is of less importance than skill in teaching, enthusiasm, and an open mind. Such qualifications, along with a fair working knowledge of the language, will ensure success if the conditions are favourable, whatever method may be adopted. It must be said, however, that the most striking results are obtained, in Latin as in modern languages, where the "direct" method is in fullest use. No doubt all competent language teachers try, more or less, to get their pupils to think in the foreign tongue, but it is only when this effort is carried out systematically by means of the devices which collective experi-

ence has suggested that the most rapid progress may be expected. To apply this method successfully, indeed, there is need of more than an ordinary share of resolution and resource, but teachers who possess these qualities in any marked degree can do much more than pass their pupils through a university entrance examination; they may hope to make a worthy contribution to their culture and their mastery of expression.

The suggestions made above may be summed up as follows:—

1. In rate-aided secondary schools Latin should not be attempted if it is unlikely that more than one or two pupils each year will turn it to definite account.
2. Latin should never be made a compulsory subject; it should be provided only as an optional form of specialised study in the later years of school life.
3. Time and energy should be saved for all concerned not only by the postponement of the Latin course, but by its compression within two or three years.
4. A thorough-going but discriminating use of the "direct" method should be attempted where it is practicable.

THE ORGANISATION OF SCHOOL GAMES.

By ALBERT SPRING, B.A. (Cantab.).
Alleyn's School, Dulwich.

ORGANISATION of games may mean anything—it may mean handing out a football with the injunction, "Go and play." The result would be a game certainly, but a game hardly calculated to do good to anyone.

Of course, when considering the matter of games, the school grounds must also be considered—their size, their distance from the school, and the condition in which it is possible to keep them. It is intended in this article to give some idea of the method in which the games are organised in one of the largest of London secondary schools, but it must be borne in mind that this school possesses fairly large grounds (they cannot be called extensive, considering that cricket pitches for certain teams have to be hastily prepared on spots upon which football has been played during the winter), and that these grounds surround the school.

The school consists of about 600 boys, who are divided into junior and senior schools, comprising 120 and 480 boys respectively, and although purely a day school, every boy is placed in one of six houses, the numbers in

which are kept fairly equal. There is no need to dilate here upon the advantages of a house system, in so far as it affects the continuous control of a boy throughout his school life by his house-master, but so far as games are concerned the house system is a necessity.

It is an understood thing at the school that each boy does something for his house; if after due and proper trial, or owing to physical deformity, it is found that he cannot take an active part in the sports of the house, then he is taken in hand and taught chess, or he is initiated into the art of scoring for cricket matches, or he assists in the keeping of the house records.

The house-master is assisted in his government of the house by four or five prefects, who have certain powers and privileges.

But now for the method in which the different games are conducted. In the first place, each department of sport has a master in charge of it—one who is not a house-master. Each of these has absolute control in his own department—it is for him to say whether matches are to be played or not, and when and where they are to be played. Also he is in charge of all matches played against other schools, and to him is handed a certain sum of money with which to run these inter-school matches.

For house expenses in connection with games the master in charge of the cricket makes a grant each year to the house-masters for the provision of cricket tackle (no special house tackle being required for football), and the house funds are also supplemented by the subscriptions of the members of the house and by an occasional donation from an old boy.

The junior school is regarded as a separate department for sports' purposes; a master is placed in charge of these sports and he has control of all games played by the juniors. Stock is provided him by the master in charge of the different departments of sport. During the cricket season each house of the junior school has a certain pitch allotted to it for practice purposes, on which play takes place in the luncheon hour and after afternoon school. On Wednesday afternoons there are no lessons, but inter-house league matches are played, those boys who are not representing their houses being allotted to certain reserve teams—these teams being arranged in such a way that the very small boys play together; in fact, these reserve matches usually amount to instructional games. On Saturday afternoons matches are arranged against the junior teams of other schools, or against some of the weaker house teams of the senior school.

Practice is given in nets on two or three evenings a week, and during the term most boys have their turn of instruction.

Very much the same is done during the football season, *i.e.*, there are practice games in the luncheon hour and after school each day; league matches on Wednesdays (juniors are allowed out early on that day, the whole afternoon not being required for matches), and inter-school matches on Saturdays.

In the senior school the same system is carried on. For cricket and football each house turns out five teams, 1st, 2nd, and 3rd elevens and 1st and 2nd reserve elevens—the first three elevens competing against the elevens of other houses in a league, and there is also a reserves' league. In both cricket and football there are knock-out cup competitions for the 1st elevens of the houses.

For the purposes of inter-school matches there are three elevens (with the addition, in the cricket season, of an "under 14" eleven), chosen from all the houses, and the competition for places in these elevens is very keen. Of course, boys may earn their colours in either house or school games.

During the cricket season there is coaching in the nets every evening (except match days), certain nets being detailed to houses; and in addition the different school teams are coached, the 1st eleven by a professional, the 2nd and 3rd elevens by masters, though promising boys in any team (even in the junior school) may get a chance of a turn at the professional's net. School nets take precedence over house nets in the call for a boy's attendance.

It is quite possible that the "form" in school matches suffers, to a certain extent, owing to the house system, for this reason—it often happens that a school 1st eleven goalkeeper is playing centre-half for his house eleven; and, again, there is a tendency to develop individual play, especially so when a member of the school 1st eleven is drawn from a house which, except for this member, is weak in that department of sport. However, these things count for very little when it is considered that there are at least thirty-six properly constituted house elevens who get regular and competitive play.

Athletic sports, also, are decided on the house basis—each boy is running or jumping for his house. Prizes are not awarded, except to boys of the junior school, but medals are given as mementoes of success in certain events; success also gains points, and the addition of these points decides the cock house and the school sports' champion for the year.

In order to whittle down the number of competitors to the number required for sports' day,

the following method is adopted: The house-master and his prefects pick out their strings for the different events, and the names are sent to the master in charge of the sports, who, with other judges, holds trial events in order to get the best six or twelve, as the case may be. To the sports' programme has lately been added a cross-country run, decided before sports' day, which event proves to be popular to certain members of the community.

Swimming is carried on in more difficult circumstances, owing to the fact that there is no school bath. The juniors are sent to the public baths on certain mornings of the week—one form at a time (N.B.—Swimming is not compulsory)—under the charge of the gymnastic instructor, who is assisted by the baths' attendant.

Senior school boys attend after school hours in charge of the master responsible for the swimming, who is assisted by other masters, and it is then that boys swim for their certificates or receive instruction. Certain boys are detailed to go to the baths each "swimming evening," and they are usually accompanied by one or more of their house prefects, who always have their eyes open for promising talent which may prove useful for the swimming sports held at the end of the summer term. During the term polo matches are played against other schools, but there are no house polo teams.

Boxing and gymnastic competitions are held during the spring term—these, again, are house events.

A word might be said about the pavilion. This building contains eight rooms, which gives one room to each house and two stock rooms, which are used for cricket stock and football stock; these stock rooms also act as scoring boxes during the cricket season. The house rooms are fitted up with sufficient lockers for every boy in the house to possess one, besides containing larger cupboards for storage purposes.

A stock monitor is appointed for every day of term, and it is also the duty of the prefect for the week to go round in the evening, after play is finished, to see that everything is safe and to report to the master in charge.

This school suffers, with most others, from lack of sufficient pavilion accommodation. Pressure is relieved to a certain extent by giving the prefects of all houses a common changing room, but, even so, the house rooms are very crowded at times.

Regular communication between house-master, prefects, and members of the house is kept up throughout the year by means of weekly house meetings of a quarter of an hour's duration (all houses hold their meetings

concurrently). These meetings afford opportunities to the house-master to make his arrangements for the forthcoming week and also for the various other matters requiring attention. Each house also possesses its own notice-board, which is displayed in a conspicuous position on the parade-ground, and it is the duty of all boys to make themselves conversant with the notices on their own house board, for this board is the only medium by which information necessitating short notice can be communicated.

The social side of the house system must not be lost sight of. House suppers are very popular institutions, not only for present boys of the house, but also for old boys, who by this means have an opportunity of reviving old memories and of keeping in touch with the house and school. These functions open with a supper provided by the school buttery, followed by a concert usually of a very varied nature, the items of which are contributed by boys of the house, old boys, masters, parents of boys, and others. The boys, of course, pay for their evening's enjoyment, and, should a small profit be made, that profit is put into the house funds.

Nothing has been said about the cadet corps for the simple reason that the organisation of such a body is on a different footing from that of any of the departments of sport. There must be a certain regularity about the organisation of all school corps which must be perfectly well known to all who have anything to do with military matters.

Suffice it to say that the corps of the school is about 400 strong, divided into three companies each containing two platoons—each house forming a separate platoon. The corps is officered by masters, all N.C.O.s being appointed from the ranks.

The remark has been made, "How are all these things got in?" It must be admitted that there is a tight squeeze; the weather at times plays havoc with a programme, as it has done with the athletic sports this year; also the school fixture list has to be somewhat curtailed, school matches in football being arranged only up to Christmas; but it is the organisation, improved through many years of experience, and the attention to details which make things work smoothly. What is more, the decentralisation in the above scheme must not be overlooked, although it is fairly obvious that a complicated scheme is far too much to be undertaken by one individual.

Emphasis, however, must be laid upon the work done by the prefects and the senior boys, who are chiefly responsible for the smooth working of the scheme, the master in each

case constituting the advisory board. The prefects arrange matches for newcomers in order to find "talent"; they organise and control practice games; they give fielding practice in the cricket season; they umpire at cricket and referee at football for certain matches; they coach at the house nets; and the secretarial work of arranging fixture lists is also in the hands of the boys.

This system may not be the best, but it has one advantage—it works.

THE TRAINING OF TEACHERS FOR CO-EDUCATIONAL SECONDARY SCHOOLS.

By S. POLLITT, B.Sc.

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AT the present time there is in the minds of many parents and a large proportion of the teaching profession of both sexes a strong prejudice against the teaching of boys and girls together in "mixed" or co-educational secondary schools. This prejudice arises either from a spirit of educational conservatism or from a lack of acquaintance with the ideals sought and conditions existing in this type of school; or perhaps it is a mixture of both.

It is not, however, my object in this article to attempt to convert the former or argue with the latter, but rather to set forth a few ideas and suggestions which may appeal to those who are interested and to those of the profession who intend to take up their duties in the future in co-educational schools.

There must be many who, like myself, are convinced that this system of co-education, previously considered by public authorities as experimental, is now accepted and recognised as a success. From the point of view of economy alone it must be allowed that the increasing number of such schools warrants some investigation into the question of the training of the future teachers with which they must be provided.

The introduction of the county and municipal authorities in educational administration which followed the Education Act of 1902 completely remodelled the whole of the secondary education in this country, and from that date secondary schools may be said to have been organised systematically as a branch of education more or less under State control, primarily under the Board of Education, and secondarily as part of the administration of county and municipal authorities.

The rapid growth of this branch of education brought with it the need for trained and qualified teachers. There were few educational in-

stitutions which gave any specialised training for intending secondary-school teachers or granted any special diplomas.

At that time, therefore, secondary schools were staffed by (a) graduates who had been trained for and worked in primary schools, (b) graduates and others with no special training other than what had been acquired in the course of their experience as teachers, and (c) graduates who came straight from the universities without training and experience. Now, however, all, or nearly all, universities have a training department, and grant diplomas in education to those of their students whose future lies in secondary-school work.

This brief survey leads to the real issue of the subject of the article; for co-educational secondary schools, being of even more recent date, have not as yet received any special consideration in their demand for trained teachers who should be familiar with the special needs which co-education brings with it.

According to the statistics of the Board of Education Blue Book of 1912-13, there were then 210 schools educating boys and girls together, and since that date many more must have been added to this total. Allowing at least six teachers for each school, there are, therefore, quite 1,400, or more, men and women engaged in teaching mixed classes of boys and girls.

It is fully recognised by all who are familiar with co-educational secondary schools that there are many more problems to solve and difficulties to meet—for which special training and knowledge are required (by both sexes on the staff of such schools)—than are found in schools where boys and girls are taught separately.

The questions which naturally arise are: What are these difficulties, and what special system of training is suggested in order to meet them?

The first and most important which confronts the young assistant-master in his dealing with girls is that connected with the physiological and attendant psychological changes natural to the sex during certain periods of physical development. This is a very delicate and vital problem, and should be dealt with carefully and in all seriousness. Therefore, if the young assistant-master in a mixed school is not a married man, the need for preliminary and careful training and guidance under older and experienced men is most essential. The personality and character of the master must also be considered in dealing with this problem. He should be sympathetic and tactful, careful in his attitude towards girls, firm and gentlemanly in action, but not cheap in manners, and have a fund of resource

and common sense ready to meet individual cases when confronted by them. He should be able to join in their sports, e.g., tennis and hockey, with easy freedom controlled by self-possessed dignity and bearing, and this will also assist him by the subtle influence it will have in the classroom, as well as in the various events connected with the corporate life of the school. Boys in his charge will unconsciously imitate him in their dealings with girls, and therefore a double responsibility rests on his shoulders.

In the case of assistant-mistresses teaching boys, the difficulties which arise are more of a personal nature. The mistress should possess most, if not all, of the qualities ascribed above to the master. The more a mistress acts towards boys as an elder sister, at the same time retaining her professional dignity, combined with firmness of character, the more successful she will be. If she interests herself in the school life of the boys, in their activities in games and sports—even if only in a passive way—the more popular she will become, and the more good she will be able to diffuse into her work in general. Boys have a very keen sense of justice and of playing the game, and these should be borne in mind by the mistress who is bent on succeeding in obtaining their trust and confidence.

These points can only be exercised and strengthened by actual experience which should be obtained during the special training of those who intend to become teachers in "mixed" secondary schools, for, if this is not done, many failures are bound to follow before masters and mistresses have succeeded in studying boy and girl natures both individually and collectively, and before their work in co-educational schools can be considered a success.

However brilliant their academic careers as students may have been, or whatever high intellectual qualifications they may possess, these are of comparatively little value in a co-educational school which is creating traditions and endeavouring to realise its ideals, if they are not prepared with the preliminary and fundamental training for work under this system.

The claims made by the present war on the manhood of this country have extended to the teaching profession, and the innumerable difficulties encountered by headmasters of both boys' and "mixed" secondary schools in filling the places of men teachers who have joined his Majesty's Forces, by successful lady teachers, can only be realised by those who have had this experience.

Here again is a vital factor to be considered. The schools will for many years after

the war suffer considerably from the diminution in the number of men teachers, both in the immediate present and in the lack of material for future supply. Therefore, another strong argument is thus manifested in favour of the expediency of training lady teachers to be able to take up their duties with confidence in themselves and satisfaction to the heads and authorities of schools where boys are taught separately or with girls.

What methods of training can be suggested to meet this very evident need? The universities have under their scheme of inspection and examination a large number of public and private secondary schools. These could be used as a training ground for their student-teachers in their post-graduate course. By arrangement with the governing authorities and heads of such schools a certain number of student-teachers, according to the size of the school and number of pupils, could be attached to each school for a certain period, say three weeks or a month. These could then be transferred to another school (a boys' or "mixed," according to the desires of the teacher), and they would be followed by another batch for a like period. The supervision and guidance of these student-teachers whilst attached to the schools would be the special duty of the head, who would receive a grant for his services from the university, according to the number trained and the length of time his services would be required. He would send in a private report on each student to the university authorities in control of the secondary teachers' training department, and this would carry weight with such authorities in the final considerations when granting the teachers' diplomas.

By this means the students in training would have facilities for teaching, and would receive the advantage of the experience and guidance of the heads of schools. Their faults would be checked, opportunities given for private talks and criticisms, and the outlook of the students considerably extended.

In the case of the mixed secondary schools the student in training would have the opportunity of studying carefully all the methods and means employed to ensure successful handling of the problems already mentioned by being brought in direct contact with these, without being saddled with responsibilities such as are incumbent upon them when taking up an appointment as an assistant.

The above schemes are by no means intended to be either ideal or exhaustive, but, as was stated at the outset, they are purely suggestive, and are written in the hope that attention may be directed to what is, and what will be in the near future, a very important

necessity if the system of educational development is to be carried on successfully.

[Since writing this article in October last, I learn that the revised Regulations for the Training of Teachers in Secondary Schools, which have since been issued, include some of the suggestions made above.]

THE WORKERS' EDUCATIONAL ASSOCIATION.

WHEN the historian of the twentieth century sits down to record the intellectual development of the period, he will be appalled by the number and variety of the educational agencies at work, and he will recognise in them a reflection of the many-sidedness of human life and human aspirations in these days. For, in addition to elementary and secondary and technical schools and universities which provide for those who can devote their whole time to study, he will take note of a vast number of institutions which have been called into being by the desire of those who are engaged in earning a livelihood to share in the delights of learning or the progress of knowledge. In this age of books and newspapers, of advancing knowledge and free discussion, no school and no university can award a certificate of final and complete achievement; and though there will always be scholars who prefer to pursue their studies in silence and solitude, there are many who seek the inspiration and comradeship of the classroom, and will respond readily whenever and wherever a teacher calls.

Perhaps the most characteristic movement of the last ten years has been the growth of the tutorial classes under the auspices of the Workers' Educational Association—the latest and most successful of a long series of efforts to bring the highest university teaching within the reach of working men. These efforts might be traced from the foundation of modern Sunday schools, about 1780, through the adult schools, the mechanics' institutes, working men's colleges, the educational efforts of co-operative societies, the continuation schools, the science and art classes, and various agencies down to the present day. It is interesting to note that the establishment of the Working Men's College by F. D. Maurice and his friends was in some measure a reaction against the narrow vocational character of the mechanics' institutes. For while the Sunday schools and the adult schools had a religious motive behind them, the mechanics' institutes were the direct outcome of a desire on the part of working men to know more of the material forces which had brought about the Industrial

Revolution, and the working men's colleges sought to create an atmosphere of liberal scholarship through the study of literary, historical, and social subjects.

The first extension of university teaching in a strict sense was the establishment of University College, London, in 1826. This was followed by King's College in 1831, and the University of Durham in 1832. But these institutions and others of a similar character which followed were available only for students who could afford time and money, and, except in a very few instances, attendance at them was quite beyond the range of a working man's pocket. Better results were expected from University Extension Lectures, which were originated by James Stuart, of Trinity College, Cambridge, in 1867. The university suggested subjects, supplied teachers, and lent books, and the local arrangements were in the hands of self-elected committees, consisting of persons interested in education, or, at any rate, in some branch of polite learning. But they were not often in personal touch or sympathy with working people. In four cases the lectures led to the establishment of a university college, in others they were of great value in enabling teachers to pursue their studies on more generous lines, but only in rare instances did they obtain a real, permanent grip of the artisan population.

The spirit which animated the pioneers, however, was not dead. The embers were smouldering and ready to be fanned into flame when the man and the opportunity arrived. In a book published a couple of years ago, Mr. Albert Mansbridge, the high priest of the movement, has described the genesis of the Workers' Educational Association and the means by which its objects are being achieved. "The association is a federation of educational and working-class organisations, of workers and scholars, for the purpose of stimulating the demand for education, and of organising the supply in the interests of those who are largely occupied in manual labour." It includes "some 2,000 organisations," and "does its work through the medium of a central council, eight district committees, and over 150 branches." A small provisional committee met in July, 1907, and organised a national conference, which met at Oxford a month later. The first classes were established in 1907 at Rochdale and Battersea, under the auspices of the Universities of Oxford and London respectively. The first tutors were Prof. Patrick Geddes at Battersea and Mr. R. H. Tawney at Rochdale, and the experience was sufficiently encouraging to enable eight classes to be started in the following session.

The movement was fortunate from the com-

mencement in securing the cordial co-operation of the universities and the Board of Education. The University of Oxford was the first to form a joint board by appointing a committee of the University Extension Delegation, upon which working men were represented. During the session 1908-9 the maximum grant obtainable from the Board of Education was 5s. for twenty student-hours; in 1909 it was raised to 8s. 6d., and in 1913 special regulations were issued, and a grant was offered of £30 or half the tutor's fee, exclusive of travelling or similar expenses, whichever may be the less, for each class. In addition to this aid, local education authorities make a grant, directly or indirectly, towards the cost of the work in their several areas. A valuable report by Mr. J. W. Headlam and Prof. L. T. Hobhouse on the work of the classes was issued by the Board of Education in 1910.

The conditions of admission are fairly rigid. Each course consists of twenty-four meetings of two hours, the standard aimed at must be that of an honours course at a university, the students must undertake to attend for three years and to write a dozen essays or their equivalent per annum. The extent to which such an undertaking encroaches upon the scanty leisure of working people can be well understood, and the fact that a large proportion of those who join manage, in spite of overtime and parental and other responsibilities of adult life, to fulfil their obligation is an indication of their real desire for education.

According to the annual report of the Board of Education, issued recently, there were 130 classes in 1913-14, of which fifty-two (containing 1,220 students) were in their first, forty-four in their second, and thirty-four in their third or later year. Economics was the subject of study in seventy cases, literature in sixteen, political science in fifteen, sociology in twelve, history (general or constitutional) in eleven, psychology in four, and natural science in two. The proportion of classes taking literature and non-economic subjects has increased in the last year or two, and this may, perhaps, be taken as an indication of the growth of a wider view of education among the workers themselves. But the predominance of economics reflects very clearly the nature of the machinery by which the classes were originally established. The demand came, almost invariably, from some working-class organisation, such as the local branch of the Independent Labour Party or an adult school. When once the class was fairly established, the students carried out pioneer work in the surrounding district, and stimulated a demand for instruction which had previously been in-

articulate. And the wider cast of the net appears to have revealed interests other than those which provided the motive in the first instance.

It is obvious that the success of the classes must have been due largely to the selection of teachers, the more so as the somewhat formal methods of university teaching are abandoned from the beginning. The time devoted to each lesson is nominally divided into one hour for the lecture and one hour for class discussion, but tutors are advised to encourage questions at any time, and this practice, while it keeps the class alert, throws a corresponding strain upon the lecturer. The usual relations between teacher and students, however, do not hold. The tutor and the class are supposed to be engaged in co-operative study, the former supplying the book-knowledge and the trained mind, and the latter presenting the experience and point of view of men unaccustomed to fine academic distinctions. The result is a broadening of outlook and sounder judgment on both sides, and few tutors would deny that they had learnt much from those who were, nominally, learning from them.

It might be inferred, from the popularity of economics, that the chief importance of tutorial classes at present lies in their appeal to men who are interested in the practical problems of sociology and politics, and it is obvious that they will form centres for the dissemination of political and economic ideas which are at least based on far more exhaustive study than most middle-class political opinion. And that is all to the good. It is an interesting subject of speculation to consider how long any section of the community can afford to base their understanding of political problems upon a schooling which finishes at or about sixteen years of age. For, as life becomes more complicated, so also do the structure and functions of central and local government increase in complexity, and the voter with an average education is just about as little qualified to exercise the franchise now as was the agricultural labourer in 1867.

But it would be unfair to charge either the association or the universities with any ulterior political motive. They simply provide instruction in the subject chosen by the students, and take care to select as tutors men of satisfactory scholarship and sound judgment. No university don could be more insistent upon the essential impartiality and detachment of the studies, and if strong political opinions are formed they can be no more dangerous than opinions arising within the sacred precincts of the university itself. It will be obvious, moreover, that a considerable

proportion of those in attendance will be students in the narrowest sense of the word. The limited number who delight in study for its own sake is not confined to any social class, though opportunities of gratifying the scholar-instinct have hitherto been largely restricted to men and women born in more fortunate circumstances. A certain amount of suspicion which met the movement at the outset appears to have been lived down, and it is generally welcomed as a valuable addition to the agencies which seek to maintain the true tradition of a university, which consists not of buildings and elaborate ritual, but of a body of men united in the pursuit of truth. As Mr. Mansbridge, in one of his eloquent passages, says: "The real university is mystical and invisible; it is to be found wherever scholars co-operate for the extension of the bounds of knowledge. It is not in one place or in selected places. It is intangible, undiscoverable, but none the less real, and men know one another when they are of its sacred courts."

SCIENCE AND THE HUMANITIES IN SCHOOL AND UNIVERSITY.

THERE has been much discussion lately as to the relative importance of scientific and classical studies in the educational courses of the public schools and the ancient universities, and the need for reconsideration of their positions in examinations for scholarships and for appointments in the public services. It is urged on one side that science should be an essential subject in the education of all, and on the other that the humanities, represented particularly by the Greek and Latin languages and literatures, provide the inspiring influence which saves the nation from descending to a state of organised materialism. The points raised have been before us for many years, and little new can be said upon them; but the war has given the advocates of modern subjects the opportunity of bringing them forward with renewed force, and an insistent demand is being made for a critical survey of educational values from the point of view of national efficiency.

We gave in our March issue some of the main contentions of a memorial entitled "The Neglect of Science," signed by thirty-six distinguished men of science and published in February last; and we referred then and in our April issue to the discussion of the claims of the memorialists in the columns of the Educational Supplement of the *Times*. The memorial had its origin in a small committee of the Association of Public School Science Masters, and it was concerned chiefly with the unsatisfactory position occupied by

science in these schools and the ancient universities. As a practical reform which might bring about a change in the direction desired, as well as lead to more ready and efficient action on the part of administrators and legislators, it was suggested that fuller encouragement should be given to scientific subjects in Civil Service examinations and fewer marks be obtainable for Latin and Greek, which are at present taken by most of the successful candidates for appointments to posts in Class I.

A "Reorganisation Committee" was formed, under the chairmanship of Sir Ray Lankester, to endeavour to give effect to the aims of the memorial; and a meeting, at which Lord Rayleigh presided, was held on May 3rd at Burlington House, Piccadilly, W., to pass resolutions embodying them. The meeting was, as Sir Ray Lankester remarked at the outset, not intended for discussion, but to be an occasion on which the faithful would affirm their convictions. Not that the speakers were only men of science, for they included such literary leaders as the Poet Laureate and Mr. H. G. Wells, a distinguished representative of classical learning in Dr. Macan (master of University College, Oxford), Lord Montagu of Beaulieu, and Mr. Nowell Smith, headmaster of Sherborne School. The two chief resolutions demanded that (1) science should be made an integral part of the educational course in all the great schools of the country, and should form part of the entrance examination of the Universities of Oxford and Cambridge, as well as of the newer universities; (2) capital importance should be assigned to science in the competitive examinations for the Home and Indian Civil Services, and be required from all candidates for admission to Sandhurst.

The activities of Sir Ray Lankester's committee are thus confined deliberately to a limited field, the view apparently being that, if the changes desired are secured, they will be influential in promoting others. The State-aided secondary schools, with their 170,000 pupils, all of whom are taught science, are left out of consideration, as also are the claims of modern subjects in general. Just as strong a case can be made out for an improved position for modern languages in Civil Service examinations as for science; and when the present syllabus is reconsidered, as was recommended by the Royal Commission on the Civil Service, it will have to be viewed as a whole and not from the point of view of any particular department of knowledge. There can be no reasonable objection to this course, with the object of determining what should be the essential subjects of a liberal educa-

tion and what portion of the curriculum should be given to them. When this has been done—and we are not sure that any school of thought can dissociate itself sufficiently from its own interests to view the curriculum as a whole—certain practical difficulties will arise which are left out of account in public discussion. Teachers will be required who can teach scientific subjects as efficiently as classical subjects are usually taught. Everyone knows that method is of even greater importance than matter, and that it can be good or bad in science as it can in any other subject. Also, it is not at all a settled question as to what should be comprised in a course of science teaching, and whether every pupil should carry out laboratory exercises or only those pupils who are later to specialise in science.

Some of these points are referred to in a letter published in the *Times* of May 4th from representatives of science as well as of the humanities. We print this letter, together with the memorandum published previously, so that the two manifestoes may be read and their statements compared. THE SCHOOL WORLD is not concerned so much with educational polemics as with practical problems and methods of school work, and for that reason we should hesitate to devote much space to the discussion of the educational claims of classical or of scientific studies. It is important, however, to deal with some practical conditions of the matter before any proposals for the precipitate modification of the curriculum are adopted. Among these aspects, none of which has yet been seriously considered, are the following:—

1. The subjects which should be included in the broad general education provided for all secondary-school pupils before specialisation is permitted, and the proper division of the available school hours among them.

2. The age at which specialisation may profitably begin and whether it should vary with the average leaving age of the pupils of a school.

3. The nature of the instruction in science included in the general education of all secondary-school pupils; that is, the relative suitability, for the average boy and girl, of the present practical work in physical and chemical measurements, and of experimental demonstrations by a competent teacher of scientific principles and discoveries.

4. The provision, if any, which should be made for the study of subsidiary subjects during the years of specialisation. The older pupil specialising in science must not grow up indifferent to language or literature, nor the classical scholar to modern knowledge.

5. The plan to be adopted during the years of the general education course to find out the

direction in which a pupil may specialise profitably.

6. The means of securing a sufficient number of efficient teachers able to make their lessons, in whatever subject, a training in scientific method. Much of the science work in schools is far from providing such a training.

7. The steps to be taken to convince statesmen and the public that satisfactory education is of necessity costly. The value, or otherwise, of the teaching of any subject depends ultimately on the teacher, and highly qualified and experienced teachers will only become available in sufficient numbers if emoluments are made attractive enough.

8. The best way to obtain the hearty co-operation of headmasters and headmistresses. The success of any scheme of instruction is in their hands; should changes be made only after full consultation with them?

(1) THE CLAIMS OF SCIENCE.

With a full sense of responsibility we submit the following memorandum on a subject which, we are convinced, requires immediate attention and drastic action. It concerns the public interest, and the public alone can deal with it.

It is admitted on all sides that we have suffered checks since the war began, due directly as well as indirectly to a lack of knowledge on the part of our legislators and administrative officials of what is called "science," or "physical science." By these terms we mean the ascertained facts and principles of mechanics, chemistry, physics, biology, geography, and geology. Not only are our highest Ministers of State ignorant of science, but the same defect runs through almost all the public departments of the Civil Service. It is nearly universal in the House of Commons, and is shared by the general public, including a large proportion of those engaged in industrial and commercial enterprise. An important exception to this rule is furnished by the Navy, and also by the medical service of the Army; in both these services success has been achieved by men who, while in no way inferior in courage, devotion, and self-sacrifice to their brethren elsewhere, have received a scientific training.

This grave defect in our national organisation is no new thing. It has been constantly pressed upon public attention during the last fifty years as a cause of danger and weakness. In the whole history of British Governments there has been only one Cabinet Minister who was a trained professional man of science—the late Lord Playfair.

It is not our intention here to enumerate the catalogue of specific instances in which a want of understanding of "physical science" has led the Ministry and Executive into error. This has been done elsewhere, but as an example of the ignorance which we deplore we may instance the public statement of a member of the Government, unchallenged when made, that his colleagues should be excused for not having prevented the exportation of lard to Germany, since

it had only recently been discovered that glycerine (used in the manufacture of explosives) could be obtained from lard! The fact is, on the contrary, that the chemistry of soap-making and the accompanying production of glycerine is very ancient history. In order that such serious blunders may be avoided, it is essential that we should have a proportion of men in the Government who, if not actual experts, yet have such a knowledge of science that will give them an intelligent respect for it, and an understanding of what it can do, how to make use of it, and to whom to apply when special knowledge is required.

Our success now, and in the difficult time of re-organisation after the war, depends largely on the possession by our leaders and administrators of scientific method and the scientific habit of mind. They must have knowledge, and the habit of promptly applying known means to known ends. To trust to luck is a mark of dangerous complacency bred of ignorance. The evidence of those back from the front makes it clear that, as of old, our "people are destroyed for lack of knowledge." How can such a revolution as we desire in the higher and lower grades of the public service be brought about? Obviously it can only be effected by a great change in the education which is administered to the class from which these officials are drawn. The education of the democracy, which gives its consent to the present state of things, would follow the change in the education of the wealthier classes. For more than fifty years efforts have been made by those who are convinced of the value of training in experimental science to obtain its introduction into the schools and colleges of the country as an essential part of the education given therein. At first it seemed as though the effort had been successful, but it is clear that the old methods and old vested interests have retained their dominance, at least as far as our ancient universities and great schools are concerned. At Cambridge but four colleges are presided over by men of scientific training; at Oxford not one. Of the thirty-five largest and best known public schools thirty-four have classical men as headmasters. Science holds no place in the list.

The examinations for entrance into Oxford and Cambridge and for appointments into the Civil Service and the Army are among the greatest determining factors in settling the kind of education given at our public schools. Natural science has been introduced as an optional subject for the Civil Service examinations, but matters are so arranged that only one-fourth of the candidates offer themselves for examination in science. It does not pay them to do so; for in Latin and Greek alone (including ancient history) they can obtain 3,200 marks, while for science the maximum is 2,400, and to obtain this total a candidate must take four distinct branches of science. For entrance into Woolwich science has within the last few years been made compulsory, but for Sandhurst it still remains optional. This college is probably the only military institution in Europe where science is not included in the curriculum. The result of this system of examination, not merely upon the successful candidates, but upon all the great schools and the old universities which necessarily (as things are at present

arranged) work with them in aim and interest, is a neglect of the study of the natural sciences, and to some extent an indifferent, not to say contemptuous, attitude towards them.

The one and effective way of changing this attitude and of giving us both better educated Civil servants and a true and reasonable appreciation of science in all classes is in the hands of the Legislature, and of it alone. If a Bill were passed directing the Civil Service Commissioners and Army Examination Board to give a preponderating—or at least an equal—share of marks in the competitive examination to natural science subjects, with safeguards so as to make them tests of genuine scientific education and not an incentive to mere "cram," the object we have in view would be attained. Science would rise in our schools to a proper position and gain the respect necessary for the national welfare. A popular appreciation and understanding of science would begin to develop; and our officials of all kinds, no less than members of Parliament, would come to be as much ashamed of ignorance of the commonplaces of science as they would now be if found guilty of bad spelling and arithmetic. Not at once, but little by little, the professional workers in science would increase in number and gain in public esteem. Eventually the Board of Trade would be replaced by a Ministry of Science, Commerce, and Industry, in full touch with the scientific knowledge of the moment. Public opinion would compel the inclusion of great scientific discoverers and inventors as a matter of course in the Privy Council, and their occupation in the service of the State.

With this object in view we urge the electorates to insist that candidates for their suffrages should pledge themselves to aid by legislation in bringing about a drastic reform in the scheme of examinations for all the public services in the sense we have indicated.

Our desire is to draw attention to this matter, not in the interests of existing professional men of science, but as a reform which is vital to the continued existence of this country as a Great Power.

T. CLIFFORD ALLBUTT.	W. OSLER.
H. E. ARMSTRONG.	C. A. PARSONS.
BERKELEY.	K. PEARSON.
R. BIFFEN.	W. H. PERKIN.
G. C. BOURNE.	J. PERRY.
L. BRENNAN.	J. C. PHILIP.
W. CROOKES.	E. B. POULTON.
J. C. EWART.	W. RAMSAY.
J. A. FLEMING.	RAYLEIGH.
A. G. GREEN.	RONALD ROSS.
J. W. GREGORY	A. E. SHIPLEY.
E. H. GRIFFITHS.	E. H. STARLING.
S. J. HICKSON.	J. ARTHUR THOMSON.
L. E. HILL.	T. E. THORPE.
J. P. HILL.	W. A. TILDEN.
E. RAY LANKESTER.	H. H. TURNER.
P. CHALMERS MITCHELL.	J. WILLIAMS.
H. MORRIS.	T. B. WOOD.

(2) EDUCATIONAL AIMS AND METHODS.

Under the shock and stress of the war, the aims and methods of education have to be considered anew. This reconsideration, in the special conditions of the

time, brings with it a risk that we may ignore elements in education vital to the formation and maintenance of national character. A great war, in which material means and technical skill are the most obvious factors in deciding the issue, inclines a nation to prize these to the exclusion of forces finally even more important; and if in our reforms we fix our eyes only on material ends, we may foster among ourselves that very spirit against which we are fighting to-day.

At a time when the energies of the nation are necessarily concentrated on other matters, sweeping changes are proposed without their effects being thought out. It is of the utmost importance that our higher education should not become materialistic through too narrow a regard for practical efficiency. Technical knowledge is essential to our industrial prosperity and national safety; but education should be nothing less than a preparation for the whole of life. It should introduce the future citizens of the community not merely to the physical structure of the world in which they live, but also to the deeper interests and problems of politics, thought, and human life. It should acquaint them, so far as may be, with the capacities and ideals of mankind, as expressed in literature and in art, with its ambitions and achievements as recorded in history, and with the nature and laws of the world as interpreted by science, philosophy, and religion. If we neglect physical science, we shall have a very imperfect knowledge of the world around us; but if we ignore or subordinate the other elements of knowledge, we shall cut ourselves off from aspects of life of even greater importance. Even physical science will suffer. Some of its most distinguished representatives have strongly insisted that early specialisation is injurious to the interests they have at heart, and that the best preparation for scientific pursuits is a general training which includes some study of language, literature, and history. Such a training gives width of view and flexibility of intellect. Industry and commerce will be most successfully pursued by men whose education has stimulated their imagination and widened their sympathies.

It is our conviction that the nation requires scientific method and a belief in mental training even more than physical science, and that the former is by no means identical with the latter. We might enthrone physical science in all our schools without acquiring as a nation what we most need, the persuasion that knowledge is essential to progress, and that it has to be acquired by the cultivation of the faculty of independent reflection, which implies the power of selecting, combining, and testing the essential facts of the subject in hand. This scientific method is not the peculiar property of physical science; all good work in all studies is based upon it; it is indispensable to law, history, classics, politics, and all branches of knowledge rightly understood. What we want is scientific method in all the branches of an education which will develop human faculty and the power of thinking clearly to the highest possible degree.

In this education we believe that the study of Greece and Rome must always have a large part,

because our whole civilisation is rooted in the history of these peoples, and without knowledge of them cannot be properly understood. The small city communities of Greece created the intellectual life of Europe. In their literature we find models of thought and expression, and meet the subtle and powerful personalities who originated for Europe all forms of poetry, history, and philosophy, and even physical science itself, no less than the ideal of freedom and the conception of a self-governing democracy; while the student is introduced to the great problems of thought and life at their springs, before he follows them through the wider but more confused currents of the modern world. Nor can it be right that the educated citizens of a great Empire should remain ignorant of the first State that met the problem of uniting in a contented and prosperous commonwealth nations differing in race, temper, and culture, and which has left so deep a mark on the language, law, and political conceptions of Europe. Some knowledge of Latin is indispensable for the intelligent study of any one of these things, and even for the intelligent use of our own language. Greece and Rome afford us unique instances, the one of creative and critical intelligence, the other of constructive statesmanship. Nor can we afford to neglect the noble precepts and shining examples of patriotism with which their history abounds.

In urging this, we do not commit ourselves to defending the present system of classical education in all its details. Still less do we claim for it any artificial privilege. We cordially sympathise with the desire to strengthen the teaching of modern history, of modern languages, and of the literature of our own country. Further, we fully accept the importance of promoting scientific research, of extending scientific instruction in schools where it is still inadequately provided, and of improving the quality of science teaching; and we desire to co-operate with the representatives of these studies in ensuring them a due place in our national education. At the same time we would point out that much criticism of our schools seems directed against a past state of things, and ignores reforms which have been already effected. It is sometimes forgotten that the teaching of physical science is compulsory in all State-aided secondary schools, that of Latin, and, of course, of Greek, in none.

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| BRYCE. | F. HUTH JACKSON. |
| J. B. BURY. | F. G. KENYON. |
| RANDALL CANTUAR. | H. LAMB. |
| CROMER. | W. LEAF. |
| CURZON OF KEDLESTON. | D. MACALISTER. |
| A. DALE. | G. MURRAY. |
| F. W. DYSON. | W. OSLER. |
| ESHER. | C. OXON. |
| H. A. L. FISHER. | W. RIDGEWAY. |
| E. FRY. | E. H. SEYMOUR. |
| A. GEIKIE. | G. O. TREVELYAN. |
| A. HOPKINSON. | |

[Prof. W. Bateson desires to add his signature as in general agreement, provided that natural science be first recognised as an indispensable part of secondary education.]

PERSONAL PARAGRAPHS.

CAPT. R. O. LAGDEN, King's Royal Rifle Corps, who was reported as wounded and missing after an attack on the German trenches at St. Eloi in March, 1915, is now stated to have been killed on that occasion. He was educated at Marlborough College and Oriel College, Oxford, at which he was a Rhodes scholar. He became a master at Harrow in 1912, and joined the Army Reserve before the war.

* * *

SECOND LIEUT. A. H. B. WEBSTER, Northampton Regiment, was accidentally killed in France on April 26th. Mr. Webster was educated at King's School, Worcester, and at Brasenose College, Oxford, where he held the Colquitt Scholarship for divinity and classics. He took honours in the final school of modern history, and on leaving Oxford was appointed a master at Yardley Court School.

* * *

M. L. LAILAVOIX, lecturer in French in the University of Manchester, was killed in action on April 10th. M. Lailavoix joined his regiment on the outbreak of hostilities, and had been promoted to the rank of lieutenant in the 79th Regiment of Infantry. He had been for several years lecturer in French at the university, as a colleague of Prof. Léon Kastner. He was very popular with both colleagues and students; his translation of a noteworthy French work on Chaucer is evidence of his interest in English literature.

* * *

THE death is announced of the Rev. H. D. Elam, who had been a master of St. Paul's School for nearly forty years. He was born in 1850, and educated at the Merchant Taylors' School and at St. John's College, Oxford, where he took a second class in Moderations in 1871, and a third in Greats in 1873. Mr. Elam will be vividly remembered by a large number of Old Paulines by reason of his unusual but efficient methods of teaching, his sardonic humour, and his deliberate unconventionality. He was an excellent French scholar, knew Spanish and Spain thoroughly, and could quote the original "Don Quixote" at length.

* * *

HARROW is lamenting the death of Mr. W. G. Guillemard, who died at Woodhays, Hants, at the age of sixty-nine. Mr. Guillemard was a master at Harrow School from 1879 to 1907; he became house-master, and had charge for six years of "The Grove," the house rendered famous by Mr. E. E. Bowen, whom he succeeded.

MR. HOWARD CANDLER has been knocked down by a motor lorry and killed. Mr. Candler was the first mathematical master on the staff of Uppingham School; up to that date classical masters had taught classics in the morning and attempted to teach mathematics in the afternoon. He was, however, not only a learned mathematician, but also a classical scholar and a keen student of English literature, an original thinker, and a vigorous writer. In the days when Thring was building up the school Mr. Chandler took an active part, and proved himself an able colleague. After his retirement from Uppingham he found scope for his activities in working at West Hampstead and at Toynbee Hall.

* * *

MR. O. R. A. BYRDE, of the Royal Grammar School, Newcastle, has been appointed headmaster of Heath Grammar School, Halifax. Mr. Byrde was educated at Winchester College and Queen's College, Oxford. He was formerly a master at King William's College, Isle of Man.

* * *

MR. BERNARD PITT, a master at the Coopers' Company School, Bow, who joined the Army on the outbreak of war and has for the past six months been in Flanders, was reported missing on May 1st. His death is now announced. Mr. Pitt was serving as Second-Lieutenant in charge of a trench-mortar battery, and his death was caused by shell explosion. He was a remarkably keen, energetic, and tenacious student and master; in 1907 he graduated at London University, taking first-class honours in modern languages; in 1911 he obtained the degree of M.A. in English language and literature. Mr. Pitt occasionally contributed to the *Saturday Westminster*; his last poem, published only a few weeks ago, was entitled "February in the Firing Line." His commanding officer writes of him as "quite one of the bravest men I have ever known."

* * *

THE Education Reform Council, the object of which is to consider the condition of education in England and to promote such reform and developments as may appear desirable, is widely representative. Among the headmasters are Dr. Burge and Dr. Lyttelton, two of the broadest-minded and most progressive of the heads of the old public schools, and Dr. Rouse, whose modern method of teaching classics is the admiration and despair of some of his imitators; Mrs. S. Bryant and Miss Robertson are among the headmistresses.

MR. SOMERVILLE, who is once again the chairman of the Assistant-masters' Association, is to add membership of the Education Reform Council to his many other activities. The amount of effective work he puts in for the cause of education has long been a marvel to many of his colleagues in the Association. The Register, and also the Registration Council, pensions, the Modern Languages Association, the Assistant-masters' Association, the Federal Council, with now the Education Reform Council, have added enormously to the work of a man whose first consideration is his school, its Army class, and his house.

ONLOOKER.

APPARATUS DESIGNED BY SCIENCE MASTERS.

THE annual exhibition of apparatus and books in connection with the meetings of the Public School Science Masters' Association was held in January at the London Day Training College, Southampton Row, on the invitation of Dr. Nunn, vice-principal of the college. Many of the principal dealers in scientific apparatus and a number of the chief publishing firms participated, and the exhibition this year was noteworthy as being the first occasion on which the majority of the glass and porcelain ware was of British manufacture. The question of the supply of British glass has, since the commencement of the war, been the cause of much concern, and with a view to meeting the demand for this many of the more important firms of dealers have combined to form the British Laboratory Ware Association, a body which has already been instrumental in enlarging a number of the glass houses in the country. In addition to this a new glass house has also been erected during the past year at Walthamstow by Messrs. Baird and Tatlock, Ltd., and many of the science masters and visitors were afforded an opportunity of visiting this during the second day of the meeting.

The exhibits by members were much more numerous than usual, and a number of ingenious devices for furthering the teaching of experimental work in schools were shown on the tables.

The Rev. W. Burton, of Sir Roger Manwood's School, Sandwich, showed a quantity of useful apparatus of an inexpensive kind, most, if not all, of which could be readily made in a simple laboratory workshop. His apparatus for optical experiments consists of a strip or number of strips of galvanised iron, 7 in. by 5 in., bent across the middle at right angles to the longer side. In one face a 1-in. square is cut, and in the other either a $\frac{1}{4}$ -in. circle or a narrow slit 1 in. long. The centres of the various apertures are midway between the vertical edges and at the same height (3 in. say) from the lower edge. The positions of the holes and slit are, of course, governed by the height of the light generally used. The luminous flame from a Bunsen burner with the tube removed can be adjusted to give a suitable flame for all

ordinary purposes, and the burner is of a convenient height for the screens of dimensions given above. The whole is painted with white enamel. The apparatus can be used:—(1) as a screen; (2) to verify the inverse square law, using the 1-in. square and a small flame; (3) as a Bunsen's photometer, by placing over the 1-in. square a piece of paper with a drop of paraffin oil on its centre; (4) as a support for (a) lenses and mirrors, (b) objects such as cross-wires and scales for magnification experiments; (5) in simple experiments on spectra. The mirrors, lenses, objects, etc., are held in position over the 1-in. square by a couple of small pellets of soft wax. All the usual optical observations and measurements with lenses and mirrors can be made with the apparatus. The supports and screens should be placed with the lower edges of their side-faces adjacent to a metre scale.

A simple electroscope by the same exhibitor is formed of a rectangular box of galvanised iron or tin, with glass windows back and front. The glass windows are 2 in. apart, and are simply the cover glasses of lantern slides. The insulation is a piece of candle with the wick removed, which fits into a short tube, $\frac{3}{4}$ in. \times $\frac{7}{8}$ in. diameter, soldered on to the top of the box over a circular

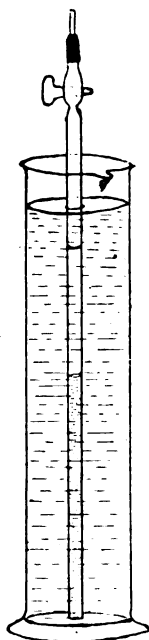


FIG. 1.—Density of gases by effusion.

opening in it, $\frac{1}{2}$ in. diameter. A brass rod, $\frac{3}{16}$ in. diameter, soldered below to a rectangular disc of metal to which the leaf is attached, is pushed up through the candle. Over the upper end of the rod a short piece of brass tube, soldered to a circular disc of $1\frac{1}{2}$ in. diameter of galvanised iron, can be

slipped. If the insulation of the wax deteriorates, the upper layer of wax can be removed, or a fresh surface obtained by passing the Bunsen flame over it for a second or two.

Mr. Burton also showed a home-made copper voltmeter, in which a piece of copper sheet $\frac{1}{16}$ in. thick and 9 in. \times $2\frac{1}{2}$ in. is bent into a U with limbs about 1 in. apart, so that it just fits into a 1-lb. earthenware marmalade jar with its free edges protruding above the top of the jar. A portion of the same copper sheet, 3 in. \times $2\frac{1}{2}$ in., has a piece of copper wire $\frac{1}{8}$ in. thick soldered along one of the shorter edges; the free ends of the copper wire are then bent to grip the sides of the jar so that the plate is supported midway between the limbs of the U. Contact is made by clips, such as those used by news-vendors, or the old-fashioned tie clips, soldered to lengths of No. 22 copper wire.

Class experiments to find the density of coal-gas by effusion were demonstrated by Mr. Durrant, of Marlborough. The simple apparatus used by him, and shown in Fig. 1, is based on the principle of an instrument used in gasworks, and consists of a burette with a fine nozzle of glass fitted to it. A rubber ring may conveniently be fixed so that when the burette is placed in a tall cylinder full of water the ring is some 6 in. below the surface. With air in the inverted burette, if two boys are working together, one takes charge of a watch marking seconds and gives the moment for the other to open the tap; he, in his turn, gives the moment the water inside the burette reaches the ring. Two determinations of the air period are taken. Then the burette, after draining from the nozzle, is filled with hydrogen, and later with coal-gas, by the use of a thin glass tube, and similar readings are made giving hydrogen and gas periods. The air period should not be less than 30 seconds.

Mr. Hammick, of Gresham's School, Holt, showed a simple form of apparatus (Fig. 2) for determining the composition of water by weight. The apparatus is made by joining together two calcium chloride tubes, A and B, of which B contains calcium chloride kept in place with wads of cotton-wool. To carry out the experiment the open ends of the apparatus are first closed with light corks, and the whole is weighed.

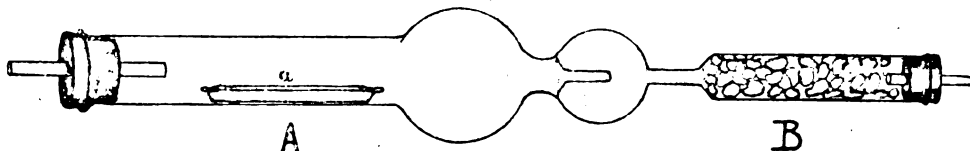


FIG. 2.—The composition of water by weight.

opening in it, $\frac{1}{2}$ in. diameter. A brass rod, $\frac{3}{16}$ in. diameter, soldered below to a rectangular disc of metal to which the leaf is attached, is pushed up through the candle. Over the upper end of the rod a short piece of brass tube, soldered to a circular disc of $1\frac{1}{2}$ in. diameter of galvanised iron, can be

porcelain boat, *a*, containing copper oxide, is weighed and placed in A, rubber stoppers fitted with tubes put in place of the corks, and the copper oxide reduced in dry hydrogen. By using a rapid stream of gas, condensation in the barrel of A is avoided, and the water formed collects in the bulbs and in B. On cooling, *a* is removed and re-weighed. The apparatus is now corked up and re-weighed. The loss in weight of *a* gives the weight of oxygen contained in the known weight of water collected in AB.

Fig. 3 illustrates a simple nitrometer, also devised by Mr. Hammick. A glass tube *a* dips beneath the surface of a layer of mercury at the bottom of an ordinary wide-mouthed bottle A. B is a 100-c.c. burette; its mouth must be accurately bedded into the cork *b*. The tube *c*, bent as shown to prevent the escape of bubbles of gas when the apparatus is in use, is connected with ordinary gas tubing to the funnel C. C is held by the ring D to the burette, and provides a means for adjusting levels in the burette.

A form of thermo-regulator suitable for use in an air or water oven, by Mr. Woodhouse, of the King's School, Chester, is represented in Fig. 4. A flask, A, of about 100-150 c.c. capacity, of the short form used for CO₂ estimations, is fitted with an air-tight rubber stopper. Through the latter passes a tube, B, bent twice at right angles, the horizontal portion being of

such a length as to allow the flask, A, to remain in a corner of the oven out of the way. To this is joined a second tube, C.

D is a thistle funnel of rather large bore, bent twice at right angles, or into the form of a U tube. It is supported on a retort stand and connected to C. The bulb of the funnel is closed by a closely fitting cork having two holes bored in it, one of which must be truly central and axial.

Through the central hole passes the narrow tube E, ending in the slanting point P. This slant end may easily be obtained by grinding on an emery wheel, and finishing on an oil-stone moistened with turpentine.

E is the inlet tube for the gas, which travels from the gas tap by the path K, G, E, P, F, H, L, to the burner M.

N is a bye-pass made from the jet of an old mouth blow-pipe. It is wired on to the burner M, and is connected by a piece of rubber tubing to T.

To use the regulator, disconnect B and C, pour mercury into D until the level is close to P. Connect up, and light the gas, regulating the bye-pass by a screw clamp.

Lower a thermometer into O through the opening in the roof of the oven.

The air in A expands and, forcing the mercury in D upwards, closes the tube P more or less gradually, according to the slope of its end.

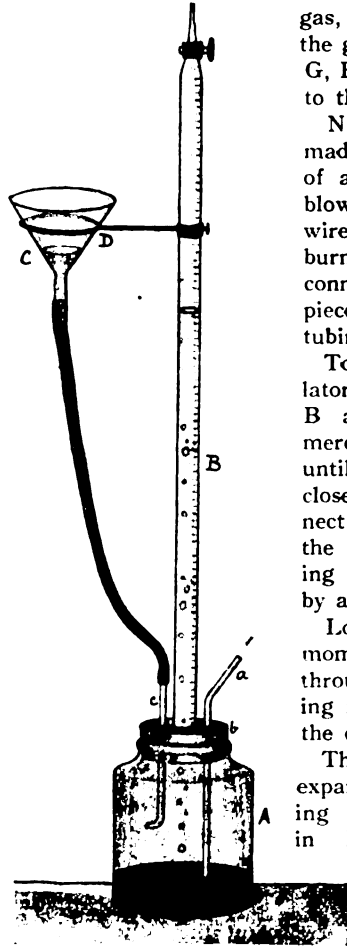


FIG. 3.—A simple nitrometer.

When the gas is cut off the bye-pass remains alight, and when O cools the mercury falls, readmitting the gas, which is lit by the flame at N.

By a judicious adjustment of the level of the mercury in D, the gas can be cut off at any desired temperature, or this can be effected by disconnecting B and C, and connecting up again when the oven is within a few degrees of this temperature.

The speed with which the gas is cut off may be varied by altering the slope of P or the bore of D.

The apparatus, when once adjusted, can be relied upon to keep a temperature within 1° C. of any desired temperature for many hours on end.

Perhaps the most ingeniously devised piece of apparatus in the exhibition, and certainly one of those producing the greatest interest, was that by Mr. Pye, of Winchester. This illustrated the progress of a train of waves of transverse vibration (Fig. 5). It is often difficult to realise that when such a wave travels forward through a medium the only motion of the medium itself is one perpendicular to the direction in which the wave is travelling. Preconceptions (usually themselves incorrect) about waves on water give an impression that the medium itself must move forward.

This apparatus, which enables one to show clearly the progress of a train of waves, either "free" or "damped," consists of a set of steel vibrating strips, 12 in. x 1/4 in. x 1/50 in., fixed horizontally. These are tuned to vibrate in synchronism, and to ensure this

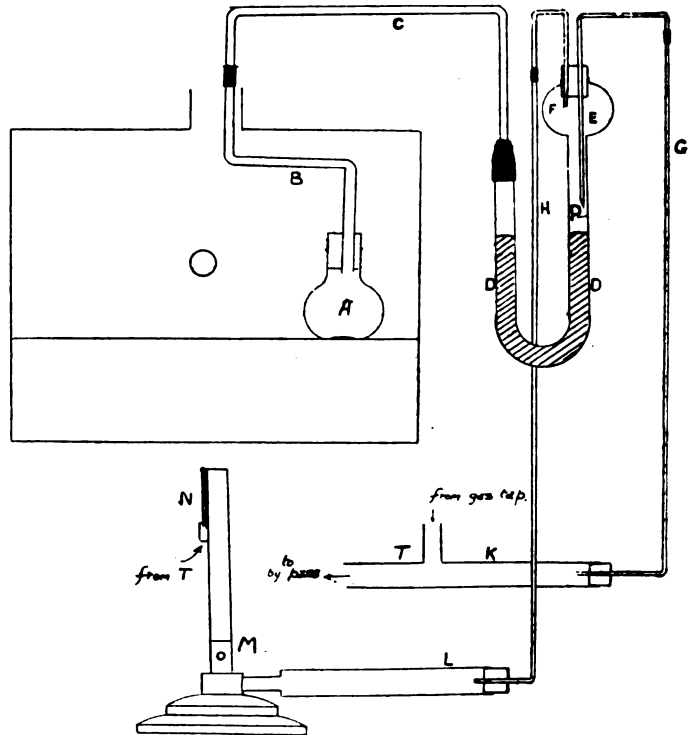


FIG. 4.—A regulator for use in an air or water oven.

short screwed bronze wires (such as are used in organ pipes) are soldered to their ends, on which tuning weights can be moved along and fixed in place by leather nuts painted white.

To start a train of waves, all the strips are first equally depressed by a smooth rod held horizontally, and the rod then smoothly drawn away parallel to itself, releasing the strips successively. To obtain a damped wave, the strip at the end is fully depressed, the remaining strips successively less and less (by holding the rod in an inclined position), and the rod again drawn away parallel to itself.

Another piece of apparatus exhibited by Mr. Pye was a wooden model to explain diffraction to a class of boys in the lecture-room. In the diagram, Fig. 6, A represents a small source of light sending out spherical waves, and the black and white sector a slice of one of the spherical surfaces. For any point F

(say) at which the needle points the black and white markings on the sector represent a slice of the circular half-period zones (very much magnified) for that point when illuminated from A. CD represents an obstacle placed between A and the screen, G a point within the geometrical shadow, E and F points outside the shadow. Then from observation of the zones exposed as the needle points successively to B, E, F, G, the extent of the disturbance at these points can be estimated.

For some years past members' exhibits at the annual

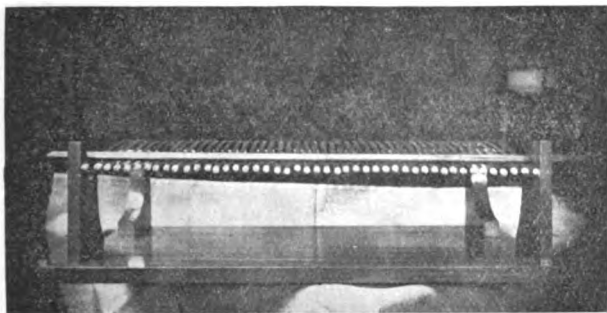


FIG. 5.—Transverse wave motion.

meetings have been largely composed of physical apparatus, but this year chemical apparatus predominated. One of the most interesting contributions was that of Mr. Thomas, of Rugby, whose exhibits numbered sixteen in all. The use of coloured plasticine for the erection of stereochemical models was illustrated, and also a simple device for the rapid drying of glass vessels. Certain new experiments were suggested for illustrating various chemical principles, and of these the "internal combustion" of methylallyl aniline picrate and other picrates, the explosions of which on

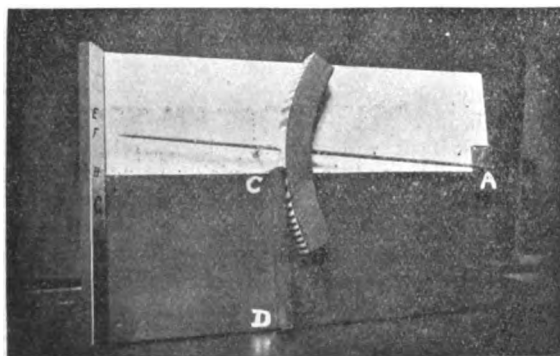


FIG. 6.—To illustrate diffraction.

heating in a test tube were demonstrated, proved of much interest. In this connection may be noted a simple arrangement suitable for the use of junior classes, for showing the influence of temperature on the velocity of the reaction between magnesium and water.

Specimens of drugs (glycol, diethylamine, ethylene dibromide, ethylene diacetate, ethylene bromacetate) prepared by pupils in Rugby School Chemical Laboratory were shown, with a specimen of "Eusol," a cheap antiseptic for wounds, supplied to the Rugby

V.A.D. Hospital. Its method of preparation was also shown. Another interesting piece of apparatus was that used for the continuous preparation of ethylene by the Sabatier and Senderens method.

A simple device for obtaining a steady and continuous sodium flame was shown by Mr. Beesley, of St. Olave's. A large cork is bored centrally, the whole being of such a diameter that the cork will fit tightly over the tube of a Bunsen burner, the upper face of the cork being flush with the top of the tube. A groove is cut in this face concentric with the hole, and the cork then varnished. Threads of asbestos cord, moistened with NaCl solution, are passed across the top of the burner, the ends fitting in the groove. A small quantity of the solution placed in the groove serves to keep the ends of the cord moist. Porcelain might replace the cork with advantage.

Dr. Tripp, of Bedford, exhibited a device for preventing back-flow of water into the flask when filtering under reduced pressure.

ILLUSIONS OF THE UPPER AIR.¹

THE lecture was made an occasion for reviewing the progress of meteorological theory in England in the half-century that has elapsed since the Meteorological Committee of the Royal Society was appointed to control the Meteorological Office.

The programme of the reconstituted office was to continue the study of the meteorology of the sea and the collection and distribution of daily telegraphic reports of weather, and to apply the automatic records of a number of observatories similar to the Kew Observatory at Richmond to the interpretation of the observed facts of weather. After referring to the activity in the study of weather, and particularly in devising weather charts, which was displayed in the early 'sixties by FitzRoy, at the Meteorological Department of the Board of Trade, by G. J. Symons and James Glaisher, who were interested in British rainfall and climatology, and by Francis Galton, who was one of the leading spirits of the British Association and of Kew Observatory, a statement was given of the convection theory of the structure of the atmosphere in relation to cyclones and anticyclones which was generally accepted at the time and for years afterwards.

It was pointed out that the ideas about cyclones and anticyclones were at the time necessarily speculative, and it was proposed to confront them with the structure of the atmosphere as disclosed by the investigation of the upper air with kites, balloons-sondes, and pilot balloons during the last twenty years. Illustrations of the general results of the investigation were exhibited, and the separation of the atmosphere into the troposphere (the region of convection), and the stratosphere (the region of no convection), was explained.

The guiding principle of the convection theory was that air flowed from a centre of high pressure (anticyclone), where cold air was descending, into a centre of low pressure (cyclone), where warm air was ascend-

¹ Abstract of a discourse delivered at the Royal Institution on March 10th by Sir Napier Shaw, F.R.S.

ing. The double spiral paths by which the air proceeds from an anticyclonic centre towards a cyclonic centre were commonly regarded as lines of natural flow from high to low contorted by the rotation of the earth.

The observations of the upper air have shown that this mode of representation is illusory in every essential item; the mistake arose from taking the characteristics peculiar to the surface to be generally representative.

The convergence of the air along the spiral paths is shown to be largely illusory when the facts are carefully examined. Above the first half-kilometre the inflow towards the low pressure cannot be identified at all.

Instead of assuming an inflow which cannot be proved, it is better, there and elsewhere throughout the upper air, to assume the circulation to be represented by the "uniform" flow of air along the isobars under balanced "forces" arising from the distribution of pressure on one hand, and the rotation of the earth and the circular path of the air on the other. Instead of a natural flow from high pressure to low pressure we have a natural flow without any change of pressure; the motion of a heavenly body round its sun is taken as the type for the air instead of the motion of a falling stone. The cross-flow that is to be found near the surface should be attributed to the friction of the surface reducing the speed of the moving air below that which is necessary to balance the pressure. Thus the friction which seemed to be an obstacle to the flow across isobars must really be regarded as its cause.

The idea of a convective force operating as an upward force in the "low," with a corresponding force in the "high," is shown to be illusory by observations which prove that the air in the high pressure is warmer than that at the same level in the low. The formation of high and low pressure at the surface proceeds, therefore, *in spite of* a distribution of temperature which opposes it, not *because of* a distribution of temperature which favours it. Nor is the humidity of the air of any importance in forming low pressure. The distribution of pressure at the surface has been shown to be the distribution at a height of 9 kilometres transmitted from above, with local changes caused by the varying density of the lower layers.

From the idea of the operation of the varying pressure of the stratosphere upon the troposphere interesting deductions were drawn as to the formation and transformation of different types of cloud. These were followed by a number of numerical calculations of the relation between pressure, temperature, and wind at different levels, which are rendered possible by the fundamental numerical relation between pressure and wind velocity. Two forms of the relation are considered: (1) the geostrophic relation in which the air is regarded as moving along a great circle, and the effect is entirely due to the rotation of the earth; this is taken as applicable in temperate and polar latitudes; and (2) the cyclostrophic relation, in which the effect of the rotation of the earth is disregarded altogether and attention is concentrated upon motion in a small circle. The second case is applicable in the

equatorial regions, in tropical revolving storms, and other circulations of small diameter.

By means of these two equations, combined with the ascertained facts of the upper air, are explained (1) the absence of strong winds in the central region of an anticyclone; (2) the dominance of the stratosphere in the distribution of pressure at the surface; (3) the apparently capricious variations of temperature and wind velocity at different levels; (4) the conditions of application of "Egnell's law" of the flow of equal masses of air at different levels; (5) the falling off of the velocity of wind in the stratosphere; (6) the changes of wind velocity with height in the troposphere; and (7) the maintenance of a cylindrical vortex with its foot on the ground covered by a cap of limited height in the stratosphere.

The lecture concluded with a fantastic but circumstantial suggestion that the Medusa of Greek myth has a subtle reference to the relation of fact to theory in the study of weather.

EDUCATION AFTER THE WAR.¹

PROBABLY the most important task before us at the present moment is to look forward to the coming of peace, and to be prepared to take advantage of the lessons with regard to education which the cruel alembic of war is teaching.

I am not one of those who think that our present system of primary education is entirely wrong. I feel sure that the magnificent voluntary response of our citizens to the call of the nation has shown that the Board of Education's description that the aim of our schools is "to make our children worthy sons and daughters of the country to which they belong" is of sufficiently wide connotation, and that we have interpreted its meaning in its deepest and truest sense. Yet we must not be blind to the fact that the war has taught us some defects. Whilst, therefore, demanding no radical changes in principle, we must consider in what direction we have advanced too far or too quickly, and in what others we have been timid and vacillating.

Our first task will obviously be to return to the normal pre-war conditions as quickly as possible after the declaration of peace, and to use those conditions as the starting point for extensions and reforms.

There is unfortunately one great difficulty, the cloud of which was heavy over us before the war began, and which the war has made more lowering still. I refer to the supply of fully qualified teachers. Our profession has ceased to be attractive, particularly to men, and the ideal of a thoroughly trained and qualified teacher in front of each class, rendered more essential of fulfilment by the lessons and results of the war, will be almost impossible to attain unless the Board of Education, the local authorities, and we ourselves unite at once in trying to find a remedy. The subject is in itself sufficient for a presidential address; but it is enough here to state that the bursar system has been an obvious failure in attracting recruits to the profession, and that the Board of Educa-

¹ From the presidential address to the National Union of Teachers delivered by Mr. C. W. Crook, B.A., B.Sc., Higher Grade School, Wood Green, London, N., at Buxton, on April 26th, 1916.

tion, in its bribes to the county authorities, has succeeded only in obtaining a small increase in the supply, and this generally in localities which are the least fitted for this important task by the quality of their staffs and the equipment of their schools.

SANE PATRIOTISM.

Apart from this one great difficulty there seem to me to be three main points upon which all who are interested in our educational system must concentrate. The first is that of the training of character in our schools, for although I have proudly claimed that the general product of our schools has proved itself true metal in the furnace of war, yet the numerous cases of exploitation by the capitalist and of strikes amongst the men, and some of the reasons given before the Tribunals by some of the conscientious objectors, show that there is need for still further emphasis upon the duties of the citizen to the State, and a truer balance between duties and privileges. The fuller study of our own beautiful literature, used as a means of developing æsthetic appreciation and love of our race and language, and our Bible and history lessons must retain a prominent place in our curriculum, and must be utilised to develop in our children a sane and non-aggressive pride of race. We must have as the central aim of our curriculum the desire to make our children "sound, healthy children of the God of Heaven."

HEALTHY CHILDREN.

With this ideal before us it is obvious that the health of our children is of major importance. The introduction of medical inspection into our schools has been welcomed by every teacher, and the cordiality of the relations of the two professions has been shown by the circular sent out under the joint auspices of the Medical Council and your union. We are, however, even now only upon the threshold of the work, and the holocaust of war must press for enormous extension of the medical care both of children and of mothers.

Under Sir George Newman's supervision much good work has already been done, but he himself will agree that the returns he publishes annually show that the proportions of defects in any area present such marvellous discrepancies that it is plain that the number of defects depends much more upon the predilection of the doctor than upon the prevalence of the disease. Some standardisation is essential. It is evident, too, that diagnosis of defects is of no use whatever unless it leads to remedy, and steps must be taken to secure effective treatment of every defect diagnosed. Although not directly connected with the primary school, there can be no doubt that the enormous loss of child life, both in the pre-natal and post-natal period, and the early sowing of disease during these periods, are matters of vital importance, the latter particularly affecting education in the school. It is a point requiring serious consideration as to whether our present infant-school system is or is not superior to the continental *crèche* and *école maternelle*.

Closely connected also with the medical side is the question of the feeding of necessitous children, and the figures here are as remarkable as those for physical

defects. While poverty should be the main basis for the selection of these children, there seems abundant evidence that improper feeding, as well as under-feeding, needs attention, and for this the advice of the doctor is essential.

In addition to medical inspection and after-care, there must be closer attention to physical exercises in our schools. The present system is excellent, but by no means perfect. The encouragement given to swimming and outdoor sports generally has been excellent in effect and can well be extended. The Board of Education may some time awaken to the lack of equality in its treatment, when it wisely demands playing-fields for its secondary schools, and is indifferent, or sometimes inimical, to their provision for the primary school.

There is one danger on this physical exercise side which so far your union and the Board of Education have foreseen, and that is the undoubted attempt that will be made to introduce military drill into our schools. I hope we shall as a union present our strongest opposition to any such attempt. To introduce the military spirit into our schools would be to give the Germans a greater triumph even than victory in the war. It would result, as it has resulted in Germany, in changing a nation wisely uniting for a war of liberation into a savage race craving for a war of deliberation.

A knowledge of the elemental physiological processes and of personal hygiene must also be given to every child before leaving school.

THE TEACHING OF SCIENCE.

The second great extension of our curriculum will undoubtedly be an increase in the amount of time devoted to the elements of science. Woodwork and its concomitant subjects have done much to relieve our schools from the danger of becoming too theoretical and literary in our education, but these themselves are not sufficient to meet the call for more scientific teaching. Personally, I think there should be a practical room in every school, and that the elements of the physical sciences should be learnt from experiments performed by the children themselves. We must, however, take care that practical science does not become too dominant in our primary schools. What is needed is the scientific spirit, which should, and must, direct the teaching of all subjects, not omitting the essentials of formal English, so that our children may proceed to sound judgments by accurate reasoning upon clearly viewed facts. The difficulty will be to determine exactly which sciences shall be attempted. Personally I would suggest that either gardening or hygiene should be chosen as a central subject, and that the elementary principles of science bearing on these should be taught during the last two or three years of school life. Much of the so-called nature-study now attempted gets no further scientifically than the stage of classification, and is rather destructive of nature than instructive in scientific principles. To secure this extension or addition of scientific teaching the requisite time can be found in two ways:—

First, by the scrapping of some of the subjects or parts of the subjects now taught, and, secondly, by the

extension of the school age to fifteen. On the former of these two, it must be obvious to all that it is now more than ever necessary that our antiquated system of weights and measures should go, and that some simplification of our spelling and handwriting should at least be considered. The number of rules still taught in arithmetic could easily and with advantage be curtailed, and long and useless mechanical problems should be omitted, while the teaching of algebra should be limited to its immediate relationships to arithmetic, and geometry leading to mensuration and trigonometry should take a far larger place in the curriculum.

With regard to the extension of school age, we must not be in too great a hurry. It is not clear in my own mind as to whether the nation would benefit by the compulsory attendance of all children up to the age of fifteen, but I am certain that the great majority would gain enormously by a wisely planned continuation of their school life, and it is difficult to allow for exceptions when we know from experience that local needs and local influence have more weight than the good of the child. Whether this extension of school life should be merely the addition of a year of attendance in their present schools, or whether the plan suggested in the *Times*, of a transference at or about the age of eleven to schools of another type, is not preferable, is a subject worthy of serious consideration. There must, however, be a much closer correlation between the primary and the secondary school. The preparatory class in the latter should be abolished, and the curricula of the two should be end on to each other. I am not an advocate of universal free education, believing that the abolition of fees in the secondary school would only increase the cost to the State or locality without increasing the efficiency of the school. I should like to see the secondary schools purged from the curse of paying dullness, and such an increase in the number of scholarships and maintenance allowances as would secure that every child of ability should have the best education possible. For this reason I would advocate the provision of more than one type of secondary school. The junior technical schools recently encouraged by the Board of Education are a step in this direction, but are too limited by their regulations to enable them to become what their name implies—an advance towards the senior technical schools and universities. This, however, is a matter which can be altered by a regulation. Secondary schools where art or commerce is the central subject are equally necessary.

CONCLUSION.

I have rigidly limited my address to matters directly connected with or directly arising from the war, and have omitted such important topics as the Teachers' Register, continuation schools, and the rural problem, and I make no apology for so doing. We teachers are probably brought more frequently into contact with the war than any other non-military profession. Our own sons, the children we have taught, our own colleagues, send us messages of joy or sorrow daily, and by every post. In no part of the theatre of this world-war are we free from anxiety on behalf of some of those we have sent. We are carried from the height

of joy to the depth of sorrow almost in the same instant. If this continual oscillation between joy and sorrow ennobles our aims, purifies our ideals, and increases our zeal, we shall be the better prepared for the task which lies before us after the war. And, as some will return shattered in health and limb, we must determine to do our best to relieve their necessities and to solace their griefs. For those dependent upon our unreturning brave we must do the same, and express our deep gratitude for their sacrifice and our desire to give them unfading honour by pronouncing over them in grief, and yet in pride, the immortal words of Shelley:—

"Until the future dares
Forget the past, their fate and fame shall be
An echo and a light into eternity."

HOW SHAKESPEARE SPOKE AND SPELLED.¹

HAS it ever struck you that if Shakespeare could come among us again and were invited to see one of his plays performed he would no doubt be struck with amazement at the stagecraft of our day, but would find it very difficult to understand what those on the stage were saying? He might even think it desirable to refer to the printed page—not necessarily as printed in his own day, a modern edition of his plays would do quite well.

If this surprises you, it is because you do not realise what a gulf separates our spoken and our written language. The pronunciation, especially of the vowels, has changed enormously during the last three hundred years; our spelling does not represent these changes, for it is a selection from the varieties of spelling that prevailed in Shakespeare's time. There was then, as you well know, no recognised form of correct spelling; a common word was often spelled in two or three ways on the same page. Shakespeare must have spelled like his contemporaries; the variety in the spelling of his plays as printed shocked him no more than anyone else. It is true that we unfortunately possess very little in his own handwriting—a few signatures of his name, in which variations occur!

Though there was no standard of correct spelling, yet if we compare the spelling of that day with the pronunciation then in use, we shall find that, on the whole, it was a pretty fair representation of the sounds of the living language. Take a few lines from Shakespeare and consider how he pronounced them:—

"Give thy thoughts no tongue
Nor any unproportion'd thought his Act:
Be thou familiar; but by no means vulgar:
The friends thou hast, and their adoption tride,
Grapple them to thy Soule, with hoopes of Steele:
But doe not dull thy palme, with entertainment
Of each new hatch't, unfledg'd Comrade. Beware
Of entrance to a quarrell: but being in
Bear't that th' opposed may beware of thee.
Giue euery man thine eare; but few thy voyce;
Take each mans censure; but reserue thy iudge-
ment."

¹ A paper written by Prof. Walter Rippmann, M.A., and distributed by the Simplified Spelling Society.

The spelling of this passage does not differ widely from our own; notice, however, "hatch't," where the last letter agrees with the pronunciation.

The consonants were pronounced as they are now, with the important exception that the "r" was never silent, always trilled. The words "proportion," "adoption," ended in "sion" with a clear "s," and with the "o" that we have in the first syllable of "poetic," and "censure" ended in s-i-u-r.

The vowels, on the other hand, were very different from ours. "Thy," "by," "tride," had the sound which we should now express by "thee," "bee," "treed." "Thought" had the same vowel (diphthong) as "soul" and in the second syllable of "opposed"; but in "no" there was a pure long vowel (as in French *pauvre*). The first syllable of "any" had the same vowel as "act"; it also appears in "familiar" (twice), in "vulgar" (compare the French *vulgaire*), in "adoption," "beware," "entrance," "quarrell." It is long in "take" and in "comrade," of which the second syllable is stressed. It also forms the first part of the diphthong in "their," which was pronounced th-a (as in "hat") -i (as in "hit") -r (trilled), and in the third syllable of "entertainment." The vowel of "thou" was the same as in "hoops" and "do." The vowel of "means," "each," "bear," "ear," was a long form of "e" (as in "pen," or, rather, as in French *été*). In "tongue," "dull," "but," and in the first syllable of "vulgar," "unfledg'd," "judgement," the vowel was that of "put"; the sound we have in these words is a more recent development. Lastly, the word "few" was pronounced f-e (as in "pen") -u (as in "put").

How can we ascertain the pronunciation of the Elizabethans? There are unfortunately no grammophone records of their speech; but we have other means of determining what sounds they uttered. There have always been people interested in pronunciation, and in Shakespeare's time there were grammarians who have left valuable indications. Our own students of language have devoted much attention to the development of sounds, and can suggest with some confidence the sounds prevailing at any particular time. The spelling also used to afford some guidance to the sounds; that it no longer does so to any satisfactory degree is due to various causes, as you may see from the "Brief History of the Spelling," which can be obtained on application to the Simplified Spelling Society (44, Great Russell Street, London, W.C.). Lastly, we get some information from the rhymes of the poets. We may learn a good deal from such of Shakespeare's rhymes as "convert: art," "desert: impart," "bone: gone," "wound: ground," "bushes: rushes."

It is true that rhymes are not an infallible guide to the pronunciation, and poets have often been content with very imperfect rhymes; indeed, they seem sometimes to have been satisfied with mere "eye rhymes." Thus Tennyson has the rhymes "prove: love," "put: shut," "town: own," "warm: arm," "words: lords"; and our Poet Laureate has rhymed "now: blow," "watch: catch," "come: home," "path: hath." As a rule, however, Dr. Bridges is

careful to have genuine "ear rhymes," and it is interesting to observe that this is generally the case with modern poets, much more so than with their predecessors. May we not regard this as evidence that they are more heedful of the living word, and less of the mere printed representation?

Shakespeare, we may be sure, cared very little about the spelling, but a great deal about the way in which the actors uttered his words. A spelling like ours, which gives no guidance to the pronunciation at all, would certainly have filled him with contempt, and he would readily have agreed with Prof. Page when he says:—

"The strongest argument for a spelling that shall more nearly represent the sounds of the words must rest on our sentiment for style and for poetry, and on a desire to bring back the feeling for poetry from its false dependence on the visible aspect of language—which is always artificial—to a dependence on the real substance of language, that is, the sound. A poem certainly loses nothing in being well read or spoken. Only so can it attain to its real existence as poetry. Yet when it is read or spoken, what becomes of the spelling and of the sentiment which is alleged to be more or less dependent on the spelling? For the sake of truer sentiment, for the sake of a truer feeling for English literature, and especially for poetry, our spelling should be simplified."

ITEMS OF INTEREST.

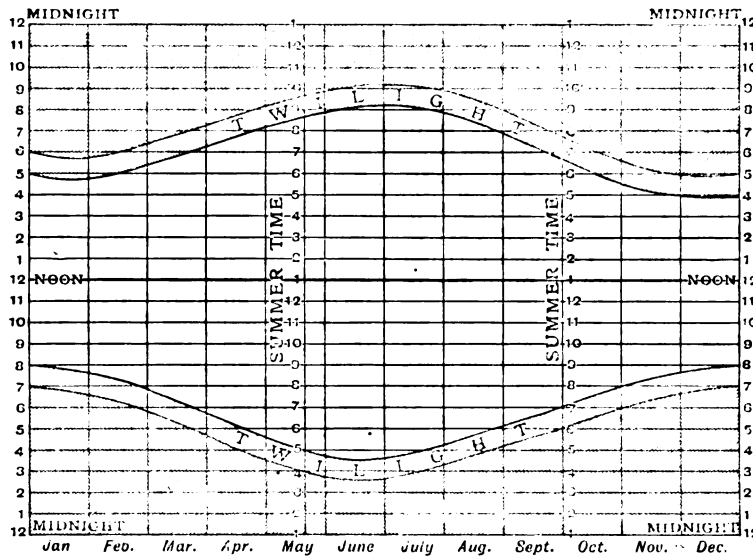
GENERAL.

We gather that the schools varied considerably in their celebration of the tercentenary of Shakespeare's week. The time-table was renounced; addresses were given on Shakespeare, the man and the poet, and on the influence of literature as being world-wide. In some cases enthusiasts dealt with the songs and the music to which they have been set, and pupils sang selections. The war and the poet's well-defined but calm patriotism were the theme. Scenes from the plays were acted, and in other cases read by chosen children, and recitations of the great speeches were given. Many schools adopted in part the programme alluded to in our last issue; and the famous chapter from Ecclesiasticus was heard, probably for the first time, by the assembled pupils. It was more than unfortunate that the present war, which has dislocated much in the school curriculum, should have prevented a definite programme being carried out all over the land.

By the Summer Time Act, which came into force on May 21st, the meridian of Mid-Europe is to be our standard for time-reckoning, instead of the Greenwich meridian, until the end of September. Civilisation, and particularly the conditions of city life, have tended to make most people pay little attention to the sun as regards its times of rising, southing, and setting in different seasons of the year. The working hours of the day have been determined by the clock; and their mid-hour in summer months is not near the middle of the period of daylight. As the length of the daylight cannot be altered, or the times of sunrise and sunset, and as people do not easily change their

habits, the clock has been adjusted so as to bring 12 o'clock midday an hour nearer sunrise, and therefore an hour farther from sunset, than is naturally the case.

THE times of sunrise and sunset throughout the year, and the twilight hour in each case, are shown graphically in the accompanying diagram. What the Summer Time Act does is to prescribe an alteration of the time-scale from May 21st to October 1st. Lighting-up times, which during the war are half an hour after sunset instead of an hour, are not affected by the new time-table; for they are determined by actual local times, which are based upon Greenwich time, with the necessary differences for latitude and longitude. Tide-tables, and all like records required for purposes of navigation and astronomy, are also to continue to be stated in Greenwich time as hitherto. From a scientific point of view the Act represents a plan of make-believe which is opposed to all sound conceptions of the meaning of a standard. The justification of the measure is found in social and economic considerations; and as Germany, Austria-Hungary, Holland, Denmark, Norway, and Sweden have all moved their meridians eastward by fifteen degrees until October we are only preserving the same time-relationships by adopting the Summer Time Act here.



AMONG the changes in the regulations for the Cambridge Local Examinations, announced since those enumerated in our issue for January last (p. 22) as arising out of the Board of Education Circular 849, are the following:—Candidates above eighteen years of age will no longer be eligible for honours. Elementary science, practical physics, and needlework have been added to the subjects in which examinations are held for senior candidates; and logic, political economy, domestic science, and physiology and hygiene can no longer be offered by them. The syllabuses in mathematics and natural science have been revised.

MR. WALTER RIPPMMANN proposes to take classes in English phonetics at Stratford-upon-Avon from July 20th, 1916. There will not be more than six students in a class. Instruction can also be obtained in French and in German phonetics, and in methods of

modern language teaching. Intending students are requested to communicate with Mr. Rippmann, 45, Ladbroke Grove, London, W. Mr. Rippmann will also deliver a course of lectures in connection with the Summer School of Speech Training at Stratford, arranged by Miss Fogerty, particulars of which can be obtained from the secretary, School of Speech Training, Royal Albert Hall, London, S.W.

THE National Federation of Christian Workers among Poor Children, of which Sir John Kirk is chairman, passed the following resolutions at its annual conference on May 1st:—(i) "That the conference views with grave concern the baneful influence of Sunday kinemas upon children and young people. It believes that in many cases they vitiate the imagination and promote the spirit of irreverence and lawlessness, and holds that no financial gain by charity can compensate for moral injury to the young; it also urges upon local authorities the exercise of further restriction and of closer supervision of all such per-

formances." (ii) "That this conference views with disfavour and alarm the tendency of many education and health authorities to cut down expenditure upon child training and care to a limit below the requirements of efficiency, and it expresses the conviction that generous public provision for child welfare is one of the most urgent national investments in a

time of war involving such a gigantic outlay of life and possessions."

THE Montessori Society of the United Kingdom has secured Miss Muriel Matters to lecture on June 23rd, at 5.30 p.m., on "Dr. Montessori's Training Course at Barcelona." Miss Matters has been attending this course, at which Dr. Montessori has dealt with the extension of her methods to children up to the age of ten. The lecture will be free to members of the Montessori Society. The Montessori Society is also holding a summer school at Wootton, near Boar's Hill, Oxford, for teachers or parents actually engaged in teaching young children. The number of students will be limited to fifty, and preference will be given to country teachers in poor country schools. In order to make attendance possible for teachers in counties where the salary scale is very low, the fee for the three weeks' course has been fixed as low as

possible, namely, 12s. for the three weeks' teaching, which will consist of one lecture and one discussion class per day. Wootten boasts a recreation hall, which has been secured as a school for the younger village children, whose mothers will be glad to have them taken care of while they themselves are busy with the harvest. This school will be under the direction of a Montessori teacher, and the students will be able to visit it. Dr. Jessie White, 49, Gordon Mansions, W.C., is acting as organiser, and early application should be made to her.

EXCEPT for the references in the presidential address and for the fact that the outgoing president is a master in a secondary school, secondary education was not much in evidence in the special conference of the N.U.T., held in the latter part of Easter week. This is scarcely surprising, since the conference was shorter than usual, and was held presumably to settle questions which had arisen during the two years since the Lowestoft meeting. The usual social functions were omitted, and the conference assumed a severely business aspect, despite the lovely weather in which it was held. The only evening meetings were devoted to business in connection with the charitable and provident work of the union, and with the meetings of most of the usual sectional organisations.

SOME work was, however, done which may ultimately be of importance to teachers in secondary schools:—(1) The secretary (Sir James Yoxall, M.P.) was able to make an important announcement with regard to the investments of the superannuation fund, which have been improved so as to secure an increase in the annuities ultimately available. (2) A discussion on scales of salaries resulted, contrary to general expectation, in the acceptance of the proposals of a joint committee of heads and assistants. These are in advance of anything hitherto generally suggested, and may form a useful standard for reference when dealing with authorities of parsimonious tendencies. Improvement in the salaries of teachers in primary schools must be welcomed, not only as a means of raising the status of such teachers, but also because it will be helpful in raising the salaries of teachers in secondary schools.

THE only two motions dealing specifically with secondary education were passed without debate at the close of the last public session. But resolutions vigorously opposing any suggestion to tamper with the efficiency of educational machinery, and demanding an improvement upon the *status quo ante bellum* at the earliest possible moment, were carried after a spirited debate. These affect secondary as well as primary schools. No notice of the conference would be complete without a reference to the retirement of the veteran treasurer, Mr. G. M. E. Hamilton, who had held the office for thirty-two years.

THERE is distinct evidence of a reaction towards renewed routine teaching of grammar, both in this country and the United States. The teachers of ancient and modern languages in both countries complain whenever they have to postpone their legitimate work to inculcate a knowledge, for example, of the

difference between a verb and a relative pronoun. Mr. C. H. Ward contributes to the *School Review* (Chicago) a suggestive article, "A Platform of Grammar," on the situation. The work should chiefly aim at the formation of better sentences; pupils should be continuously trained in the inquiry into what words do. Technical terms and mere forms should be avoided. The main work lies in exercises; sentences should be grouped to provide drill at first in single topics, later in two topics, and these sentences should be taken from stories and descriptions. Grammar based upon extracts from Tennyson or Emerson is unreal. It is more profitable to examine a live idiom like "I don't know who did it" than to whirl towards Azrael's outposts with "As night to stars, woe lustre gives to man." This is not an easy programme, for it is harder to be thorough in a few fundamentals than to hurry through a thousand non-essentials.

IN an article on "Methods of Measuring Teaching Efficiency" Mr. D. A. Anderson, of the University of Washington, in *School and Society*, suggests a new attitude towards the teacher. Efficiency tests have been invaluable in industry and business; why not in education? The goal aimed at in training teachers should be more clearly perceived; the selection of teachers should not rest on opinion, but on the results of impersonal objective and substantial tests; acting teachers should be measured frequently to establish a rational basis for promotion. There is a demand for a scientific analysis of the successful teacher; no teacher who fails to improve during service should be retained. Various schemes have been promulgated to measure efficiency; one of the best is that of E. C. Elliott, whose scale of efficiencies is as follows:—Physical (80), moral (100), administrative (80), dynamic (160), projected (50), achieved (250), social (80), supervisory (200), where the numbers in parentheses are parts of a maximum of 1,000. The adoption of such a scheme implies certain definite results. Misfits in the teaching profession will be eliminated, and, as time goes on, will occur less frequently. When a teacher knows that a certain standard of efficiency guarantees a correspondingly high standard of appreciation and salary he will pay attention to his continuous growth and improvement. Efficiency means a betterment of conditions all round and a consequent enhancement of the value of the profession.

"THE European war has not created the problem of Americanisation, but it has revealed it to us as a vital, perhaps the paramount, issue of our public life." So begins an article in the *Columbia University Quarterly* by Prof. R. L. Schuyler. The frontier has disappeared, and the fierce individualism, a frontier product, has been modified; Americans are not so sure as formerly that God has singled them out as His chosen people. Americanisation, in its broadest sense, is a problem of education. The melting-pot is kept working overtime for the aliens, but he refuses to be melted. He finds new facilities and many obstacles in reference to naturalisation. He must be taught to be American by example as well as by precept. The public schools must teach civics and vitalise the teaching by showing the pupil the meaning to him of his own com-

munity life; he must participate in school government. So the young alien and the young American will be Americanised; but the adult alien requires special treatment. The census of 1910 showed nearly twelve million foreign-born whites, of whom one-fifth could not speak English, and one-eighth were illiterate; many cities with an alien population amounting sometimes to 7,000 had no public evening classes where immigrants could learn English. The National Americanisation Committee has been formed to extend the teaching of English to foreigners, to encourage and facilitate naturalisation, to improve industrial conditions, and to spread the American standard of living. Peonage is a blot upon American civilisation.

THE Ontario Department of Education has issued special regulations enabling young men attending high and continuation schools and the collegiate institutes to obtain their departmental certificates without completing their courses in the usual way, provided they enlisted for overseas service not later than May 12th. Similar regulations deal with the pupils in the higher forms of the provincial schools, permitting them to obtain exemption from attendance and departmental examinations or school promotion, provided they enter at once upon some occupation of the farm and continue so to work for at least three months. This is part of the Government's plan for dealing with the paramount necessity for making timely and adequate provision for planting and harvesting the crops of the Dominion in view of the situation and the scarcity of farm labour. Our schools—although not State schools—could perform similar useful service.

AN interesting and well-illustrated supplement on "China" was issued with the *Manchester Guardian* on April 18th. British traders in China are awake to the need for defeating German competition, and the British Chamber of Commerce has started a school of languages at which Chinese will be taught. There are pictures of exceedingly primitive coal-mines, which demonstrate conclusively the promising opening for engineering works. There is an excellent map of the Chinese railway system, both operative and suggested, with a great trunk line from Canton through Hankow to Peking and Mukden, and the important line from Peking to Shanghai. From Peking to Shanghai the journey occupies twenty hours, and from Peking to Hankow twenty-seven hours. Roads are levelled by a roller which is drawn by about thirty coolies, who earn about 4d. a day, and are content to live on this meagre amount. In the towns where Chinese live in contact with Europeans the standard of living has doubled within the last thirty years, and the gradual extension of such a change throughout 400 millions of people will involve great issues for British commerce.

THE annual report on education in the Cape of Good Hope for 1914 has just reached us. There are five inspectors whose districts cover an area almost half as large as England; one of them includes almost the same area as that of England. Six inspectors have charge of more than 150 schools each. The number of schools has been more than doubled since 1894, and there are 2,630 schools for white pupils and

1,830 for coloured children now in operation; the increase in the former has chiefly been made in recent years in small rural schools. There are now ten training colleges for student teachers, four more than in 1913. There are nearly a quarter of a million pupils, with an average attendance of 88 per cent.; two out of five pupils are white. There are forty-eight high schools, attended by fourteen thousand pupils. The teaching staff numbers nine thousand, with an average of twenty-six pupils per head; two out of three teachers are fully qualified, but the supply of newly trained teachers does not equal the demand; five out of eight teachers are women. School libraries are in increasing use; more than two thousand schools make use of about a third of a million books. Twelve new schools have been completed, and many existing schools have been extended. The average cost to the Government is £3 14s. 9½d. per pupil, of which 1.3 per cent. is spent on office administration and 3.9 per cent. on inspection.

MR. P. BOARD, the Director of Education for New South Wales, addressed the twenty-second annual conference of the New South Wales Public School Teachers' Association on "The War and Education." The address has been published by the New South Wales Department of Education. The school has to set up a demand for competence, to combat the great danger of democracy—the cult of mediocrity. The schools must develop a stronger corporate life, and must bring the pupils close to the actual life of the world in matters of conduct, just as it has recently succeeded in vitalising the school with actual relations to outside affairs in matters of knowledge. The school must affect the passage for the pupil from the stage of submission to external control to that of self-government, from the habit of response to direct stimulus to that of reaction to the indirect stimulus of life in society. The war, too, emphasises the need for efficiency, and the secondary school must aid the pupil to realise his own aptitudes, and must cause him to exercise these special abilities in an efficient manner. Morally, the war is a warning against docility of character in the face of the Government; there is a great moral difference between the compulsory military service sprung from within the people of Australia and that imposed upon the people of Germany by a military caste.

THE College of Preceptors examiners' reports yield some unexpected statements. Several youthful optimists aver that Great Britain retook Heligoland in 1915, and no town site is now considered satisfactory if it is near the sea, for the reason that it is then liable to bombardment.

A CORRESPONDENT has directed our attention to the sentence: "Among the crowd of school primers it stands out for a humdrum originality," in our review last month of "English Verse Composition," by A. E. Roberts and A. Pratt (Edward Arnold). Our reviewer remarks:—"The phrase, 'humdrum originality,' is quite right, but perhaps its meaning is not clear. I meant to praise the book, and intended to convey

that, though the questions of prosody, rhythm, rhyme, etc., have been again and again dealt with and are from the nature of things humdrum, the way in which the whole subject has been treated is original." It will be seen in the present number (p. 235) that this little work is again referred to and quoted from; the beautiful verses by a child, called "Forget-me-not," are quoted from the introduction to it.

SCOTTISH.

SCOTLAND has hitherto had little experience of child labour. The half-time system, save for isolated instances on the east coast, has never been popular either with employers or parents, and the number of exemptions granted to children of school age form an almost negligible percentage of the children on the roll. Even where permission is given it is accompanied by conditions that secure the attendance of such children at continuation schools until the age of sixteen. The scarcity of labour at the present time in agricultural and cognate occupations has led to an increasing demand for the employment of children of school age. If such labour is to be allowed at all there certainly could be no better, because no healthier, sphere for it than agriculture, and there is probably no other occupation where such labour would be more effective. If the country really needs this labour, all other considerations must give way. But the deplorable thing is that the great majority of education authorities do not apply themselves to this question. The attitude they take up is this:—"The removal of these children will mean a loss of grant to the board. Are you prepared to make good this loss of grant in addition to paying the children the current rate of wages?" If the employer agrees, the pupils are at once set free. It is amazing that the Education Department tolerates such juggling with the pupils' interests; but we are aware that they are not indifferent in the matter, and are at present conducting an investigation regarding the whole question of exemptions.

A MINUTE has been issued by the Department making important alterations in regard to the certification of teachers. The annual certificate examination which still holds in English training colleges was abolished in Scotland about ten years ago. Since that time certificates containing detailed information regarding their attainments in each branch of the regular curriculum have been issued to the students. For the purpose of standardising the work in the various training centres, a visiting inspector was appointed for each subject, and it was his business to determine along with the lecturers the degree of attainment to be set down on each certificate. By the new minute a further step forward is taken, and the responsibility for the marks assigned to each student is placed upon the lecturers and the training authorities. It is perhaps not too much to hope that if the training college lecturers justify, as we have no doubt they will, the responsibility thus placed upon them, the Department may introduce a similar reform in regard to the issue of the school leaving certificates. By another change which has been made students will now rank as cer-

tificated teachers immediately they leave the training college. They will, however, be on probation for a period of two years, and at the end of that time, if the reports on their work are satisfactory, will be recognised as fully qualified teachers and receive their permanent certificate.

At the meeting of the General Council of the University of Glasgow the proposed ordinance dealing with the preliminary examination came up for consideration. The Rev. Dr. Smith, chairman of the Business Committee, moved that the ordinance be not approved. He urged as a general objection that it was unwise to stereotype their schools and universities on predetermined lines, when the best interests of the country might be served by leaving them free to arrange their courses in the light of the experience gained from the war. Prof. Gibson, in supporting this motion, asked if education was the one thing which had nothing to learn from the war. No one, he contended, would be prepared to support that position, yet this ordinance was based solely upon pre-war ideas. The resolution to oppose the ordinance was carried by a large majority.

SINCE the beginning of the year a War Savings Committee has been at work organising a thrift campaign in England, but the Treasury seem to have thought no such body was required in Scotland. They probably believed that the mere offer of £1 for 15s. 6d. would prove a sufficiently moving appeal to the keen Scot, and would draw to the War Loan every spare shilling in the land. We greatly fear that Scotland's reputation for thrift, as for many other things, is a tradition and not a present-day reality. The Treasury seems at length to have come to that view also, as it has just appointed a War Savings Committee for Scotland. Teachers are highly pleased and gratified to find the name of Mr. G. C. Pringle, rector, High School, Peebles, on the list of members. It is a well-merited recognition of the great work he has already done in the cause of thrift in schools throughout the country.

PROF. WALLACE, Edinburgh University, has brought a hornet's nest about his ears by his statement in the public Press that the present system of education has proved a failure. The professor makes no attempt to prove his thesis, and he seems to be profoundly ignorant of the nature of the curriculum in Scottish schools, both rural and urban. He says that the education of the masses "is little more than a glorification of the three 'R's.'" It would be a much truer criticism to say that the three "R's" are being pushed too much into the background for the sake of premature instruction in the elements of vocational subjects. The learned professor seems to have all the typical bucolic distrust of education for the masses, at least of all education that does not lead to direct results in farming operations. He would agree with those who hate education because it "puts notions" into the heads of the rural youth and so makes them averse to working on the land. Education does, indeed, create a divine discontent in all its votaries; but the remedy is not to be found in its abolition, but in the

removal of the conditions against which education revolts. The system of education in Scotland has many faults, but Prof. Wallace has not placed his finger on any of them.

At a meeting of Edinburgh University Council Dr. Morgan, principal of the Provincial Training College, in moving the approval of the draft ordinance for the institution of a degree in education, said that the ordinance made provision for one of the most comprehensive degrees in education offered by any English-speaking university. When it became law it would make its influence felt on the educational system of the country, and would do much to advance the professional status of teachers.

IRISH.

THE Sinn Fein rebellion, which has wrecked the fairest part of Dublin and caused untold harm to Ireland, may seem to have little to do with education. If we mention it here it is because the so-called Commander-in-Chief of the Forces of the Irish Republic was the headmaster of an intermediate school at Rathfarnham—a Dublin suburb. Mr. P. H. Pearse was the proprietor of St. Enda's College, as it was called, which he founded as a Roman Catholic boarding school mainly in the interests of the Irish language, which he made the chief means of instruction for other subjects. He and his brother, W. Pearse, and T. A. MacDonagh, who also taught there, were all three shot as chiefs of the rebellion. Some other assistant-masters of Dublin schools figure among those who took part in the insurrection, and have been sentenced to penal servitude.

THE Very Rev. F. J. Watters, headmaster of the Catholic University School in Leeson Street, Dublin, was one of the many innocent victims of the outbreak. He was standing at the door of his school when the revolt was supposed to be over and was shot in the stomach, dying in hospital a few days later. He was among the most prominent of Irish Catholic headmasters, and was at one time President of the Dublin Education Society.

ONE of the many brilliant incidents which redeem the sad and sordid character of the rising was the defence of Trinity College. At the time of the outbreak on Easter Monday the college was practically empty. A bare handful of students remained, and these, under Mr. Alton, one of the Fellows, maintained the defence of the buildings and grounds, covering a large area of fourteen acres. By various ruses they kept off the rebels, who, from the loop line of railway, practically commanded the grounds, the small force being gradually increased until, after two anxious days, a regiment of soldiers entered the gates and was quartered in the park and quadrangles.

MR. BIRRELL, whose resignation of the office of Chief Secretary in consequence of the outbreak was inevitable, will probably be best remembered for his services to Irish secondary and university education. The knotty problem of a university for Catholics, which had foiled many Governments and been the downfall

of Mr. Gladstone on one occasion, was settled by him on lines generally acceptable by the foundation of the National University in the South of Ireland, with its three constituent colleges in Dublin, Cork, and Galway, and of the Queen's University in Belfast. The National University will probably be modified in the course of a few years, but the main problem is solved. To secondary education he has secured for the improvement of the salaries of lay assistant-teachers an annual Government grant of £40,000, together with a scheme of registration, at least in embryo.

SCHEMES for the improvement of manual instruction and medical treatment in national schools have recently attracted attention. Unfortunately both matters are hung up for the present owing to the lack of funds caused by the war. In connection with manual instruction a scheme has been prepared by the Roman Catholic Working Boys' Technical Aid Association, a body which is doing admirable work in a limited manner to help juvenile workers to avoid blind-alley employments. It has established a club for working boys in Clarendon Street in Dublin, where it holds evening classes and prepares them for the entrance examination into the trade and technical classes in the city. The committee of the association is of opinion that closer co-ordination between the National Schools and the Technical Institutes could be secured by the formation in each school of a trades' class chosen from boys suitable to put forward for the technical entrance examination. It also suggests evening or continuation classes in the National Schools for pupils who are obliged to leave school at such a low standard as to be unable to pass the entrance examination. The committee appeals for public help and support for these proposals, and also for the establishment of regular manual work in all National Schools.

At last there has been issued the Government's proposed change in the Registration Council. It was made by the Lord Lieutenant on February 16th, and, having lain on the tables of both Houses of Parliament from February 22nd, came into force on April 11th. The Council is increased by four new members from fifteen to nineteen. The new members are to represent (1) the Incorporated Association of Assistant-masters in Secondary Schools (Ireland Branch), (2) the Governing Body of the Royal College of St. Patrick, Maynooth, (3) the Managers of the Roman Catholic Convent Intermediate Schools in Ireland, and (4) the Managers of the Roman Catholic Diocesan Colleges in Ireland.

WELSH.

THE Governing Council of St. David's College, Lampeter, met on May 2nd to elect a new principal, the post being rendered vacant by the death of the late Principal Bebb. There were about a dozen candidates, and the choice of the council fell on the Rev. Canon Joyce, warden of St. Deiniol's Library, Hawarden, and a former vice-principal of St. Michael's Diocesan College, Llandaff.

MANY interesting views and facts are brought to light in the progress of the movement for improving and extending the teaching of Welsh. The Welsh Prime Minister of Australia, acknowledging an address presented to him by Welsh citizens of Melbourne, said he regretted being unable to address the meeting in Welsh because all present would not understand it. It was one of the blots on the educational system of Australia that the people of that country were allowed to grow up in barbaric ignorance of the finest language in the world. Welsh was the language in which the first courtship had run its course in the Garden of Eden, and, despite many attempts to crush it, it still endured, and would rest for ever in the minds and hearts of all who called Wales their native country. Without inquiring too closely into the proportion of banter contained in Mr. Hughes's remarks, we may safely say that these words are a literally correct expression of the ideas of large numbers of people. The Welsh of to-day is, of course, as truly a modern language as is English; it differs no less than does English from its own form of six hundred years ago, and its vocabulary owes a heavy debt to Latin; it has many varieties of dialect in both idiom and spelling, and, like English, it is sorely in need of protection from degradation by admixture.

A RECENT writer describes how in the school he attended the master caused a boy who used a Welsh word to take possession of a wooden token, which he retained until he caught another boy doing the same thing, when he passed the token on to him. At the end of the day punishment fell on the culprits, and the writer congratulates pupils of to-day on their freedom from such methods of teaching. We are not told what the punishment was, but on this, and not on the mnemonic device, depends the whole of the grievance. It is necessary to avoid Welsh words and idioms in speaking English, and English words in speaking Welsh. Vernacular bilingualism is a positive disadvantage when it leads to such expressions as the following, quoted from a contemporary:—From a sermon: "Roedd y pen yn fitio'r shoulders, pob joint yn fitio'u gilydd yn un skeleton complete"; and from a speech at a farmers' meeting:—"Y mae arno ni eisio Land Courts i securio fixity of tenure, i ofalu am compensations, am improvements, ac i protectio rights y tenants da." And this was overheard in the streets of a Mid-Wales town:—"Lle mae John Williams yn byw yrwan?" "Oh, mae o wedi agor siop newydd yn y High Street, i shavio a hair-dressio!"

It is interesting to note that one of the most important men in the Welsh educational world is credited with looking forward to the time when, not French or German, but Welsh, shall be the next language taught after English in the schools of Britain. An encouraging sign of the times is the fact, brought out at the Welsh Language Conference at Cardiff College on March 18th, that the supply of school books for Welsh study has made great progress within the last few years in both numbers and quality. A forthcoming version of "Grimm's Tales" should be welcome in Welsh schools.

SERIOUS efforts are being made to establish toy-making as a national industry. It has been started in the Vale of Clwyd, and its promoters have made arrangements for a stall for the sale of the toys in the grounds of the National Eisteddfod, which takes place at Aberystwyth on August 16th-18th. There is now on view at the temporary museum in Cardiff City Hall an extensive collection of toys of all ages, from 2500 B.C. to the present day, formed by Mr. Edward Lovett, who has arranged them in series to show the evolution of the ideas expressed in their forms. The exhibition, which is under the auspices of the National Museum, is to remain open for three months.

DR. GWENOGFRYN EVANS has nearly completed his study of the Book of Taliesin, which he has printed at his private printing press at Llanbedrog. He has been engaged in this work for eight years, and has come to the conclusion that Taliesin lived in the twelfth century, not in the sixth, according to the general belief. There are many who hold that there were two Taliesins, whose works have been confused—an interesting parallel to the belief of Owen Rhoscomyl that there were three Arthurs.

THE conditions that are to be established in Welsh education after the war are receiving timely consideration. The Central Welsh Board is to be re-formed, and the Commission on Welsh University Education has already met three times. The meetings for general discussion are to be held at the London headquarters, but portions of the inquiry will be held in Wales itself in order to gather information at first hand. The secretary of the Commission is Mr. A. H. Kidd, to whom communications should be addressed at the offices of the Board of Education.

FROM the South Wales newspapers:—County School A recently advertised for a teacher of Welsh, offering in the case of a master a salary which was to commence, according to his qualifications and experience, at from £120 to £170, and was to increase annually by £10 to a maximum of £170. The salary offered to a mistress was £100 to £140, under like conditions. County School B recently advertised for a caretaker, salary £100, together with house, free of rent and rates, with gas and coal. Verily it is better to be a doorkeeper than to take thought how one may be a teacher with adequate training and acquirements.

THREE NEW WAR BOOKS.

- (1) *The First Year of the Great War.* By R. Wilson. 256 pp. (Chambers.) 1s. 6d. net.
- (2) *Syllabus in War Geography and History.* By A. A. Cock. 32 pp. (Philip.) 6d. net.
- (3) *The Nemesis of Docility.* By Edmund Holmes. viii+264 pp. (Constable.) 4s. 6d. net.

THESE three very different books illustrate the wide range of educational interests touched by the present war. The first is historical, the second primarily geographical, the third psychological.

Dr. Wilson has provided a reading book for boys and girls, particularly such as are in the upper forms of elementary schools. Together with a succinct narrative of the main events of the campaigns of 1914-15, he contrives to give a good deal of informa-

tion concerning the countries at war and the issues at stake. His narrative is interspersed with many illustrations and maps.

Mr. Cock aims at no more than the formulation of a syllabus for a year's course on the history and geography of the belligerent nations. His little pamphlet, therefore, is merely a teacher's *vade mecum* which makes no pretence of literary style. It is particularly interesting in one respect, viz., that it supplies a concrete example of that co-ordination of history and geography which is so often discussed in general terms, but so rarely reduced to a practical programme.

Mr. Edmund Holmes, in his "Nemesis of Docility," has made a remarkably subtle and profound analysis of the German national character. He has, of course, in the sphere of English education, long been urging the relaxation of discipline and the opening of the way to the manifold manifestations of individual idiosyncrasies. He finds in Germany an awful example of the neglect of his teachings, and the adoption of that policy of rigid regulation which is associated with the name of Prussia. He shows how militarism has bred docility, how docility has engendered a reciprocal dogmatism, how dogmatism has resulted in arrogance, brutality, and general moral degradation. It is an impressive study, written with all Mr. Holmes's well-known literary ability. Its lesson is that German militarism must be crushed by a decisive and overwhelming military defeat. Mr. Holmes hopes that another and better *régime* may be raised on the ruins of Prussianism. It may be doubted, however, whether armies are destined soon to be abolished or whether it will be possible to organise them on the principles of the Montessori system.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

What is Phonetics? By Harold E. Palmer. 60 pp. (International Phonetic Association.) 2s. (1s. to members of the association).—Mr. Palmer's answer to the question, "in the form of twelve letters from a phonetician to a non-phonetic friend," is an excellent piece of popular exposition, lucid and convincing. He shows what the science of phonetics aims at and what results can be achieved by its help. He answers the familiar objections raised by those who have not given it a trial. He points out how futile it is to attempt to teach the pronunciation of a foreign language by relying on mere imitation; and he pours scorn on the misleading "imitated pronunciation" to be found in some books. The choice of symbols made by the International Phonetic Association is explained and justified. For the purposes of propaganda this pamphlet will serve admirably. Rarely is there any statement to which we can take objection. The treatment of the question of standard speech is rather unsatisfactory. After devoting a letter to showing that there is no "standard" pronunciation, he speaks on p. 54 of "normal" pronunciation and of "correcting" vulgar speech—but this implies a standard. It is a pity that some phoneticians will not realise the importance of considering the problem of what is to be taught as "normal." The gain to be derived from phonetics in studying the history of the language might have been dealt with more fully. Even for pupils at school such phenomena as Grimm's law, Umlaut, the plural *chevaux*, the pronunciation of "c" before "e" and "i," become intelligible when phonetics are employed for their explanation. (By the way, such loose statements as "French final 'l' was replaced by a vowel"

should not have been allowed to pass.) Lastly, there might well have been some allusion to the problem why sounds change at all; it is not enough to explain pronunciation as a "fashion."

La phonétique appliquée à l'enseignement de la lecture. Par Paul Passy. 19 pp. (International Phonetic Association.) 1s. (6d. to members of the association).—Anything that comes from M. Passy's pen is sure to command the earnest attention of all phoneticians. The present pamphlet contains an account of a brief experiment in teaching reading to a small group of children whom M. Passy taught in the autumn of last year, and M. Passy also discusses previous experiments of a similar kind. A visit to the United States some years ago showed him what was being achieved there by the "synthetic" method, according to which a beginning is made with words; whereas Spieser, in his well-known experiments, began with sounds ("analytic" method). The words designating familiar objects were written in the alphabet of the International Phonetic Association, and M. Passy considers that the results were distinctly encouraging. This is not at all surprising to those familiar with what had been previously achieved by teachers who utilised a phonetic spelling; readers of THE SCHOOL WORLD will recall the recent experiment with simplified spelling which showed how much time could be saved. We look forward to further accounts of the progress made by M. Passy's pupils, and would suggest that he would do well to utilise some of the results of Dr. Montessori's work, to which there is no allusion in his pamphlet. We believe that the skilful muscular training advocated by her, combined with the use of a consistent representation of the sounds, would produce in English and French results no less remarkable than those which stand to her credit in teaching Italian, a language blessed with a decent spelling.

Classics.

Tacitus, Agricola and Germania. Edited by J. H. Sleeman. liv+211 pp., with two maps. (Cambridge University Press.) 3s. net.—In his preface to this addition to the "Pitt Press Series," Mr. Sleeman makes the fullest acknowledgment of his debt to Mr. Furneaux. Since Mr. Furneaux wrote new MSS. of Tacitus have been discovered, and have caused some amendment of the received text; but this is not extensive, and the greatest justification of this present edition is that it contains so much borrowed from Furneaux's two masterly monographs at a much cheaper price. The introductions contain all about the life, style, influence, etc., of Tacitus which the young student requires, while the section on the history of the text and MSS. will be useful even to advanced students. The two maps are beautifully clear, and the notes—some 150 pp. to 56 pp. of text—are very full and detailed. Over-lengthy notes are strongly to be deprecated in a school edition; but these two treatises contain so many difficulties that length is inevitable. The student will find in them not only the pith of Furneaux's notes, but also much valuable information resulting from the excavations of Prof. Haverfield and others.

English.

V.B. being Poems written by Members of a School Form at Shrewsbury. 60 pp. (Oxford University Press.) 1s. net.—A fashion is springing up to publish children's verse. If this is done to show the possibility of teaching versification or to prove a theory, as in the case of Perse School, there can be no objection; or if a writer wishes to direct attention to a Marjorie Fleming or a

Logan Wilshire, who are poets, or divine memories, at the mature age of eight, it is well; but if a claim is made for the excellence of schoolroom verse we have to cry halt. Occasionally we light on a gem (we quote two below), but the mass is for the albums of child-worshippers or for the family record. The booklet, "VB," consists of Shrewsbury verse, edited for, not by, an enthusiastic master, and many a hard-working teacher will be glad to see it by way of encouragement. Five of the little poems were worth the light, but the remaining twenty-seven are of the school—schooly. "The Lighthouse," "The Spartans," "The Eagle," "The Magician," and "Leaves" justify the tiny volume. Perhaps when we consider what the world would have gained by a wholesale scrapping in the case of some of the world's greatest poets, editors will be chary in following this new fashion; but we should have been sorry to miss the following, not from Shrewsbury, the first of which is from the introduction to "English Verse Composition," reviewed last month:—

"By a Child of Eight.

"(Spelling mistakes corrected.)

"When to the flowers so beautiful
The Father gave a name,
Back came a tiny blue-eyed one,
All timidly it came,
'Dear Lord, the name Thou gavest me,
Alas, I have forgot.'
The Father kindly looked on her,
And said, 'Forget-me-not.'"

"From a Longer Poem.

"I don't see how my parents kin make the big
mistake
O' keeping down a boy like me that's got a name
to make!
It aint no wonder boys is bad and lalky as a mule,
Life aint worth livin' if you have to waste your
time in school."

The Cambridge Book of Poetry for Children. Edited by Kenneth Grahame. Parts 1 and 2, about 120 pp. each. (Cambridge University Press.) 1s. net each.—It has always been a happy thought to get people like E. V. Lucas, Frank Stockton, "Q," and other experts to descend from Olympian heights and do the ordinary in the way of guide-book or anthology, provided that the same loving care be expended on the ordinary as on other work. What an excellent child's story-book, for instance, we think Algernon Blackwood could compile, and what an editor for a literary library Charles Lamb would have made! So here we expect, and find, amid much that is old, a new touch when the author of "Golden Days" collects his preferences for children's reading. He has not despised Sir Walter Scott, Tennyson, Longfellow, thus defying those critics who would banish such writers from the schoolroom; he has added quite a number of little-known pieces, and a few personal notes give a charm to the books. But, alas, Mr. Grahame has no place for Christina Rossetti.

History.

History: the Quarterly Journal of the Historical Association. Edited by Prof. A. F. Pollard. (Macmillan.) 1s. net; annual subscription, 4s. 6d. post free.—The magazine entitled *History* has been in existence about four years. Hitherto it has been run as a private venture, although supported mainly by members of the Historical Association. Now, however, the Association has officially taken it over, and has commenced the issue of a new series in a new and vastly improved form. The present number con-

tains four leading articles, as follows:—First, "The Teaching of Imperial History," by Sir Charles Lucas; secondly, "The Teaching of Naval and Military History," by Mr. Julian Corbett; thirdly, an account of the instruction in naval history given at Dartmouth, by Mr. H. W. Hodges; finally, a vigorous defence of history against the exclusive claims of natural science, by the editor. In addition to the articles there are sections devoted to "Notes and News," "Correspondence," "Reviews," and "Bibliographies." The Historical Association is to be heartily congratulated on its new venture, and to be complimented upon the success of its inauguration.

The True Patriot's Book. By Orme Agnus. vi+162 pp. (Pitman.) 1s. 3d.—This little work is in effect a school text-book of civics, but it is rather wider in its scope than most of its fellows. It contains the usual chapters on the constitution and the machinery of central and local government—topics which it is almost impossible to render interesting to any save the bureaucratic mind. But besides these chapters there are others more novel and attractive. They deal with such subjects as "The Greatness of a Country" and "Our Past History," together with "Our Great Men," "Our Freedom," "Our Language." It is these circumscribing chapters that lend distinction to the book, and mitigate the irremediable dullness of the civics proper. There are numerous illustrations.

(1) *Modern Europe, 1789-1914.* By Sydney Herbert. xii+262 pp. (Macmillan.) 2s. 6d. net.

(2) *Outlines of European History, 1814-1914.* By G. B. Smith. viii+267 pp. (Edward Arnold.) 2s. 6d.

These two small text-books, so nearly parallel in their scope and equal in their dimensions, bear witness to the newly awakened desire of educated people to know more of the affairs of Europe during the nineteenth century. They are both written by competent scholars, and both appear to be trustworthy in the information which they impart. The two main differences between the two seem to be these: first, Mr. Herbert deals with the history from the point of view of Europe as a whole, while Mr. Smith rather provides sketches of the main countries of Europe; secondly, Mr. Herbert's detailed study practically ceases at 1878—the subsequent period is touched only in the lightest outline—while Mr. Smith's narrative becomes fullest for the period 1871-1914. Thus the two works admirably supplement one another, and should, if possible, be read together.

Mathematics.

Mathematical Monographs. No. 16: *Diophantine Analysis.* By R. D. Carmichael. vi+118 pp. (Chapman and Hall.) 5s. 6d. net.—This is an admirable introduction to that fascinating field of investigation into the properties of numbers which is associated with the names of Diophantus and Fermat. As the author points out, although the majority of modern workers have followed the lines of research originated by Gauss, yet the older methods have not been developed to their greatest possible extent. Of their power there can be no doubt. Fermat's last theorem still challenges mathematicians. But the Diophantine body of doctrine is disjointed and fragmentary in character, concerned with special problems rather than with general methods of investigation. It has therefore been the aim of the writer to gather together the important results so far developed, and to develop a more systematic treatment of the whole subject. The discussion of the problem of the Pythagorean triangle

is a natural starting point, and leads immediately to the consideration of problems involving a multiplicative domain, such as the solution of the Pellian equation. The concept of a multiplicative domain is that of a class of numbers such that the product of any two of the numbers is also in the class. It is developed, first, in connection with numbers which are sums of squares, and is later extended with applications to problems of higher degree.

Another general method discussed is that of functional equations, and it is clear that both methods are full of promise. A number of Fermat's theorems, and especially that known as the last theorem, receive detailed treatment, while the majority of the essential results which have been obtained in this department of analysis are to be found either in the text or amongst the exercises.

Descriptive Geometry. By H. W. Miller. 149 pp. Third edition. (Chapman and Hall.) 6s. 6d. net.

The Essentials of Descriptive Geometry. By F. G. Higbee. vi+204 pp. (Chapman and Hall.) 7s. 6d. net.

Descriptive geometry possesses a value in education quite apart from its use in technology. In addition to the training of hand and eye which it affords, it gives the student the power of forming a clear idea of the relations between geometrical forms in space. All who have taught solid geometry know that the ability to think in three dimensions is only acquired slowly, and that not much benefit is derived from the mere inspection of models. It is probable that a short course of descriptive geometry would be found to assist the student's progress in a very marked degree. For such a course nothing could be better than one on the lines followed in these books. Written by teachers in two American universities, they resemble each other in many respects, especially in the thorough analysis from fundamental principles to which each problem is submitted before the construction is entered upon, and it is this feature which renders them of high educational value. The writer of the first-named book has made use of differences of type to bring out clearly the various stages in the solution, statement of the problem, analysis, discussion, construction. A few eccentricities of spelling, such as *thru*, which appears on almost every page, and a set of "Quiz sheets," give a characteristic touch. The second book goes somewhat further than the first in the degree of difficulty of the problems attacked, and there is a useful and novel chapter on the construction of paper models.

Science and Technology.

The Moon, considered as a Planet, a World, and a Satellite. By James Nasmyth and James Carpenter. Pp. xx+315. (Murray.) 2s. 6d. net.—James Nasmyth is better known as the inventor of the steam-hammer which bears his name than as the joint author of a classical work on the moon. When he retired from business in 1857, at forty-eight years of age, he became an enthusiastic student of astronomy, and this led to the publication of the famous work with Dr. Carpenter. Many years have passed since then, yet Nasmyth and Carpenter's "Moon" is still the most readable and interesting book on the physiography of our satellite, and its publication at the remarkably low price of 2s. 6d. should be the means of making the work known to a greatly extended circle of readers. There are twenty-five striking plates, showing the chief lunar formations and their possible mode of origin. In spite of difficulties in the way of explaining lunar craters by volcanic eruptions, no more satisfactory theory has yet been established,

so that substantially the state of knowledge of the moon as described in the original volume remains unaltered. We trust that the demand for the attractive edition now before us will abundantly justify the enterprise shown by Mr. Murray in making such a valuable work available at a price which brings it within the reach of all.

Shell-turning for Muniton Workers. By H. Schofield and J. F. Driver. 55 pp. (Blackie.) 1s. net.—The authors of this little book have attempted to give simple explanations of the work and tools which have to be employed by those who have volunteered for service in muniton works. After describing the lathe and its method of working, some of the simpler operations in shell-turning are explained. Other chapters deal with turning tools and the methods of keeping them in order, and with measuring appliances. As the matter is dealt with in a very simple way, any learner actually engaged in a workshop will learn quickly the whole of the contents of the book. Some of the drawings could be improved; thus Fig. 1—a simple engine lathe—is very badly drawn; the tail-stock should be re-drawn. The chuck in Fig. 5 is placed part on one page and part on the opposite page. The "general hints" on pp. 27 and 28 are likely to be useful.

Miscellaneous.

Fredom in Service. By Prof. Hearnshaw. 100 pp. (Murray.) 2s. 6d.—This collection of six essays forms admirable material for discussion in the higher forms of schools. The writer, whose history is unimpeachable, proves easily that voluntarism is new and the citizen army old; that liberty does not mean the power to do as you please; and that national service is democratic. With respect we may say that all this, which everyone knows, is but a starting point for discussion; and over against Prof. Hearnshaw's contentions it is to be remembered that we are, apart from the war, in a period of change and unrest; that educated and deeply read writers have for years been preaching revolt; and that the rise of the poorer classes to a consciousness of limitless power has scrapped a good deal of the older certainties in regard to government. You cannot escape the possibly unwelcome fact that George Meredith, Ibsen, Strindberg, Brieux, Masfield, were, or are, rebels; and that the Bible itself is an age-long challenge to comfortable centuries. It is better to limit our studies in liberty to the plain question: "May a minority defy law, and when and how?" The writer returns, as most people do, to Aristotle's "Golden Mean"; but what of those who are past the hour when the dictum still retained its priceless wisdom?

(1) *The Schoolmasters' Year Book and Educational Directory, 1916.* lxiv+1248 pp. (Year Book Press.) 12s. 6d. net.

(2) *The Public Schools Year Book, 1916.* Edited by H. F. W. Deane and W. A. B. Evans. xxxii+796 pp. (Year Book Press.) 5s. net.

The first of these indispensable works of reference bears many traces of the war. No summary of educational tendencies of the year has been attempted. Two new marks, one signifying on active military service and the other registration by the Teachers' Registration Council, are conspicuous in part ii., and it is surprising to find how small a fraction of the total number of masters in secondary schools have registered yet. The editor may well claim "to have held together the organised record of higher and secondary education which 'The Schoolmasters' Year Book' has struggled for years to maintain." We

wish the volume, which is of constant assistance to us, the success its excellence deserves.

"The Public Schools Year Book" maintains its usefulness, and this twenty-seventh issue is as complete and up-to-date as ever.

Studies in Shakespeare. By Mary A. Woods. 176 pp. (Truslove and Hanson.) 3s. 6d.—Nine short essays on Shakespearean subjects make up this well-written and thoughtful volume—an attempt to disentangle the greater and the lesser man, the man who wrote "Lear" and the man whose birthplace Mr. Henry James so carefully emptied of its world-wide vulgarity. Surely it is because we are wedded to German criticism that we lose our common sense at once when we approach the man of Stratford. If teachers would but question Coleridge's unfortunate epithet, "myriad-minded," and substitute for it "myriad-brained," we might be less perturbed over Shakespeare problems. We will have it that Shakespeare preaches; whereas, unlike most of our poets, Shakespeare—and Chaucer—never preach. The men themselves are as silent as Horatio, and as wise. The studies here are full of knowledge; and to them intelligent artisans have listened.

EDUCATIONAL BOOKS PUBLISHED DURING APRIL, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

- "Book of German Verse." Compiled and edited by H. G. Fiedler. 458 pp. (Clarendon Press.) 3s. net.
 "Progressive German Idioms." By S. Tindall. 112 pp. (Clarendon Press.) 1s. 6d. net.
 "Italian Grammar Self-Taught." By A. C. Panagulli. 104 pp. (Marlborough.) Wrapper, 1s. net; red cloth, 1s. 6d. net.
 "Key to Italian Grammar Self-Taught." By A. C. Panagulli. 29 pp. (Marlborough.) Wrapper, 6d. net.
 "Italian Self-Taught Grammar and Key." By G. Dalla Vecchia and A. C. Panagulli. 285 pp. (Marlborough.) Cloth, 3s. 6d. net.
 "Italian by Home Study." By G. Dalla Vecchia and A. C. Panagulli. 285 pp. (Marlborough.) Three books banded, 2s. 6d. net.
 "French for the Front." By E. F. Harris. Third edition. 32 pp. (Marlborough.) Wrapper, 3d. net.

Classics.

"Rome and her Kings; Selections from Livy I." Edited by W. D. Lowe and C. E. Freeman. (Oxford Elementary Latin Readers.) 110 pp., with map. (Clarendon Press.) 1s. 6d.

English: Grammar, Composition, Literature.

- "The Cambridge Book of Poetry for Children." Edited by Kenneth Grahame. Part i., xii+118 pp. Part ii., viii+126 pp. 1s. net each. Bound in one vol. cloth extra. (Cambridge University Press.) 3s. net.
 "Keats's Odes, Lyrics, and Sonnets." Edited by M. Hills. 152 pp. (Clarendon Press.) 3s. 6d. net.
 "Swift's Conduct of the Allies." Edited by C. B. Wheeler. 125 pp.+2 maps. (Clarendon Press.) 2s. 6d. net.
 "English Prose: Narrative, Descriptive, and Dramatic." Compiled by H. A. Treble. (World's Classics.) 522 pp. (Oxford University Press.) 1s. net.

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CORRESPONDENCE.

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Distorted Graphs.

IN common with most other examiners, it sometimes falls to my lot to set questions on "graphs," and to mark the candidates' answers. It is my experience that very little of the work submitted is of any substantial value. In a recent paper where an easy ordinary algebraic quadratic graph was set, 60 per cent. of the candidates failed to draw the graph correctly; 25 per cent. did not attempt the question; and of the remaining 15 per cent., one-third gave too little of the graph and one-third drew a curve which, though substantially correct in principle, was drawn in a very irregular and slovenly way; thus only 5 per cent. got anything approaching a really satisfactory result.

The mistake most commonly made is that in representing the relation between two quantities of the same kind, or two variables connected by an algebraic relation, candidates fail to represent the variables in their correct relative proportions. Unless this is done the drawing of graphs is of little value. If we call the variables x and y , a graph ought to show at a glance which is the greater at any point, and where, if anywhere, $y=2x$ or $\frac{1}{2}x$. I have seen graphs drawn of straight lines which the candidates had proved were at right angles to each other, but which were made in the figure to cut at an angle of more nearly 45° .

I have heard of certain restaurants which had outside their entrance two cylindrical mirrors curved in opposite directions so that a passer-by could see distorted images of himself intended to show what he would look like before dining at the restaurant and after dining. The graphs commonly sent up to me bear no more likeness to the real locus of the equation than does what the person saw bear to his actual appearance. If candidates are asked to graph the equation of a circle they usually give a very elongated

curve bearing no resemblance even to the upper half of the circle. If they were asked to draw a catenary they would certainly draw a figure which could not by any possibility represent the curve assumed by a heavy, flexible chain.

Unfortunately, the text-books are to blame for these bad graphs. I have seen a diagram in an educational paper which professed to exhibit by means of a graph the relation between the diameter and the circumference of a circle, but which really showed the circumference as only about one and a half times the diameter, as could be easily verified by applying a foot-rule to the figure.

It is important that the pupil should be taught to realise that there are two classes of relations that can be represented by means of graphs. One class includes relations connecting quantities of the same kind, as well as those given in the form of equations (algebraic as a rule) connecting two variables. The second class includes relations between magnitudes of different kinds, such as the day of the month and the height of the barometer.

In the first class it should be possible to see at a glance from the shape of the curve the relative magnitudes of the two variables at any point of the scale, and the impression thus formed should be capable of verification by marking off on a ruler the lengths which represent them. Only in very exceptional cases, where the variables are of a considerably different order of magnitude, is it necessary to adopt differences of scale. In the good old days differences of scale would have been necessary in representing the relation between a man's income and what he paid in income tax, but in the present disturbed times this distinction has ceased to be necessary, or even justifiable.

Even in relations of the second class a great deal can be done to improve matters. Where quantities of different kinds have to be studied in their dependence one on the other, it is the choice of units rather than the choice of a scale which is of fundamental importance. When the units have been fixed, both should, if possible, be represented by the same length. Thus in the case of the old-fashioned problems about men mowing a certain number of acres in a certain number of days, the same length, whether an inch, a half-inch, or a centimetre, ought to be used as a rule, to represent a man, an acre, and a day.

I believe that it is positively mischievous to allow pupils to make things look unequal in a graph when they are really equal. When I remonstrate with them my pupils point out that the books all do the same. The effect of this is to bring into existence a certain type of pupil who blindly follows the text-book, even if he thinks all the time that it is at variance with ordinary common sense. We have suffered from this kind of thing too much already, and have still many such pupils on our hands whom we are trying to enlighten.

If graphs are to be taught at all, let them be taught properly and intelligently. If not, it is worse than useless to teach them at all.

Plas Gwyn, Bangor.

G. H. BRYAN.

School Instruction in Science for Military Purposes.

CAN you afford space for me to mention some points raised by correspondence which followed the article on the above subject in your April issue?

One writer said that I had overestimated the cost of telephones, and that he had purchased (in September) a pair of Siemens' portable telephones with wire and accessories for about £9. These instruments are very similar to the Service pattern.

Several correspondents have expressed surprise that

map reading and field sketching found no place in the list of subjects I gave. One of the reasons for the omission was that these subjects are usually taken by officers of the O.T.C. When they are not, it would be valuable if science masters would undertake the work, or, perhaps, geography masters or art masters could find the time.

The following books would prove useful:—

"Manual of Map Reading and Field Sketching," 1912; General Staff. Official. (Wyman.)

"Notes for Lectures on Map Reading and Sketching." (Terrill; Gale and Polden; 1s.)

"Artillery Map Reading and Elementary Gunnery Made Easy." (Gunlayer and Contour; Gale and Polden; 3s. 6d.) In this book the elements of gunnery are set forth clearly and concisely; they afford good examples of a practical kind in mathematics. The instruments referred to in the book are not fully described; it should be read in conjunction with "The Handbook of Artillery Instruments" (Wyman; 1s. 6d.).

A set of eight "Landscapes for Army Class Drawing" (with instructions), by Bellin Carter, is published by Edward Arnold at 2s.

Mr. J. Young, instructor in science at R.M.A., Woolwich, has kindly sent me the following notes:—

What an Infantryman Should Know.

1. Elements of *electricity* leading up to telephony, and details of the construction of the D.Mk.3 and Stevens's instruments. Tests, faults, and how to rectify them (all in detail). Laying lines; use of the telephones in the field. Morse code and facility in its use.

2. *Map reading* is very important; use of prismatic compass, etc.

3. *Explosives*, not so important.

Students might be taught something of the composition and properties of cordite, materials used for charging bombs and hand-grenades, such as T.N.T., guncotton, and N.G. mixtures, ammonal and some chlorate mixtures. Construction of a fulminate detonator.

4. *Poison Gases*. Properties of gases which have been, or may be, used. Absorbing agents; respirators; self-contained breathing apparatus.

5. *Range-finding*. The elements of *light* treated as briefly as possible and leading up to principle of range-finders. Details of the Barr and Stroud one-man range-finder.

What a Gunner Should Know.

Electricity. Same as for infantryman; but it is even more important for him to know his telephone and Morse code thoroughly.

Explosives. General principles of explosion and detonation. Explosive mixtures and compounds with the examples of gunpowder, guncotton, nitroglycerine, blasting gelatine, etc., cordite, fulminate, picric acid, T.N.T.

Range-finding, *Poisons*, *Map Reading*, as for infantryman.

C. L. BRYANT,

Hon. Sec., Association of Public School
Science Masters.

Hillside, Harrow-on-the-Hill, May 12th.

Set Books in Examinations.

THE Cambridge Local Examinations and Lectures Syndicate have recently issued their report on the examination results of the year 1915, and it would appear, in view of their criticisms and of the proposed reorganised syllabus for future examinations (in

consonance with the Board of Education Circular 549), a favourable opportunity for the schoolmaster to criticise examinations generally and this examination in particular, so far as his practical experience bears upon them.

I have long deplored the archaic nature of the classical papers. We may look, I suppose, on the older Universities as the pillars of classical learning, and yet at the very moment when they decided to abolish set books in the French syllabus of the Junior Examination they announced that there would be in the future no alternative unseens in the Junior Greek papers. So that while they bring themselves into line with the most recent ideas in modern language teaching, they revert to the most retrograde principles of classical teaching, thereby weakening the whole structure that they uphold. It is my belief that the decay of the classics is largely due to the set book. What interest or practical advantage can there be to an immature mind in reading the same wearisome book of Vergil or Cicero for three successive terms in order that a minute and meticulous knowledge may conceivably be attained—an ideal which defeats its own ends more frequently than not? Conceive, on the other hand, the delight of following the whole story of the "Æneid," or at least a large part of it, of reading the "Noctes Latinæ," or an abridgment of Herodotus, which would be the natural result of abolishing the set book.

Classical papers should be set on the same principle as modern language papers—in unseen work only. Not, of course, that the boy or girl of sixteen should be set a speech of Thucydides—beloved by the examiners in set books—to translate at sight, but there is both in Latin and Greek plenty of easier material to draw upon which would be within the scope of the normal pupil who has been intelligently taught. Candidates for distinction might, perhaps, be set alternative unseens of a harder nature. We want our youthful Latin or Greek pupils to know a little Latin or Greek, not to learn a translation by heart. In that way, and that way only, can classics become a living interest. And in this connection it would be well to remember that the immature mind does not take kindly to the interests of maturity: the philosophy of the "De Senectute" or the "Phædo" is above the head of the average boy of sixteen.

But the decay of the classics can only be paralleled by our immense ignorance of English. When I think of the glorious heritage of literature we can call our own, I shudder at the waste of time spent in cramming one play of Shakespeare for the local examinations. The ignorance of and dislike for Shakespeare evinced by the average middle-class Englishman is, I suspect, largely due to the set book demanded by the local examinations. It is lost labour to a schoolboy, who will probably never become a scholar in the intenser sense of the word, to read and re-read and learn and dissect "Macbeth" or "Julius Cæsar," when he might all the time have been induced to recognise some of the broader beauties, not of that play only, but of two or three others. Why not a trilogy of one tragedy, one comedy, and one historical play, together with, say, Milton's shorter poems and a selection of essays, not to be learnt by heart, but to be generally read and appreciated? It may, I know, be said that there is a paper offered both in certain selected works and in English literature generally, but the boon is more than nullified by a proviso that this precludes taking a third division in the section unless it be a set book. The London University Matriculation Examination, excellent in its classical papers, has been less fortunate in its English paper, as it relegates its literature to a very

minor place, the obvious remedy being a separate paper in literature.

It is the daily enigma of the schoolmaster how to reconcile examinations with education, and it is small wonder that a horror of cramming has determined some schools to have no traffic with examinations. Slowly schoolmasters have induced examining bodies to acknowledge their aims in modern languages, in mathematics, in science, but there is still much room for improvement, and nowhere more than in classics and English (though I have heard the history papers adversely criticised). We want a broader curriculum, higher ideals, more education, and a proper appreciation of the youthful mind. The improvement will, no doubt, come when schoolmasters have, as a matter of course, their place among the examining body.

C. A. HOWSE.

Kingston Grammar School, Surrey.

Determination of the Focal Distance of a Mirror or a Lens.

THE method described in January's issue for the determination of the focal distance of lenses and mirrors has been in use in my classes for some years. I have found, however, that it is more satisfactory to have a number of half-lenses and mirrors, both concave and convex, which can be placed upon a piece of paper on a drawing-board, and arrange experiments on similar lines to those performed with the plane mirror. In this way the student can not only find the focal lengths, but also the position of the image and object, and their relation to one another.

The students in the intermediate classes are also made to perform these experiments, which undoubtedly help them to form a clear mental picture of the phenomena of reflection and refraction in the above cases.

W. G. P. WALL.

Philander Smith College, Naini Tal, India.

A Federation of Teachers.

THE article, "A Federation of Teachers," by Mr. A. T. Simmons, in *THE SCHOOL WORLD* for May, voices a feeling which is shared by very many teachers. Why should a teacher in a secondary school be faced with the necessity of joining several associations? As an assistant-master, he joins the A.M.A.; as a specialist teacher, he joins his specialist association—e.g., the Geographical Association; as a keen educationist, he finds a place on the Teachers' Register; perchance he joins the Teachers' Guild, or becomes a member of the College of Preceptors. Not only is the multiplicity of associations a heavy expense, but a mild participation in the activities of these educational bodies involves a heavy call upon the teacher's time. Experience, however, shows that, for example, the five bodies named above are distinct in their aims and interests, and that in general routine work they overlap very slightly; hence, presumably, their existence. Would the proposed federation cover all these activities and represent all these interests? In that case the Teachers' Federation, with its very numerous sub-committees, would become as unwieldy a body as the London County Council, and inevitable sectional interests would be frequently eclipsed in view of general considerations.

Mr. Simmons does not quite correctly present the case of the elementary-school teachers; their National Union is not their only association; the class-teachers have a separate and active organisation parallel with the Associations of Assistant-masters and Assistant-mistresses, and there are also a London Teachers' Association, mainly intended for elementary-school teachers in the London service, and an association which supervises the interests of certificated teachers who are

not college-trained. Frequently, also, the elementary-school teacher joins the Teachers' Guild, or a specialist association, such as the Historical Association. The upshot of the situation is that the teacher must make a choice: he may become active in one professional organisation, or he may eschew them all and join a special association, which is not entirely professional, such as the Royal Geographical Society or the British Association, and find vent for his energies in movements which are not strictly educational, but are related to the advancement of science.

The analogy of the legal and medical professional organisations is not quite valid, since there scarcely exists in these bodies such a multiplicity of interests and activities. The comparison between a Federation of Teachers and the Chemical Society is beside the point, since the Chemical Society is not interested in the chemist as a wage-earner, but aims at advancing chemical knowledge. The implied similarity between teachers and lawyers and doctors is also weak, since teachers' associations deal with such questions as tenure and salaries in especial relation to the employment of teachers by education authorities; it has, indeed, been suggested that an Association of School Medical Officers is necessary. Such a suggestion implies the need for sectional organisations.

B. C. WALLIS.

MR. WALLIS has rather ignored my main contention that there is no educational parliament to which matters on which the collective opinion of all teachers is required can be referred. At the time of its inauguration the promoters of the N.U.T. appear to have had in mind the formation of such a representative body. This is the only reference to elementary-school teachers in the article, and the argument required no mention of the sectional associations to which Mr. Wallis directs attention. If Mr. Wallis will look up its constitution he will find that the Royal Society of Medicine is really a federation of numerous associations. The Chemical Society was instanced as a contrast to the existence side by side of the Associations of Headmasters and of Assistant-masters. There are not separate chemical societies for professors of chemistry and for demonstrators of chemistry. Finally, there is already a Medical Officers of Schools' Association.

A. T. SIMMONS.

The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

PRACTICAL PROBLEMS OF THE CURRICULUM.

WE published in our June issue two manifestoes, recently given wide publicity, in which the respective claims of science and letters to prominent places in the curricula of secondary schools, and particularly of the public schools, were set forth. Much has been printed in the public Press, and spoken from public platforms, upon these matters, often by people who manifested little knowledge of the actual work now carried on in schools; and schoolmasters have only rarely entered into the arena, either to justify or condemn existing conditions. It seemed to us desirable, therefore, to endeavour to secure expressions of opinion upon some of the practical points involved in the proposed reforms.

With this object in view, we sent our article to a number of experienced teachers and invited them to give other members of the profession the benefit of their opinions upon any of the specific subjects referred to in it, or others of a related kind. We are fortunate in being able now to publish, as the result of this invitation, what must be acknowledged to be the most valuable contributions that have been made recently to the question of the reconstruction of the curriculum. For convenience of reference, we state again the aspects of the subject which require consideration in the light of experience, though little attention has been given to them in the general discussion.

1. The subjects which should be included in the broad general education provided for all secondary-school pupils before specialisation is permitted, and the proper division of the available school hours among them.

2. The age at which specialisation may profitably begin and whether it should vary with the average leaving age of the pupils of a school.

3. The nature of the instruction in science included

in the general education of all secondary-school pupils; that is, the relative suitability, for the average boy and girl, of the present practical work in physical and chemical measurements, and of experimental demonstrations by a competent teacher of scientific principles and discoveries.

4. The provision, if any, which should be made for the study of subsidiary subjects during the years of specialisation. The older pupil specialising in science must not grow up indifferent to language or literature, nor the classical scholar to modern knowledge.

5. The plan to be adopted during the years of the general education course to find out the direction in which a pupil may specialise profitably.

6. The means of securing a sufficient number of efficient teachers able to make their lessons, in whatever subject, a training in scientific method. Much of the science work in schools is far from providing such a training.

7. The steps to be taken to convince statesmen and the public that satisfactory education is of necessity costly. The value, or otherwise, of the teaching of any subject depends ultimately on the teacher, and highly qualified and experienced teachers will only become available in sufficient numbers if emoluments are made attractive enough.

8. The best way to obtain the hearty co-operation of headmasters and headmistresses. The success of any scheme of instruction is in their hands; should changes be made only after full consultation with them?

By the Rev. A. L. CORTIE, S.J.
Stonyhurst College, Blackburn.

It will probably be conceded by all that the study of the natural sciences in public and secondary schools ought to be extended so that our pupils, especially those who have specialised in classics, may not leave school without some knowledge of the phenomena of the world around us, and of the experimental and observational methods which are the basis of all scientific research. But, to judge from the utterances of the protagonists on the side of science, what is required is a

revolution in the curricula of our public schools, and to quote, for instance, Sir Edward Schäfer (*Nature*, May 18th, 1916), "science ought to oust the study of Greek and Latin from the prominent position which these subjects hold in the educational course of our schools." This position, I take to mean, is that the basis of education in these modern times is to be sought in the study of natural science. After twenty-five years' experience as a science master in a public school, I should regard such a change as the greatest blow that could be inflicted on the study of natural science itself. For education is not primarily the acquisition of knowledge, as Sir Edward Schäfer has informed us, but a systematic mental gymnastic for drawing out the faculties, so that our pupils may learn how to acquire knowledge. You cannot train the mind of youth by imparting such facts to it as that, by rubbing sealing-wax on the sleeve of your coat, it will attract small pieces of paper, or by the application of the heuristic method so as to turn our classrooms into glorified kindergarten, and our method of teaching into one akin to that for making models out of plasticine.

The instrument for training the mind must be one that makes boys think, and gives them facility in the expression of their thoughts and accuracy in applying thought to action. The study of languages, and especially of the Greek and Latin languages, which, being dead languages, have their forms fixed and stable, is most admirably adapted for this end. In Latin, for example, each termination in the declension of a noun, each tense in the conjugation of a verb, and especially the correlation of the parts of a sentence in the construing of a passage, is a scientific exercise of the highest order, analogous, though superior, to the classification of living things into their orders, genera, and species. Again, the exercise of expressing the thoughts embodied in a passage of Latin into their equivalent English is an analysis requiring accuracy of thought and felicity of expression.

Experience, too, has shown the excellence of a preliminary training in Latin or Greek in forming the mind, so that it can the more easily adapt itself to the methods of natural science when required so to do. I have heard it stated by two principals of great technical schools that the chief obstacle that they had experienced in training the pupils that came to them was the inadequate preparation they had received in the subjects of a general education. Some years ago Sir Andrew Noble, when asked what special studies were advantageous for a pupil who desired to seek entrance into the profession of an engineer,

replied that the best preparation was a general education, and that an educated lad would soon learn engineering. And as a subject of general education for those who have the opportunity of learning it, though they may forget all about it afterwards, Latin is unsurpassed, on account of the orderly and truly scientific form of the language. The same experience has befallen science masters, for almost invariably the classical boys, when they are applied to science, outstrip their compeers who have received the relatively jejune mental training of the so-called modern side.

It would be well, in this connection, to read the passages from the experience of eminent French and German educationists quoted by a writer of a letter to the *Educational Supplement of the Times* for June who signed himself "Octogenarian." Combined with a preliminary literary training, in Latin or Greek for choice, there ought to be a concomitant training in the elements of mathematics and geometry. It is almost impossible to teach physics properly to students who are ignorant of elementary mathematics, but, given students who are possessed of a fair knowledge of mathematics, progress is much more rapid.

All boys in a public school ought to be put into the science classes when they have reached the standard of the lower fourth form. After a year or two it will soon be evident which boys are likely to make progress in science and which boys could more advantageously specialise in literary subjects. My own experience is that a boy of ordinary ability, who has been previously trained in classics and mathematics, can easily pass such examinations as those of the higher certificate of the Oxford and Cambridge Board, or the entrance examination for Woolwich, in physics, by devoting five or six hours a week to the subject for two, or at the most three, years.

Sir Edward Schäfer points to the pre-eminence of the Royal Navy in the public services as the result of "the fact that, from *the very first* [the italics are mine], the training given is mainly a training in scientific methods, whilst the very subjects which are alleged by so many instructors of youth to be essential to a scheme of general education are rigorously excluded." Boys enter for the qualifying examination for Osborne about the age of thirteen and a half, and one of the subjects required for the qualifying examination is Latin. It is precisely—and for this I am contending—because the boys to be trained for the Navy have first received a good general education, of which the study of Latin is an essential part, that our Royal Navy is so pre-eminently efficient. But let me point to

another efficient service, and that is the administration of our Indian and Colonial Empire. The men who have so successfully administered our vast Empire are for the most part public-school and university men, whose chief training was classical. Humanists by training, they knew how to administer colonies and dependencies in a human manner, far removed from the stereotyped, mechanical methods of German organisation. Would those who decry the study of the classics exclude such men from administrative posts because, perchance, they had no taste for natural science?

In medio stat virtus, and it is for those whose life-work has been spent in the training of boys in public schools to evolve a curriculum in which the claims of science and classics for due recognition shall be harmoniously satisfied. The cry that classics must be ousted because, perchance, our officers have made mistakes through a lack of scientific knowledge is dictated by panic. Others seem to think that the object of all study and learning is technical and utilitarian. After all, when we win this war, the scientific German officers, the product of forty years of organised effort, will have proved inferior in resourcefulness, in adaptability, and, above all, in humanity to the officers who have been trained in the public schools of England.

By J. H. E. CREES, M.A., D.Lit.

Headmaster, Crypt Grammar School, Gloucester.

It should be noted at the outset that the outcry raised against the predominance of classics in the public schools scarcely affects the ordinary secondary school. In such a school, inspected by the Board of Education and receiving grants from it, the study of science has already obtained adequate recognition. Science, especially in a modern school, is on an equal footing with classics, or, rather, it would be more correct to say that it has been elevated to a higher pedestal than classics, which often stands for indifferent Latin and non-existent Greek. Ten years ago the Board of Education grant was based entirely upon science teaching, an absurd situation which is happily a thing of the past. If the present secondary-school boy of ordinary intelligence does not get a fair idea of scientific method, and a fair knowledge of some branch or branches of science quite equal to the standard attained in other subjects of the curriculum, the reason must be either that he does not stay at school long enough, or that his teachers are not skilled. Mathematics, a study closely akin to science in its rigorous

methods, are, strangely enough, ignored in the recent memorial of men of science. This subject also holds an important place in the curriculum. Let it be remembered also that scientific knowledge and knowledge of science are not the same thing. In all subjects knowledge needs to be methodised.

As regards the aspects of the question to which THE SCHOOL WORLD directs attention, I make the following comments:—

1. Natural science should be included, as, in fact, it is included, in the broad general preliminary course. The Board of Education used to insist that two hours must be devoted to the subject; perhaps, except in the case of boys taking Greek, three hours, which would probably come to two double periods, would be better. I suggest tentatively that, dividing the week into, say, thirty-six periods, one might allot four to science, six to mathematics, six to Latin, ten to English (including history, geography, and divinity), four to French, one to drawing, leaving the remaining five to be allotted according to individual preference. Science and mathematics would thus take almost one-third of the time. I do not think that science should be taught to boys under twelve, nor do many science masters press for it, though a course of nature study is desirable. Nor should more time be given to science in the early years of the school course. Unless great care is taken science is a narrowing subject, and, moreover, we can teach, not science, but only a very small segment of science.

2. A form of average age sixteen should by then have taken an examination of matriculation type, and should be ready for specialising, if its members have come in good time to a school where they are kept steadily at work. Some will, of course, be ready earlier, and they ought not to be kept back. Others, I fear, will never be ready. In some schools this will mean no specialising at all. We cannot legislate for the boy who leaves at fourteen and a half; we can only protest and refuse to cater for him. We ought never tamely to accept the view that fifteen is a proper leaving age, and we must fight and fight until our view is recognised. Perhaps in some schools the year between fifteen and sixteen might be given to vocational training—scientific or otherwise—but such a policy needs much watching. I do not think that the age of specialising ought to vary according to the average leaving age; the kind of curriculum very properly might. But this is another story.

3. This *must* depend upon circumstances, especially upon the aptitudes and attainments of the teacher. I incline to think that in boys' schools the first three years

should be devoted to general elementary science (*i.e.* chemistry and physics), with, of course, practical work, and that the fourth year should be given to either chemistry or some branch of physics.

4. The most vital problem of all secondary education at present. I find it most difficult to keep science and mathematics boys from one-sidedness, what I am tempted to call illiteracy. Where it is possible, Latin or French should not be dropped. The English work is *most* important, and forceful teaching, based on no rigid syllabus, but of the most general character, is required. Though a teacher of strong personality is needed, his actual work only begins in the classroom. He must train his pupils into the habit of wide reading in the English classics, and get them into contact with as many great writers as possible. I lay the greatest stress on this point, and set my boys books to read regularly, giving them a wide choice, which may range from Ruskin's gorgeous rhetoric, or De Quincey, or Carlyle, to Boswell's "Life of Johnson," a glorious book for developing boys, the picaresque romances of Borrow, or even a novel of Thackeray, to read whom is a liberal education in itself. Guidance and suggestion are, of course, necessary. Most text-books being—inevitably—unhelpful, so many boys do not know the rich content of English literature, and it is not always recognised that to the ordinary schoolboy the great writers of the past, with their appeal to a small circle of the highly cultivated, seem to live in almost a different world. Such a boy has to catch their tone and adjust himself to their environment. Milton, Landor—I had almost said Lamb and Thackeray—are nearly as remote as Virgil or Cæsar in their outlook upon human life. There is need, then, of teachers of real culture, supersaturated in literature, humane men. Where are they to be found? Alas, I do not know; but the ranks of the teachers of classics will supply some few.

5. Teachers can merely wait and see. They will often be disappointed; notably in the boy of the "mechanical turn," who is generally too lazy to learn the bookwork on which all real progress in the higher branches of science must be based.

6. Another crux. There is a clamant need, as there always has been, for men of striking personality—masters of their own subject, but with sufficient breadth of view to co-ordinate it with other subjects. *All* subjects, not merely natural science, should be a training in method. All that administrators can do is (1) to pay the teacher really well; (2) to give him a free hand, which, if he is a real teacher, he will insist upon, or cease to teach. The Board of

Education, while not securing 1, has done much to prevent 2.

7. I am afraid that the problem is insoluble. But until philosophers become Chancellors of the Exchequer, or Chancellors of the Exchequer become philosophers, I see no remedy for the existing ills.

8. "Should changes be made only after full consultation with the headmasters and headmistresses?" The question answers itself. I would only add that the need for diversity of type in the schools of England must be recognised, and that, except in the case of quite unbalanced enthusiasts, it must be realised that it is best to give the willing horse his head, and that by some inscrutable law the Government official is much better skilled in applying the curb than in using the spur, whether in his own office or outside it.

By RUPERT DEAKIN, M.A.

It is remarkable that, while all secondary schools recognised by the Board of Education as being efficient are required to teach science and to teach it practically, nevertheless very few schools adopt the same course in carrying out this regulation. The universities issue long detailed syllabuses for their various examinations in science, but different schools, preparing pupils for the same examination, often use widely different methods of teaching; and, probably, no two of the eminent scientific men who signed the recent memorial would agree as to the way in which scientific instruction can best be imparted. This divergence of view among experts constitutes a great practical difficulty in teaching science. If a science master leaves, his successor will almost certainly want to make radical changes. The latter will say that there is a certain amount of new apparatus which he must have, and that much of the material that has hitherto been considered satisfactory is quite useless. In addition to this, new scientific apparatus is constantly being invented. Consequently, in many secondary schools nowadays there are large quantities of expensive apparatus that is stowed away in cupboards and evidently never used.

These frequent changes in the method of teaching science, causing, as they do, derangement of school routine as well as extra cost, have had two important results. Many very good private schools have hesitated to introduce science teaching into their curricula to any large extent; and public schools have found it necessary to keep down the salaries of their teachers and to economise in every possible way.

Twenty years ago there was a dearth of

science teachers; but, in spite of the poor salaries offered in many schools, there has been little difficulty lately in obtaining teachers with science qualifications. This is owing, mainly, to the existence of our technical schools. If, however, science teaching is to be extended, a difficulty will probably arise with regard to the supervision of games in boys' schools. Science masters have to spend so much time in keeping their laboratories in order and in preparing experiments that they cannot enter so fully into the outdoor lives of their pupils as masters engaged in other subjects are able to do.

I cannot help feeling that the present agitation for a change in the curricula of our schools is not the most urgent matter. A revolution in the spirit animating the boys at school is much more important. The love of ease and the pursuit of pleasure are found among our schoolboys to as great a degree as among any other class of the community. If a boy at school is taught to work hard, to think clearly, and to energise without the help of any teacher, the question whether more or less weight is attached to science, or to any other subject, is of comparatively little importance.

By J. L. PATON, M.A.

High Master, Manchester Grammar School.

THERE is a clear need for a more generous provision of university scholarships for science. There is even greater need for provision of research studentships, enabling promising students, after taking their degrees in science, to be trained in methods of research.

In making any such provision the claims of agriculture must not be forgotten. When one discovers that, while in England the average yield per acre is £4 per annum, the yield in Belgium under similar Free Trade conditions is £20 per annum, it is obvious what a vast field of production would be opened up by the application of trained brains to the tillage of the soil. It was good agriculture to which France owed her wonderful recuperation after 1871.

That every boy should have some training in science in his secondary-school curriculum everyone would be prepared to admit. I imagine there is scarcely a school where that is not the case. It follows, therefore, that science would necessarily be included in the proposed first examination at sixteen years of age. But after that a boy should have the option of higher study either in science and mathematics, or in some coherent branch of languages and history. This once achieved,

it will not be necessary to include science as a compulsory subject in the entrance examinations for the university. It would only be tophammer. The classical sixth boy, for instance, should not shut down his interest in science, but he should not pursue it along examinational lines; he should do all his science out of doors.

With regard to the Civil Service of India, I trust the humanities will still remain the staple subject. It is horrifying to think what the result might have been if the Governors of India in the past had been brought up on "the hard-grained Muses of the cube and square" and test-tube.

One word of warning. The result of our last science boom was that a whole host of small boys, who could not put two sentences together intelligently, were set to play at smell-making in expensive laboratories. I trust we shall be spared all repetition of that exploded error.

Another point. The provision of scholarships for modern languages is far more meagre than that for science. Cambridge gives five, Oxford three. We shall never have a satisfactory affiliation between the universities and our modern sides (and I include under this heading our municipal secondary schools) until the provision of scholarships for French and German is more on a par with the provision for Greek and Latin.

By W. PHILLIPS, M.A.

Professor of Education, University College of South Wales, Cardiff.

OF the points raised on pp. 216 and 217 of the June number of THE SCHOOL WORLD I desire to comment on the following:—

1. The subjects which should be included in the curriculum for *all* secondary-school pupils must be such as can reasonably be expected to bear fruit at the end of the first three years; for the great majority of pupils do not stay for a longer period than that. English literature must be included, and also history, arithmetic; a science (observational, practical, and experimental work is here essential), geography, music, and drawing. The introduction into most schools of some direct vocational work is strongly to be recommended, such as agriculture for boys in rural districts and cookery for all girls. I should greatly reduce the time and attention given to a formal subject like sloyd. The ever-increasing importance of the study of modern languages tempts me to add one of these to the compulsory list, but I believe the weight of the arguments is against taking such a step;

nevertheless, a modern language will rightly find a place in many schools; most profit will ensue if an intensive conversational method be adopted.

Each subject included above has been selected because a knowledge of it or skill in it is intrinsically valuable and necessary to our future citizens and workers. The time has arrived for giving up the attempt to settle a curriculum on the basis of the mental discipline which certain subjects are said to produce. The claims made on this score for Latin and mathematics cannot be substantiated. I should teach the former only to those who are likely to study it sufficiently long to learn to read its literature. I should give a bigger place to mathematics, but only on condition that the topics studied in the first three or four years are given a much more practical bearing than is given to them at present.

3. As most secondary-school pupils do not, as already indicated, go to a higher place of learning, it is obvious that if the scientific instruction given to the majority is to bear fruit in after years, the attempts made to give an "idea of scientific method" or to train "good powers of observation" by means of a brief study of the elements of two or more subjects may have to be abandoned, and attention concentrated on some one science. In such a case, geology and botany have strong claims for special consideration, because, when school-days are over, each can be pursued without the aid of a laboratory.

4. I agree with the editors that "the older pupil specialising in science must not grow up indifferent to language or literature, nor the classical scholar to modern knowledge." I should be inclined to include English literature in every young specialist's course.

6. It seems difficult to discover any better plan for securing efficient teachers than to insist that the principal members of a secondary-school staff shall, like those in an elementary school, have undergone a course of training in the theory and practice of education.

By T. RAYMONT, M.A.

Acting Warden, Goldsmiths' College (University of London).

THE editors of THE SCHOOL WORLD are, I think, wise in not inviting a general discussion of the relative claims of science and the humanities. The merits of each, considered without adequate recognition of the merits of the other, have been so often and so forcibly stated, from Huxley's time onwards, that there is surely little left to be said on the abstract

question which of the two has the greater "educational value." Speaking not only as a professional teacher, but also as a parent who has tried not to neglect his opportunities, I should say that a varied curriculum, including some study of the physical as well as of the social environment, is necessary up to a certain age, if only for the simple reason that there is no other way of enabling the child to find himself. A genius will, of course, find himself anyhow. Not even Shrewsbury could prevent Darwin from so doing. But it is morally certain that Shrewsbury and its like have prevented many a potentially good naturalist or physicist from coming to his own, in order to make an exceedingly bad classic. On the necessity of a varied curriculum, in which breadth is deliberately preferred to depth in the earlier years, I have nothing to add to this statement. But if, when the pupil's bent has become manifest, the school is unable or unwilling to offer him the means of following that bent, then the school is not doing its duty; and if the system of prizes and emoluments tempts him to forsake what he can do best, then that system stands obviously condemned.

So far as my own observation and studies justify me in offering opinions on the definite points raised by the editors of THE SCHOOL WORLD, I will state these opinions as follows:—

1. Every pupil should learn to write clear and correct English, but he should never be required to write for writing's sake—only for the sake of expressing his thoughts when he may well be supposed to have thoughts to express. He should be required to read carefully (but not to study intensively) a large amount of good English prose and poetry, but with the proviso that an austere principle of choice generally defeats its own end. He should begin to learn at least one language other than English. He should do some practical science, not, however, restricted to any specialised branch, but on the broad lines of what is now known as nature-study. The geography he learns should, again, be practical, and at some stages there is no need to distinguish between geography and nature-study. Much of the rubbish with which the arithmetic books are still encumbered should be thrown overboard as lumber, and a general course in elementary mathematics, made thoroughly practical and with no unscientific distinctions between arithmetic, algebra, geometry, and trigonometry, should be substituted. History should, I think, be taken in broad surveys, the "special period" being eschewed. Drawing and handwork should be taught so as to support and strengthen the

other studies, such as science and history. Every child should learn to sing, and this he can generally do with slight expenditure of time.

2. I think it is a pity that specialisation should have to begin before the age of fifteen, though in second-grade schools it must begin earlier. But by the time a child is twelve or thirteen years of age we can usually be quite sure of the things in which he can never shine. He should not, however, be allowed to neglect them entirely thereafter.

3. I have hinted above at the kind of general and non-specialised science I believe to be most effective for all and sundry. The thing to be shunned in this connection is any *direct* attempt to teach "scientific method." To make a pupil perform a series of what seem to him to be jejune and silly little experiments, with the view of training him in "scientific method," is the last word in pedagogic folly, no matter how well devised the experiments may be from the *adult's* point of view. You may get your pupils keen on finding out about "things"; you will never get them interested in acquiring "scientific method"; and without their interest you can do nothing. They are quite right, just as you are right when you are interested in your dinner, and refuse to be interested in the process of digestion.

As to the content of the science course, I have often wondered whether it is necessary that science should be so thoroughly dehumanised. Could we not give it the quickening human touch by making more use of the work of the earlier discoverers?

4. Under this head there is only one thing about which I feel strongly, and that is that when specialisation in science begins, definite and systematic work on the other side of the curriculum should not come to an end. Anyone who does not feel strongly on this point might do worse than glance through Sir Clifford Allbutt's little book on "The Composition of Scientific Papers." Speaking from vast experience in reading theses for the degrees of M.B. and M.D., he says that "the greater number are written badly, some very ill indeed." And he tells us that the prevailing defect is not mere inelegance, but "is such as to obscure, to perplex, and even to hide or to travesty the sense itself." Men of science who sneer at linguistic training should remember that most people need that training, not only in order to express themselves decently, but also as an important aid to clearness in actual thinking.

5. This is a question of practical organisation. I suppose that in most cases it should be the form-master's business to watch the

intellectual development of each pupil in his form, with the view of finding out the direction in which the pupil may profitably specialise. In this connection the educated parent should obviously not be ignored. As time goes on I hope he will refuse to be ignored.

6. This raises the whole question of the training of teachers, a question on which I hold very strong views. I admit that in some respects the present plans for training secondary-school teachers leave much to be desired. But I am sure that we shall never make much progress in reform until the young teacher, on the threshold of his career, is trained to take a systematic view of the questions at issue. Otherwise, the most he can usually do is to carry on the tradition in which he himself was brought up.

7. This question is too hard for me. I can only say that I do not think much will happen until some leading statesman takes up education as a big and pressing national question.

8. On the whole, I think there will be little difficulty about convincing headmasters, and still less about convincing headmistresses. I feel sure that most of them (except in places where tradition dies hardest) are convinced enough already. But they are in the grip of a system, and many of them would probably welcome a force from outside which should free them from that grip.

By WALTER RIPPMMANN, M.A.

Staff Inspector, University of London.

THE editors of THE SCHOOL WORLD have, with their wonted good judgment, refused to let themselves be drawn into the Science v. Humanities conflict, and have preferred to consider the wider question of the secondary-school curriculum. Of the eight points which they submit for discussion it is particularly the first on which I venture to submit some suggestions.

The schools I have in mind are the State-aided and rate-aided day schools, because the majority of the schools which it has been my privilege to inspect have been of this type, and because I admire the work they are doing and believe in it as a guarantee of greater national efficiency and fuller appreciation of the value of sound education in the strenuous decades of reconstruction. The eminent signatories of the "Neglect of Science" letter suggest that "the education of the democracy would follow the change in the education of the wealthier classes." It would be interesting to know how much they have seen of the "education of the democracy" as represented by the schools to which I have referred.

If the education of the wealthier classes as a whole were as good as that of many county secondary schools we should indeed be fortunate; as it is, the more you pay for your child's schooling, the greater the uncertainty of securing a good education.

I do not propose to discuss the early teaching of children, but to consider them as entering the secondary school proper at about ten years of age. Let it not be thought that I undervalue the importance of these early years. There is a great deal of waste at present through lack of co-ordination between the secondary school and the preparatory school. The best arrangement is to have a preparatory department closely connected with the school; the next best, a working agreement with one or more good private schools, which, in return for adapting their curriculum and methods to those of the secondary school, receive certain privileges, such as free advertisement in the school prospectus, the occasional use of the school playground, etc.

The two years from ten to twelve may be taken as one stage; the next two years as the second; the third stage covers the time up to sixteen; and the fourth stage completes a full secondary-school course.

Before drawing up a curriculum for the first three stages we must make up our minds how much time is available. Probably all will agree that thirty periods of forty-five minutes each week is the maximum for the first stage.¹ This might mean five full days each with three hours' work in the morning and one and a half hours' work in the afternoon; or four full days and two half-days. Preparation should not exceed forty minutes a day; this may be either fitted into the time-table (making thirty-five periods in all) or treated as homework. Where the conditions are unfavourable, the preparation may have to be included in the thirty periods of classwork, the only homework being a little memorising of poetry, etc.

It is not uncommon to require a greater number of periods per week in the next stage; unwisely, I believe. We have been inclined to hurry the children on beyond their physical capacity. (I fear that fixing the London Matriculation age at sixteen has undermined the health of many a child.) Thirty periods seem quite enough; the preparation may be increased to one hour-daily.

At the third stage (fifteen and sixteen years) we may raise the total periods per week to thirty-five where the conditions are favourable; but in a not inconsiderable number of schools it is wise not to go beyond thirty, and then

no second foreign language should be attempted. A total of thirty-five periods means three periods in the afternoon, in which case they should not be longer than forty minutes and separated by short intervals, except when two periods are run together (as for practical science, manual work, etc.). The preparation may be as much as one and a half hours daily, at least in the second year of this stage.

The following table gives a tentative distribution of the thirty or thirty-five periods available in the week:—

	I. (10-12)	II. (12-14)	III. (14-16)	Total (6 years)
Scripture... ..	1 ...	1 ...	1 ...	6
English	6 ...	4 ...	4 ...	28
History	3 ...	2 ...	2 ...	14
Geography	3 ...	2 ...	2 ...	14
French	— ...	5 ...	4 ...	18
Second For. Lang... ..	— ...	— ...	5 ...	10
Mathematics	4 ...	4 ...	5 ...	26
Science	3 ...	4 ...	4 ...	22
Drawing	2 ...	2 ...	2 ...	12
Music	2 ...	2 ...	2 ...	12
Manual Work	3 ...	2 ...	2 ...	14
Physical Instruction	3 ...	2 ...	2 ...	14
	30	30	35	

This table may be useful as a basis for discussion. It is not likely to satisfy everyone; this or that specialist will demand more time for this or that subject. If he does so, will he please indicate where it is to come from? Giving more time to one subject means either taking it from another or increasing the total periods per week.

Apart from Scripture, and counting geography as half an "English" subject and half a science, the periods per week in the six years' course work out as follows: English subjects 49, foreign languages 28, mathematics 26, science 29, arts 24, manual work and physical instruction 28; that is, roughly, two-sevenths of the time for English subjects and one-seventh for each of the other five departments.

I have deliberately assigned rather more time than is usual in most schools to music (in which I include "eurhythmics," "musical appreciation," or anything else that makes music a reality for the average boy or girl), to manual work (which it seems to me wrong to drop in the third stage), and to physical instruction.

What may surprise some is my treatment of foreign languages in the curriculum. If I am a specialist at all, it is in the matter of teaching languages; and yet it looks as though I were here treating them in a niggardly way. Fifteen years ago I might have thought differently; but, after seeing many schools at work, I am quite convinced that spreading out the learning of the elements of a foreign lan-

¹ In the table below, ten out of the thirty periods are given to drawing, music, manual work, and physical instruction.

guage over many years entails deplorable waste of effort and leads to boredom and failure. It is no good starting a foreign language before you know something about the pronunciation of the mother tongue and have a respectable English vocabulary, with some idea of grammar; and it is no good if you can spare only two or three periods a week for it, for the study of a foreign language must be intensive at the outset. When the vocal organs have been rendered supple by phonetic drill in English, the child of twelve has no difficulty in acquiring a good French pronunciation; and his knowledge of English grammar and his more extensive vocabulary give him a great advantage over the child of nine or ten in acquiring the foreign language.

The second foreign language is often in a very sad state in our secondary schools, mainly because it is begun too early and too little time is given to it. I am convinced that better results are obtained by giving daily lessons to it in the third stage than by giving three periods a week for four years. Whether it is to be German, Spanish, or Latin will depend on circumstances. On the whole, I should be inclined to recommend a choice of German or Latin; for those who study mathematics or science German remains essential. Those looking forward to a commercial career might, in some schools at least, take Spanish. Latin will rightly appeal to many; but I do not think that Russian should be introduced at this stage.

In a school where many of the pupils stay on until eighteen (and we may hope that this will be increasingly common), there seems no reason for specialising before the end of the third stage. This should be reserved for the time when the pupils have passed a suitable test (for which we are still groping) of their "broad general education." Where, however, the average leaving age is appreciably lower than eighteen years, say sixteen or even fifteen plus, it may be advisable to adjust the distribution of periods in the third stage to meet the needs of individual pupils or small groups of pupils. Thus there are always some who possess little linguistic ability and can barely learn even one foreign language with real gain, and who are sure to learn both badly if a second foreign language is attempted. There are others whose skill in manual work is well above the average, but who can never hope to get beyond a rather low level in "academic" subjects. There are others, again, whom it is worse than useless to teach more than a strictly limited amount of mathematics, but who make good use of extra time devoted to literary and historical studies. How far the curriculum of individual pupils

can be modified naturally depends on the size of the school and the staff available.

Although it is the secondary day school to which the above considerations particularly refer, I believe that most of what I have said has a wider application. If the preparatory boarding-schools and the great public schools accepted such a curriculum as I have indicated, we might look forward to a noticeable reform. It is about time that the education of the wealthier classes followed the change in the education of the democracy.

I will not venture to take up more space, although the other matters suggested for discussion are tempting enough. I entirely agree that it is very bad for pupils to specialise to the exclusion of all subsidiary subjects, just as it is bad for a teacher to be teaching his own subject exclusively all day and every day. The task of ascertaining the special capacity of each pupil is difficult; it would be simplified if a confidential record of each pupil were kept from the day he enters the school, which would remain in the keeping of his form teacher for the time being. Some schools seem to pay astonishingly little attention to such matters.

The education of our statesmen and the public as to the value of education is very uphill work. If our politicians were indeed statesmen, it would be easier—nay, unnecessary; as for the public, let us hope that it will keep its head amid the conflicting cries of educational partisans. Our salvation lies, not in the equipping of splendid laboratories or the maintenance of classical scholarships and fellowships and headmasterships, but in the provision of a "broad general education" for the greatest possible number; an education sound, not "showy," and fitted to be a true foundation for all subsequent specialising. For this we need keen, well-trained teachers, who should receive both adequate remuneration for their work and, what is even more important, an honourable position in the esteem of their fellow-men, as guides and guardians of the coming generation.

By NOWELL C. SMITH, M.A.

Headmaster, Sherborne School.

In reply to your invitation, I am glad to make a few comments on the practical points raised in your article on "Science and the Humanities in School and University." It is very important that such practical points should be raised. Educational discussions too often resemble Falstaff's bill of fare—there is altogether too much of the "sack" of theory and too little of the "bread" of practice.

In the first place, I only pretend to speak with first-hand knowledge of what are known

as the "public schools." And it is the public schools and the Universities of Oxford and Cambridge which are mainly in view in the proposals of Sir Ray Lankester's committee, the point being that through those institutions pass a very large proportion of the men who by force of circumstances have the greatest influence upon the Government and other departments of the national life. This is not to say that the whole system of secondary education, or rather of all our education, is not to be put to the test, overhauled, adjusted to our needs. But, without forgetting the whole, we must examine the parts; and one thing which some of our theorists neglect is to obtain information from people actually engaged in working the different parts.

Now to take your first three points *seriatim* :—

1. Setting aside religious instruction and physical training, which there is no need to discuss in this connection, the subjects which I believe should be included in the curriculum for *all* at a public school are English composition and literature, elementary mathematics, elementary natural science (including geography), history, French. Music (including elocution), drawing and other handiwork should certainly be part of every child's training, but should not be necessarily carried on for all boys after they reach the public-school age. The proper division of school hours among the necessary subjects cannot be laid down in a few words; but I am inclined to think that, roughly speaking, the time might be equally divided between English (including history), mathematics, science, and French.

2. It is important to distinguish between specialisation in various degrees. Upon the basis of the necessary subjects enumerated above I should build four structures: one predominantly classical, a second predominantly mathematical, a third predominantly modern-literary, and a fourth predominantly scientific. The two former would be smaller in size than the two latter, but of great importance from the quality of mind concerned. These boys would in most cases have shown a decided bent towards literary or mathematical studies, while boys of no decided intellectual bent would naturally be directed towards one of the two modern groups. Differentiation must be a question, not of age, but of capacity; but, roughly, this bias should begin with most boys at about fifteen. At about seventeen such boys as were fit for it should begin more decided specialisation.

3. Practical work in chemistry and physics is too expensive to be carried on, except to a strictly limited extent, as part of the general education of boys and girls. Some practical

work in a laboratory is necessary if the pupil is to be influenced by scientific method; but it should be supplemented by demonstrations and by the history of science, one of the main objects being to open the pupil's eyes to the importance and interest and bearings of scientific progress.

Time and space forbid my attempting to deal with the remaining points in this contribution, important though they are. The question of securing competent teachers is, indeed, of vital importance. Unless the State—or, preferably, the people—realises the necessity of devoting a far larger proportion of its expenditure to education than has hitherto been done, it will be increasingly difficult to get teachers of sufficient ability and force of character. It is true that in no circumstances will men and women be drawn to the teaching profession by the hope of making a fortune; but, on the other hand, many suitable teachers are lost to the work for want of a wage that would enable them to marry and in general to live in accordance with their social standing.

By E. H. TRIPP, Ph.D.
Bedford Modern School.

SINCE the wheels of reform grind with exceeding slowness in this country, it is undoubtedly important that those who have had a practical knowledge of teaching should descend from the somewhat attenuated atmosphere of abstract and academic argument into the more buoyant region of practical proposals. After the educational stables have been cleansed of the effects of lingering monasticism, of the abuses of the present system of examination, and of the hundred and one obstacles which strew the path of continuity of instruction, the first constructive step in the reorganisation of the secondary school must be the readjustment of the curriculum to meet modern requirements (and modern developments), without at the same time sacrificing the essential character-forming elements which have proved so potent in the past. The proposal of instituting a general course up to the age of sixteen, and a specialisation period thereafter, as adopted by the Board of Education and now unhappily shelved at the time when it is most needed, will meet with the approval of the majority of teachers. The objection to such a broad general course—that all boys are not cast in the same intellectual mould, that one boy's mental pabulum is another boy's poison—has truth in it and force behind it; but a curriculum based upon that fact would be quickly shattered on the rock of finance, it would be subversive of the excellent discipline of learn-

ing to accommodate oneself to the uncongenial, and it would render more difficult the task of foreseeing the kind of work the pupil should take up in the period of specialisation. The following schemata for the reformed curricula in both periods are put forward in a tentative manner and with all humility. The school week is taken to consist of thirty-two working periods of fifty to sixty minutes each. No provision is made for the teaching of Scripture, which might well be included in the time devoted to English, nor for that of the very important physical culture, which could with advantage be relegated to out-of-school hours.

might be introduced, as biography and the teaching of the habits, etc., of primitive man, which, if not always (or ever) strictly historical, appeals to the imagination of the young and furnishes material for the art master to base some of his lessons upon. Physics could be got well under way before the advent of chemistry, and biology (except in its introductory form—nature study) could wait upon the two. If the decimal system were adopted, arithmetic would be all but completed in Stage I, reserving abstract teaching in geometry for the years when intellectual power was more developed. The art and handicraft subjects could follow one

Curriculum of Broad General Course for Boys, aged 10-16 Years.

A. LITERARY (14).					B. NON-LITERARY (18).						
					1. Science (8)		2. Maths. (6)		3. Handicraft (4)		
English	History	Geography	French		Physics	Chemistry	Arithmetic	Algebra	Drawing	Wood and Metal Work	Music
Stage I } 10-13 years	8	none	I	6	7	none	6		I	2	I
Stage II } 13-16 years	7	2	none	5	7	2	5		4		

The only alternative allowed would be Latin for some of the English (4-5 periods). As the greatest difference in ability is most often observed between attainments in A and B subjects, these would be organised in sets.

Curriculum for Specialisation Period. Boys from 16 Years of Age.

A. LITERARY.			B. SCIENCE.				C. BUSINESS.		
1. Classics.			2. Applied Science.						
2. Modern Languages.			1. Pure Science.						
Latin, Greek, and Ancient History	20	French, German, one other Language ...	22	Chemistry, Physics, Biology, etc. ...	18	Engineering Subjects ...	14	Modern Languages II	4
Modern Language	4	Geography ...	2	Mathematics ...	8	Physics and Chemistry ...	6	Book-keeping, Shorthand and Typewriting ...	8
Science	4	Science ...	4	Modern Language	4	Mathematics ...	6	Science ...	3
History	2	History ...	2	General Literature	2	Modern Language	4	Modern (Commercial) History ...	2
General Literature	2	General Literature	2			English Composition ...	2	Economics ...	2
						History of Agriculture ...	2	Organisation ...	2
						Economics ...	2		

It is a trite criticism that the school timetable is overloaded, and that in attempting to teach too many subjects we tacitly ignore the proposition that development of powers is of greater importance than acquisition of facts. The curriculum outlined above has apparently the same defect; but a feature of the reformed time-table would be the limitation of the number of subjects taught at the same time. The substitution of Latin for much of the English would appeal to those teachers who think that the direct teaching of the mother tongue is apt to be of a "sloppy" nature, and to make insufficient demand upon the reasoning powers. History would not appear before Stage II, although prior to that time some

another in a definite two- or three-year rotation. Another feature of the modernised curriculum would be the insistence on interplay between subject and subject. English composition should be taught incidentally by nearly every teacher; the physicist would help the mathematician and *vice-versa*, and both could co-ordinate their efforts with those of the chemist. There should be action and reaction between handicraft and science, between history, languages, and geography. The last-named subject is best included in literature in the early years, for it is only when the pupil has gained insight into physical and chemical truths that he is in a position to pursue it as a science, *proprement dite*.

Ethical training should be imparted almost entirely in an incidental manner, and in this respect the value of science must not be overlooked, for ignorance of natural truths and inability to draw logical inferences from them are contributory causes of nearly all the ills that man is heir to, *e.g.* dirt, disease, waste, lack of sympathy and tact, cocksureness, narrow-mindedness, bigotry, idolatry, superstition, conceit, injustice, etc.

Considerations of time and space preclude the possibility of treating each subject in detail, but it must be emphasised that the study of foreign literature in good translations should be included in the English course, and that no science worthy of the name can be treated except experimentally. The essential objects of literary training are to impart knowledge of human nature and the power of clear expression. The objects of scientific training are to acquire a knowledge of the world around us and of man's relation thereto, and—not less important—to develop the scientific habit of mind. It is true that other subjects also lend themselves to furthering the latter object, but natural science, when taught by those who have had actual experience of research, is of far greater utility in this respect. The power of "selecting, combining, and testing"—whatever that may mean—is no true description of the scientific method. That method is better interpreted in the words of the Iron Duke: "Use what you know to find out what you don't."

The acquisition of knowledge of real concrete entities and not of mere signs and symbols, the framing of hypotheses to account for relationships between observed phenomena, the balancing of probabilities, the evaluation of evidence, and the combination of accuracy with resource and prevision, are the most important specific virtues of the method of the experimental sciences. No lectures, demonstrations, or other kinematographic displays can take the place of actual experimenting. An important feature of the specialisation curriculum is the inclusion of science in all departments; and, since all pupils will have been grounded in the art of experimenting, the instruction in the literary and business branches might well be of the lecture-seminar kind. Every student must devote one period per week to hygiene, which must be treated scientifically and made to include a variety of topics, from eugenics down to the habits of the house-fly and other vermin. The lectures for non-scientific pupils should be selected from astronomy, geology, botany, Darwinism, etc., and could include such special topics as wireless telegraphy, steam-, gas-, and oil-engines, sulphuric acid, radio-

activity, rubber, and the like. The inclusion of engineering and agriculture in the curriculum of a secondary school is open to criticism, as such subjects might well be transferred to technical and university institutions. If, however, they are included, the scientific foundations of such applied sciences should receive the larger share of attention. The specialist in biology and the future medical student would substitute elementary anatomy and physiology for mathematics. In the business section the greatest importance would be attached to modern languages and geography. The mechanical studies—shorthand, typewriting, etc.—are best treated on the "intensive" principle, *e.g.* six hours per week for six weeks at shorthand would produce much better results than two hours a week for eighteen weeks.

The effects of the rearrangement of the school curriculum in accordance with the ideas outlined above need to be discussed from the point of view of the teaching staff and from that of finance. It is obvious that the science staff must be increased, that teachers of all subjects (including science) must be better trained, and that more teachers should combine several subjects. If the teaching profession is ever to establish itself in this country as a great and important calling, men and women must undergo a proper preparation for it, and not, as at present, be allowed to drift into it. If the proposal of a full-time academic course devoted to the subjects the student wishes to teach and to the science of teaching them be unattainable, at least the fourth year at the college or university should be devoted to education. Diplomas awarded for budding proficiency should have "sides" corresponding to those of the specialisation curriculum, and they should be open to receive endorsement of proficiency attained in additional subjects in later life. The question of post-graduate study is of first-rate importance, for teachers who fail to go forward inevitably fall backward, and become dull, mechanical, and narrow-minded. Every teacher of experimental science should be given time and opportunity to indulge in research; for it is not only "more science" that is required, but "better science."¹ Of the factors which limit educational fertility at the present time, finance is among the most important. In addition to the urgent need of raising emoluments in order to attract, retain, and compensate adequately the best men, the unfair division of spoils between head and assistants, the necessity of weeding out those

¹ The inclusion of experience in research work as a qualification for a university degree should materially help in securing teachers with a knowledge of scientific methods.

pupils who fail to make any progress, and the cost of practical science, are all problems which need investigation. Long experience has convinced me that the cry of the great cost of laboratory work in science is without foundation. Apart from initial capital expenditure, which is often grossly extravagant, science work should cost little or no more than other subjects. The practice of imposing special fees for science instruction is to be condemned from every point of view; it is unjust to parents, it discourages science, and it should be wholly unnecessary.

The limitation of the size of a class to a maximum of sixteen pupils would undoubtedly increase the cost of science teaching, but other subjects need the same reform, if to a lesser extent. If retrenchment is to be the order of the day, the printer, the bookseller and publisher, and the professional examiners should be made to feel the pinch first. But, when all is said, education, taken as a whole, will continue to cost far more than the revenue received from pupils' fees. Though we may reasonably expect the next generation to realise better than their forbears that the best education is the cheapest of all investments, and that, accordingly, they will consent to pay higher fees, yet even then the deficit will be large. The only solution is for the State to step in and pay for that which will react to its benefit in days to come. The present war must have convinced all who preached parsimony and eternal peace that the penny wisdom of "wait and see" is as dust in the balance compared with the pound folly of allowing the nation to drift to the brink of disaster, and that organisation and foresight (the real meaning of "Kultur") in education amount to the same thing as organisation and foresight in our means of defence and offence. Though the "robbing of hen-roosts" is usually an unpopular and almost always a highly immoral expedient, national welfare and efficiency demand that educational endowments should be confiscated and pooled among the whole body educational. It is reasonable to suppose that the benefactors who left property or specie for educational purposes did so from an altruistic motive—for the general good; and if it be admitted that the general good would be promoted by such a pooling, the confiscation would not run counter to the intentions of the benefactor. In the idealistic world of education the "root of all evil" becomes the root of all good.

The hearty co-operation of heads of schools is undoubtedly a consummation devoutly to be wished, if not to be altogether expected. The majority of headmasters and headmistresses have been brought up in the tradi-

tional literary blinkers, and though their opinions on reforms in their own particular branches of study would carry great weight, their ideas on science teaching would be correspondingly valueless. Many of them, no doubt, realise its necessity, but very few have any practical experience of it. At the present time the conversion and support of the parents are the more hopeful desiderata, for they pay the piper and can call the tune; but with increased State assistance (accompanied by a restricted State interference into details) their power will decline and take its proper place.

The question of the education of girls is outside the immediate ken of the writer, but he has no doubt that any scheme which involved the sacrifice of the essentially feminine qualities, or at least of such of them which are socially beneficial, would be a curse and not a blessing. In the sphere of æsthetics the emotions of woman are more in need of control and direction than of expansion; and in regions of intellect and practice they should learn to unite "culture"—a knowledge of the best that has been thought, known, and done in the world—with "Kultur," the power of organisation combined with prevision.

By the Rev. A. W. UPCOTT, D.D.
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My ideals for a new system of education after the war may be summarised as follows:—

1. A classical or literary side, in which the subjects of education would be:—(a) The two ancient languages, Latin and Greek, studied with the view of understanding the authors themselves; no verse composition; and no prose composition, except in so far as absolutely necessary for such understanding; in some few cases, advanced verse and prose composition might be retained for "pure scholars." (b) Two or more modern languages, including a sound training in English, often treated nowadays with scant respect. Composition to form a part of all modern language teaching. (c) Mathematics. (d) Science. (e) Art, studied on the broadest and most varied lines possible. (f) Manual training for all the younger boys.

2. A modern or commercial side, in which the subjects of education would be:—(a) Two or more modern languages, with English as the basis, and composition in all as above (the elements of Latin might be included in some cases). (b) Mathematics. (c) Science. (d) Art. (e) Manual training for all.

3. An engineering or technical side. Subjects of education:—(a) Two modern languages, English and French, with composition. (b) Mathematics. (c) Science. (d) En-

gineering or technical instruction. (e) Art. This side would be fed by boys drafted from sides 1 or 2 at the proper period of their career.

Religious instruction and the study of history and geography would, of course, form part of the training in all sides.

HISTORY AND CHRONOLOGY.

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THE Cambridge Local Examiners, in their report on the history papers of 1915, remark that the junior candidates "exhibited a hopeless ignorance of chronology." This "hopeless ignorance of chronology" is no novel phenomenon in examination papers; it has been for many years a characteristic of a large part of the historical work done in schools. What is novel, interesting, and welcome is that examiners should direct attention to this ignorance, and should express disapproval of it. For it has been the fashion, during a long period, to regard the omission of dates from the teaching of history as a virtue, as a mark of our modern emancipation from the soulless slavery of our fathers, as a triumph of spirit over matter. Said an American professor of education in 1893: "The over-emphasising of chronology has hitherto been one of the serious defects of history teaching."¹ Another educationist similarly exclaimed: "The lessons of history are absolutely independent of time. Freed from chronology, the near and remote may become equally potent in the life of the child."² The disciples of the late-Victorian *Zeitgeist* accordingly freed history from chronology, threw their antiquated date-books into the waste-paper basket, and commenced, on the principles of timeless morality, to make near and remote "equally potent in the life of the child." History was assimilated to Andersen's "Fairy Tales," Æsop's "Fables," and the "Arabian Nights' Entertainments." Everything happened "once upon a time," no matter when. Morality ceased to be progressive. Nimrod, Nebuchadnezzar, Nero, and Napoleon became contemporaries, the exemplars of eternal laws, the subjects of everlasting lessons.

The results of the emancipation of history from chronology were by no means such as had been either expected or desired. Not only did history, hitherto a consecutive whole, fall into a chaos of isolated fragments; it

failed to gain either the enhanced interest or the increased ethical efficacy which had been anticipated. It was found, first, that chronology is essential to a comprehension of history; that the omission of marks of time, so far from making history easier and more attractive, renders it unintelligible, and that antipathy to the learning of dates is not nearly so general in children as it is in educational theorists. Secondly, it was discovered that the lessons of history were *not* "absolutely independent of time." Quite the contrary. Time is of the very essence of the matter. The connecting-thread of history is causality—that is to say, the progressive and cumulative sequence of cause and effect. Our whole judgment of a man depends on the age in which he lived. Our estimate of an event is entirely conditioned by our knowledge of the contemporary circumstances. The lessons of history are no more independent of time than the lessons of geography are independent of space. Chronology is as indispensable to the one as are lines of latitude and longitude to the other. All this is now clearly recognised once more by those whose opinion counts, and particularly by the best practical teachers. But the evil late-Victorian tradition has not been, and cannot easily be, eradicated from the schools. For it is embodied and embedded in many sloppy text-books; it is maintained by a numerous residuum of dateless teachers, and it has not wholly lost its advocates among visionary theorists. Hence the complaint and warning of the Cambridge Local Examiners.

Now it will be freely admitted, at any rate by those of us who were reared forty years ago on Curtis's "Outlines," that chronology can be overdone. Just as you can fill a map so full of lines of latitude and longitude that the whole earth is obliterated, so you can concoct (*e.g.* from Haydn's "Dictionary") lists of dates so overwhelming as entirely to crush the historic sense. It is vital to perceive and acknowledge that chronology is only a means to an end. It is related to history in much the same way as railway lines are related to a train. It is a permanent way along which a passenger is bound to travel if he wants to get anywhere in particular. It may also be compared to the scaffolding without which no house could be accurately or securely built. The best and closest analogy, however, is provided by the frame of pigeon-holes or docketts by means of which the postal clerk sorts and classifies his packages. By its use he reduces the most immense mass of chaotic material to order, so that he knows where to find every particular item and where to place any new item that may turn up. Sometimes

¹ Hinsdale, "How to Study and Teach History," p. 83.

² *Educational Review*, ix. 47.

dates are described as pegs on which facts can be hung. That is a bad comparison. For the mind does not want to keep facts in isolation, each on its individual peg like the cloaks of guests at a *soirée*. The mind wants to group facts together, to co-ordinate them, to associate them, to reduce them to the smallest possible number of general and memorable classes. Hence the problem of chronology is to divide history into periods, which taken together shall comprise the whole, which taken individually shall enable us to locate, classify, interpret, and therefore remember each particular fact of importance.

For this purpose we commonly divide the range of recorded history into the three great sections of ancient, medieval, and modern. Whenever we are required to "place" a man or an event we almost instinctively ask ourselves first, to which of these three does he or it belong? But these three great sections need a good deal of subdivision, and the nature of the subdivision will depend partly on the country (England, France, etc.), and partly on the kind of history (political, economic, etc.) to be studied. Since it is desirable, however, that so far as possible the same docket or divisions should be used for all purposes, it is found in practice that the great landmarks of political history form the best delimiters of periods. Thus English medieval history can best be subdivided into Anglo-Saxon, Norman, Angevin, Lancastrian, and Yorkist periods, each defined by precise dates. But even these periods are too big for some purposes. It is necessary to partition them still further. For the Anglo-Saxon period it will probably suffice to distinguish broadly:—(1) Settlement, 449–597; (2) Conversion, 597–681; (3) Consolidation, 681–787; (4) Danish Invasions, 787–937; (5) Feudalisation, 937–1066.

From the time of the Norman Conquest, however, a more exact and minute system of dockets is needed. Fortunately, this is ready to our hands in the dated reigns of our kings. "What!" the late-Victorian pedagogic pundit may exclaim, "shall we return to those arid and meaningless names and dates which with so much rejoicing we got rid of a generation ago?" Yes, we shall do well to do so, to the limited extent advocated above. The knowledge of the time-limits of the reigns of our kings and queens since the Norman Conquest involves the committing to memory of about forty dates. This is a task which a normal child will accomplish easily and without tears in a few periods of a few minutes each. It is a mistake to suppose that a normal child dislikes a dull mechanical piece of work of this sort. Quite

the contrary. It is a concrete job which can be speedily and effectively accomplished without excessive effort, and the sense of "something attempted, something done" gives the satisfaction that induces repose.

The child should, however, be disabused of the idea that in learning these chronological data he is "learning history." He is merely building up a framework of useful dockets into which his history can later be placed. Having acquired this exact chronological framework, he should be regularly exercised in its use—as he is in the multiplication table—until he is able to employ it instantaneously and without conscious effort. When, as his school life progresses, he has completed his study of the outlines of English history, each of the great periods—Norman, Angevin, and the rest—will have acquired its own peculiar characteristics in his mind; each of the reigns of the kings will become differentiated from the rest, so that when any new fact comes to light it will be readily referred to its appropriate place in the general scheme, and it will assimilate itself rapidly to the knowledge already secured.

For the last two centuries of English history (1714–1914) it may be urged that there are better subdivisions than the reigns of the somewhat insignificant monarchs. I am not concerned to argue this point. All I am urging is that some logical and exhaustive system of periods should be adopted which will enable every isolated event to be placed in its circumstances. If this is done, the learning of a large number of disconnected dates will be rendered unnecessary. The only essential thing is that an event shall not be wrongly placed in the chain of cause and effect. Sometimes, as in the case of a work of art, it is enough to be able to locate it in its right century. At other times it is important to know the precise year. Occasionally, as in studying the incidents of the fateful August of 1914, it is necessary to date things that happened accurately to the day or even the hour. The point is that, by some means or other, it must be fixed in its right relation to its environment, so that it may be interpreted and rendered intelligible.

Many efforts have been made in different countries to draw up lists of dates which represent the irreducible minimum to be committed to memory. Germany, for example, thorough and precise as usual, has formulated and made compulsory a table containing 116. England and America have left the matter to private discretion. Among English history text-books, Mr. Hassall's is notable for its summaries of important dates. For American students, Prof. Bourne, in his book on the

"Teaching of History," provides reasoned minimum chronological summaries of Greek, Roman, European, and United States history. But these lists, and others like them, are useful mainly for reference. If the student has his chronological framework in good condition, the precise date of an event will usually have fulfilled its function when it has enabled him to place the event in its proper pigeon-hole. But unless that framework is constructed, and unless it is kept by constant use in good order, history will remain a chaos, and examiners will be forced to complain year after year of the same "hopeless ignorance of chronology."

MUSICAL AND DRAMATIC SOCIETIES IN SECONDARY SCHOOLS.

By FANNY JOHNSON.

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IN the remarks which follow I shall speak only of day-schools, since the problems of boarding-schools are not only very varied, but in many essential respects different from those of day-schools. Also, I shall refer always to girls, with the understanding that most of my suggestions would apply equally well to boys. Further, I shall use the abbreviation M.D.S. for Musical and Dramatic Society, and the abbreviation O.G.S. for Old Girls' Society.

One may take it that the first promoter of any M.D.S. is actuated primarily by a love of the art of music or of drama, or of both, whatever be his private or professional status. This is a simple statement of fact, and may be put conversely by saying that to none but a lover of any art would it occur to be at the pains of starting an art society. One has, indeed, heard lectures given on "painting" or even on "drama" by persons who had evidently no natural taste, but who had laboriously acquired information about the dates of birth and death of the principal artists, and the divers styles of their early and late periods. The M.D.S. can never be galvanised into life by such methods. It were better to adopt the plan of early-Victorian music and elocution masters, who troubled their pupils little concerning the private life of Beethoven, or of Shakespeare, while they confined attention to fingering and the correct manner of voice-production. Thus the pupils were free at least to develop individual taste, even if their ignorance of the best work was sometimes profound. Our secretary should, of course, steer an even course between these extremes, and determine with herself whether to plan her society so as to kindle and keep alive a general love of *drama* or a general love

of *acting*; a general love of *music* or a general love of *musical performance*; a general love of the *terpsichorean art* or a general love of *dancing*; for dancing, literature, and music form the threefold chord of drama, which should not be cut asunder.

The distinction I have indicated between performance or interpretation and appreciation is inherent in every art, though it is most obvious and liable to injurious consequences on the stage. "Actor-managers" (I have been told by those who know!) "do not even read the plays they produce"!

The concern of actors with the interpretation, or creation as they call it, of parts that suit their own idiosyncrasies, apart from the dramatic merit of the play itself, is an obsession to which amateurs are equally subject, and is the great snare to be avoided by all interpreters whose success depends upon the fortuitous possession of physical gifts. The wise secretary will aim at promoting a combination of both theoretical knowledge and interpretative skill, or if her own bias lean too much in one or other direction, let her at least be consistent. Success depends upon businesslike precision more than upon high aspiration, even in æsthetic matters. The vogue, for example, of the "Perse players," who claim to compose, as well as to act, the plays they produce, was due to a consistent, though, in my view, a mistaken, policy! Though creditable as schoolboy exercises, these pieces are not plays in the full sense. They partake of the nature of impromptu charades, and are just as valuable as these in stimulating imagination, alertness, and quickness of comprehension. But they do not take the place of a study of drama proper any more than the composition of so-called "original" tunes by a beginner can take the place of a study of *real music*. The *naïveté* and *naturalness* which are claimed for such plays as their peculiar charm, and which are based upon ignorance and inexperience, are achieved by the great artists, in addition to their other qualities, by study. Even such an artist as Blake, whose effects appear peculiarly spontaneous and unsought, turns out on investigation to have studied deeply. To work this point further would lead me too far afield. My own bias is sufficiently betrayed herewith; and out of the abundance of predisposition the counsellor speaketh. Counsellors in art have, however, at all times proceeded on these lines, and have urged the study of great models as the first element of success. Let us hear the opinion of Aaron Hill, who, in 1735, conceived the project of founding a Tragic Academy, since, "all our stages being hirelings" (in his view), "no experiment can be made in them to see

what effect might arise from a better choice of plays and a juster art of acting." In a letter addressed to Thomson, author of "The Seasons," he thus set forth the purpose of his scheme:—

Whereas certain gentlemen have proposed, at their own expense, to attempt an improvement, under the name of a *Tragic Academy*, for extending and regulating theatrical diversions, and for instructing and educating actors in the practice of dramatic passion and a power to express them [*sic*] strongly, the success of which laudable purpose might establish the reputation of the stage, by appropriating its influence to the service of wisdom and virtue; our names are therefore subscribed, etc.

These eighteenth-century aspirations, however quaintly worded, may well be essentially repeated in our modern M.D.S. A *better choice of plays and a juster art of acting* are the two reforms that are likely to be called for as each generation of amateurs finds itself faced with the inevitable lapse and retrogression of public taste from the best to the inferior things. Such being our general purpose, it remains to consider the more difficult problem of the methods to be employed for achievement. Everyone who has had acquaintance with the working of societies knows how very much depends upon the

(i) *Secretary*.—I have already spoken of this official, who is likely, in the case under review, to be self-appointed, and who is almost certain to be a member of the school staff and a teacher of literature to boot. I shall endeavour later to show just cause for regret in this customary trend of things. Suffice it for the present to say that a secretary of this type is liable to be overworked and unable to give enough time and thought to the M.D.S., however great may be her personal enthusiasm. I suggest that she should, from the beginning, be on the look-out to delegate her office to someone who can give it more whole-hearted attention, preferably an O.G. And this brings us to the question of

(ii) *Membership*.—To be a member of the M.D.S. should be regarded as a privilege and not as a tie. Hence the gathering together of two or three enthusiasts with concentrated and kindred aims is worth more than the lukewarm adherence of large numbers. Membership would, in any case, be restricted to one or two of the upper forms in the school, or to girls above a certain age (say, sixteen). The simplest beginning is for the secretary merely to invite a select few (four or five) to a short meeting for *reading* a play or hearing music, and thence to feel her way to some more formal organisation. As soon as the

M.D.S. is fully formed it should draw up a simple constitution, a small membership fee (from 6d. to 1s. per annum) should be imposed, treasurer and committee elected, and so on. At this point the secretary should be on the watch for organising power among the members, and ready to lay down her office as soon as need be.

The subscriptions will form a nucleus for (a) purchase of a dramatic and musical library, for which gifts may be invited from time to time; (b) purchase of simple refreshments for ordinary meetings, as well as for the necessary office expenses of postage and so on.

One of the first questions likely now to arise is the

(iii) *Number of Meetings to be Held*.—At least one, but not more than three meetings in each term are required to keep the M.D.S. in a flourishing condition, and, of course, frequent and short meetings are better than long ones at distant intervals. The actual number decided on must depend upon many circumstances: the distance of members from the place of meeting, the other and necessary claims on their time, the willingness of the headmistress to grant time for business meetings during an ordinary school session, and so on. Brisk disposal of business details should preface or conclude each meeting, unless these can be relegated, as I have suggested, to a few stolen minutes from the history or literature lesson of the morning. The length of time should never exceed two hours, and any kind of weariness or "dragging" should be avoided. A greater crux is, however, the

(iv) *Time and Place of Meetings*.—A uniform hour, day, and place will lessen the work of the secretary in posting up information on these points. Probably for most schools the hours between 4 and 6 p.m., or 4.30 and 6.30 p.m. in summer, will be found most suitable, or of tri-terminal meetings one evening (8-9 or 8-10 p.m.) and two afternoon sessions might be possible. The place of meeting is a greater difficulty still. The secretary's home or lodging is not always convenient or sufficiently spacious, though it will probably serve best as a beginning. The ideal school building would contain a lesser as well as a greater assembly room for the express purpose of such meetings. Failing such a counsel of perfection, the occasional use of the mistresses' room, library, or sixth-form room may be permissible. Then arise questions of cleaning, lighting, heating, etc., all of serious consideration even in pre-war times, and well-nigh prohibitive now. Cosiness and comfort greatly conduce to pleasant meetings. But

in this connection I am brought at once to consider the

(v) *Co-operation of the O.G.S.*—So far as I am aware, nearly every O.G.S. exists in and for itself, with very little reference to the needs of the present generation of pupils. Now since we must, for some time to come at any rate, supplement paid assistance by voluntary aid in almost every department of life, there is here, I think, a source of energy which might be tapped for various purposes. Where a flourishing O.G.S. already exists, the secretary of the M.D.S. might well approach its members with a tentative invitation to meetings of a select few, known by report of the headmistress or otherwise to be of likely value. Thus a few more adherents would probably be gained for the M.D.S., and the co-operation of these comparatively leisured members might be utilised in various ways. For example, among them might be found a secretary or treasurer, and even the problem of a meeting-place might be solved by hospitable offers from one or more girls in comfortable circumstances and ready to throw themselves heartily into the interests of their old school. All this requires tact and time on the part of the promoters of the M.D.S., and care should be taken not to swamp the present with the past.

In a school where the headmistress and staff have remained stationary for many years, such cordial co-operation is of more easy growth. A new headmistress is oftentimes tempted, most unwisely, to break with the past, and if she appears as a figurehead at the O.G.S. it is, perhaps, rather as a testimony to her own importance than to that of the society. In this, as in many other respects, it often appears that the school is not regarded as a living organism with a past, present, and future life, a corporate part of the locality and nation with great possibilities for influence. It tends to become a little world of its own, isolated for good or ill from the rest of the community, and with laws and customs that separate from, rather than harmonise with, those of the larger world. The co-operation of the O.G.S. in fullest measure would correct what was evil in this tendency, if only those in authority would recognise that they have much to learn from the past.

To return to the immediate concerns of the M.D.S. Some few O.G.s are sure to develop dramatic or musical capacity. They could be utilised as members of a choir or of a dramatic caste, as stage-managers, wardrobe-keepers, leaders of reading circles, and the like. The more distinguished among them might be invited to give an occasional address or lecture or to open a discussion.

Apart from any other advantages the O.G., even if married, is almost certain to have more time at her disposal than present mistresses or pupils. I recall the harassed dash of former high-school days, when enthusiastic assistant-mistresses and sixth-form girls endeavoured to squeeze an additional hour's work, a labour of love, into the already too full twelve-hour day. Possibly this over-zeal is a preponderantly feminine trait. Yet I fear some boys' schools have become similarly affected. And such ways are likely to continue until we, as a nation, recognise that the whole of life, and not only school life, is education. The O.G., with her extended knowledge of the outside world and her extra-school interests, should bring in a whiff of fresh air and save the M.D.S. from becoming stereotyped or "nervy."

So far we have only a skeleton ready. It remains to consider how to clothe it with flesh and imbue it with spirit. Assuming the number of meetings to be three a term, I suggest, as one among many possibilities, a rough (vi) *Programme of the Year's Meetings*, which may consist approximately of two working or study sessions to one entertainment or performance, somewhat as follows:—

I. Readings, recitations, and songs of some specially selected character, or dealing with a selected topic, *e.g.* naval or military, faery, parents and tutors, love-stories, etc.

II. Play-reading in parts of a classical work, English, French, or some translated piece.

III. *Performance* (members only invited), consisting of two short dramatic and about five musical items.

IV. Short reading of dramatic criticism by secretary, selected from Lamb, Hazlitt, or one of the modern critics, such as William Archer or Bernard Shaw, followed by a discussion, or short papers on professional performances recently seen by members.

V. Play-reading, in parts, of a modern drama, such as Galsworthy's "Strife," Zangwill's "War-god," Shaw's "John Bull's Other Island," etc.

VI. *Performance* (members only invited), with two important musical items, a dialogue, and a dance or two.

VII. Impromptu concert and charade evening, each item very short and brisk, arranged in advance with the minimum of preparation.

VIII. Play-reading in parts. French or German originals, or Greek, Norwegian, or Russian translations.

IX. *Grand Performance* (admission to the public by purchased tickets) of English, French, or Greek (translated) classic.

It will be seen that something in the nature

of a small dramatic library is indispensable for carrying out the above plans. A search into publishers' catalogues will reveal a considerable amount of available cheap material (from 6d. to 1s. per volume). These may be obtained, in the first instance, partly by borrowings, partly by purchase and gifts. In a year or two there would probably be an accumulation of volumes sufficient to keep the M.D.S. going for some time.

I have omitted some fruitful topics for consideration, such as dramatic wardrobes, charity performances, selection of plays, and the like, but perhaps the above hints, which are the result of a good deal of practical experience, may be found useful.

LORD KITCHENER.

THE death of Lord Kitchener has robbed the Empire of its most representative and dominant personality. More than any other man, he stood for British power and prestige: his name alone became a guarantee of efficiency, in which the nation trusted. Throughout his brilliant career he had but one object in view: duty. The secret of Lord Kitchener was that he always did the perfectly obvious, and did it with all his might, regardless of official restrictions; and his genius was shown, both in the Sudan and South Africa, in the creation of the simplest expedients to overcome obstacles in his path. He was, in truth, a man who faced realities in the Elizabethan spirit of our Empire-builders. His motto was "Thorough."

The early training of Lord Kitchener was in the excellent school of survey-work under the Palestine Exploration Fund. Lured to Egypt by the troubled state of the country at the time of the Arabi revolt, he opened up a career for himself in which he achieved the highest distinctions, and he will be ever remembered as the foremost leader in the emancipation of the Nile Valley. In all the succeeding events which made history Lord Kitchener was prominently engaged. As Sirdar of the Egyptian Army he was unrivalled; and to him fell the lot of freeing the Sudan from the ruthless rule of the Khalifa. His victories on the Atbara and at Omdurman brought him to the shrine of Gordon; and his appeal to the nation immediately raised a fund of over £100,000 for the institution at Khartum of a British college, as "a pledge that the memory of Gordon is still alive among us, and that his aspirations are at length to be realised." The Gordon Memorial College has, indeed, proved a notable success; and, although based on the system of teaching in the higher primary

schools at Aswan and Wadi Halfa, its adaptation to local conditions has been brought about with patience and admirable judgment.

Lord Kitchener's reputation as a soldier was greatly enhanced by his skill and ability as a diplomatist and an administrator. He understood the subtleties of the Oriental mind and was never in any doubt as to the fixity of his own. Thus in a few years, as British Agent in Egypt, he suppressed all seditious tendencies and provided for the economic needs and growing aspirations of the country. Nor must we forget his seven years' administration as Commander-in-Chief in India, when he introduced drastic reforms and placed the Army on a war-footing. The last phase of his active life was the reward of all that went before. The magic of his name and the fearless pursuance of his methods raised from the dust, as it were, five millions of freemen ready to fight for their country. His prescience that the present war will be long enabled him, without haste and without rest, to lay the foundations upon which rest our present organisation as a military Power of the first rank.

PERSONAL PARAGRAPHS.

PROF. SILVANUS P. THOMPSON died on Monday, June 12th, after an illness of only two days. He was educated at Bootham School, York, and at the Institute at Pontefract. He was for a time science master at Bootham School; he gave up that position in order to become a student at the Royal School of Mines. In 1878 he was appointed professor of experimental physics in University College, Bristol, and in 1885 became professor of physics in the City and Guilds Technical College, Finsbury, of which he afterwards became principal. Prof. Thompson was an admirable lecturer on scientific subjects, and possessed an unusual power of exposition; he exhibited keen interest in his subject that aroused corresponding interest and attention in his audience. In addition to his well-known works on electricity and magnetism and on optics, he wrote three biographies—one of Philip Reis, another of Faraday, and the third of Lord Kelvin.

* * *

CAPTAIN H. C. B. CUMMINGS, Seaforth Highlanders, died on May 7th of wounds received the previous night. He was a foundation scholar at Tonbridge School, from which he went to University College, Durham. For seven years before the outbreak of the war he was a master at Edinburgh Academy; on joining the Army he received his commission in the Seaforth Highlanders, and was shortly afterwards promoted Captain.

CAPTAIN V. E. REYNOLDS, West Yorkshire Regiment, was killed on May 4th. He was educated at Shrewsbury School, and, on leaving, became a student at the Slade School. After studying art for some years in Florence and Paris he became art master at Aske's Haberdashers' School at Cricklewood. In May, 1915, he obtained a commission, and, a month later, was gazetted to the West Yorkshire Regiment. He obtained his first promotion in October, and was gazetted in the spring of this year as a Captain.

* * *

CAPTAIN C. A. WERNER, Rifle Brigade, who was reported missing on May 9th after the attack at Aubers Ridge, near Fromelles, is now stated to have died from wounds on that day. Captain Werner was educated at Dulwich College, and was a master at Harrow School from 1901 to the end of 1914.

* * *

CAPTAIN C. F. ELLERTON, Cheshire Regiment, was killed on May 17th. Mr. Ellerton was educated at Christ's Hospital, and Jesus College, Oxford. He then went as a master to Liverpool College, where he remained two years; he was appointed mathematical master at Eastbourne College in 1902. In 1914 he went to Radley College as mathematical master, and completed one term there before going on active service. The *Times* quotes a brother officer: "I was told by a witness that he saved the life of a boy who was going to be bayoneted by rushing in front and throwing a bomb at the Germans. He was at first badly injured, and refused to be carried away, ordering the stretcher-bearers to save themselves. Immediately afterwards he was killed."

* * *

SECOND LIEUTENANT C. J. FOWLER, Royal Fusiliers, died in France on June 1st from wounds received in action on May 23rd. From Wellington College, where he held a senior scholarship, he went to Trinity College, Oxford; on leaving Oxford he became a master at Sandroyd School, Cobham, and was a student of the Inner Temple. His Colonel writes: "He very gallantly led his company through an intense barrage (old warriors described it as the worst of the war) to almost within thirty yards of the German trench, where he was shot. After his captain was shot, which was early in the fight, he assumed command. His conduct was most gallant, and his leadership perfection."

* * *

MR. E. G. HOBLEY, art master at Penrith Grammar School, was found dead in Swarthbeck Ghyll on the mountains overlooking

Ullswater. Mr. Hobley was a student of the Royal Cambrian Academy and an occasional exhibitor at Burlington House. He had left home for the Ullswater district to sketch cloud effects on the mountains; as he did not return, several of the masters at the grammar school and a number of Boy Scouts went to Barton Fells to search for him.

* * *

MR. GUY KENDALL has been appointed head-master of University College School, Hampstead, in succession to Dr. H. J. Spenser, who has resigned. Mr. Kendall was educated at Eton, and at Magdalen College, Oxford. After leaving Oxford he held a temporary appointment at the Manchester Grammar School in 1901 and acted as warden of the University settlement in Manchester in 1901-2. Since 1902 he has been a master at Charterhouse School, where he is form master of the modern sixth and head of the modern side. Mr. Kendall is the author of "The New School-master."

ONLOOKER.

SPEECH TRAINING IN LONDON SCHOOLS AND TRAINING COLLEGES.

THE London County Council has done well in arranging for a conference on speech training and in publishing the report, although, as is cautiously added, "the Council accepts no responsibility for the views and conclusions therein expressed." The members of the conference were Dr. F. S. Boas, Dr. J. E. Borland, Mr. Cloudeley Brereton, Miss M. Dodds, Miss H. Graham, Dr. H. H. Hulbert, Mr. Daniel Jones, Dr. A. T. de Moulpied, Mr. J. J. Nisbet, Mr. Hardress O'Grady, Miss M. S. Ryan, and Miss E. A. Sheppard. These names inspire confidence, and the conference has, indeed, produced a very useful piece of work.

It has been urged in the columns of THE SCHOOL WORLD that every education authority should produce, for the use of its teachers, a little handbook containing an account of the main features of the local dialect, as regards pronunciation and vocabulary—and, we may add, grammar. Such a handbook would be of special value to teachers previously unacquainted with the dialect; for it would help them to an intelligent interest in that dialect, and would facilitate their task of teaching standard speech.

The London report takes no account of the vocabulary or grammar, and we must hope that this aspect of the question will receive attention. Other aspects are dealt with in a

concise and clear fashion. As an introduction we have a discussion of the problem of speech training in (a) the elementary school, (b) the secondary school, and (c) the training college. Simple directions are given with regard to the most important breathing exercises; good breathing is rightly treated as essential to good speech. It might have been added that it has valuable effects on the nervous system.

The next chapter deals with enunciation. The chief causes of indistinct speech are enumerated under these nine headings:— (1) Faulty position of head and body (reference might have been made to the slack posture, half standing, half leaning, often adopted by pupils when rising from their seats; also to the practice, not everywhere abandoned, of sitting with folded arms); (2) wrong ways of holding books; (3) force expended insufficient to cause the sound to carry; (4) lack of effort; (5) excessive rapidity of speech; (6) defective breathing; (7) faulty pitch of voice; (8) existence of individual speech defects; (9) stammering and stuttering. Remedies are then suggested; in particular there are useful hints for dealing with faulty pitch. Some of the mistakes in the reading of beginners are due to our punctuation; the declining use of the comma, in particular, leads to long series of words having no punctuation marks to break them up, and proper phrasing is rendered very difficult for the child. In elementary reading-books it would be well to supplement the punctuation by indicating pauses in some mechanical way (e.g. upright lines or spacing).

For dealing with slipshod speech (No. 4 above) or faulty sounds (No. 8) the need for systematic instruction is emphasised, and the question of pronunciation is dealt with in some detail, the symbols of the International Phonetic Association being employed; but the report adds: "We do not desire to press for the adoption of this or any other particular phonetic system in London schools and training colleges." This is the kind of remark one may expect from a conference which is not altogether unanimous. It is to be regretted that this problem was not faced a little more resolutely. Why should the most widely used system not frankly be recommended for general adoption in training colleges? And when we consider the practical application of phonetics in the schools, why not boldly tackle the whole question of phonetic script? Should it be used exclusively at the outset? If so, for how long? Should the children write it? If so, should they use the printed or the script form of the phonetic alphabet? How is the transition to the ordinary spelling to be effected? Again,

what is to be said for phonetic spelling and for simplified spelling respectively, when we consider the preparatory muscular training for writing advocated by Dr. Montessori?

The general observations on the method of teaching pronunciation are sound, and the detailed suggestions deal with most of the difficulties encountered by the London child; it is odd to find no reference to nasalising and to the faulty pronunciation of final unstressed [i], e.g. in "windy." Minor points are: "u" as the vowel sound of "boot" (p. 13) should be "u:"; "bard" (p. 14, § 6) is not a good example, "lard" would have been better; "sko:" (as a faulty pronunciation of "school," p. 15) is doubtless a misprint; for the London child it would surely be better to use "ou" than "au" for the diphthong of "out"; in section 19 on p. 16 "proper" is twice used for "improper," and "febjueri" should be "febjuəri." The warning against unnecessary corrections is timely; to give the first vowel of "English" the same value as in "length," to make "Southwark" rhyme with "talk," is abominable, and the use of the strong forms of "was," "had," "and," etc., in unstressed positions is a grave mistake. The suggestion that in words like "cross," "lost," "cough," the long vowel "should not be corrected into the short one" will surprise some; the children, at least in the educated class, hardly ever retain the long vowel in these words. A little strange, too, is the implied commendation of the pronunciation of "poor" as "pour."

The teacher is told that he must bear in mind continually that, "even if a particular form of pronunciation is distasteful" to him personally, "it should nevertheless be allowed to pass if it is, as a matter of fact, a form used by a considerable number of educated persons"; and it is urged that "teachers should make a special study of variant pronunciations which occur in educated speech." Easier said than done. We may add here a rather enigmatic sentence on an earlier page of the report: "Departures in pronunciation from standard usage which render words and sentences unintelligible to the educated should be considered as faults and should be remedied, whether or not a standard of correctness be definable or desirable." These references to standard pronunciation raise a number of questions. How many persons are "a considerable number"? Are the "educated persons" whose speech is to be tested for this purpose confined to London? or to southern England? or to Great Britain? or may they be representatives of any English-speaking country? Does "standard usage" include any variant spoken by a "considerable number" and not "unintelligible to the edu-

cated"? Our own opinion is that there is an increasing tendency to uniformity of pronunciation; that non-significant variants are a loss, not a gain, to a language; and that the philologist's idea that, in language, "whatever is, is right," may lead to a complete denial of any such thing as "normal" or "standard" pronunciation—in which case we may as well give up our efforts to teach "good English speech."

The rest of the report is taken up with an interesting section on expression, which reminds us not a little of Mr. O'Grady's attractive book on "Reading Aloud and Literary Appreciation," and with a kind of appendix in which will be found helpful suggestions and criticisms on speech training through poetry, simultaneous recitation, speech training through prose, the use of dramatic literature, school dramatisation, oral composition, literary and debating societies, ceremonial speeches and recitations, Shakespearean and other performances. Finally, there is a short bibliography for teachers.

We give below a few passages from the report, as a further incentive to every teacher of English to procure a copy. The price is fourpence (post free fivepence); and the publishers are Messrs. P. S. King and Son, Ltd., Great Smith Street, Westminster, S.W.

It is in part the increased attention given to the subject in elementary schools, and the valuable experiments that have been carried out in some of them, that have suggested the publication of the present report.

There are some encouraging signs of progress. Breathing exercises preparatory to singing and scale singing, and voice exercises in relation to certain vowel sounds are well done in many elementary schools. Speech has been connected with music by rhythmic movements; the children are led to discover where and how sounds are made. There are lip exercises, and guessing and listening games. The widespread use of the phonic system for the teaching of reading has had a good influence on speech. More attention is being paid to oral composition. In some schools a short period is given to it daily, and much greater care is taken than formerly that each child should be allowed to speak in his turn. . . .

In the cases of the defects mentioned under (4) and (8) [lack of effort, and existence of individual speech defects], it has often been suggested that the remedy consists merely in increased practice in "classroom" speaking, coupled with frequent correction from the teacher. Certainly frequent practice in such an exercise as oral composition is greatly to be advocated, but the unsystematic correction of faults as they occur leaves much to be desired. All teachers know how much children dislike to be interrupted, how they fear correction before others, and how the same fault needs correction time after time, a process involving much waste of energy. A better method

is to begin with a systematic study of how the sounds that go to make up speech are formed. This study enables the children themselves to correct the faults committed, and also determines the kind of exercise most needed to combat such faults.

It is sometimes urged that such a study is not suitable for children, and is one in which great difficulty is experienced in arousing and keeping up their interest. We do not suggest that a study of theoretical phonetics by young children is necessary, but experience has shown that they are very much interested in the main principles underlying the production of speech sounds, and the more so if they are led to discover the principles for themselves. Moreover, they enjoy the exercises required for this purpose. The more advanced the stage, the greater the number of exercises possible, but even in the initial stages the use of the hand-mirror, the various methods of detecting "voice," the comparison of the sound under discussion with those already considered, the efforts of individual members of the class to produce the sound, and simple phonetic dictation have all proved interesting as well as profitable exercises.

This systematic study has been found to be a great factor in overcoming nervousness. The personal element is to a large extent removed; it is not the child's own mistake that is under discussion, but a particular sound and how that sound can be modified by a change in position of the tongue or other organ of speech. Under such conditions the child will not mind performing before others (even to the extent of making grimaces), nor will he object to being criticised by the other members of the class. Again, the improvement in the child's ability to recognise sounds, and the fact that he is not dependent upon mere imitation, but has a reason for what he is doing, add greatly to his confidence. . . .

Expression. Period A (elementary).

In this period the child may not be able to read, his vocabulary is limited, and his reasoning powers are undeveloped. Therefore, reading aloud with artistic expression cannot be expected of him. But the child can and will learn to recite. Prose passages may be given for this purpose, but poetry is more certain to be successful. The piece to be learnt will contain some words or phrases which are not yet included in the child's vocabulary. In order to concentrate attention on *expression* and to avoid the disturbance which would result from explanation of these difficulties at the moment of learning, a method should be devised of meeting this problem. Some teachers have found it a good plan to introduce these difficulties gradually in lessons during the week or weeks previous to the recitation lessons. Thus the poem when presented for the first time will consist of rearrangements of words and phrases already known to the child.

The teacher will then read out (or preferably recite) the poem. It is essential that this rendering should be simple and unaffected, as children tend not only to imitate but to exaggerate any artificiality or over-emphasis. When the poem has been thus recited two or three times, individual children may be questioned as to the meaning of the whole, and may be asked

to say what "pictures" are suggested to them by the various component parts of the poem. Even for children at this period it will be found that this questioning, especially if it be cleverly conducted, will help the memory and render the memorising less mechanical.

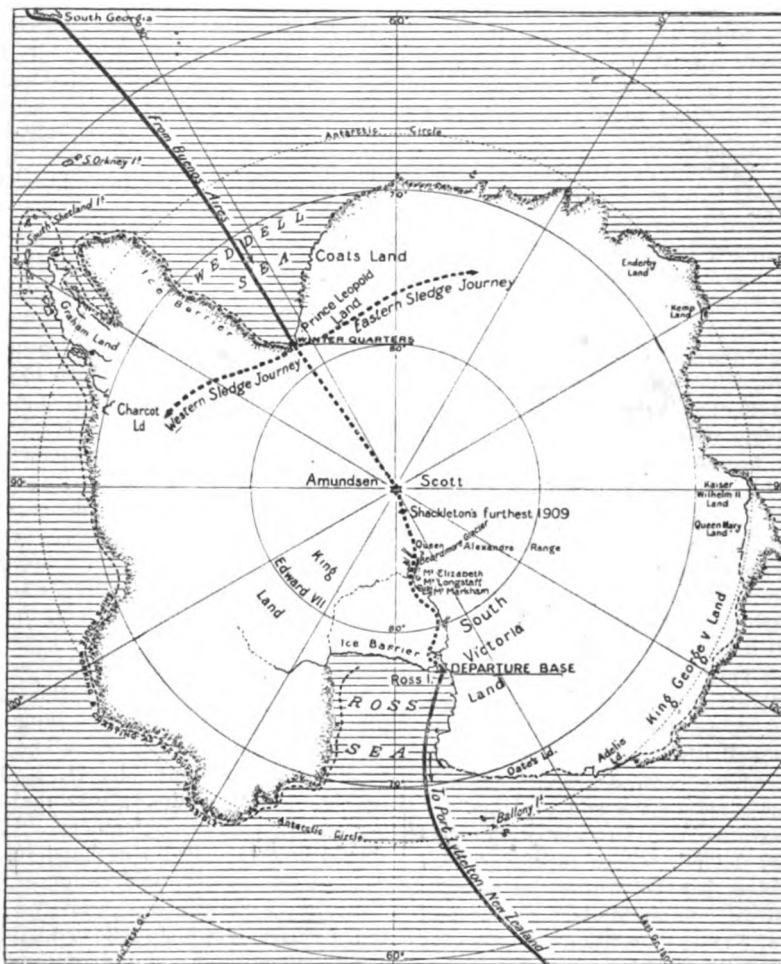
It seems, however, that a certain amount of mechanical memorising, by frequent repetition, after the preliminary questioning, is unavoidable at this stage. Such points as (1) the correct observation of pauses, (2) the right stressing, do not occur to the average child at this period and must be definitely taught; it is therefore necessary that the teacher should explain the reason for making a pause at a certain place or stressing a certain word. In a large class it is probable that at least one or two children may be able to suggest pauses and stresses in answer to questions. That they should be allowed to do so when they are able will help to make the whole class more alert and interested.

It is important that a poem which is a complete artistic unit should be first read or recited in its entirety. If it is suitably chosen, its natural unity and sequence will insensibly help the class to memorise it. But no attention should be drawn to construction at this period, as the children are unable to understand it, although they may feel it. After this preliminary questioning and instruction, the successive portions of the poem may be learnt by repetition. Here every child should be encouraged as much as possible to say the verses simply and intelligently, making use of appropriate gesture, and avoiding over-emphasis, "sing-song," and mechanical repetition.

ANTARCTICA, 1914-16.

ON June 2nd the *Daily Chronicle* announced that Sir Ernest Shackleton was safe in the Falkland Islands after the accomplishment of a feat unique in the history of Antarctic exploration. His ship, the *Endurance*, sank on November 20th, 1915; on April 8th, 1916, his party sailed away from the ice in three boats, and a landing was made on Elephant Island, which lies at the eastern end of the South Shetlands, on April 14th. On April 24th he set out with five volunteers in one boat to attempt to reach South

Georgia, 750 miles away, and on May 10th he beached the boat in a small cove on the west of that island; with two companions he crossed the interior of the island by means of thirty-six hours' continuous marching, and reached the whaling station of Stromness, on the east of the island, in the afternoon of May 20th. On May 26th a relief party set out in a small unprotected whaling ship of but 80 tons, and three vain attempts were made to get through the ice to Elephant Island. To the intense disappointment of the Norwegian whalers and Sir Ernest him-



self, shortage of coal compelled the relief party to turn northwards to the Falklands.

The *Endurance* left South Georgia in December, 1914, and sighted Coats Land on January 10th, 1915; the voyage was continued, and 200 miles of coast, probably between Coats Land and Prince Leopold Land, were discovered. It was February, but not "summer"; conditions were abnormal, the weather being so cold that the animals had migrated northwards; the *Endurance* was beset with ice, and never again escaped. The ship drifted southwards, and

reached 77° S., 35° W., near to the proposed winter quarters, but no landing was possible. From June to October the ice pressure was continuous; on August 1st the ship was half out of the water; on October 16th she was resting solely on the ice, and on the 27th she broke. During October the expedition drifted over the reputed New South Greenland—marked by the words "Ice Barrier" on the accompanying map—where soundings showed that the water was two miles deep. From August until December, 1915, "Ocean Camp" was a resting place on the ice, except for a short time during a vain attempt to cross the ice with the aid of the dog-teams. From December until April the boats were hauled northwards, but five of the dog-teams were shot owing to shortage of food, so that progress was slow. The sea voyage was commenced on April 8th.

The results of the expedition to the Weddell Sea are important; primarily, attention is again focused upon the difficult ice conditions which there prevail; the sea has been surveyed hydrographically, new coast lands have been seen, and the western coast as indicated on the accompanying map has been shown to be incorrect; magnetic, meteorological, biological, and photographic records have been obtained. South Georgia has been crossed for the first time.

Twenty-two men are marooned on Elephant Island in charge of Mr. Frank Wild, whose Antarctic experience is unrivalled, as he has been with four of the latest expeditions. Seals may be caught, and there were full rations for five weeks. A powerful vessel with a large stock of coal might succeed in forcing a way through such ice as would be encountered, so that the immediate dispatch of such a vessel to Elephant Island will be necessary. A committee appointed by the Government has this matter in hand, and the work of rescue has been undertaken by a steam-trawler, the *Instituto Pesca*, lent by the Uruguayan Government. This vessel left the Falklands on June 17th, with Sir Ernest Shackleton on board. She has been fitted with wireless, and will maintain communication with a British auxiliary cruiser. It is hoped that Wild and his comrades will be landed safely in South America before the end of June.

Meanwhile nineteen men are in winter quarters somewhere near Ross Island, where they were left stranded when the ice carried the *Aurora* northwards. These men can use three different huts and stores of provisions, the relics of former expeditions, and despite a comparative lack of clothing, it is expected that they will manage to maintain life until next summer. The *Aurora* is at present in New Zealand, and she will carry a relief expedition to McMurdo Sound at the end of 1916.

Polar ice has again taken toll of the brave explorers who have dared to trespass within its fastnesses. One of the three boats was lost, presumably with all hands, on the voyage to Elephant Island, and one of the five volunteers who set out for South Georgia appears to have perished.

Sir Ernest Shackleton has demonstrated once again the indomitable qualities which fit him to be the leader of an Antarctic expedition, and which yield the strongest chance that the men on Elephant Island may yet be rescued.

THE NATIONAL ASSOCIATION OF HEAD TEACHERS.

THE report of the council of the National Association of Head Teachers to the conference representatives at Nottingham on June 15th and 16th was one of exceptional progress, and this is the more remarkable inasmuch as the conference was not held last year on account of the war. The membership of the association now numbers 6,000, and it is rapidly increasing. To a certain extent it is possible that the somewhat aggressive policy of class teachers is having a healthy reaction upon principal teachers; but it is more probable that the growth of the Head Teachers' Association is due to the excellent work it is doing in the direction of improving the relationship between members of local education authorities and the *personnel* of the schools under their jurisdiction.

In practically all the large education areas there are now consultative committees formed from representatives of the Head Teachers, and, in some cases, of Assistant Teachers, which confer periodically with committees selected from members of the local education committee upon all proposals affecting the welfare of school children and the improvement of school curricula. Not only has this course resulted in the creation of a sound interest in schools and pupils among members of education committees, but it has quickened the enthusiasm of teachers themselves, and consequently all principal teachers feel themselves under an obligation to keep in active membership of their associations in order to maintain a progressive interest in educational matters among their own staffs.

The local arrangements for the conference, which were in the hands of the Nottingham Association, were exceedingly well organised, and the conference proved in every respect one of the most successful in the history of the National Association of Head Teachers. The outstanding feature of the conference was the practical spirit of the reforms suggested by the various resolutions on the agenda. The high note struck by the new president, Mr. H. R. Barge, of London, in his opening address, was maintained throughout the course of the conference. His plea that there should be established a national system of education—primary, secondary, and technical, homogeneous and complete—after the war provided the keynote of all the discussions which followed.

The supply and training of teachers and the question of war economies in education were very fully debated during the first two sessions, and the attention of the Board of Education and local education authorities was directed to several practical suggestions made by the conference.

One of the most interesting discussions followed upon a proposal that head teachers should be allowed to nominate pupils who did not possess the "examination" temperament for admission to secondary and technical school training. Teachers are well aware that scholarships do not always go to the most deserving pupils owing to the fact that many who have headed the lists of their classes for prolonged periods unaccountably fail to pass external formal

examinations. This resolution was carried unanimously. Strong resolutions of protest were passed against the curtailment of school medical services and the feeding of necessitous children, and it was decided to support a proposal that foreign languages should be taught, where practicable, in primary schools. The conference also supported a resolution calling for one year of practical school training from all candidates for the teaching profession immediately upon the completion of their secondary-school courses. The employment of immature child labour was strongly deprecated, and it was decided to approach the authorities with the view of securing the abandonment of various forms of retrenchment which are tending to retard the school progress of children.

Members of the conference enjoyed exceptional facilities for studying local industries under normal conditions by means of visits to the factories of the foremost hosiery and lace-making firms.

CONFERENCE OF THE HEAD-MISTRESSES' ASSOCIATION.

THE forty-second annual conference of the Incorporated Association of Headmistresses was held on June 3rd at Wycombe Abbey School, by kind invitation of the governors of the school and the headmistress, Miss Whitelaw. The conference was presided over by the president, Miss Escott (Sheffield High School), and about 220 members were present from all parts of the United Kingdom.

In place of the usual presidential address, the Master of the Temple (Dr. E. W. Barnes) had been invited to address the meeting. Dr. Barnes took as the subject of his address "Women's Education in connection with some Problems which will arise after the War." While stating that women no longer needed to justify their claims to higher education, but had abundantly vindicated their right to make such a demand, he outlined certain changes, more especially in the system of examination, which he considered would prove beneficial to the community. The time had arrived when the teaching profession should cease to absorb so large a percentage of educated women as in past years, and it was now incumbent on the headmistresses of the secondary schools of the country to determine in what professions women were most likely to succeed, and to modify the school curricula accordingly. It was the headmistresses' duty to advocate incessantly that in general every girl of the middle classes should be trained for some definite occupation in life, as had always been the case with the girls of the lower classes. The war had shown that women could perform efficiently many of the duties formerly assigned by custom to men. In the future in each urban community the school attendance officer, the factory inspector, teachers of hygiene and cookery in the compulsory continuation schools, those supervising the dental and eyesight clinics, the milk depôts, and such children's amusements as the kinema, might all be women attached

to one central bureau, who should work in co-operation with the women teachers of the elementary schools, the parish deaconesses, and the doctors of the local hospital. The head of the bureau would of necessity be a well-educated woman who had studied the economics of industry, and was capable of putting her views cogently and persuasively before the local municipal authority. Only such an efficient bureaucracy, zealously and incessantly active in its duties, could protect women and their young children from the ill-effects of that industrial competition which in the future was likely to be even more fierce than in the past.

To the vocations of teacher, deaconess, and social worker, on which Dr. Barnes insisted as the three indispensable openings for women in the future, he added the professions of medicine and nursing, stating that no development of women's education was so urgently needed as in those directions. He said that it would pay the State to subsidise the medical education of women by a liberal system of scholarships, and private benefactors could not do better than to lavish money with the object of reducing the necessarily heavy cost of training girls in medicine or surgery.

Dr. Barnes urged that girls who intended to enter business should be trained in such subjects as they would need in the wholesome atmosphere of a well-ordered school. After the war there was no reason why ultimately the bulk of the foreign correspondence of the country, which, as international intercourse increased, would become of continuously greater importance, should not be done by women. Such work also as scientific research in connection with industry, and under the auspices of the great business firms, could be undertaken by able women who had had a university education in the physical sciences. At Cambridge before the war the University had contained eight times as many undergraduates as women students; for the sake of the country, the numbers ought in the future to be equal, and in other places where other types of education were given the same truth held.

Resolutions were adopted by the meeting to the effect that any qualification accepted by the Board of Education for entrance to a training college should carry with it a certificate; that the Board of Education should be requested to recognise as qualified for admission to a training college (a) candidates who have obtained a school certificate granted by the various examination boards which have accepted the principles of Circular 849; (b) candidates who have not obtained a school certificate, but at one and the same examination have passed in English, history or geography, arithmetic, and two other subjects (of which history or geography may be one); and recommending that university and other examining bodies should be approached with a view to the equalisation of their standards for passing examinations drawn on the lines of Circulars 849 and 933, as an indispensable part of any real reform of the examination system as applied to secondary schools.

EDUCATION AS A PREPARATION FOR FUTURE WORK.¹

By Miss E. STRUDWICK, M.A.

Headmistress, City of London School for Girls.

FROM early times in the world's history the question of education as a preparation for future work has been considered one of great importance, and in all the centuries that have passed since Plato the chief problems have remained the same.

In the seventh book of the "Republic," when he is considering the training of those who are to be guardians and rulers of the State, he dwells upon two main points—the unreality of education in the Greek world, and the need for the development of character to be regarded as the chief task of educators.

What men learn, he says, is but a shadow of reality—true education should be the turning of the eye of the soul towards the light—only those greater souls whose eyes are turned so that they apprehend the good shall be the rulers or guardians of the State, and these souls must realise their community with lesser souls, and not stand apart from them because they have known the light. They must turn back to the shadow-world again, until, under their guidance, their subjects may emerge into the light with them.

Secondly, he insists upon an all-round education for the building-up of character, an education that does not end with school-days, an education in which there is no sort of strife between the respective claims of art and science and no gap between study and practical life.

It is a far cry from Plato to 1916, and no doubt he wrote for a more leisured community than ours, leaving out of account the less favoured sections of the Greek world, whose time of preparation was short and whose work in the world heavy and laborious, but in the main we might do worse than think over his criticism and hold by his ideal. Never has education mattered more than it does now and will in the future; never will the careers of girls and boys be of more vital importance to the nation than those of the pupils now in our schools.

Therefore a preparatory education on the right lines must somehow be secured, if it is not already in being, and it is vital that we should be ready to withstand the attacks which are being, and will continue to be, made upon the basis of our teaching, and the demands for earlier specialisation which, always inarticulately present, are finding voice in the national crisis.

This is, however, not a time for detailed discussion of changes in curriculum adapted to meet possible demands, of subjects to be added or withdrawn, of the usefulness or uselessness of this or of that. We have no guidance as to the needs which will be outstanding in the years that are before us; the events of each day as it passes are moulding the face of the future, the outlook is different, if we could see it, from week to week; nothing is stable, all is in flux. It

would be an unreal discussion at best, because we have no data upon which to go.

The war is educating the nation to see that specialised preparation at least is necessary; and the next step will be to secure the acceptance of the belief that a preliminary *general* preparation is more necessary still. For now, if ever, is there need that everyone should be at his best, and should go forth upon his adventure with life and stimulus to be up and doing, with the spirit of intelligent service, and that can be helped only by an education which has been real and vivid, which has opened out to him the vista of many possibilities, which, while not unwisely diffused, has yet been lavish in suggestion of infinite worlds to conquer and understand.

If the generations that are to rebuild the world can be sent upon their errand with alert and ready minds, quick to grasp essentials, not bound within the narrow limits of their own immediate work, then, whatever their choice of individual profession, they will be invaluable citizens.

It is this need to make the world as big as may be in the early years that makes one anxious at the present moment not to yield to the cries for specialisation in school work. It is one thing to encourage a child on the lines of its general aptitude, and another to shut it up within the four walls of its own destined career. Things of the imagination have to count, and *do* count—children have a good appetite for all sorts, and it should be satisfied. Even from the most sternly practical point of view imaginative insight and a wealth of intellectual experience are great assets. After all, there are few careers which do not involve intercourse with one's fellow-men, and may not lead to some kind of influence or authority over them. Skill in the mastery of natural forces is no doubt a most necessary thing, but I have yet to learn that skill in the mastery of men is not a greater. The knowledge of men in ancient civilisations, and of their ways of solving problems in many ways similar to ours, the study of their thoughts about themselves and the universe—these things may seem unpractical, but not once only in our island story has a training in humaner letters produced a great practical administrator.

Alertness and adaptability are qualities which have their value everywhere, and if to these be added the appreciation of a scientific method, there need be no fear that girls will not take a worthy share in the world's work. The development of science teaching in girls' schools may, or may not, be possible or advisable, on a large scale at any rate, but its method and its impersonal appeal are both invaluable; if it is not possible, we can at least inculcate a scientific method in general teaching. Girls are by nature very receptive and imitative, and what they need encouragement to develop is a capacity for initiation. The exigencies of war are proving that it is latent and needs only to be brought out, and if, at any rate in the higher forms, the seminar system could perhaps be more freely employed, with its spirit of joint research, of companionship in study and mutual aid between elder girls and mistresses,

¹ From a paper read at the forty-second annual Conference of the Association of Headmistresses, June 3rd, 1916.

we should get for girls who cannot hope for a college career a little of that atmosphere which a college career can give. For in the years to come it is the standard of the average that will be of importance, for the simple reason that during reconstruction the work of the average will be what really matters.

THE SUPPLY OF TEACHERS IN SECONDARY SCHOOLS FOR GIRLS.¹

By Miss W. M. KIDD, M.A.

Headmistress, Girls' Grammar School, Maidstone.

FROM percentages reaching to 1915, kindly supplied by the authorities of Bedford and Newnham Colleges, covering in the case of Bedford the last four years, and in the case of Newnham the last twelve, it does not seem that there is any considerable falling off in the numbers of those desiring to teach up to last year. The principal of Bedford College, however, thinks that at the present moment there is a greater number who do not intend to teach, and the difference may amount to 20 per cent. of the total number of students.

From the number of vacancies and applicants on the books of the Association of University Women Teachers, it would seem that the number of English literature and history mistresses is far in excess of the demand, and that it is quite unwise of us to advise girls who intend to become secondary-school teachers to specialise in these two subjects if they are capable of tackling subjects more needed.

The temporary dearth of teachers of mathematics and science (especially chemistry and physics) is really serious. This, of course, may right itself after the war. But at the present time a great many mistresses are entering boys' schools, others are becoming analysts and instrument-makers and taking posts in chemical and physical research laboratories. In such posts the hours are shorter and the evenings not burdened by corrections. Then, again, the war is creating an ever-increasing demand for women doctors. There are too, I hear, posts for women with mathematical knowledge in connection with surveying, mechanics, and some branches of engineering.

There will, after the war, be good openings for teachers of French and Russian, so that the supply of teachers of French here may not be equal to the demand.

The number of teachers of domestic science is at the present moment in excess of the demand. This is due to the fact that municipal authorities are retrenching in this department during the war.

At the moment the number of gymnastic and games mistresses is not, as it is apt to be in normal times, greater than required. Many of these mistresses are doing massage work in military hospitals, but it is contemplated that things will be as usual again in two or three years' time. The demand for teachers of classics is comparatively small in girls' schools, but the war is increasing, and will increase, the need for such in boys' and mixed schools. The supply of trained

teachers of geography becomes less and less adequate to the demand now that the standard of teaching in this subject is at so much higher a level than it was twelve or more years ago.

I hear it is absolutely essential that Froebel mistresses should be prepared to take some special subject, such as drawing, singing, or sewing, with older girls. The same applies to art mistresses.

It was suggested to me that headmistresses of secondary schools should study the condition of the teaching market more than they apparently do before advising girls who go to college with the sole aim of preparing for the teaching profession in which subject they had best specialise. To meet the current demands, and also what are likely to be those of the future, these subjects would seem to be physics, chemistry, mathematics, and geography.

MR. H. G. WELLS AND MODERN LANGUAGE TEACHING.

MR. H. G. WELLS has recently contributed two interesting articles to the *Daily Chronicle*, in which he discusses some problems of modern language teaching, with special reference to Russian. There is always something refreshing about Mr. Wells's criticism, and he is always willing to learn. The correspondence arising from his first article was far too voluminous to be printed in these days of paper shortage, but it was submitted to Mr. Wells, and he learned with surprise and, we are sure, with pleasure how much progress has been made in the practical application of phonetics, and how widely the alphabet of the International Phonetic Association is used. As for Russian, he seems to have attempted to learn it, and to have been disappointed in the books at present available for the purpose. This is not at all surprising. As Mr. Wells has observed, the Russians in many cases use the same letters as we do, but attach a different value to them; thus *n* stands for "p," *m* for "t," and *p* for "r." Mr. Wells suggested that the language should be transliterated for beginners to help them over this difficulty; but the difficulty lies not so much in the use of *n* for "p," etc., which is perfectly consistent, as in those features of the pronunciation which the spelling does not reveal at all, and for which a phonetic transcription is badly needed. There is no book that deals with this question at all satisfactorily, and, we may add, no book that deals with the problems of the accidence and the vocabulary in an enlightened manner. The bulk of the Russian courses available are, from the point of view of method, on a par with the French courses that were getting discredited twenty years ago. Several books for teaching Russian have appeared since the beginning of the war, as was only to be expected; but they are all more or less on the old lines.

In his second article Mr. Wells urges that our Government, working if possible with our Allies, should adopt and insist on some one phonetic alphabet for all purposes for which phonetics are needed. He refers to "an extremely influential petition upon these lines" which is being organised, and to Mr. Harold

¹ From a paper read at the forty-second annual Conference of the Association of Headmistresses, June 3rd, 1916.

Cox as "the active spirit in this important initiative." We have not seen this petition, but the movement referred to is doubtless the same as that mentioned in an article on "The Communion of Nations" in a recent issue of the *Spectator*. Reading between the lines, we gather that someone, imperfectly acquainted with the International Association's alphabet and ignorant (perhaps wilfully) of its extensive and successful use in our schools, has worked out an "Anglo-French" would-be phonetic alphabet and wishes to gain official recognition for it. When he writes that the International Association's alphabet is "already employed in several English schools," he is either intentionally misleading or reprehensibly ignorant; and when he calls it "excessively elaborate," the obvious reply is that greater simplicity can only be secured by neglecting to represent important differences of sound, and that, as a matter of classroom experience, this "excessively elaborate" alphabet is very readily acquired by young children. Mr. Wells is undoubtedly quite right when he maintains that the language specialist is all the better for a little occasional "shoving" from the outsider. "Shoving" from Mr. Wells is always welcome; but, judging from many recent letters to the Press, there are some "outsiders" who seem to think that modern language teaching in our schools has not changed since they themselves learned, or failed to learn, French, and who abuse the teachers of to-day for the shortcomings of their distant predecessors. The specialist has a right to ask that these "outsiders" should gain some insight into what is being done in our schools before writing at large about educational reforms—such as phonetic spelling.

ITEMS OF INTEREST.

GENERAL.

THE work of the Education Section of the British Association, for the meeting to be held at Newcastle-upon-Tyne on September 5th-9th inclusive, will open with an address from the president, the Rev. W. Temple, who will probably deal very largely with the Workers' Educational Association, of which he has been so long president. The programme for the meeting is necessarily still incomplete. It will, however, be devoted to three main topics: the position of science in secondary and higher education, the reform of the primary school, and normal performances of school children. Immediately after the presidential address, which is fixed for 10 a.m., Wednesday, September 6th, the section will consider primary-school reform. Mr. J. G. Legge, Prof. T. P. Nunn, and Prof. J. A. Green are to read papers, and Mr. Crook, president of the N.U.T., has promised to open the discussion. On Thursday, at 10 a.m., Mr. J. Talbot will deal with science teaching in public and grammar schools, and he will be followed by Dr. H. B. Gray ("The Relative Value of Literary and Scientific Subjects in a Course of General Education"), Dr. Hadow ("Science Teaching in the Universities"), and Dr. E. F. Armstrong ("The Value of Science in Industrial Works"). A general discussion will follow, in which Sir Charles Parsons has promised

to speak. It is hoped also that the scientific education of girls may find representatives. The details of the meetings on Friday, which are to be joint meetings with the Psychological Sub-Section, are still under consideration. Mr. Cyril Burt will be amongst the speakers, and a report on the general question is to be presented.

THERE can be little doubt that one of the results of the war will be a reform in our educational system; the overflowing meeting held in the meeting-room of the Linnean Society last May, the space devoted by the daily Press to correspondence upon the subject, the decision of the Organising Committee of the Educational Section of the British Association to allot two whole days to a discussion upon reform, and the circular letter recently sent to the parents of the Eton boys, all show the widespread dissatisfaction which now exists. The signatories of the "Eton letter," who include men of such diverse views and training as Lord Avebury, Admiral Jellicoe, and Colonel Leatham, maintain that the classical training in public schools is, for the average boy, a deplorable waste of most valuable time, and they urge that more attention shall be given to English, modern languages, and science. With these conclusions most progressive teachers are in agreement; but if reform is to proceed upon sound lines it is necessary for a constructive policy to be placed before British parents.

THE schoolmaster may be, and in many cases doubtless is, to blame for specialisation in classics taking the place of a general education; but, after all, he is a tradesman who has to sell his wares, and so long as parents, instead of troubling about the curriculum, choose a school for their boys because of its social status or the reputation it has for cricket or boating, they can scarcely blame the classical headmaster for taking the line of least resistance. If parents wish their boys to learn French in order that the boys may make themselves understood when abroad, rather than because they have been told it is a useful form of mental gymnastics; or if their sons are to have the elementary scientific knowledge which would prevent them from being ignorant of the fact that explosives can be manufactured from fats, this must be made clear when they enter their boys at a school, and they must be prepared to withdraw their sons if they find that instruction is not being received which the schoolmaster is paid to give.

THE reform of secondary education, however, depends upon spheres outside the school. Parents demand, and rightly, that their sons shall be prepared at school for the public examinations; and so long as the Civil Service Commissioners demand no knowledge of science from their Sandhurst candidates, so long as Oxford refuses to recognise science at all in Responsions, so long as Cambridge makes elementary science alternative with—of all subjects in the world—Paley's "Evidences of Christianity," so long as London allows the option of science or Latin, so long will it continue to pay the schoolmaster to let his pupils be crammed in subjects which do not require laboratory fittings and expenses.

At the request of the Board of Education a Summer School of French is being organised at Bedford College for Women from August 29th to September 12th. The course will comprise lectures by eminent French men and women on literature, present-day social conditions, linguistics, and methods of teaching abroad and at home. Ample opportunities will be given for the practice of conversation and phonetics. The full course is intended for teachers only. Further particulars may be obtained from Miss Batchelor, Bedford College, Regent's Park, N.W.

THE twentieth annual conference of the Parents' National Educational Union will be held at Bedford College, Regent's Park, N.W., on July 4th-6th. Among the subjects of addresses are:—"Foundations for the Future," Mr. A. Greenwood; "Education, Work, and Beauty," Mr. W. R. Lethaby; "The Teaching of Greek and Roman History," Prof. W. G. de Burgh; "Value of Handiness," Mr. C. Parsons; "A New Aspect of Elementary-School Teaching," Mrs. Petrie Steinthal; "Educational Reconstruction," Mr. G. Smith; and "Poetry and Education," Mr. John Drinkwater.

Two conferences are announced in connection with the Shakespeare Festival which is to be held throughout August at the Memorial Theatre, Stratford-on-Avon. For the first week a series of lectures and discussions is arranged on "The National Life of the Allied Countries"; eminent representatives of the several nations have already promised to speak, and the programme will soon be available. On August 7th-12th a conference on "The Teaching of English" will be held. This is, in outline, a repetition of the conference which took place in 1914, and Sir Sidney Lee is again the chairman of the Advisory Committee. The programme includes papers on various aspects of English teaching; Mr. J. H. Fowler, of Clifton College, will read a paper on "The Teaching of Composition"; Miss M. G. Jones, head of the department for the training of secondary teachers, Alexandra College, Dublin, will speak on "The Literature Lesson," and a discussion will be opened by Miss May Copey. Prof. Walter Rippmann will speak on "Phonetics as an Aid to Good Speech," and will hold, throughout the season, classes in English phonetics, as well as lectures in connection with Miss Elsie Fogerty's Summer School of Speech Training. Mr. Stanley Leathes will read a paper on "Examinations in English," and a discussion will be opened by Miss Hilda Wilson, of the Ladies' College, Cheltenham. Miss Nellie Dale will open a discussion on "The Teaching of Reading." Two poets have promised to take part in the conference—Mr. John Drinkwater will give a lecture entitled "The Significance of Drama," and Mr. Walter de la Mare will speak on "Rhythm."

THE teaching of Shakespeare will be a subject of especial interest, and the conference will open on Monday, August 7th, with a discussion on "The Ideal School Edition of Shakespeare." Sir Sidney Lee will preside; teachers with practical experience in schools, colleges, and universities will speak, and all members

of the conference are invited to contribute to the discussion. The fee for admission to the conference is ten shillings. Application should be made as early as possible, as the Grammar School is limited as to seating capacity. Communications should be addressed to the Secretary, Conference of Teachers of English, Shakespeare Memorial Theatre, Stratford-on-Avon.

THE report has now been published of the Committee appointed by the Home Secretary to conduct experiments on the relative value of dry-powder fire-extinguishers, water, and other first-aid appliances for extinguishing, or effectively controlling, fires such as are likely to be caused by bombs. The tests applied were as follows:—(A) Ground-floor rooms, 10 ft. by 10 ft., were fitted with wooden furniture, 28 lb. of fir-wood sticks, and 1½ lb. of celluloid. They were set alight by means of an incendiary bomb and allowed to burn for 45 seconds before being attacked with the various appliances, viz.:—(a) Dry-powder extinguisher ("Kyl-Fyre" was selected); (b) buckets of water; (c) liquid chemical extingcteurs. (B) Bombs were fired in the midst of heaps of 21 lb. of fir-wood sticks; ten seconds after percussion the resulting fires were attacked with the same appliances as detailed above. (C) Wooden erections, 6 ft. square, containing 14 lb. of shavings, 14 lb. of sticks, and half a gallon of paraffin, were fired and allowed to burn for two minutes before the attack was opened with the same appliances as in tests (A) and (B).

THE conclusions arrived at were that, whilst none of the agents employed could be said to possess any marked influence on the combustion of the bomb itself, the superiority of water over the dry-powder extinguisher was very marked. The spread of the fire caused by the bomb was greatly limited, and in some cases totally prevented, by the application of water, whereas after the application of the dry powder the fire continued to burn, though temporarily checked. The water acts in two ways: (i) by wetting the surrounding objects; (ii) by direct mechanical damping out of the fire. The dry powder generates carbon dioxide, which, however, in the opinion of the Committee, is insufficient in amount to be of much service. The Committee recommends the use of good-quality chemical extingcteurs, seeing that they give a better control of the volume of water ejected than is possible with ordinary water-buckets. It finally recommends a plentiful supply of water applied in the manner most convenient, and deprecates the use of dry-powder extinguishers, which, as is pointed out, consist mainly of sodium bicarbonate and chalk, retailed at an extortionate cost.

THE Lundie Memorial Trust, with the view of encouraging the study of patriotism in secondary schools in the city of Liverpool, with which this educational foundation is connected, has decided to institute an essay competition which will be open to all pupils under eighteen years of age in attendance at a secondary school in the city recognised by the Board of Education as efficient. The subject of this year's essay is Robert Browning's couplet, "Here and here

has England helped me, how can I help England?" The prizes offered include Lundie silver and bronze medals, with books to the total value of £2 10s. Further particulars of the competition may be obtained by forwarding a stamped (halfpenny) and directed postal wrapper to the secretary of the trust, Miss A. M. Davies, 27, Church Road, Waterloo, near Liverpool.

ARRANGEMENTS have been made, with the approval of the Foreign Office, for extending to British prisoners of war interned abroad the benefits of the scheme, which has been in operation for the last year in connection with Ruhleben, for supplying selected books of an educational character to those of the interned who may be desirous of continuing their studies in any subject. Under this scheme several thousands of carefully selected volumes, mostly standard works, have been supplied to the Ruhleben Camp, which is now provided with excellent libraries (class, reference, and lending). These books, which have been sent out through the agency of officers of the Board of Education, have proved a great boon to the interned, and have enabled sustained educational work of a definite character to be carried on by the Camp Education Department formed among the prisoners. In view of the value of the work the Board of Trade (Marine Department) have decided to take it into account in connection with their examinations for the certificates of competency granted by them to officers of the Mercantile Marine and the Fishing Service. Accordingly, arrangements have now been completed for recording the time spent by any prisoner interned at Ruhleben or Groningen in the study of nautical or other subjects. An appeal is, therefore, now made for a plentiful supply of new or second-hand books of an educational character (light literature and fiction are available from other sources) to meet the needs of the many thousands of British prisoners interned in enemy or neutral countries. It is to be hoped that to this appeal there may be a liberal response. A circular explanatory of the educational book scheme can be obtained by sending a postcard addressed at the Board of Education, Whitehall, S.W. to Mr. A. T. Davies, who is in charge of the arrangements.

THE RT. HON. LORD SHEFFIELD presided over a Conference of the National Education Association in May last, and in the course of an address adverted to the need for a Royal Commission appointed to review the whole field of education. In reference to secondary schools, he stated that it has been in contemplation by the Government to change the permission to provide such schools into an obligation. Such a change will imply that the education authority shall no longer be hampered by the 2d. rate limit in regard to that branch of educational administration. Each local authority should be called upon to submit a report as to the needs of the district in reference to secondary schools and to state how it is proposed to meet those needs. All towns of more than 200,000 inhabitants ought to have a college affiliated to some university, and local authorities should be aided by Parliamentary grants to provide adequate equipment, staff, and scholar-

ships in secondary schools and colleges, and the rule that 25 per cent. free places are to be maintained in secondary schools should be extended to these colleges.

DR. WILLIAM GARNETT read a paper on "Industry, Education, and Research" at the annual spring meeting of the Textile Institute. He fears that in many cases the work of the school is never dovetailed into the experience of the home, the street, and the workshop, and, in fact, that lessons in history are not fitted into lessons in geography, Scripture, and so on. Much of the child's school experience is passed, as it were, in a world apart. "An axiom is something you must admit before you learn Euclid, *but, of course, it is not true.*" In this way is illustrated the first task for the educational reformer—to break down the isolation of the schools, and this reform must begin in the training colleges. A year spent at the end of the training college course in a technical school or polytechnic, in which workshop classes are held in the mechanical arts, would be most valuable. Dr. Garnett's suggestion is applicable to other departments of modern life than manufacture; some students should be brought into practical touch with commerce; and it is noteworthy that there is a tendency in the United States to extend university instruction in such a way that, in all fields of education which are not purely academic, the undergraduate should combine some practical out-of-college training with his class work.

THE thirteenth annual convention of the American Religious Education Association has formulated its principles. Church and State are distinct institutions; all children are entitled to adequate facilities for religious instruction and training. The child's time should be so allotted as to allow opportunity and strength for religious education. Religious instruction and training pertain to the home, the church, and the private school, not to the public school or public-school officials. The success of a scheme of religious education depends upon the systematic use of weekdays as well as Sundays for religious instruction, more adequate provision for training in the experience of public and private worship, the embodiment of sound educational theory and the ideals of the religious community in a systematic plan, the adequate preparation of special teachers, and the awakening of parents and churches to their responsibilities as well as their opportunities in the instruction and training of children in the religious life. There is need for sympathetic co-operation among all citizens of whatever faith and intelligence, and devotion should be displayed in the common task.

MR. E. J. SMITH, the chairman of the Health Committee of the Corporation of Bradford, advocates in the *Child* far-reaching schemes for the endowment of maternity and for the promotion of child welfare. There should be a national grant of 5s. per child per week provided the housing is adequate, the home is kept clean, and the doctor certifies that the child is properly fed, clothed, and cared for. These provisions would guarantee that public money was being wisely spent and not wasted. Nearly four-fifths of a million

babies are born annually, so that the charge on the national income would be something less than ten millions sterling the first year, twenty millions the second year, and so on until the child leaves school, *i.e.* about fourteen years. The money, however, would be spent upon necessities, and would not become capital, but would provide additional employment. It is suggested that a portion of the money should be obtained from a tax upon single adults and upon childless married couples. Such a scheme would have profound educational results, since it would obviate the necessity for maintenance grants to secondary-school pupils and for care committees in elementary schools, and fewer children would waste public money since they are physically incapacitated from profiting by their education. Is this scheme an evidence of a change in values due to war expenditure?

THE *Schoolmaster* for May 27th contains an open letter to the chairman of the Education Committee of the London County Council on a matter of far-reaching importance to the public in general and the teaching profession in particular. The Council has employed a large body of "war-supply" teachers, who include many young women who in ordinary circumstances would have obtained permanent employment in the London service. In hundreds of cases these teachers do men's work in boys' schools. They are paid by the day at rates which are lower than those which obtain in the case of similarly qualified women teachers on the permanent staff. "*In short, their labour is sweated labour.*" If a "war-supply" teacher is absent from sickness or if the school is closed for a holiday, her pay is stopped. These teachers look forward to the summer holidays with anxiety, since they mean thirty-one days without pay. The letter asks the Council to consider the case of the war-supply teacher as one demanding special and immediate attention, and concludes with the suggestion that the Council as a body is ignorant of the facts and will grant immediate relief when the real condition of affairs comes to its knowledge.

SWIMMING should form an integral part of every school curriculum. This is the contention of Mr. H. Leather in an article, "The Teaching of Swimming," in the June issue of the *Journal of Education*. Children differ in the readiness with which they take to the water; some children should be encouraged to dive, and these children soon put into practice the leg and arm movements which they have been taught in a few lessons on land; other children require a considerable amount of land-drill, and should then be assisted when in the water, either with the teacher's hand slightly below the pupil's breast or by means of some supporting apparatus. It is a fallacy to assume that the teacher of swimming must be able to swim or must teach by actually entering the water. Many successful teachers are unable to swim and direct all operations from the side of the baths. The chief quality necessary for such a teacher is that the pupils have absolute trust in the instructions which the teacher gives and in the ability of the teacher to save them should they get into difficulties. It is

important that the pupils should acquire correct style in swimming, and back swimming is, on the whole, most necessary.

THE unrest in American schools in reference to the evils which prevail in school and college athletics is manifested in a paper presented to the last meeting of College Presidents in Pennsylvania, "The Migration of Athletes from one Institution to Another," and printed in *School and Society*. The author, Mr. J. A. W. Haas, charges the athletes and their coaches with dishonesty and hypocrisy. It is necessary to arouse a spirit of straightforward honesty and to fight the American conception that "to win is better than playing a fair game." Unjust reports are spread about rival teams, and when it is not possible to prevent a team gaining the victory by clever and partial refereeing, it is proper to assail and question its integrity and honesty; such hypocrisy is to be condemned. These serious defects of American sportsmanship are apparently rampant in the colleges, and are known to be prevalent in the schools, and they are largely laid down to the publicity given to disputes in the Press and to the practice of gaining prestige or income by means of the games. The appointment of an impartial central board, and the establishment of regulations which prevent a student from playing for his new school for a year after he has been dismissed from his old one, are suggested remedies for the blatant evil.

THE difficulties inherent in the conditions under which educationists labour in India are manifest in the following examination answer written by a candidate for the secondary teacher's certificate in Bombay, 1915. The candidate was required to explain and discuss three statements, of which the third was:—"The Rt. Hon. Robert Lowe announced that there could be no such thing as a science of education"; and his answer read thus:—"When we minutely observe the science of education we come to the same result, and we then can fully recognise the truth of this statement. As, for example, in chemistry all our experiments are completely bound up by the strict rules and methods, so this science of education is completely ruled by the various methods. There are various stages to follow this science of education. For children there are various ways to educate them, and for the young there are also quite different rules for giving instruction. Thus after great meditation we come to a result, and we can very safely assert that there is no such thing as a science of education." It is difficult to imagine who deserves the greater meed of praise, the European educator who is endeavouring to maintain a respectable standard of efficiency, or the native student who is so sorely beset by the difficulty of writing a foreign tongue.—*Indian Education*.

THE April issue of *Science Progress* contains five articles, of which two are mathematical in character. The account of the natural history of tumours, contributed by Dr. C. M. Moullin, is of general interest. Tumours are the product of the innate power of asexual reproduction present in some measure in all

tissues. So long as the development of the tissues is normal, growth is also normal, but when the chemical reactions which cause this normal development are upset by some form of irritation from without, abnormal growth results. There is a great proportion of young, rapidly growing cells which form buds which resemble them, instead of developing on a higher plane of evolution. It is urged that much more must be known about the chemical changes which take place in living tissues before real progress in preventing their occurrence can be made. An account is given of the influence of such substances as arsenic, aniline dyes, cobalt ores, soot, etc., in causing the formation of tumours. Experience in Basle has demonstrated that workers in aniline colours are particularly prone to tumours in the urinary organs.

SCOTTISH.

THE action of Admiral Egerton, K.C.B., Admiral Inglefield, K.C.B., and Admiral Farquhar, K.C.B., C.V.O., in asking to be placed on the retired list in order to make way for the promotion of younger men who have rendered eminent service to the Empire during the present war is one of the finest examples of public spirit that the great struggle has produced. It is eminently characteristic of the Navy spirit, and entirely in accord with Navy traditions. This act of renunciation and self-sacrifice by the three admirals is one that should be brought prominently before all school pupils. It is well calculated to seize the youthful imagination and to produce lasting effects on all who have their attention directed to it. One would fain hope that it is more characteristic of the national temper than the evident greed and selfishness of certain sections of the community.

PROF. DARROCH gave the opening lecture of a series arranged under the joint auspices of the Workers' Educational Association and the Outlook Tower in the Royal High School, Edinburgh. Taking as his subject "Education after the War," he said that no one believed more strongly than he in the better scientific and technical training of the worker. For this purpose they needed to reorganise their technical colleges and ensure their freedom for development. They must see that these colleges were placed in such a position financially as would enable the work of scientific research to be carried out with the sole aim of furthering knowledge and of bettering the processes of manufacture. But scientific and technical education alone would never save a nation. It must be founded on the solid basis of a liberal education—an education which would free men's minds from all narrow, petty, national interests, and make them realise that they were heirs of a common civilisation, and that the only contest in which the European nations might rightly engage was the never-ceasing war between good and evil.

At a meeting of the council of the Educational Institute the question of the position of education after the war came up for discussion. All were agreed that the present world-struggle would have far-reaching effects on education, and the president urged the need for being prepared with reasonable and practical

schemes of reform. If teachers were not ready with a policy, then certainly others would come forward with their specifics directed to secure this or that alteration in the body politic, and having little regard to purely educational ends. It was finally agreed to appoint a committee representative of all grades of teachers to consider the question and bring forward a report as speedily as possible. The committee was empowered to co-opt for the purpose of the inquiry teachers and others specially qualified to advise on this matter.

MRS. LESLIE MACKENZIE has done a valuable national service in directing attention in a recent address to the Workers' Educational Association to the great and preventable waste of child-life that takes place annually in this country. From the latest available reports of the school medical inspectors it was evident that much of their work arose from the present inadequate provision for the inspection and treatment of children before going to school. As the result of the social awakening due to the war voluntary agencies to cope with child wastage had developed rapidly, and in certain districts had been remarkably successful. For example, in one old cathedral city, through combined efforts by the municipal authorities and voluntary workers, the infantile death-rate had fallen from 148 to 83 per 1,000. But the problem of the pre-school child far outran the possibilities of voluntary, and even of municipal, action. The nation must take direct cognisance of the terrible wastage of precious lives that still went on, and endeavour by direct legislation to strike at the causes of this wastage, such as ignorance, poverty, bad environment, and disease. As a step in this direction she heartily welcomed the Notification of Births Act and the Midwives (Scotland) Act, both of which had been passed recently as emergency measures.

JUNE is the usual month in Scotland for budgeting for next year's educational charges. So far as disclosed up to date the amount asked for shows, in almost every instance, a considerable decrease compared with last year. The national financial situation certainly demands the most careful scrutiny of every penny of expenditure by public bodies, but at the same time emphasis should be laid by these bodies on the fact that the decreased expenditure inevitably means decreased educational efficiency. When the national existence is at stake education, like other essential national services, must be allowed to suffer a certain eclipse. No permanent injury, however, will result if at the same time the nation is plainly told that when the war is over and the never-ending struggle for commercial and industrial supremacy once more holds the stage, the expenditure on education must go up by leaps and bounds if the nation is to retain its place in the sun.

THE Teachers' War Service Committee, in pursuance of its thrift campaign, circularised all the schools in the country urging the establishment of school banks, either permanently or for the period of the war. Already it is reported that 130 schools have opened banks, and that the funds in school banks show an

increase of £15,500 compared with last year. This is a substantial increase, but there is plenty of scope for improvement. Whatever may be said for or against school banks in ordinary times, at present they should be regarded as an essential feature in all schools.

IRISH.

THE annual intermediate examinations commenced this year on June 13th, and lasted into the following week until June 21st.

THE Assistant Commissioners of Intermediate Education have issued a memorandum to managers of schools to the effect that they are directed to state that the circular issued on March 7th last with reference to the bonus school grant merely lays down the principles to be aimed at, and is not to be taken as a set of hard-and-fast rules, and that the Board have retained the power of departing from them should it seem desirable to do so.

THE spring number of the Journal of the Department of Agriculture and Technical Instruction is a pamphlet of 150 pages, the most interesting article in which for educational purposes is one on "Rural Science and School Gardens," by Mr. W. H. Johns, Municipal Technical Institute, Belfast. It is illustrated by photographs, and should be of great use to managers and teachers who are introducing gardening into their curriculum. In Ireland the subject is a comparatively new one, and the general commencement of it dates only from 1910, when the Department's present scheme of rural science and school gardening was introduced. At the present time the subject is taught in 150 schools by teachers specially trained under the Department's programme. The other articles deal mainly with the agricultural work of the Department, such as the management of dairy cows, tobacco growing, live-stock feeding, classification of eggs, etc. The number also contains a large number of official documents dealing with the instruction work, scholarships, etc., of the Department.

THE University College, Dublin, a constituent college of the National University of Ireland, has issued a kind of calendar for the session 1916-17, in three parts: (1) general regulations, scholarships, class fees, etc.; (2) regulations for courses of study and subjects of examination for degrees of the faculties of arts, philosophy, and Celtic studies; and (3) similar regulations and subjects of examination in the faculty of medicine, including dentistry. The general regulations contain at the end a fairly large number of recent resolutions of the Senate of a general character affecting students. The first and most interesting is that during the period of the war honorary Bachelors' degrees shall be conferred (except in the faculty of medicine) on students who have spent not less than nine months on approved war service, and have been invalidated on such service, provided that such students have attended all the required courses and have passed all the required examinations of their first two years of study, and that the professors and lecturers are

satisfied that such students in their ordinary course would have passed their final examination for their Bachelors' degrees in their respective faculties.

THE annual Committee of Convocation of the National University is still agitating the question of evening courses for degrees. At a recent meeting a resolution was passed that Convocation was pleased to see that opportunities have been provided for evening lectures in some subjects in University College, Dublin, thus showing that it is quite feasible to have lectures in other subjects delivered in the evening. Regret was expressed, however, that the college authorities have as yet taken no steps to put in force the recommendations made by Convocation several years in succession to provide evening lectures leading to degrees. The evening lectures referred to are in commerce, Celtic archaeology, commercial law, banking and accountancy, and constitutional law.

WELSH.

THE report of the Welsh Department of the Board of Education under the Intermediate Education Act for the year 1915 contains a record of arrested development, of course, but also of work steadily carried on, with little loss of efficiency, though under conditions becoming steadily more difficult. The number of pupils in the schools was 15,202, an increase of 1,010 on the previous year, which is due to a general rise throughout Wales, one county and one county borough falling back slightly, and one county showing no change. The outstanding feature of the report is a discussion of the school library and its use; there is too much fiction and too little Welsh literature; too little is spent on the library, and it is kept too closely locked up. "Too often the books are hidden away, are under lock and key, and are accessible at stated times only, and in the presence of a master . . . the children should be trusted wherever the tone and discipline of the school are what they should be." These words deserve careful attention.

THE University College of Wales, Aberystwyth, has organised a summer course, principally, though not exclusively, for teachers. It lasts from August 1st to August 19th, the fees vary from £1 to £2 per course, and the cost of living in the Alexandra Hall of Residence is 4s. 6d. or 5s. per day. There are five sections:—(a) Geography and civics; (b) rural science; (c) art and manual subjects; (d) pedagogy; (e) commercial subjects. All the courses include practical and experimental work, and the fact that the National Eisteddfod is to be held in Aberystwyth during the second week of the course will provide special opportunities for observation and study, as well as for simple diversion; while there will be special meetings under the auspices of the Civic and Moral Education League.

THE Glamorgan County Council holds its eleventh summer course at Barry from July 31st to August 26th. It deals with natural history, geography, art, and manual instruction. The Uplands summer meeting is to be held at the Normal College, Bangor, from

August 4th to August 21st. There are courses in nature-study, regional study, gardening, eurhythmics, and housecraft.

A QUESTION of great importance to teachers has recently been decided—against the teacher. Mr. Justice Peterson decided in the Court of Chancery on May 23rd that the action in which three elementary-school teachers moved to restrain the Glamorgan County Council from dismissing them because they did not live within a mile of their schools must fail. His lordship remarked that it was reasonable and useful that teachers should be in touch with the scholars and their parents; with this no teacher will find fault. But when he pointed out that the employment was "at the pleasure of the council," and that there was nothing to prevent the council from making any desired stipulations in engaging the teacher, he was simply indicating the existence of a state of things which calls for alteration. Teachers regard regulations restraining their choice of residence as an undue interference with the liberty of the subject and an attempt to control their actions outside school hours, sometimes with the effect of imposing on them extraneous duties. Moreover, there are in South Wales education authorities who make regulations as to residence which they do not impartially enforce. Teachers who wish to have such matters put right must belong to their professional associations, and make them strong enough to deal with cases of injustice.

THE war continues to take its toll of teachers and scholars. It would be impossible to give even a fairly representative list, but we may mention Ynyswen Council School, with a roll of 240 teachers and past scholars on service; Cardiff Technical School, with more than 800 enlistments, nine deaths in action, one distinction for bringing down Zeppelin L15, and 300 trained munition-makers. Aberystwyth and Bridgend Intermediate Schools have each had a member of their staff killed; Barry County School mourns four old boys; so does Pontypridd; one school has seven candidates for London Matriculation who are expecting to be called up the day after the examination.

SINCE November of last year 180 women have been trained in the emergency classes provided by Cardiff Technical College for rapid instruction in commercial subjects; the Glamorgan War Agricultural Committee has classes for women at St. Fagan's, and the pupils command from 18s. to 21s. per week. Training classes are also being opened at Margam and at Neath.

CONSIDERABLE changes in the control of secondary education in Wales are anticipated as the result of the proposal to put the work into the hands of a council which shall replace both the Welsh Department of the Board of Education and the Central Board. Closer co-ordination of secondary with technical education is foreshadowed, as is also a more effective connection with elementary teaching below and university teaching above. The Central Board has published a booklet dealing with these matters and embodying many useful statistics and the recommendations of its special

committees of inquiry. It is interesting to note that the examination books issued two years ago for the Central Board examinations were labelled "Welsh National Council"—doubtless a piece of intelligent anticipation!

TRAINING FOR INDUSTRY.

The Principles of Apprentice Training, with Special Reference to the Engineering Industry. By A. P. M. Fleming and J. G. Pearce. xiv+202 pp. (Longmans.) 3s. 6d. net.

THE question of apprentice training was left unsettled when the war broke out. It will be one of the first questions to settle when the war is over. The indebtedness of our country must be liquidated by increased export of home products, and success in foreign markets will depend on economy and efficiency of production at home. Hitherto our countrymen have been exceedingly careful in the utilisation of waste products, and many a thriving business has been built up on this economy, but the proper utilisation of our human material is a problem to which engineers as a whole have not yet addressed themselves, and yet on the solution of that problem will depend the success of our national industry in the future.

Selection and training are the two keywords of a national system. Each case of misfit is disastrous to the misfitted individual, and represents a loss to the nation. In the past we have spoken of "getting a boy a job." In the future our aim must be "to get a boy *the* job." In this the schools must play their part. Mr. Fleming suggests that when primary boys are selected for secondary schools at the age of eleven those pupils that do not pass on to the secondary school should be classified out into two sets, those who seem better fitted for clerical work and those fitted for industrial work. These two sets of "clericals" and "industrials" should be taught separately with differentiated curricula, that of the "industrials" being approximated to the curriculum of the junior technical school. It is then for employers so to arrange the conditions of probation as to discover whether the boys entering the works have real aptitude for mechanical industry. Mr. Fleming has a helpful analysis of the qualities for which the school teacher should look in order to form a right judgment as to the "bent" of a boy. Like Dr. Kerschensteiner, he emphasises among these the co-operative faculty. "Modern industrial conditions demand that men should work, not as independent units, but in mutually dependent groups." This is one of the services which the Scout movement is rendering to education; it teaches a lad to work as a member of the group and to follow specific directions. How to transmute the play-impulse into the work-impulse is one of Sir R. Baden-Powell's great discoveries. The whole system of badges is contributing materially to industrial efficiency.

Vocational training is an integral part of civic training. The fundamental requisite of the good citizen is that he should do his daily work well, throw his heart into it, and feel pride in accomplishing it to the best of his power. This is where our modern apprenticeship breaks down. It is supposed to supply all that is necessary in the learning of a trade. It no longer does this, and the reason is that nowadays efficiency depends in large measure on a knowledge which is theoretical and not to be gained by any empirical process. "In general," our authors say, "apprenticeship conditions in Great Britain are chaotic. Except in a few cases no definite plan of training exists.

The youth is conscious of no well-defined aim and lacks keenness and enthusiasm, without which his capacity for absorbing experience and knowledge is tremendously diminished. There is no definite standard regarding what constitutes a skilled workman or craftsman. Many works employ so-called apprentices whether the latter can be taught anything or not. Even when apprentice agreements are drawn up, too often youths are exploited on repetition work."

Technical schools should be supplying this deficiency, but these, too, fail because, in our authors' judgment, "they concentrate on assisting the capable man to rise," and neglect the average man, the man who most needs supplementary help to rationalise his work.

Where, then, lies the path of solution? It is no use expecting the foreman to teach his apprentices knowledge amid the racket of a modern workshop when everything is done by piece-work, and there is no time to spare. Mr. Fleming, at the end of his book, gives a most interesting account of what has been done in the British Westinghouse Works during the last three years. A school has been set up in the works themselves. Apprentices have been drafted into the school for one hour a day (exclusive of Saturday). There, with the actual working drawings and tools before them, they have been taught to understand intelligently the processes on which they are engaged, to know something of the materials they handle and their properties, the fundamental principles of mechanics, and the transmission of energy; also the necessary calculations for workshop practice and the costing of the finished article. The object of the works school is primarily to give the workman a rational conception of his work, and, by evoking the interest of his higher qualities, to make it less monotonous. Secondarily, it serves the purpose of sifting out those apprentices who show themselves capable of higher work; these are sent at the firm's expense one whole day each week to the Manchester School of Technology, and trained with a view to technical or professional qualification.

Already after three years' working there have been some striking results. It might have been thought that apprentices would excuse themselves attending evening schools when they were getting instruction in the daytime. Quite the contrary. The percentage attending evening schools has risen from 18 to 62. Outside authorities have been quick to recognise the benefit, and headmasters are keen to send their boys where these advantages are available. The proportion of bound apprentices in the works has increased from 5 to 23 per cent. Foremen, who were at first inclined to be suspicious, have been roped in to help in the teaching, and now find by experience that their boys are brighter, more willing, and better all round. The best feature in the old system was the personal touch between employer and employed; that personal human touch has been re-established here in the larger and more complex relationships of a business employing over 5,000 "hands."

What this may mean when it is worked out on a national scale it is not possible to estimate. English workers will not tolerate either the cut-and-dried systematisation of the Germans or the paternal patronising of certain large concerns in the U.S.A. But some more careful organisation of our collective effort on a co-operative basis there must be, and this experiment at the Westinghouse works, which does not stand alone, is full of promise. So far all these experiments have been carried out by large concerns. Our industrial concerns are not on so large a scale as those of Germany or the U.S.A. But there is no reason why a number of small firms should not co-operate in running a works school.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

German Prose Composition. By J. A. Chiles. vi+175 pp. (Ginn.) 3s.—There has, not unnaturally, been some slackening in the British output of works for teaching German, but from the United States we still get a good many. Mr. Chiles's book on German composition is the careful work of an experienced teacher. The first part contains a summary of the elements of German grammar, very well expressed; each section is followed by typical sentences, questions in German, and English sentences for translation. The second part consists of anecdotes, each followed by German questions on the text, and by two English versions (or, rather, variations) of the text. There are also German-English and English-German vocabularies, and a list of strong and irregular verbs. As is only natural, the American source of the book appears occasionally in the English employed. Probably it does our boys and girls no harm to learn a little American incidentally, such as "roll of bills," "drummer" (=commercial traveller), "ticket window," "we have quit smoking," "she is a slow poke," "the noodle factory."

Deutscher Sagenschatz. Adapted and edited by F. W. Wilson. 100 pp. (Bell.) 1s.—Mr. Wilson has collected a number of German legends, such as the story of Siegfried, of Kaiser Rotbart, of Bishop Hatto, and has told them in simple German, in some cases adding a poem that deals with the same subject. The text of the stories is followed by German questions on the text; by notes, mainly in German, and very well expressed; by exercises on reform lines (grammar and vocabulary) and outlines for free compositions; by a list of strong irregular verbs; and, for those who desire it, there is an edition also containing a German-English vocabulary and exercises for retranslation. The editor has done his work skilfully and conscientiously, and the book is very well printed; there are very few misprints. If there is anything to which objection can be raised it is the arrangement of the book; we think it is preferable to have explanatory notes at the foot of the page, and see no advantage in separating the questions on the text from the exercises.

Exercises in French Prose Composition. By Mary Stone Bruce. ix+91 pp. (Ginn.) 1s. 6d.—This is rather an attractive little book. It starts with a brief account, in French, of the Franco-Prussian War of 1870, and then gives the text of Daudet's famous short stories, "La dernière classe" and "Le siège de Berlin." The text of each story is followed by copious sentences based on it, for translation into French—about a dozen lines of English to six of the French text. Much ingenuity is shown in making up the sentences. The English, it is true, sometimes has an American flavour ("Let's run across lots"; "he wears his silk hat on exhibition days"; "nobody pays any attention to the June bugs"), but this does not materially affect the value of the little book, which appeals especially to those who introduce translation into French at the junior stage.

English.

The Modern Study of Literature. By Prof. R. G. Moulton. 530 pp. (Cambridge University Press, for University of Chicago Press.) 10s.—Prof. Moulton has long been known as a writer who applies his theories of form in literature particularly to Shakespeare and the Bible. Probably the average reader owes more to his biblical work than to the much harder interpretation of Shakespeare and the more remote studies in the ancient classical drama, and the

"Modern Reader's Bible" has a place in most libraries. The present work is a kind of culmination of the preceding studies, and, as we should have expected, it pleads for inductive criticism and personal appreciation of the facts of world literature. The very term "world-literature," used in a singularly beautiful essay by the author's compatriot, G. E. Woodberry, suggests disagreement with academic unities, chronological evolution as opposed to psychological evolution, and the like, and we are not surprised to read: "The paradoxes of criticism have come to be enrolled among the curiosities of literature." The student who resolutely turns his back on the mountebanking that has passed so long for criticism will find comfort in the writings of one who, if rather wordy, has a great deal worth saying. Indeed, though the solid chapters seem too long, the flashes and even the humour are not far away. The explanation of the true meaning of the word "genuine," as applied to a literary work; the interpretation of the words "our literature" so that they easily take in Reynard the Fox and the Kalevala; the fresh criticisms of Scott's "Monastery" and Browning's "Mesmerism"; the flood of light thrown by a simple sentence on the first three phrases of the Lord's Prayer—all these, selected at hazard from a medley of fine things, will attract the reader and, even if he be not converted, will make him think. The most curious impression that the book leaves is that though the Bible is spoken of as suffering from its medieval setting, it is mainly from this Bible that illustrations are taken. Perhaps the author rides the morphology a little hard; but it is in the interests of a wide and humane criticism.

The Carthaginian, a Tragedy in Three Acts. By Frank Taylor. 105 pp. (Murray.) 2s. 6d.—The author of "The Gallant Way," whose death is chronicled in the seven lines of preface, must have been one whom literature could ill afford to lose. This strong tragedy of Hannibal at the Court of King Prusias shows a command of blank verse and a sufficient wealth of purple passages to give us hope that when, as Stephen Phillips used to say, the actors can learn to speak it, verse tragedy may yet claim discerning audiences. Hannibal, even with Livy's grudging encomium, has not had his due as a man; his soldiering is a commonplace. The play may be named along with "Cyrano" and "The Cloister." The following lines are almost taken haphazard from among the many fine passages (Hannibal speaks):—

. . . when I am dead,
Bury me yonder by the shifting sands
Where the blue deep froths white, there bury me,
In sword and harness, even as I die.
. . . I shall sleep softly there,
Where I can watch the changing of the sea,
Where I can hear the sobbing of the sea;
And long waves that have kissed her marble limbs,
Majestic Carthage, mother of me, shall come
Past Sicily and purple Adria,
Past cliff-girt Crete and all the green Greek isles,
Play round my feet and sing me songs of her."

Our Warrior Women (2d.) and *The Girl He Left Behind Him* (2d.) Each 14 pp.—Miss Beatrice Harraden and Mr. Hugh Martin have written these booklets. They are an appeal for money. The women in scores of thousands have come to the help of the nation, as indeed most people have, and the immense numbers require decent accommodation, recreation, and the like. That is the common sense of it. Mr. John Oxenham adds a stirring ballad, but it is money that all ask for. The schools might do worse than have these booklets read to the children by someone who has been to munition factories and seen the women at

work. We think the sentimental side can be overdone; munition work, like all war work, is after a time dull, monotonous, ghastly; but it has to be done, and the conscience of the crowd—a most compelling force—will see that it is done. Moreover, it has its excitements, and it is a great change from other work. Whenever responsible people get great crowds together part of the responsibility consists in housing and properly providing for the crowds; that is the first and last word in the matter, and it is of no use to blink the fact. It may be a disgrace that such appeals as this are necessary, seeing that decency in food, sleeping accommodation, and the like are of quite as much importance as the turn-out of the requisite number of fuses.

Coronata. Edited by R. Wilson. 238 pp. *Treasure Trove.* 256 pp. *Story-Tellers' Hall.* 246 pp. (Dent.) 1s. 6d. each.—These three attractive books, edited by Dr. Wilson, are uniform in price, binding, and illustration. They are three anthologies, and embrace prose, verse, and story-telling. Combined they would make an admirable source-book for English work, and they are thoroughly enticing and non-schooly. There is some original selection in all.

The "English Journal" for April and May, 1916. (University of Chicago Press.)—This magazine, noticed by us in former numbers, contains interesting articles on composition, vocal training, grammar, and the celebration of the Shakespeare tercentenary. The treatment of the subjects is not academic at all, but rather sympathetic with the views of the child, who looms large in American schools. Perhaps in time to come it will be as ordinary a thing for teachers to be exchanged as for views and books from the other side to be put before us. We—and they—should probably benefit.

History.

Landmarks of Polish History. By August Zaleski. 46 pp. (Allen and Unwin.) 6d. net.—This little sketch of Polish history is the first of a series projected by the newly constituted Polish Information Committee. Dr. R. W. Seton-Watson contributes an introduction, in which he explains that the general aim of the series is "the interpretation of Poland to British readers." This is elsewhere defined as "the rescue of the country from the misunderstandings of the German historians." It is true that our estimates of Poland and the Poles have hitherto been mainly based on German versions of Polish history. It is an advantage, therefore, to have a sketch, however slight, giving an intelligent native view. What is the difference between the Teutonic and the Slavonic interpretation? It is fundamentally this. The Germans attribute the failure of the Polish kingdom to maintain itself to faults in the Polish character; the Poles themselves attribute it to the fact that their nation was in advance of the rest of Europe, that it made a premature effort to establish a constitutional Government, and that it conducted a great experiment in an unfavourable environment. The fate of Poland, says M. Zaleski, "is that of a nation which attempted to practise democracy while the rest of Europe was largely autocratic in government, and had not entirely thrown off the traditions of feudalism." It is an interesting thesis. It requires, however, more than forty-six pages to prove it.

Studies in Tudor History. By W. P. M. Kennedy. x+340 pp. (Constable.) 5s. net.—Mr. Kennedy is interested primarily in ecclesiastical history, and he views ecclesiastical history from the Roman Catholic point of view. A former work of his, entitled "Parish Life under Queen Elizabeth," showed that he possesses

a remarkable first-hand knowledge of local and diocesan records of the later sixteenth century. On the strength of evidence derived from these he presented a distinctly unfavourable picture of the social and religious life of England after the completion of the Reformation. The same general impression is conveyed by the volume before us. Henry VII. is extolled; Henry VIII. is exposed; Edward VI. is lamented; Mary is excused; Elizabeth is condemned. At first sight it seems strange to find "Elizabethan Puritanism" treated with marked sympathy and tolerance; but the reason is soon apparent. Equally with Catholicism it repudiated and opposed "the Papacy of the Queen." All who are interested in the controversies raised by the Elizabethan settlement of the Anglican Church will find these scholarly and well-written studies worthy of careful perusal.

The Story of London. Vol. i., *Westminster, with the West and North-West.* xiv+175 pp. Vol. iv., *London in the Nineteenth Century.* xvi+184 pp. By R. McWilliam. (Pitman.) 1s. 3d. each.—Mr. McWilliam was at one time an inspector of schools under the London County Council, and he consequently has had exceptional opportunities for discovering both the need for, and the scope of, local history in the elementary schools of London. The arrangement which he has adopted for his four small volumes is curious. The basis of the first three is geographical; the one before us deals with Westminster, the West, and the North-West; the second is announced to deal with the City, the North, and the East; the third with the South. Why the City, which, after all, was, and is, London, should be relegated to so secondary and inconspicuous a place is not adequately explained. The basis of the fourth volume is historical; for it appears that in none of the earlier volumes is the story carried beyond the eighteenth century. In this supplementary sketch the material, social, religious, and intellectual development of Greater London is treated as a whole. All the volumes are made attractive by many well-selected illustrations.

Geography.

Geographical and Industrial Studies: Asia. By Nellie B. Allen. 449+xiii pp., maps and illustrations. (Ginn and Co.) 3s. 6d.—This book is a supplementary reader, and is designed to emphasise the "aliveness" of modern geography, which deals with real people who live in a real place, and to make the black dots on the map symbolise cities crowded with busy workers who live in real houses and pass their days in ways which are frequently different from ours, but are essential to them. The book is a success; we laid it down with one thought in mind, "Has Miss Allen travelled the length and breadth of Asia?" The sureness of her touch, the vividness of her descriptions, and the reality of the whole word picture give rise to the impression that she was writing as a consequence of personal experience. Many a book of travel lacks the atmosphere which is created in this geography book.

A Map of the World showing the Distribution of Timber Trees and Timber-growing Arcas. Prepared by J. Hudson-Davies. 40x30 in. (W. and A. K. Johnston, Ltd.) On cloth, rollers, varnished, 6s. net.—This map is the first of a series which should prove extremely useful in schools. The teacher of geography has not yet had provided for him anything approaching this map in excellence, for there are three inset maps to indicate the relation between forests and temperature, rainfall and elevation respectively; and the forest areas as well as the names of the most important timber trees are shown in strong relief against a less prominently printed background which

indicates the chief countries, rivers, and cities of the world. The teacher of woodwork will find the map equally useful. The other maps in the series are four in number, and deal respectively with North America, South America and the West Indies, Europe and Africa, and Asia, the East Indies, and Australasia.

Science and Technology.

Botany: a Text-book for Senior Students. By D. Thoday. xvi+474 pp. (Cambridge University Press.) 5s. 6d. net.—This must be accounted one of the best of recent school manuals on botany. It is stated to be intended primarily for use in connection with the Senior Cambridge Local examination, but it possesses a philosophic breadth of treatment which puts it in a category apart from the generality of books "written round" examination syllabuses. Nearly a hundred pages are devoted to an unusually clear account of the physiology of nutrition, which is taken as the key to the commoner variations of form and structure. Some forty pages are next given to the anatomy of internal tissues. Seeds and germination are considered at the end of a section on the work of flowers—that is, half-way through the book instead of at the beginning, as is usual. Following this is a section on classification, illustrated by descriptions of selected families, which should do much to counteract the prevalent misconception of "natural orders" as rigidly limited groups. In a "general survey" of the families dealt with, a useful account is given of the chief lines of advance among flowering plants. In the final section, on plants in relation to their environment, we get chapters on climbing plants and water plants, as well as instructive notes on some of the commoner plant associations. A chapter on common trees is also included in this section, where it seems somewhat out of place. The book as a whole is well proportioned and not overburdened with detail. It has 205 excellent illustrations.

Economics: An Introduction for the General Reader. By Henry Clay. xvi+476 pp. (Macmillan.) 3s. 6d.—To plan a good book is one thing; to carry out the plan successfully another. Mr. Clay has been happy in both, and the result merits the highest praise. His book should be on every teacher's shelf. The majority of teachers form part of that large public of "general readers" for whom Mr. Clay specially caters. Apart from that, we can conceive of no more helpful suggestions for topical essays than his chapters on the problem of wealth and welfare. On the other hand, those teachers engaged in introducing their pupils to the elements of economics will find in Mr. Clay's pages many a hint and suggestion to throw no small light on the ordinary text-book treatment of the subject. Mr. Clay's handling of the theory of value is a case in point. It adequately covers the ground familiar to students of economics, but there is a freshness about it that makes his survey interesting reading. Moreover, the problems are stated concretely, and this makes them easy to follow. "The woollen shirt, the price of which is ten shillings," haunts the book, but the reader never tires of it, because it helps him to a more complete mastery of the subject. Mr. Clay's consideration of the ethical aspects of economic problems deserves special mention. It is a pity that so good a book lacks an index. Moreover, Mr. Clay would have added to his helpfulness if, whenever he quoted Mill or Marx, Marshall or Adam Smith, he gave the reference to their writings. He certainly does so in isolated cases, but these only direct attention to those where the reference is omitted.

Art.

Practical Drawing. By E. G. Lutz. 250 pp., 400 diagrams. (Batsford.) 6s. net.—This book will probably prove useful to art students, soldiers practising panoramic sketching, costume designers, and others. Its range is ambitious, and is indicated by the chapter headings:—Beginning to draw; proportions of the human figure and drawing without models; charcoal and crayon drawing; water-colour painting; pen-and-ink drawing; helpful geometry; perspective made clear; pictorial composition; on lettering; drapery and hints on costume designing; concerning materials for, and other matters about, drawing. The treatment is necessarily condensed, as each section would require a whole volume for its adequate consideration. The diagrams and illustrations are generally satisfactory, but some—e.g. those on pp. 93 and 94—are somewhat unsympathetic; while the chapter on lettering, which illustrates a number of types, shows nothing so refined as the inscription from Trajan's column.

Simple Art Applied to Handwork. By H. A. Rankin and F. H. Brown. Vol. ii. 107 plates. 207 pp. (Pitman.) 4s. net.—This book should prove most useful to the instructor in manual training who is not obsessed by the utilitarian aspect of his work. In the first volume geometrical and brushwork designs and lettering were illustrated. In this volume the more technical processes of wood staining, pyrographs, gesso, leather work, sgraffito, etc., are dealt with in a practical manner. Most of the suggested designs are admirably suited to their purpose, but a few are bad. The foundation of good taste, which the authors rightly emphasise on p. 195, is laid by the study of historic ornament, and of such designs as those illustrated in plates xv. and li., not by the imitation of such designs as those illustrated in plates vii. and lxi.

Religious Knowledge.

Chronicles I. and II. By W. A. L. Elmslie. (Cambridge Bible for Schools.) ix+362 pp., with maps, notes, and introduction. (Cambridge University Press.) 4s. 6d. net.—This new edition is no mere revision of the earlier work by Dr. Barnes. The introduction is entirely new, and incorporates much of the result of the patient and enlightening research of the intervening seventeen years. It is thoroughly well done, and is eminently readable and clear. We have seen no better analysis and review of the whole purpose and contents of Chronicles than this. Much of Dr. Barnes's work reappears in the notes, but these have been considerably extended and adapted to the Revised Version text, which is used in this edition. Four practical and helpful maps are included, which will be of much value, particularly when the book is used for advanced school work. Altogether it is an excellent commentary, concise, direct, comprehensive. It is nowhere marred by that dry lifelessness so often a characteristic of such works. On the contrary, it is alive and interesting throughout, and everywhere translates the message of the ancient text into virile and understandable terms.

The Old Testament for Schools. Arranged and edited by Canon Morley Stevenson and C. W. Bailey. xiv+527 pp. (Dent.) 2s. 6d.—“The Old Testament for Schools” contains the Bible narrative in the words of the Bible itself; but from it have been removed all terms and incidents unsuitable for children's reading. Thus we have in this volume an abridged Old Testament, and, in addition to expurgations that can obviously be justified in every case, and will be universally approved, the editors have done much skilful and desirable rearranging. The result is as near a chrono-

logical whole as can be achieved. Though poetical and prophetic books have been laid under contribution, this new Old Testament rarely at any point loses its character as history, and, moreover, it treats and teaches history in the sanest and most scientific manner. All overlapping and duplication have been avoided. We have nothing but high praise for the book, and congratulate the editors on a fine and valuable piece of work that has long wanted doing. The absence of irritating divisions into the old orthodox chapters and verses, and the numerous divisions into sectional headings, which are carefully indexed, are attractive features.

Miscellaneous.

Fighting Lines. By Harold Begbie. 94 pp. (Constable.) 1s.—This bright little volume has already been reprinted, and in certain quarters it will penetrate where poetry of a higher order would knock in vain. It is frankly didactic and catchy, “The Scout” and “The Walls of Jellicoe” being perhaps the brightest jingles; the last lines, “War Exalts,” are a trifle cryptic. A number of non-war poems are added.

Commencement Days. By Washington Gladden. 257 pp. (Macmillan.) 5s. 6d.—For those who would like to know what school sermons are here and in the States this volume may be read side by side with the “Homilies” of Arthur Sidgwick, lately noticed in these columns. The comparison is interesting, for the American “graduate” is obviously younger than the fifth-form boy with us. The addresses seem to have been given to young women, and the difficulty of being interesting without becoming trite is that which faces all sermons.

EDUCATIONAL BOOKS PUBLISHED DURING MAY, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

“A French Note-Book.” By C. E. Hodges. (Dent.) 1s. 9d.

Classics.

“Latin Prose for Middle Forms.” By W. H. Spragge and A. Sloman. viii+148 pp. (Cambridge University Press.) 3s. net.

“Silva Latina: A Latin Reading-book.” By J. D. Duff (editor). x+232 pp. With vocabulary, 2s. 6d. net; without vocabulary, 2s. net.

English: Grammar, Composition, Literature.

Shakespeare: “The Tempest.” Edited by J. H. Lobban. (The Granta Shakespeare.) xxii+138 pp. (Cambridge University Press.) 1s. net.

Milton: “Paradise Lost.” Books. I.–IV. (Oxford Plain Texts.) 107 pp. (Clarendon Press.) 1s. net, cloth.

“Fifteen Plays of Shakespeare, with a Glossary abridged from the Oxford Shakespeare Glossary of C. T. Onions.” 1152 pp. (Clarendon Press.) 3s. net; on Oxford India paper, 5s. net.

History.

“Germany, 1815–1890.” Vol. i., 1815–1852. By Sir A. W. Ward. (Cambridge Historical Series.) xiv+592 pp. (Cambridge University Press.) 12s. net.

“Nationality as a Factor in Modern History.” By Dr. J. Holland Rose. 224 pp. (Rivingtons.) 4s. 6d. net.

Geography.

“Senior Geography of Africa and Australasia.” By G. C. Fry. viii+56 pp. (Clive.) 1s.

Mathematics.

"Elementary Geometry, Theoretical and Practical." Vols. i. and ii., now issued separately and together. By W. E. Paterson and E. O. Taylor. 328 pp. (Clarendon Press.) Separately, 1s. 8d. each; together, 3s.

Science and Technology.

"Elementary Strength of Materials." By E. S. Andrews. 216 pp. (Chapman and Hall.) 4s. 6d. net.
 "Steel and its Heat Treatment." By D. K. Bullens. 438 pp. (Chapman and Hall.) 16s. net.
 "Methods in Practical Petrology." By H. B. Milner and G. M. Part. 68 pp. (Helfer.) 2s. 6d. net.

Art.

"The Principles of Drawing: A Notebook for Students." By L. Bellin-Carter. 152 pp. (Edward Arnold.) 2s. 6d. net.

Pedagogy.

"Converging Paths." By E. T. Campagnac. viii+114 pp. (Cambridge University Press.) 2s. 6d. net.
 "The Purpose of Education: An Examination of the Education Problem in the Light of Recent Psychological Research." By St. G. L. Fox Pitt. New edition, with preface by Prof. Emile Boutroux. xxx+144 pp. (Cambridge University Press.) 2s. 6d. net.

Religious Knowledge.

"A Companion to Biblical Studies: Being a Revised and Re-written Edition of 'The Cambridge Companion to the Bible.'" Edited by W. E. Barnes. xii+678 pp. (Cambridge University Press.) 15s. net.
 "The Book of the Prophet Ezekiel in the Revised Version." Edited by A. B. Davidson and A. W. Streane. (Cambridge Bible for Schools and Colleges.) lxii+404 pp. (Cambridge University Press.) 3s. 6d. net.

Miscellaneous.

"Matriculation Model Answers, Mechanics: Being London University Matriculation Papers in Mechanics from January, 1910-January, 1916, with Model Answers." 124 pp. (Clive.) 2s.
 "The Principles of Apprentice Training, with Special Reference to the Engineering Industry." By A. P. M. Fleming and J. G. Pearce. xiv+202 pp. (Longmans.) 3s. 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.

Should English Texts be the Property of the Boy or of the School?

TIME was when all text-books had to be purchased by the parent—a by no means inconsiderable addition to the tuition fees. To-day, in all the public schools and in a great many of the more important endowed grammar schools, i.e. in schools where the additional cost to the parent of text-books is not a very serious matter, a similar rule obtains. But in county council and municipal secondary schools established since the Act of 1902 for the purpose of making further education possible, at a minimum of cost to parents, for all ex-elementary-school children capable of profiting by it, the use of text-books is included in the democratic

fees, which vary from three to nine pounds per annum. It is, of course, only an endowed or a grant- and rate-aided school that can give for, say, six pounds what costs the authorities at least sixteen.

The system wherein the school buys all text-books has much to commend it to parent and master alike; at the same time there are drawbacks to it, gross as a mountain, open, palpable. If the system precludes undesirable auctions at the end of each school year, and equally undesirable bartering following an unexpected "move," it does nothing to prevent a set of books being retained, for the sake of economy, for use long after the claims of decency and of hygiene would have consigned them to the school furnace or to the public refuse-destroyer.

The present writer feels he is now beginning to tread on somewhat delicate ground, for he wishes to single out one subject of the school curriculum for special consideration and to suggest that governors and education committees should do for English what he would consider need not be done for other subjects. It is only an occasional boy that would choose to retain his science or his mathematical text-books if the offer to retain any of them at all were made to him; although of much more general interest than these, modern language texts could not hope to compete in popularity with the English classics; while, as a rule, Greek and Latin are so little taught in the latest type of secondary school as to be almost of negligible interest in the case of pupils at present under consideration.

But surely English stands in a different plane. No plea is being put forward for the retention by pupils of text-books in grammar and composition; most boys would as lief retain their Hall and Knight or Shenstone as their Nesfield or Murison. The texts of English classics are on quite another footing; they never get out of date; they can never be superseded; they ought to be, and can become at a trifling additional cost to the school authority, a *κτῆμα ἐς αἰεὶ* to the vast majority of boys and girls who at sixteen or seventeen leave our secondary schools to make their living in the world.

Is it realised how very poorly stocked are the home bookshelves of our boys and girls? True, there are the public libraries, where the deficiencies of reading material at home can be repaired; but this, after all, is not more satisfactory than any other palliative. A few statistics taken from three forms each of twenty-five boys (ages ranging from thirteen to fifteen and a half) will perhaps throw some light on the poverty of home libraries. Of Dickens, Scott, or Thackeray there were only twelve complete sets in all, while just more than half the boys possessed merely an odd novel or two of these giants. Stevenson, strange to say, was more in evidence, though even here it was generally a "Treasure Island" or a "Master of Ballantrae" that had found itself on the boy's shelf through the agency of Father Christmas or the generosity of a kind aunt on the occasion of a birthday. Kingsley was represented by forty copies of "Westward Ho!" fortified by twenty-one "Hereward the Wake" and seven "Water Babies." In two of the three forms Lytton was almost entirely unknown; on the other hand, there were fairly liberal supplies of Rider Haggard and Conan Doyle, whose "Brigadier Gerard" and "A Study in Scarlet" were prime favourites. In only one of the forms were there any of the works of Jane Austen, or of George Eliot, or of Borrow; but copies of "Robinson Crusoe" and of "Gulliver," frequently in some abridged or simplified form, however, seem to have been family heirlooms for three or four generations back.

In all there were forty-one complete Shakespeares—

a wonderfully cheering number. Of the other poets, Longfellow easily headed the list with forty-four (why is Longfellow so very popular?); there were thirty-three Tennyson, twenty Scott, nineteen Wordsworth, fourteen Byron, and eighteen "Ingoldsby." Of verse anthologies there were fourteen "Golden Treasury," and one each "A Casket of Gems" and "1001 Gems of Poetry."

Now the point urged here is that the copies of English texts used by all boys and girls in the third and fourth years, at all events, of their secondary-school course should become their own property on their leaving school. The cost to the schools would not reach the amount annually spent on the school prizes; the gain to the pupils is out of all proportion to the cost.

That the majority of boys, on leaving school, would dearly love to take with them the English texts they have used for the preceding two years or so is a fact which can be seen in the longing, lingering look with which they give in their books; it is perhaps not too much to say that there is often a somewhat marked tendency on the part of some boys to disregard the law of *meum et tuum* at these times.

Even boys are not utterly devoid of sentiment. Every pencil mark or note they make in the margin of their text makes the book more a part of themselves (and incidentally it depreciates heavily the value of the book to the next user of it); the owner can visualise the portion of the page on which will be found some pleasing couplet or finely polished period which the young barbarian has learned to appreciate. A brand-new copy will certainly not be the same thing to him—no, let him have the copy which has been for so long his familiar, for although it is not a thing of beauty, to him it may be a joy for ever.

In the case of boys lacking literary taste—and we all know there are some of these—the question of ownership of texts is one of little import during the boy's school-days; but even in these cases, if the boy becomes the owner of his English texts, there may in after life appear that interest which, developing late, may prove at least as strong as if it had been roused earlier. At all events, such later interest, when it does appear, is a thoroughly genuine one. The case occurs to the writer of a young man who, as a boy in the middle form of his school, was deaf to the charms of all literature; now, a petty officer on one of H.M. transports carrying the sinews of war to the East, he finds in a copy of his school anthology of verse a relaxation from the grim excitement of guarding against hostile submarines.

It may be taken for granted that boys and girls will have a better knowledge of the texts they prepare during the last two years of school-life than of any books they may read later. Re-read in the light of a riper experience of life, these books remind their owner of his school-days, and recall to him lessons in a way which teachers flatter themselves is not altogether unpleasant. The writer is assured that books, or portions of books, which had bored boys during the days of preparation for examination afterwards became most interesting and profitable when they could re-read them *sua sponte*.

H. A. TREBLE.

Borough School for Boys, Croydon.

"Homer and History."

THE kind review of my "Homer and History" in the May issue of THE SCHOOL WORLD moves me to one small protest, not in my own interest, but in that of the English language. One does not like to be accused of "giving currency to the newspaper vulgar-

ism of *this much* and *that much*." If the accusation were just, I should bow the head. But if your reviewer will kindly refer to the "New English Dictionary," *That*, III. b, and *This*, II. b, he will find quotations for *That much* in 1634 (Rutherford), and *This much* in 1586 (Sir F. Walsingham). Among other writers quoted is Ruskin, "Fors Clavigera," "this much of Plato." The phrases are classical idioms, not newspaper vulgarisms.

The reviewer says that I have "to assume a meaning of $\chi\theta\alpha\mu\alpha\lambda\eta$ which is not supported in ancient Greek." If he had read my p. 150 a little more carefully, he would have seen that the meaning in question is not only supported in ancient Greek, but is taken direct from Strabo.

WALTER LEAF.

June 3rd.

THE two early examples of *this much* and *that much* certainly surprise me; they do not prove that they are not a vulgarism, but I must withdraw the words "modern" and "newspaper."

With regard to $\chi\theta\alpha\mu\alpha\lambda\eta$, I had read the page in question carefully, but I am still of the same opinion. Readers may judge for themselves.

YOUR REVIEWER.

Helping the Farmer.

WHILE it is of great importance that all crops should be saved, it is also of serious importance that schoolmasters and others should not offer *free* labour to farmers, who, one and all, can well afford to pay for work done.

Most conservative of men, he has been slow to make use of women's labour; slow to accept the Government's offer of troops (on conditions); slow to reply to the Board of Agriculture's offer of unskilled labour; and slow to make application to Labour Exchanges. To work without payment will undoubtedly tend to depress the wages of agricultural labourers—many of whom receive no more than 15s. to £1 per week at the present time.

As a class farmers are, in my experience, the most inveterate enemies of educational progress in this country. There is, therefore, ample scope for missionary efforts in the cornfields this summer.

N. T. E. C.

The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

MODERN SIDE IDEALS.

By W. F. BUSHELL, M.A.

Head of the Modern Side, Rossall School.

A GREAT deal has been written lately as to the necessity of an improved science education, and there seems to have been a prevailing impression that the great educational struggle in public schools is classics versus science, a struggle in which all tradition is in favour of the former, while all utility is in favour of the latter. Such an impression is, however, entirely wrong. The great battle of education in public schools at present is a battle of a classical versus a modern education, a battle in which the larger public schools, represented by their rulers, are often unreservedly in favour of the former, while the outside public, and perhaps the majority of the assistant-masters, are in favour of the latter.

Bearing these circumstances in mind, it might be interesting to consider, in the briefest form, the ideals which underlie a modern side education in the public schools, to estimate the value of these ideals, and to measure the success that has attended the efforts of the creators of modern sides. It must, however, be premised from the start that this short paper intends to give no account at all of the curriculum and organisation of a modern side, except so far as incidental references may be necessary for the maintenance or the completion of an argument.

There seem to be four considerations that, in the eyes of the classical headmaster, weigh most strongly in authorising the formation and continuation of a modern scheme of education: (1) The public demand it; (2) it is easier to write an apologia for the continued existence of a classical side if the stupid boys are put on to the modern side; (3) it is easier to decry the modern side and less easy for its supporters to defend it, if the stupid boys

are mainly on it; (4) they probably believe that a modern education is better for stupid boys than a classical one, though this must not be taken as an acceptance of their presumed belief that clever boys do better on a classical than a modern side.

The first consideration undoubtedly did a great deal in the formation of modern sides: under present conditions of finance a refusal of fees is an impossibility, and parents had at last come to see that the classical education under which they suffered as boys was wrong, and determined that their sons should have a more real and less specialised education; but whether a public demand can do much now really to forward modern side ideals is a more open question. Many parents are lethargic in the interest they take in their sons' curricula; they have no special knowledge of what constitutes a liberal education, and naturally accept the dictum of the headmaster to whom they apply. Hence, when a modern side has once been established little inquiry need be feared, and the headmaster is able to give more weight to his private beliefs as to the merits of a modern education. Now it is not necessary to hold that the considerations numbered 2, 3, and 4 above are in the minds of every headmaster; but, consciously or unconsciously, they seem to be acted upon, and the whole structure of the modern side is gravely imperilled by the antagonistic attitude which it has to face.

For what are these ideals of education which, if rightly carried into practice, may well make a modern education the education of the future? The old classical education had undoubtedly a definite aim and ideal that was more or less realised in the case of 5 or 10 per cent. of the boys that went through the resultant training; it was an ideal which represented a real knowledge of the language and literature of the Greeks and of the Romans; that is to say, it gave a most highly specialised

education and omitted as irrelevant all but the very elements of any other subjects. From the first, however, modern education opposed so extreme a specialisation; modern languages, English, history, mathematics, and science, as well as Latin, were all to have their place, and although it was obvious that the *average* boy in such circumstances would not attain scholarship knowledge in any one subject, yet it was held that his intellectual capacity would never fit him for such scholarship knowledge in any subject, and hence it would be better for him to start life with a reasonably competent knowledge of a comparatively large number of subjects than with a slightly fuller knowledge of a very few. This probably was, and certainly now is, the ideal for the average boy, who, in many cases, leaves school early. A tolerable knowledge of many subjects, any one of which may conceivably help him in after life, is quite likely to give that intellectual stimulus and desire for more which, as a nation, we are sometimes supposed to lack. A slightly more extensive knowledge of very few subjects, such as a classical education supplies, fails to fit a boy for his life, inasmuch as the intellectual stimulus thus supplied is often very slight, and very rarely indeed are the subjects learnt of any value in after life.

Too much insistence, however, must not be laid on the use in after life of the subjects a boy learns at school, mainly because the old platitude that a school education trains the mind to teach itself must never be forgotten. But it is impossible to insist too strongly on what a school can and should inculcate, viz. an intellectual attitude which causes a boy to wish, and obtain, for himself a completer knowledge of some branch or branches of learning. One shudders to think of that vast army of boys whose intellectual energy has been wasted and whose intellectual interests have been atrophied by the old-fashioned belief of the schools that it was entirely unnecessary that they should learn anything likely to interest them. Often, indeed, they asked for bread, and were given a stone. It is no use, however, decrying methods of fifty years ago; it is more important to ask whether intellectual stimulus is really a result of modern side education.

All of us have met masters who have declared that boys dislike their work, and it is quite usual for the school story, even of the modern type, to take for granted that the majority of boys will not work unless they are compelled to do so. Such a view I believe to be profoundly untrue. Human nature inevitably rebels at anything which is really distasteful, and it is more than probable that the

legend is a relic of the days when all boys learnt rules of accidence and syntax by heart, knowing full well that they would never put much of it to practical use, even in their prose or verse; or, still more, when they were compelled to write verses in Latin and Greek and yet were utterly unable to express even the simplest thought in English poetry. At all events, I think I can fairly say that I have practically never met a master or a boy who has seriously declared that the normal modern side curriculum is distasteful to the learner. Quite possibly, in exceptional circumstances, this may be the case; possibly, too, in less exceptional circumstances, it may sometimes be the case; but it is most certainly true, and is, in fact, generally agreed, that a modern side curriculum makes a greater appeal to a boy's intellectual sympathies—and there is no boy without such sympathies if they can be found—than the education that is in vogue on the classical side of the school. It is felt that there is more reality in it; that it is more comprehensive in aim and treatment; that it has not the narrowing influence which that continual brooding over a civilisation two thousand years old engenders in the human mind; that there may possibly be a use in it; that it may not be wholly undesirable to acquire the faculty of conversing with a foreigner in his own language, and even to be able to read his literature in the original; that some knowledge of the ascertained facts of some branches of science are not entirely useless; and that, while, to use the words of a recent critic, science may teach humanity to murder a baby with a gun at the range of fifteen miles, yet it also teaches it to ensure the absence of pain in the operating chamber; for, whatever be the case at some schools, science has certainly no place—and modern languages but little—in the curricula of other classical sides.

If it be granted, as it often is, that this anxiety for knowledge is a feature of a modern education, is not this, in the circumstances, wholly remarkable? It is certainly a fact that in many schools the majority, in some cases the great majority, of entrance scholars are placed on the classical side, and even admitting all that has been said as to the relative merits of the two forms of curriculum, it is probably true that the inside intellectual influence, coming from continued association in set or form with clever boys, must do more to forward the desire for knowledge than the personality of even the most forceful master. For good or for ill much school work is based, at all events in lower forms, on the competitive instinct, and the desire to come out top of the form, or to beat another boy, plays its part in enabling a boy to get the best out of him-

self. Nor is that all: for the atmosphere of the classroom, however hard it may be to define or describe, not only inspires the master, but also inspires the boy. Inspiration breeds both successful teaching and successful learning, and there is no excuse for the very severe handicap with which modern sides are faced by being denuded of so large a part of the brain power of the school. In these circumstances, then, it does not seem unfair to regard as remarkable the success—or even partial success—that has been achieved by them.

This ideal, then, for a modern side, in which a desire for knowledge is the fundamental feature, is no new one. No doubt it has been claimed by many different forms of education, and possibly has been realised by some of them; but can anyone who has a real knowledge of the situation submit with sincerity that other forms of education which exist at present in public schools effect as much in satisfying that intellectual appetite which all boys, consciously or unconsciously, possess?

It may be argued that intellectual narrowness can be found everywhere; that the man of science can be as narrow as the classic—and that the historian can be as narrow as both. No doubt this is true; the extremist can always be found, but the boy educated on modern principles has, at all events, a substratum of a large variety of subjects, any of which he can easily extend if the opportunity or need occurs.

More attention has, perhaps, hitherto been paid to the needs of the average boy in the foregoing remarks, and some little discussion is now necessary as to how far the claims of the cleverer boy are met by the wider and more comprehensive syllabus of the modern side; an average boy who does not leave school till eighteen or nineteen, and a cleverer boy at an earlier age, will get into a high form, where special arrangements must be made for his instruction. It is true that the number of clever boys may be small; in some schools it is considered almost rank heresy to associate brains with modern studies; but the trend of the age and ordinary common sense will increase that number in the future. First of all, then, it must be premised that it is *absolutely essential* to encourage on the modern side here two distinct bents—the literary and the scientific; the latter preparing, in many cases, for a mathematical or science scholarship, the former for a history scholarship, at Oxford or Cambridge. Modern languages, of course, must not be neglected, but while the universities fail to give much weight to modern linguistic ability in their entrance scholarship awards, it will inevitably result that the literary boy will tend to find salvation in his-

torical research. Such a system, involving as it does a staff of masters prepared to teach on these lines, will have the fullest effect on the work of the rest of the school, and until it is recognised by the authorities that history, mathematical, and science students are capable of their fullest development in the top form of a modern side, real progress cannot well be made. Some reading these pages may feel that this is mere common sense, and that such an organisation has been long in vogue; but it is quite certain that there are schools where the intense—nay, passionate—belief in a classical education still survives, and finds expression in placing history scholars on the classical side, and in some cases mathematical scholars as well. Not so many months back there were some who would scornfully deny the possibility of history scholars substituting for Latin and Greek such “tinpot” languages as French and German (to use their own words); and the answer came in a most appropriate fashion two or three months later, when Balliol, last December, awarded three history scholarships, two of them to boys from a public school where no Greek is taught and whose curriculum is entirely modern, and the other to a boy from a municipal school, where it is likely that modern studies mainly flourish.

The intellectual stimulus derivable from association with clever boys has already been mentioned, and the extra stimulus derivable from participation in a scheme where, at the top, different types of the human mind are catered for is considerable; for such a scheme involves not only the clever boy but also the clever master. There are many masters capable of preparing boys for entrance scholarships; there are many boys anxious and ready to be thus prepared; and any artificial separation by concentrating such ability, to a great extent, in a different part of the school will inevitably reduce all modern sides to a state of intellectual chaos which, however gratifying to its opponents, has a deplorable effect. “There are forty scholars on the classical side and only two or three on the modern,” so runs the argument, “and if more scholars are allowed to change they will get lost intellectually.” What a commentary this is on scholastic organisation! Is everything to bow down to the needs, or supposed needs, of classicism? Is nothing to be done for the obvious needs of modernism because it may thereby raise itself up and really contend with classicism? The truth can only be gauged by those who have had much experience, but it would require a bold man to deny the implacable hostility that modernism has often to contend with in its efforts for reform.

Such an ideal, involving specialisation in

the top form or forms, is probably now always carried out. The multiplicity of examinations for which boys usually prepare no doubt does much to hinder, but in its essence the education common to all (with, perhaps, one or two alternatives, such as German and Latin), followed higher up by a concentration upon a more specialised form of study, seems to bring the most successful results. This specialisation should, however, never be too complete; the mathematician or science student will never drop all his literary subjects, and the historian will still retain some branch of mathematics and science, thus maintaining a certain grasp upon one or two secondary subjects, while gaining a comprehensive or even scholarship knowledge of his main subject. No man can be held to be really educated unless he has some acquaintance with the main trend of modern thought, whether it be in a literary or a scientific direction, and it is as criminal for the science student to do no literary subjects as it is for the classicist to know no science.

These ideals can certainly be realised, but how far are they realised? Too often but imperfectly. The needs of modernism are still so imperfectly understood in our schools, and organisation in a school which exists mainly for classicism is so difficult, that the best use is not always made of the material that exists. In some schools, for instance, historical and even mathematical scholars are allowed to be on both sides, each side possessing its own separate internal organisation, and such an arrangement must inevitably lead to friction. As an example, hours for extra history for scholarship candidates, if arranged to suit the classical organisation, may be entirely unsuited to the needs of the modern. If the mathematics of the two sides is separate—and yet both sides have their mathematical scholars—as is sometimes the case, it is inevitable that there will be scholarship teaching on both sides, an arrangement which cannot aid the economy which most critics are now urging, and the sacrifice thereby entailed in the unity of the scheme on which a modern education is based is often gravely imperilled. The difficulties, however, are not insuperable, and a sympathetic handling of the problem will go a long way in bringing together antagonistic beliefs; but there is a common idea, which is met with everywhere, that the classical bias of public schools is so great that it becomes almost tedious to suggest reforms which have little or no chance of being carried out. Such a feeling can scarcely exist without at least a substratum of truth; but it is wholly deplorable that more cannot be done by way of compromise or reform to remedy this grievance.

Lastly, a few words as to the future. It is quite certain that modern sides are going to have their day, though it is equally certain that their day has not yet come. In many of the older classical public schools the modern side is numerically superior, though probably still vastly inferior in brain-power, and mere quantity will take a long time before it carries the day against quality. But the progress that has been made in deference to public opinion, albeit in defiance of scholastic opinion, is so great that the future may, perhaps, be viewed with reasonable equanimity. Every obstacle seems to have been erected: entrance scholarships for classics are given by the score; extra science fees of immoderate dimensions are charged to the modernist; Greek is still compulsory at the two older universities, and yet, in spite of these and other difficulties, the good sense of parents and—it must be added—the unwavering devotion of the early pioneers of educational progress have contributed to place modern sides in a position from which they can never go back, and from which they can look forward with confidence to a further ascent. The old argument that classical ability was conterminous with literary ability, in the sense that literary boys could not indulge their inclinations on modern sides, has long since been abandoned by all but the most prejudiced; mere facility in Latin verses is no longer the hall-mark of the gentleman and the scholar, and there seems every hope that parental insistence, as well as Board of Education regulations, will effect what so many pedagogues in the past have refused, and even at present are still refusing.

THE WELSH UNIVERSITY AND THE INTERMEDIATE SCHOOLS.

By A. E. L. HUDSON, B.A.
County School, Pontypridd.

IF Wales is to have a system of education which may be compared to a single ladder rather than to a staircase with landings leading each to a separate floor, it is obvious that those whose feet are set on the lower rungs must take an anxious interest in the soundness and evenness of the rungs to which they hope later to climb.

The question which is now being so anxiously discussed, whether Wales should have only one Federal University, or one for Cardiff and one for North Wales, or three, replacing the constituent colleges of Bangor, Aberystwyth, and Cardiff, is of comparatively slight interest to the schoolmaster; but since he has to do with the preparation of the university students of the future, he is vitally

concerned with all that pertains to the transition from school to college, and with the equipment of information and of training which it is his duty to give them.

The age at which pupils leave the secondary school for the university is a matter of great importance; it is given for the Welsh University as an average of 16½ years—surely too low for the beginning of university life and work, except in the case of students of exceptional brilliance and steadiness. The age of those who matriculate by way of the Central Board Senior Examination is apparently higher, on the average, so that those who matriculate directly must be younger still.

A too early entrance to the university has several bad effects; the pupil often has not had time to "come to years of discretion," after the troublesome middle-school period known to all teachers, which is marked by the growing consciousness of individual power, at first untempered by a sense of responsibility. The release from school before the sense of responsibility is developed has a doubly bad influence—on the work of the student by reason of the change from the closer supervision of the school to the freedom of the lecture-room; and on his behaviour, unless he be sufficiently strong-minded to resist the attractions of outside interests and the temptations to slack and irregular work to which he is exposed, alike from the very fullness of the corporate college life and from the freedom of life in lodgings.

The loss, too, of the best pupils of a school at too early an age has a bad effect on the school, which loses the opportunity of giving to them of its best. If the upper work of the school is to be cut off at the level of a pass in a matriculation examination at the lowest possible age, the fact must inevitably react to the detriment of the school; it will remove what is probably the strongest inducement to any enthusiastic teacher to remain in a scandalously underpaid profession—the chance of work in which he can use some of the knowledge whose acquisition has been of interest to himself. The drudgery of lower-form work—honourable, no doubt, but still drudgery—has some compensation when one can take a sixth form in work requiring a little preparation on one's own part, and calling for the taking of some trouble in order to keep up with current progress. Otherwise, half a degree is sufficient qualification, and the academic standing of the staff is lowered.

Moreover, the matriculation examination, the lower one of the two contemplated by the Board of Education in issuing its circulars Nos. 849 and 933, will be for many pupils not the entrance examination leading to a

university career, but merely one for a school-leaving certificate, and it is important that this, which serves also as a preliminary qualification for many professional pursuits, should not be unduly lowered in standard; it is the only means of securing that entrants into these professions should have a fair general education.

The higher-school examination, corresponding roughly to something between C.W.B. higher and honours, should also be maintained at such a standard that it can, and will, be accepted by the university, subject for subject, as an equivalent for the intermediate examination. A student is not fitted to enter on a university career who has just managed to get through with 40 per cent. in matriculation. This kind of student has, for instance, no real control of a modern language, such as would fit him to appreciate its literature; his study of the matter is continually hampered by his imperfect mastery of the language, and this mastery of the language is best imparted in the school; often it is not acquired at all at the university, but modern books are read as painfully as if they were written in a dead language. That student has the best chance of taking high honours in a subject at the university who has been prepared for it up to the intermediate stage in the school. Such a student does not, in the current phrase, "mark time"; he does his work with power and with enjoyment.

There are many students in the secondary schools whose abilities would warrant their proceeding to the university, but whose means do not enable them to do so; such students could take the higher school examination, and if it became possible later for them to go to the university, could count it towards their degree; if, however, after an interruption in their studies, they had to take the intermediate examination, many would be deterred by the necessity of perfecting themselves again in the former work before proceeding to the higher and wider considerations proper to the reading for the final degree examination.

If the schools are capable of doing work up to intermediate standard, surely it is beneath the dignity of the university or its colleges to prepare students for its own matriculation examinations! This was doubtless necessary in the early days, when secondary-school teaching in Wales was confined to a few sleepy grammar schools; but it cannot possibly be needed now that there is an efficient secondary school for every twenty thousand of the population.

In the controversy now being carried on concerning the advantage of one university or of three, each side claims for its own plan the

virtue of giving more freedom to the teacher, and much is said of the effect of a syllabus in hampering his freedom and crushing his enthusiasm. It is probable, however, that the teacher is infinitely more hampered by lack of proper equipment and proper remuneration; these are the things that must be put right before Wales can get the best value from its teachers. The same statement has been made about the Central Board's syllabus; but no syllabus can hamper the teacher who refuses to "prepare" for any specific examination, but teaches his subject to such a level that any pupil who works reasonably can hardly fail to pass.

The complaints about the C.W.B. syllabus do not come from the teachers, who find it elastic enough, and know they have the power to get it varied if they wish; but from the class of writers whose quarrel with the Board arises from the fact that it has earned the best thanks of all true friends of education in Wales by attending strictly to its educational business, untrammelled by any nationalistic or denomi-nationalistic considerations whatever.

All due honour to Welsh national feeling; but much that is written about it in relation to education is mischievous and interested nonsense. When local history and geography, the local language and folk-lore, have had due provision made for them—which should be done not only in Wales, but elsewhere—the rest of the work of education is not national, but international, in character. There is no Welsh national method of teaching mathematics or science; the best method is the same for an English as for a Welsh pupil.

In the university, as in the schools, the cry of "freedom for the teacher" is mainly political; the teacher needs an outline plan of work, and if he is left without an external one will make his own; faced by an external syllabus, he will treat it with just as much respect as it deserves.

The assistant staff of the colleges is, in many cases, worse paid than the assistants in the intermediate schools—and this statement is only a comparison of a slightly lesser scandal with a slightly greater.

Inasmuch as the secondary schools prepare most of the future students of the university, the organic connection between the two institutions should be made intimate. No one will quarrel with the fact that the elementary-school teachers are represented on the governing bodies of the university; the secondary-school teachers ought also to be strongly represented, since they are even more immediately concerned with the work and requirements of the university. It may be said, and is generally

assumed by education authorities, that the schools *are* represented—and sufficiently—by the presence of heads on the authorities in question. But the heads are not elected by the assistants or with the concurrence of the assistants, as is the case with the representatives of elementary teaching. The assistants in the schools have neither a vote nor a voice. The one exception to this is the fact that the assistants in the North Wales county schools do elect representatives, from their own number if they wish, to the Council of Bangor University College. This is as it should be, and what is right for Bangor is also right for Aberystwyth and Cardiff. It is too often forgotten that assistant-teachers are not merely workmen carrying out the instructions of educators elected of the people; they are a picked class—the actual educators, inferior to many of the heads under whom they work only in respect of the opportunities they enjoy, and entitled to a voice in the deliberations, not only of education authorities in general, but especially of those that prescribe the studies and the regulations of the universities.

COLLECTIVE MARKING AND COLLECTIVE REWARD.

By SHILLUM HASKE.

MANY of us who are engaged in teaching have been accustomed, in our more dissatisfied or more idealistic moments, to rail at "marks." What wonderful things we could effect if we were not fettered by a rigid system of marking imposed upon us by authority! What progress would our pupils make but that they must halt at every few steps to have their advance tested by examination! How much of our time and energy is wasted in producing "orders"! So runs the familiar complaint. Yet in practice it has usually been found impossible in secondary schools, except among the oldest boys, to do without some system of marking. And there are teachers who find in the actual marks and the calculations attendant upon them—without regard to the ideas of which they are the symbol—a peculiar and rather unholy fascination. Indeed, I have heard a distinguished, if rather cynical, schoolmaster of long and varied experience state that marks and corporal punishment are the only two subjects which can be relied upon always to excite interest at a meeting of members of his profession.

I shall endeavour, not to show a way by which we may do without marks, but rather to suggest by illustration how it may be possible to make them serve a more truly educative end than is secured by the system with which we are all of us familiar.

It is legitimate, I think, to speak of one generally prevailing system, for, though the methods of various schools may differ in detail, the essential features are common to nearly all. That the merit or demerit of an individual boy's work should be represented by assigning to him a certain number of marks; that periodic lists should be compiled showing in arithmetical order the total marks gained by individuals for a certain period, whether half-term, term, week, or fortnight; that these orders should be used not only for purposes of reclassification, but also, directly or indirectly, for bestowing reward or the reverse; and that it is a legitimate function of the teacher to encourage the competitive spirit, using the prospect of a high place in the order of so-called merit as a healthy stimulus, and even awarding prizes to the victors in the rivalry—all these features are so familiar to us that we have almost come to regard them as inevitable.

This system, though rather elaborate, is on the whole convenient; and, with a true English dislike of examining first principles, most schoolmasters have been ready to assume that, because it is convenient in practice, it is sound ethically. But that assumption seems to me to be very questionable. And the point is certainly worth examining. For no schoolmaster will deny that marks exercise an influence, at least upon younger boys, which, whether wholesome or not, is certainly potent. And the greater the "efficiency" of the school the stronger will this influence tend to become. It is worth while, therefore, to consider whether the usual practice may not be in some respects inadequate or even demoralising.

In the first place, it is to be noted that we are appealing to a sentiment which is not only sternly competitive, but purely individualistic. There is no reason why a boy should be interested in the success or failure of anyone except himself; or, rather, the failure of others may be said to promote his own success—is, in fact, sometimes the actual condition of his own success. In every other field of school activity a boy may hear his masters emphasise the ethical value of co-operation. In games, social life, religion, they reiterate the conception of united effort for the promotion of a common end. And the ideal which they put forward with so much fervour is one which is readily acceptable to him at the age of adolescence. Yet in the actual work of the classroom—where, more than anywhere else, he is under the immediate direction of his masters—he is expected to respond to an appeal of an exactly opposite nature.

The effect of a strictly competitive system, except in so far as it is modified by personal

or other influences, may be equally unfortunate for the successful and the unsuccessful. The former are inclined to assume credit, not for attaining a certain standard, but for defeating their competitors. The prize is not necessarily for the boy who does his best, but for him who does enough to keep ahead of his fellows. There is no idea of the responsibility attached to talent, of the abler boy making a superior contribution to the common stock in proportion to his greater natural endowment; for there is no common benefit which his efforts can help to secure. The ethical influence, then, in this case is, so far as it is effective at all, unsocial or anti-social. On the other hand, the naturally stupid or lazy boy derives nothing but discouragement from the repeated spectacle of his name at the bottom of the list; he would benefit from the knowledge that there is no necessary disgrace in being last, and that his best efforts, however humble relatively, may be of some service to the community as well as to himself.

It is true, of course, that neither of these objections applies to the majority who make up the large middle section of any form. But to admit that is to pay a merely negative compliment to the existing system. It is no argument against the attempt to find a method of more positive merit.

These appear to me to be the principal points in which criticism is legitimate, but it would not be difficult to discover others. There is some force in the argument that if any advantages are to be attached to a competitive system the competitors should at least start on even terms. Few schools in classifying their pupils for teaching purposes can take sufficient account of variety of age and attainment to satisfy this first condition of fair competition. A more serious consideration is that by many (though by no means all) existing methods different subjects are separated from one another in water-tight compartments. There is naturally a tendency for boys to regard one of their number who is weak in the principal subjects, but strong in a subsidiary subject, as something of a "freak." Whatever he may achieve in his own particular "line," his efforts appear to be cut off from the general work of his fellows, who are therefore inclined to belittle their value. Whereas we should try to lead our pupils to realise that the well-being of a community depends upon the extent to which each individual develops his own particular gift, upon individuality rather than upon uniformity of service.

I had never felt any particular liking for the competitive system of marking, though it was the only one which as boy and master I had experienced. And after being responsible for

a year for the work of a lower form of a public school, I was more than ever conscious of its limitations. In this particular school there is a rather elaborate apparatus of marks and orders, and a tradition of testing the prepared work which precedes most lessons by written answers; so that the influence of marks is perhaps unusually strong. Moreover, I had other reasons for wishing to promote in my form a feeling of solidarity, the consciousness of mutual effort directed towards a common end. So at the beginning of this year I determined to adopt the suggestion of a friend, who is responsible for whatever success has followed, and to put in practice a scheme whereby:

First, it should be possible to signify by marks the collective achievement of the whole form as well as the separate work of the individuals composing it;

Secondly, a standard should be fixed the attainment of which by their collective efforts would represent a high level of general industry; and

Thirdly, an inducement to reach this standard should be presented in the promise of some form of collective reward.

No doubt some people, in particular people who have had no practical experience of teaching, will demur to the idea of a reward of any kind being necessary or expedient. They will contend that we ought to train boys to work without any material reward for the sake of the work itself, or from a belief in its ultimate educational value. The sentiment is one which everyone will respect. But what schools have found themselves able in practice to dispense altogether with reward, or with its negative equivalent, punishment? Until radical changes have taken place, not only in our curricula, but in the actual principles of our education, I believe it will be legitimate to hold before young boys some more material and immediate inducement to industry than the assurance that they will "realise the benefit of it all in later life." On the other hand, I do not suggest that the particular *kind* of reward which I am about to describe is by any means perfect.

I will now describe our plan in some detail. The subjects which are included in the weekly order (this is part of the school organisation) are English, Latin, and French. Under what I will call the old system the marks gained for each of these subjects were "reduced" to a certain range between the highest and lowest boys—100 to 0 for one of the subjects, 80 to 0 for the other two. The three "reduced" marks were then added together, and the total of each boy for the three subjects decided his place in the week's order. I will take an

actual example from my mark-book, selecting four boys from different parts of the form:—

	English	Latin	French	Total
Smith	100 ...	48 ...	66 ...	214
Jones	26 ...	54 ...	76 ...	156
Brown	11 ...	60 ...	49 ...	120
Robinson	32 ...	9 ...	0 ...	41

With regard to these figures I wish to point out once more that the marks have absolutely no relation to the "full" marks obtainable during the week. They are the result of adding the marks actually gained at the various lessons, and merely represent the relation of the different boys to each other. We can see, for instance, that Smith was top for the week in English and Robinson bottom in French, and that Jones was not far behind Brown in Latin. But there is nothing to show whether the general standard of work for the week was in itself satisfactory or the reverse.

Under our new plan the "full" mark for each lesson is recorded by the master, and these "full" marks are added together at the end of the week. By means of a slide-rule each boy's total mark can then easily be represented as a percentage of this sum of the "full" marks. Equally easily can be produced his average percentage for the three subjects combined. For example, the marks of the same four boys for the same week appear as follows:—

	English	Latin	French	Combined
Smith	100 ...	100 ...	100 ...	100
Jones	73 ...	71 ...	69 ...	71
Brown	51.5 ...	74 ...	72 ...	65.8
Robinson	47 ...	76 ...	64 ...	62.3
	53 ...	52 ...	46 ...	50.3

By a slightly more lengthy operation we can then find the average percentage of the whole form for the combined subjects. In this particular week the average for the form of 64 boys was 61. This is where we apply our test. A numerical standard was fixed at first by way of experiment at 63 per cent., afterwards with general consent at 65 per cent. Every time the average, which obviously depends upon collective effort, reaches 65 per cent. the collective reward is granted. There is, of course, no particular virtue in the number 65. It is quite clear to me that each master can only by trial determine what number suits his own methods. When, as in this case, the different subjects are divided between two masters, comparison of their respective methods will be necessary.

The reward consists in the remission to the whole form of one half-hour of work or half-lesson for every time that the 65 per cent. is attained. These periods can be "saved up" and spent continuously. Thus, since after-

noon school comprises three lessons, the attainment of the standard for six weeks gives the form an extra half-holiday at the end of term.

So much for the machinery. We may now examine the results which have, in my opinion, sprung from its adoption, and may be expected to develop further when the scheme has been longer established. At the same time I shall try to answer some of the criticism which I encountered at the outset.

In the first place, I have no doubt whatever that the standard of work improved. I have no examination results or other visible proofs to support this statement, and I do not regret it, for such mechanical tests are often exceedingly fallacious. I can only state my conviction that less pressure and encouragement were necessary on my part; that more and better work was done in preparation; that there was at least equal application in school hours; and that the general activity and industry of the form increased. One example must suffice. There is a period of preparation, nominally lasting an hour, on Saturday evening. Complete freedom of choice is given in regard to this work, and many boys make capital use of this opportunity of following their own bent. So much time and trouble were bestowed upon this work that finally the form with excellent sense made a rule for the protection of their other subjects that not more than *six* hours should be devoted to it.

If the attitude to work may be thus expected to improve, so also may the attitude to the boy who is industrious or successful. The clever young boy will no longer be regarded as a "beastly little sweat," but as a highly useful person. Industry will be the sign not of a prig, but of a good citizen. Change in this respect is particularly desirable in forms of rather older boys than those of whom I have been speaking.

Some of my friends were apprehensive that a mercenary or "mark-grumbling" spirit would be fostered, and that the boys' interest in their work would therefore decline. Naturally enough, their interest in marks was greatly heightened, partly from the mere excitement of a novelty, still more because a boy felt that his marks now provided him with a more just and accurate standard for the measurement of his work. By a comparison of the successive weekly orders he could now see, not only how he stood in regard to others, but whether he was rising above or falling below his own standard of the past. Moreover, he could apply a similar test to the achievement of others, whose work, as I have shown, possessed a new importance in his eyes. Our new mark sheet suggested, too,

some interesting comparisons between the new system and the old. As you examine it you might recall the case of a friend in another form who had been put "on allowance" by his tutor, *i.e.* told that if he was not a certain number of places higher in the next weekly order he would be caned. And you could prove from the figures before you that it was possible to be many places higher next week and yet to do a very poor week's work, or, conversely, that you might be last of all and yet improve on your previous efforts, and you might be stirred by all manner of rebellious questionings. There was then, no doubt, a greater attraction in a weekly order than before. But of the real danger that lies in "mark-grumbling," a decline of interest in the actual work, I saw not the slightest symptom.

Equally misplaced was the fear that an increased consciousness of the possibility of reward would be in itself demoralising. There was certainly eagerness to obtain the reward, but there was no trace of the spirit of "get all you can, never mind how." When it became clear that in fixing our standard at 63 per cent. we had fixed it too low, it was decided unanimously to raise it to 65 per cent. On another occasion the form rejected a suggestion of mine that, in view of special circumstances, an average which had just failed to reach the required number should be counted as having done so. In fact, it was evident that the idea of collective work had produced an enlarged sense of responsibility for its adequate performance. This sense of responsibility, I believe, can only grow when the boys are given every possibility of marking their own work, when they are encouraged to discuss and criticise the work of one another, and when precautions against fraud and dishonesty are reduced to a minimum.

The inevitable opposition in this case followed two lines of argument, which are in a sense mutually destructive. On the one hand it was contended that no mere machinery of marks would rouse the enthusiasm of the ordinary schoolboy; while at the same time another prophet of evil foretold that eagerness for the reward would be such that a boy who failed to contribute adequately to the common stock would be the victim of resentment amounting in the last resort to active bullying. Of the salutary effect upon industry I have already spoken. The other point does not appear to me to present much difficulty. In a thoroughly ill-disciplined school the danger might be a real one; in a normally efficient school it should be negligible. And I believe that when through self-government opportunity is provided for collective resentment to express itself after discussion in

responsible punishment, the danger of irregular retribution will altogether disappear.

It was only natural that at the outset some boys should find certain features of the scheme rather puzzling. Why, for instance, should the "slacker" share in the benefit of a reward which he has done little to secure? This point is fundamental. It is not sufficient, though it is not altogether irrelevant, to reply, "That is the way of the world. Make what you can of it." The true answer is that the knowledge that he is not a genuine contributor to the common stock (and is therefore reaping an undeserved reward) will be a much more potent influence for making the "slacker" work than the fear of punishment. Similarly, I see no reason to fear that a boy who contributes largely in one subject will feel justified in contributing less in another. On the contrary, comparison and criticism of the two results will give him an additional stimulus to improve his work where it is weak.

I have mentioned what appear to me to be the principal advantages of collective marking. In conclusion, I wish to emphasise my belief that if it is to be fully utilised for developing the idea of co-operation and the sense of responsibility, the boys themselves must, so far as is possible, decide whether they have reached the required standard. Clearly this will not be possible in every lesson, nor in those lessons where it can be introduced will it be possible in the same degree. But the moral value of realising the shortcomings of one's own work and of judging it by comparison with the work of others is indisputable. And I am confident that the more fully this liberty is granted to boys the more completely will their fairness and impartiality confute the cynic and the pessimist.

THE PLACE OF SCIENCE IN EDUCATION.¹

By DR. J. A. FLEMING, M.A., F.R.S.

University Professor of Electrical Engineering in University College, London.

ON all sides we see evidence of a widespread feeling that we shall not be able to secure our national position after the sacrifices of the war unless attention is at once given to the more systematic development and application of scientific knowledge, and a radical improvement effected in its position in our educational schemes.

This opinion is showing itself in the establishment of numerous committees, boards, and conferences of various kinds. These dis-

cussions may be necessary to clear the ground and awaken interest, but they will be futile if they have no other result than mere assertions of national inefficiency or neglect.

The need of the moment is a careful and searching analysis of the causes of this failure to cultivate sufficiently scientific knowledge, and of the small popular appreciation of it, and we shall then, perhaps, be able to agree on the practicable remedies. Above all, we must estimate and define its proper place and function in popular education, so that we may not err in undervaluing or in overstating its importance.

In the last half-century there has been enormous progress in our knowledge of the physical universe and in the degree to which we are able to control its inexhaustible energies, powers, and materials for human purposes. It has been found that this knowledge not only brings great benefits in its train, but also that it is unfortunately applicable in the most effective service of the powers of evil.

Hence we are compelled to pursue it not only for its intrinsic advantages, but that we may meet and control misapplications of this knowledge, and prevent ourselves from being brought into subjection to those whose ethical development has not kept pace with their progress in using scientific knowledge.

Moreover, a careful study of the subject shows us that a too exclusive attention to the material side of nature, and to its purely physical phenomena, has its special dangers and disadvantages.

The important questions which therefore arise for consideration are, first, the place and character of the instruction in science which should be given in primary and secondary education; secondly, the mode and means by which an intelligent public interest in, and appreciation of, scientific knowledge may be stimulated; and, thirdly, the steps which should be taken to encourage and assist scientific investigation.

As regards elementary education, our first duty to the child is to impart to it some small knowledge of the laws and phenomena of the physical universe into which it has been born, something concerning its own bodily structure and powers, so that it may learn to live well and in right relations to its fellows, and also to other forms of life around it.

The young child is naturally vastly curious and interested in its new surroundings and asks to be instructed, but the majority of children are deliberately educated into stupidity by the greater stupidity of adults around them, who cannot answer the child's questions and will not take the trouble to learn how to do it.

¹ Reprinted with permission from the Journal of the Royal Society of Arts, June 23rd, 1916.

The child is by nature a philosopher eager to know the reasons for things; an experimentalist ready for all risks; and an artist who lives in a world in which imagination clothes ugly facts in picturesque raiment.

Right methods of education take advantage of all this to enable the child to educate himself. The success of the Montessori system of training young children is based on the fact that the child is by instinct an experimental philosopher. The instant and permanent triumph of the Baden-Powell Boy Scout movement was due to the right utilisation of the boy's imagination and love of adventure. The cardinal and disastrous error made in elementary education, as administered by the State at present, is that it begins with language, words, and books, instead of with realities and natural phenomena. The first thing we do is to teach the child to read and "learn by heart." It learns to repeat strings of words, and at a later stage commits to memory an ill-assorted collection of information on grammar, history, geography, and literature, which has small bearing on its immediate requirements. There is very little training of the hand and eye, and little or no pains taken to bring the town-born child in contact with nature and nature-study.

Then as regards school instruction in scientific knowledge, this should begin with elementary facts of astronomy and natural phenomena, such as the properties of air, water, and common substances, the effects of heat and cold, the simplest facts concerning light and sound, and the growth and structure of familiar plants and trees. All this should be taught by appeal to the eye and by motion pictures or models, the principal aim being to train the child's powers of observation, description, and logical inference.

It will require a greater national expenditure than at present, but the nation has to learn the truth that there is no economy so false as economy in national primary education.

Coincidentally with this nature-study the child should be taught reading, writing, elementary arithmetic, and drawing; but beyond this the training of eye and hand, the practical arts of life, co-operative action in drill and dancing with the aid of music, should take precedence of books and words.

The main thing is that the child shall be taught to *do* things, or effect practical achievements, and not simply to store its memory with words, or the analysis of them. The right use of language, and its employment to describe experience, should be conveyed by example and imitation from the living teacher and not the dead book.

Turning then to a more advanced stage of education, we find at present a strong consensus of opinion that improvements are necessary in the curricula of public schools. The large amount of time spent at present over Latin and Greek grammar and literature brings no return at all proportional to the effort and money spent over them. The mental discipline can be obtained more usefully in other ways.

There are four great groups of educational subjects which should be put on an exactly equal footing, and claim each a quarter of the whole working time of the schoolboy. These are: (1) Language and literature, considered chiefly as a means of expressing thought and experience; (2) science, or a knowledge of the facts and laws of the physical universe; (3) mathematics and graphics, or the study of number and form, including arithmetic, geometry, and algebra, and drawing in various forms, geometrical and free-hand; (4) civics, or the preparation for citizenship, which includes history, both of the world and of the native country, elementary political economy, religious or ethical instruction, elocution, and military drill or exercises. The expression of emotions in music and some training of the æsthetic feelings should not be neglected.

Assuming a total of working hours of about forty per week, this would give ten hours a week, or, say, 360 a year, for the study of scientific subjects. In the next place we have to consider what these subjects should be. When science teaching was first introduced into schools, chemistry seems generally to have been selected, and under its schoolboy designation of "stinks" has been the principal subject taught.

Chemistry is, however, by no means the best subject for initial instruction in science. It provides, of course, attractive experiments and requires no very expensive appliances, but it lends itself almost too readily as a subject for cram knowledge, whilst its necessary theoretical basis is difficult to expound. The chief object of school instruction in science should not be the mere acquirement of cut-and-dried information as to facts, but the cultivation of the student's powers of observation and experiment and drawing correct logical deductions therefrom. Hence it is far better to begin with mechanics, elementary physics, and botany. A skilful teacher, provided with the proper apparatus such as that described in the late Sir Robert Ball's "Experimental Mechanics," can make mechanics an excellent introductory subject for school instruction. A properly equipped physical laboratory should form part of every school, and the

work therein should consist in taking the boys, arranged in pairs, through a carefully selected series of practical exercises in magnetism, heat, light, electricity, and acoustics.

It is a great mistake to lecture too much to boys as if they were adults. This type of oral teaching is easy to give, but most ineffective in results. The students should perform the experiments and not the teacher, and the work should consist in making careful observations or measurements, which are then as carefully described by the boy in his own language in writing. The proper description of experiments or observations in good, simple, lucid English should be strongly insisted upon, and marks given for this as well as for accuracy in results. The effort should be to make the boy rediscover for himself, under guidance, the elementary facts and laws of the subject under study.

It is advisable to postpone the study of chemistry until after the elementary physics and mechanics, and until a little training in experimental work has been acquired. In some schools a great show is made with carpenters' or engineering workshops. This impresses parents and attracts boys with a mechanical turn of mind. But there is little or no real scientific training in it. The making of a model steam-engine is an amusement for leisure hours or wet half-holidays, but is perfectly useless as a means of scientific education for boys. The school work should be confined to imparting a really practical and thorough knowledge of elementary principles of science. Of course, in all this the quality and kind of teaching given are the important factors. The mode in which a subject is taught is even of more importance than the subject itself. Chemistry can be so imperfectly taught as to be of little use as a mind-training. It is possible to give a very scientific lesson on a Greek verb, and also to give a lesson on an electrical machine which is not scientific teaching at all.

Hence here as elsewhere the man counts for more than the machine or apparatus. Nevertheless, the good teacher is wasted unless he has the necessary appliances. For this reason every public school should be adequately provided with museums containing geological, mineralogical, botanical, and zoological specimens, and these should be continually increased and well arranged. The physical and chemical laboratory accommodation should be ample and well equipped. Every school should also have a small astronomical observatory, with an equatorial telescope, clock, and transit instrument, and an outfit of surveying instruments, such as a theodolite, chain, level, and surveying staffs.

Trigonometry as a mathematical subject should be taught in a practical manner by the aid of these last-named appliances, and not merely made to consist in the memorising of formulæ.

Instruction in elementary astronomy, comprising a practical knowledge of the constellations and movements of the sun and moon, should form part of all school education. It is lamentable to notice how few adults, even in the educated classes, have the smallest knowledge of these things, or the faintest conception of the reasons for the tidal movements of the sea, the changes in the seasonal appearances of the starry heavens, the phases of the moon, or the phenomena of eclipses.

A classical scholar, on being told that on a certain night an eclipse of the moon would be visible, observed to the writer of this article that it was "fortunate" that the moon would be full on that night, as the eclipse would be better seen. It is a most elementary fact of astronomy that it cannot occur at any other time except at full moon.

One of the essential things is to give proper dignity and importance to scientific knowledge and teaching. It has been far too long considered as the Cinderella of school subjects. The division of schools into classical and modern sides, accompanied as it has been by an air of unquestionable superiority on the part of the classical department, should cease. One great reason, of course, has been the vastly higher inducements to classical studies by university scholarships and exhibitions, and the predominance awarded to them by the marks allotted in public and Civil Service examinations.

An influential meeting was, however, held lately, under the chairmanship of Lord Rayleigh, at which important resolutions were passed urging: (1) That the study of natural sciences should form an integral part of the educational course at all the great schools of the country and of the entrance examinations of the universities, old and new; (2) that the Government should encourage this study by assigning capital importance to scientific knowledge in the competitive examinations for the Home and Indian Civil Service, and for admission to Sandhurst.

If these resolutions are acted upon by the authorities, pressure would at once be put upon the public schools to reform and augment their scientific teaching. We should not then in the future run the risk of our legislators in Parliament exhibiting, as they have done recently, the most astonishing ignorance of simple facts of chemistry.

Another and equally important reform would be the revision of the relative value of

the scholarships and exhibitions offered at the universities for classical, mathematical, and scientific knowledge. At present there is evidence that the lion's share of these encouragements falls to classics. Hence the public schools devote most attention to the subject which "pays" best. The right arrangement would be to put the subjects on an equal footing. If these recommendations were followed, the study of science would shortly cease to be regarded as of inferior importance, and would take its rightful and dignified position. It would no longer be regarded as a curious and unimportant hobby by those who know nothing about it, and an ignorance of the broad general facts of chemistry, physics, biology, or astronomy would be regarded as a mark of ill-education. What is required is not merely to produce scientific specialists, but even more to create appreciation of, and sympathy with, scientific work and aims in the mind of the general public.

Assuming, however, that a reform in public-school methods will lay the foundations for this increased sympathy, it is then essential that men of science should continually endeavour to place the results and methods of their work in such a form as to encourage and justify public interest. The principal method by which this can be done is by public lecturing and also by written communications to the public Press, chiefly the great daily newspapers and the more widely circulated general magazines. The public lecturing is by far the more important, because this can be illustrated by actual experiments, diagrams, lantern-slides, projections, or specimens.

We reach the core of the matter when we come to consider the place of science in the university and technical teaching. Here the principal object in view is not merely the dissemination of information, but the instruction and training of men who can create new knowledge. Of late years the ancient as well as the modern universities have added greatly to their equipment in laboratories and museums, with all the appliances of scientific study. Nevertheless, too much of it has been devoted to the purpose of making graduates rather than investigators.

The chief function of a university is to increase our knowledge, and not merely to put the hall-mark of a degree on young men who have acquired a certain store of learning concerning the achievements of others. The obsession of the written examination paper and degree still holds us in its grip. Whilst it is essential to insist on a certain breadth of acquaintance with known things to prevent the creation of narrow specialists, the university does not accomplish its final purpose if

it fails to animate its students with an intense zeal and some ability to push forward the confines of knowledge. Hence the main duty of a university is research. The duty of advancing pure scientific research is the particular responsibility of the science teachers and advanced students and graduates in it. No one is fit to fill the post of a university teacher who is not actively engaged in research in his own special department of knowledge. His success ought largely to be gauged by the degree to which he gathers round him students who can take part, and assist, in new investigations.

The value of this work has to be measured by its quality as well as its quantity. There is at the present time an enormous output of published researches, but a great deal of this is work which is concerned with minor questions, quantitative measurements, and with the gleaning of corners of the scientific field. The really great investigations are those which open for the first time some novel and rich mine of scientific truth.

A most important matter is the consideration of the conditions under which this stimulative originality can be fostered and increased. One thing is certain, that too much devotion to the study of what others have done is apt to diminish original powers. The great inventors and discoverers instinctively turn to new fields of research. When a man has this notable originative power, everything should be done to facilitate his possession of the necessary material means. It is the most wanton waste of rare gifts if an experimental genius is allowed to spend much of his life in a heart-breaking struggle to acquire merely the implements of research. The British nation has yet to learn of the immense resources which in Germany, and also in the United States, are being put at the disposal of those who have proved powers of scientific investigation.

It is not a day too soon, therefore, that the Government has appointed a Committee of the Privy Council to deal with scientific and industrial research, and an Advisory Council to direct the disposal of the funds which will be administered.

There are indications that this will be done by grants to learned scientific societies for special researches, and by grants to universities and colleges and to individuals and committees for definite research work. By the assistance of research scholarships and fellowships it will be possible to give the necessary financial assistance to trained men who have exhibited the necessary qualities of mind. We have to search diligently for this capacity and cultivate it, not simply to wait for it to turn

up, and we may then hope to increase greatly the systematic pursuit of advances in scientific knowledge.

The direction in which all the above effort must tend is, however, in the application of this knowledge in commerce and the arts. If we are not to suffer hopeless defeat in the coming commercial contest of brains, we have continually to bring this scientific knowledge to bear upon all the problems of industry.

One great difficulty which presents itself is the small faith which so many British manufacturers have at present in the utility of scientific research. This shows itself in the unwillingness to make the necessary investment of money in it.

Again, if our educational methods are directed sufficiently to the production of men who can do new things, and not merely know about old ones, we shall provide the manufacturer with the men who can give him efficient assistance. We have, therefore, to make science an integral part of our national education. We have to create conviction in the public mind that only in this manner can we forge the weapon which shall give us the ability to retain our place as a world-Power. We have, therefore, to reconstruct the basis on which our educational systems rest and make a study of the laws, phenomena, and processes of nature of primary importance in them.

It has to be clearly realised that, great as are the victories of science in the past, there are revolutionising discoveries and inventions yet to be made which will affect human life in every way. We cannot afford to be, and remain, content to have no part in them, but they will only come as the reward of strenuous labour on our part. We may not be able to effect all the reforms in education which are an essential precursor, but we can do something, and we can do it at once.

EDUCATION AND MACHINERY.¹

By E. SHARWOOD SMITH, M.A.

Headmaster of Newbury Grammar School.

I AM glad that we have had this opportunity of testifying to the solidarity of the teaching profession. Education, like the French Republic, is one and indivisible. Far too often has it seemed as if the various branches of education were separated into water-tight and light-tight compartments—with results which are only inimical to real progress in the craft. We are all engaged in the same work—elementary, secondary, technical, higher.

Do not let me be misunderstood. I do not mean to assert that only in the ranks of professed teachers will the advance-guard of progress be found. Far from it. That would be an arrogant and ridiculous pretension. All professions suffer—and ours particularly—if they assume an exclusive and superior position. In no work have laymen so often shown the way. Many of us have learnt more from those outside the pale than from our professional brothers and sisters, and I may parenthetically remark that if there is one piece of advice which I, as almost a veteran in the craft, would offer to the young apprentice, it is that he should eschew rather than pursue too much intercourse with those engaged in the same work. It is good, it is very good, to meet periodically, as we are meeting to-day, to compare difficulties, to offer sympathy and encouragement and advice to one another, to struggle that the way may be made smoother, at any rate, to the feet of our successors; but if we cut ourselves adrift from the society of those engaged in quite different occupations we lose that close grip with the world around us which enables our work to be fruitful and practical in the highest sense. We want to broaden, not to narrow, our interests. The influence of a profession on an individual member may easily be to dwarf and cripple his outlook on life.

What I meant just now rather was that, while some of the greatest educational ideas have come from outsiders, yet education is not essentially their business. But *we* are dedicated and devoted to education. It is our only occupation—our livelihood, such as it is—our life's work—often our life's burden, sometimes our life's delight. I have used the word "dedicated" advisedly. I need not remind this audience that any who enter the profession in order to make money will not only be grievously disillusioned as to the money-making, but will be quite useless from a higher point of view. One thing that should be impressed upon any novice before he starts his work is that it is futile for him to become a teacher unless he possesses something of what I will call the missionary spirit—if possible, a double portion.

For whatever our academical qualifications may be, of whatever subjects we imagine ourselves masters, whatever learned and laborious text-books we may have crammed, whatever formal training we have undergone, if we lack the one thing needful we are no better than parasites on a noble profession; we are mere cumberers of the ground and had better devote ourselves to some other occupation while there is yet time. And what is the one thing needful? It is difficult to sum it up in one word.

¹ A paper read at a meeting of the Newbury and District Teachers' Association.

"Enthusiasm" perhaps comes near, but it is not absolutely right. I am not altogether enamoured of enthusiasm without discretion. I can, however, for the present find no nearer term. It is the passion for learning all our lives all that life can teach us—and I say life and not books, though books may be helpful in order that we may the better help others. No one knows better than I do how inadequately the teacher is remunerated, how rarely promotion or even recognition is his lot, how he manages without serious difficulty to escape even birthday honours unless he is also a politician; but I remember also that the teacher, the real teacher, is a member of a profession which—as has been said by someone before me—if the worst paid, is the most richly rewarded of them all.

It is fatal for any of us to lose faith in humanity—to regard any case as hopeless. In spite of, or, as I would rather put it, in consequence of, nearly thirty years of teaching, I remain an incurable optimist. I do not, of course, mean by optimism a shallow and facile acceptance of everything as it is. What would there be to work for on such an assumption? I mean by optimism an abiding faith in the possibilities for good in any human being, no matter what his past may have been, and particularly in the young, who have no past, or a very short one, to plague them. This is more than a belief—it is a religion.

And "personality," that quality so difficult to define, so easy to recognise, is the greatest thing in education. It springs, I imagine, from a sure conviction that life has a meaning and a purpose, and implies the bending up of every nerve and sinew of the soul, to fling it forward on its self-chosen path. It is perhaps the very word of which we were in search a short time ago. For it is not what a teacher knows—it is what he *is* that matters. I admit that if we take knowledge in the highest sense what he is depends ultimately on what he knows. It is his whole attitude to life and what he considers the greatest things of life. It is his constant readiness to learn from all—from his fellows, from his pupils, from life itself. It is the seeing life steadily and seeing it whole. It is what I mean by religion.

I chose the subject of Education and Machinery because it has been borne in upon me more and more of recent years that the great danger to education is just what I call its machinery: I mean by the machinery of education the framework, the organisation, the body by which and in which education is carried on, if not carried forward. I suppose there never was a time when this machinery of education was so efficient and so expensive.

And the thing I want to say this afternoon, and I will put it quite bluntly, is that all this complex machinery has hardly advanced education—rightly so-called—one single step. Nay, worse; it has driven it backward in some ways, because it has lulled a number of worthy people into the complacent belief that all this business is in itself a sign of great progress and so has diverted attention from the real problem. I need not assure you that it is nothing of the kind. It is, on the contrary, to a large extent, a miserable waste of time and money.

I would not exaggerate. Statistics are useful to a certain extent. Properly employed they enable us occasionally to see where the machine is working badly, and more occasionally to stop up a gap or mend a leakage, but they cannot help, whereas they can, and do, harm the real thing—the spirit of the work. They cause a ridiculous stress to be laid upon the beggarly elements, upon the letter and the law. The analysis they make is, in other words, purely quantitative—qualitative appreciation is absolutely outside their scope. And yet it is the things that cannot be weighed and measured with cunningly devised apparatus—the imponderables for which there are no scales—that really count. And besides the great Board itself there are the local authorities and the accumulation of officials that they bring in their train, who batten on education and too often exhaust its vital processes in so doing. Again I desire not to exaggerate. There must be some officials, and some of them are no doubt extremely useful. But they are multiplied to an absurdity. I myself have served on many committees in my time, and I am conscious of the laborious futility of most committee work. Not that I would seek to depreciate the heroic and self-sacrificing labours of many members. Their work is beyond praise and wholly unexpectant of reward. But I have often felt, after sitting for some hours in the somewhat vitiated and occasionally highly heated atmosphere of a committee-room, that most of the time has been wasted—that the members would be far better employed in getting to know education from the inside in the school than from the outside in the committee-room. To do any real good committees must have access, not only to the bodies and the pockets of teachers, but to their hearts. And the reverse applies still more. What all this machinery seems to kill is the direct, living, personal touch—the sense of brotherhood and fellowship and comradeship in a great task. We live, as Wordsworth tells us, by admiration, hope, and love—not by forms and documents and statistics. The machinery is strangling the life. And, unfor-

tunately, this machinery reacts, and must react, on the school work itself.

Organisation is regarded as a desirable thing in itself, not as a mere means to an end. I notice that the chief virtue of a head teacher is that he should be a good organiser. I would submit, on the contrary, that this, though necessary, is one of the least important of his qualifications. His function—it seems to me—should be rather to inspire, to stimulate, to create—no, that is too big a word—to liberate the atmosphere in which the whole school lives and moves. I do not know whether it is still the case now, but certainly a short time ago a headmaster was supposed to do scarcely any teaching; and how many of us found long hours of our day spent in preparing forms and time-tables and feeding the insatiable maw of officials and committees for facts and details, and yet more details and more facts? I am certain that this work, unless it be reduced to a minimum, exercises a deleterious influence on the whole atmosphere of a school. We become slaves of routine and of the time-table. And real education—by which I mean enlightenment, the illumination of the spirit—begins where the time-table ends.

I used the expression "school atmosphere" just now, and I should like to enlarge a little on that theme. I hope you will not think it fanciful, but I always imagine that directly I am within the four walls of a school I can, to a certain extent, appraise the quality of the school even before a word has been spoken. There are some schools in which one has a sense of constriction, of stifling—one cannot breathe or think freely. That is the machine-run school. Everything externally is perfect. The whole place goes like clockwork, and that is exactly what it is—clockwork, not human activity. A talk with the individual teacher, an attempt to penetrate into his ideals of education, his sympathies, his aversions, even his hobbies and amusements—in fact, his whole outlook on life—would give an experienced and sympathetic inspector a far deeper insight into the character of the school than the most critical inspection of all the actual work done and the minutest scrutiny into the methods employed.

The fact is that very few people give enough credit to the subconscious self of the pupil. He absorbs daily and almost unconsciously—the seed grows secretly. And that is why the teacher cannot be too careful about his words and his actions—and, indeed, his very thoughts. What floats on the surface of the mind may be collected by the examiner and marked and appraised, but, after all, he gets only what is usually on the surface—the froth and the scum. The secret springs that nourish

the life are fed quite otherwise. No systems or methods, however admirably devised, will help us there. Again, it is what we are, not what method we employ, that matters. As for methods, some of them no doubt are useful, but do not let us be led to believe that there is any one effectual method.

There are nine-and-twenty ways of inditing tribal
lays,

And every single one of them is right,

sings Rudyard Kipling, and the same may be said of methods, only more so. There are nine hundred and ninety-nine methods of education, and every single one of them is right, and every single one of them is wrong also. The fashion of this world passes too quickly for enduring methods to be right. Change is the law of life and of education. There are eternal principles, but life refuses to be imprisoned in formulæ or manipulated by method. The wise teacher creates his own methods as he goes along and alters them continually. He allows his pupils to show him how to teach them. He plunges into direct contact with their lives, their feelings, their aims. Method means in the end the dogmatic slumber in which many teachers are sunk. It means routine, repression, mental and spiritual tyranny. It means machinery.

We want more freedom in our schools—not only freedom for the teacher, but freedom for the pupil. It is a fatal mistake to try to pump our own ideas into the minds of our pupils. No education, no enlightenment is achieved that way. We can kill, but we cannot make alive. And with freedom I believe in more leisure in the school. *Es bildet sich ein Talent in der Stille*, if I may be pardoned for quoting from a German, and a noble German, in these days of a baser Germany. A talent builds itself up in stillness. Talent, ability, genius, personality, develop, like a tree, with secret growth. We must refrain from teaching too much.

As to what subjects exactly shall be taught, to me it does not seem to matter very much so long as we give children plenty of scope for self-expression, so long as we get them to observe and to think. The normal child naturally loves to learn, and there are many avenues to learning. But I would plead for more art, more drawing, and particularly more colour-work, even for the youngest children. They must express themselves or perish spiritually. And what we call art is self-expression, whether it be painting, music, or wood- or metal-work. Particularly we do need colour in our modern life—especially for those brought up in the drab and depressing influence of our modern towns. A paint-box to a child is the means to create a new heaven

and a new earth. I wish those good and well-meaning people, like Lord Meath, who write with such laudable intent such dreadful letters to the papers would realise that man does not live by bread alone, nor by cookery classes alone, nor by shorthand alone, nor even by science alone. Science teaching can be absolutely unscientific. These are all good in their way, and indeed almost as necessary as bread is. More machinery, less art! As well say no inner life during the war, I would reply. And if these advisers had their way I should not know what we were fighting for. For to do as they desire is exactly to Prussianise, to mechanicalise the schools, and if that is to be done the Prussians will do it much better than we. The most illuminating remark I ever heard about the war came from a non-commissioned officer. He said: "We're up against a tremendous machine, and we've got to smash it." In other words, is Europe to be machine-governed or to be a free federation of free States, each in brotherhood with the others, but working out its own salvation?

Colour, music, poetry, are they to be banished from our schools because we are at war? More, I would urge, we want more, not less, of them; for these are the free expression of the soul, not the forced achievement of mechanical routine. Coercion can only produce hypocrites in education as in religion—it cannot dictate to the free spirit of the individual, whether he be young or whether he be old. It is the inner conduct, which alone is rightly to be called religion. And what is education—enlightenment—but religion in the last analysis? And I hope you will not object that I have ventured to speak of religion. Too long have we teachers kept silent on that all-important subject and allowed false doctrine to be spread abroad. For, as none know better than we, religion is not a subject that has a special place on the time-table—a regular hour or hours in the week. It should permeate and pervade every lesson that is given, every bit of work that is done. And machinery—that is, routine—is the unrelenting foe of religion. One knows, for instance, that the so-called religious lesson can be the most irreligious thing in the world, because it is so often merely a part of the organisation, the machinery of the school. Once place your faith in machinery and you become a machine yourself.

I hope no one will go away with the idea that I advocate anarchy and chaos in a school. I have only seen literal anarchy in a school where all the power came from machinery and where the driving-belt had slipped or a cog or two became loosened, and naturally the whole school ran down. Mental and spiritual

anarchy is frequently to be found where the school is from the outside thoroughly efficient. And the best discipline I ever saw was in an elementary school where some seventy children were all working by themselves at different things under the guidance, not control, of two young girls. On the outside there was no discipline at all or sign of organisation. The children were disciplining and organising themselves. I am arguing on the great assumption that nothing is real which is not spiritual. The materialist is the pessimist, and the pessimist is the foe of education. But if we believe in the essential spirituality of man we are optimists in spite of everything—in spite of boards and councils and committees and directors and inspectors and forms and registers and time-tables and statistics and low salaries and continual disillusionment and disappointment, and all the slings and arrows that outrageous fortune may hurl and point against us, and we shall struggle wholeheartedly to free ourselves from the throttling coils of machinery that some in the name of efficiency, so often taken in vain, would wind around us, and our struggle will not be in vain.

THE STATE AND SCIENCE.

LORD CREWE, at a meeting of the Governing Body of the Imperial College of Science and Technology, held on June 30th, made the important announcement that the Government had decided to appoint a Special Committee to consider the question of scientific teaching. The proposed committee is to work in close concert with, and with the full agreement of, the President of the Board of Education, and is to be as strongly composed as possible, its membership including scientific men in whom the country have confidence—those who appreciate the application of science to commerce and industry, and "those who are able from general experience to correlate scientific teaching with education as a whole." In the course of his speech Lord Crewe said that one of the duties of the committee would be to consider the question of amending the system of examination to the Civil Service and other public services; he did not, however, mention the preliminary examinations at Oxford and Cambridge, probably because he considered these to be less under Government control than the examinations conducted by the Civil Service Commissioners. It is, however, probable that the influence of the older universities upon the curricula of public schools is even more potent than is that of the Civil Service Commissioners; and, since the Govern-

ment has in the past effected reforms in university teaching, we hope the committee will not fail to make recommendations respecting the Responsions and Previous examinations should it find that these require reforming.

The composition of the proposed committee is sufficiently wide to ensure respect for its conclusions, but if Lord Crewe has been correctly reported, it seems that the only educationist to be appointed on the committee is to be one who has not been directly concerned in the teaching of science; this should not be the case with a body which may have to consider technical points in the teaching of the subject, and it is much to be hoped that the name of at least one science master will be included.

If the present agitation is to result in a satisfactory reform, it is essential that those who are responsible for it shall be prepared with a definite constructive policy: the opinions published in the last issue of THE SCHOOL WORLD prove that at present the individual science masters are widely divided in their aims and ideals. The subject has been under consideration for several years, and it is satisfactory to know that the committee of the Association of Public School Science Masters is drafting a scheme showing what, in the opinion of the members, is a suitable curriculum for the public schools. It is to be hoped that any scheme which is finally adopted will, whilst covering sufficient facts concerning the application of science to daily life to awaken the interest of the pupils, aim at developing their power of observation and reasoning; nothing would do a greater disservice to the cause of scientific education or to the real welfare of the nation than to make science an "easy option," nor would it be less fatal to insist upon it as an "easy compulsory subject." Although it is possibly an error to say that the educational value of a subject varies directly as its difficulty, there can be no doubt that much harm can be done by suggesting that science can be mastered without a severe mental effort.

PERSONAL PARAGRAPHS.

DR. LYTTELTON is to be succeeded at Eton by the Rev. C. A. Alington, who has been headmaster of Shrewsbury since 1908. Mr. Alington was educated at Marlborough and at Trinity, Oxford, where he obtained firsts in the two classical schools and was elected a Fellow of All Souls. He was an assistant-master successively at Marlborough and Eton. He is the author of "A Schoolmaster's Apology."

MR. F. H. RAWLINS, lower master, has been appointed vice-provost of Eton, in suc-

cession to Mr. F. Warre-Cornish. Mr. Rawlins has been lower master of Eton since 1905. He was educated at Eton, where he was Newcastle scholar and Tomline prizeman, and at King's, Cambridge, of which he was a scholar. In 1874 he was bracketed senior classic and Chancellor's medallist, and he was Sir William Browne's medallist for three years in succession, and was elected a Fellow of King's. He has edited portions of Livy, and is the joint-author of "The Advanced Eton Latin Grammar."

MR. J. M. THORNTON, mathematical master at Blundell's School, Tiverton, for the past thirty-two years, died recently after an operation at the age of fifty-six. Mr. Thornton was educated at Almondbury College, Owens College, Manchester, and at St. Catharine's College, Cambridge. For some years he was mathematical lecturer at Newnham and Girton Colleges, and had been a master at Blundell's since 1884. From 1893 to 1912 he was a housemaster.

CAPTAIN LESLIE WOODROFFE, Rifle Brigade, died of wounds received on June 1st. Mr. Woodroffe was educated at Marlborough College and at University College, Oxford. After being a master for a short time at Cheltenham College, he went to Shrewsbury in 1909, where he stayed until the war broke out. He was given a captain's commission in the Rifle Brigade at Christmas, 1914, and proceeded to the front in the following May. In July he was severely wounded at Hooge, and was awarded the Military Cross. After recovering from his wounds he returned to the front, and was mortally wounded on the day of his arrival.

CAPTAIN H. A. BUTT, Gloucestershire Regiment, went to the front early in 1916, and was killed on the night of June 8th. Mr. Butt was educated at Bromsgrove and at Jesus College, Cambridge; he obtained a third class in the Classical Tripos. On leaving Cambridge he went to Audley House, Lee, then to Framlingham College, and to Elvedon School, Bristol, where he remained until he was appointed to Clifton College in 1908. Mr. Butt joined the O.T.C. at the outbreak of war, and received a commission in the 11th Gloucesters in 1915. In August of the same year he was given a captaincy.

CAPTAIN B. S. HARVEY, London Rifle Brigade, was killed on July 1st. He was educated at St. Andrew's, Eastbourne, Malvern College, and Trinity College, Oxford. Upon leaving Oxford he became a master at Hildersham House, St. Peter's, and in 1912 joined the staff at St. Andrew's, Eastbourne.

LIEUTENANT H. W. COOMBS, Northumberland Fusiliers, died of wounds on July 2nd. A native of Frome, he was educated at private schools and Manchester Grammar School; on leaving Oxford, where he was at Corpus Christi College, he became mathematical master at Wellington College. He obtained his commission at the beginning of 1915, and went out to the front last January.

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SECOND-LIEUTENANT A. O. MILES, Gloucestershire Regiment, was killed on June 30th. He was educated at Pembroke Lodge, Southbourne, and at Lancing College. At Oxford he obtained a third class in history; he then returned to Pembroke Lodge as a master, and remained until the outbreak of war. After joining the Naval Division he was offered a commission in the Gloucestershire Regiment, and was appointed physical training instructor.

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SECOND-LIEUTENANT A. G. CLARKE, who was killed on July 2nd, was the son of the Rev. A. E. Clarke, headmaster of Oxford Preparatory School; he went from that school to Winchester College, from which he obtained a scholarship to New College, Oxford; at the outbreak of war he was a master at the Royal Naval College, Osborne. In December, 1914, he joined the Royal Fusiliers, and after promotion to non-commissioned rank was commissioned into the Rifle Brigade in May, 1915.

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SECOND-LIEUTENANT F. W. CATON, Royal Engineers, who was killed on the morning of June 28th, was senior science master at Taunton School. He was educated at Brighton Grammar School and at Merton College, Oxford; he afterwards took a London B.Sc. with first-class honours. For some time he was engaged in research work under Dr. Power at the Wellcome Chemical Research Laboratory; in 1912 he was appointed lecturer and inspector under the Staffordshire Education Committee. In August, 1915, he was gazetted to a commission in the South Staffordshire Regiment, whence he was transferred to the Royal Engineers. His commanding officer writes: "I have learnt to appreciate his splendid qualities as a soldier and as a man."

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THE Governors of the Rochester Mathematical School have appointed Mr. A. W. Lucey to take the place of Mr. H. J. Cape as headmaster. Mr. Lucey was educated at Worcester Grammar School and at Hertford College, Oxford, where he obtained a first in mathematics and a second in physics. He was at one time a master at Bolton Grammar School, and from 1908 to the present time at Bedford Grammar School. ONLOOKER.

EDUCATION AT HOME IN 1914-15.

THE period covered by the recently published "Report of the Board of Education for the Year 1914-15" [Cd. 8274] almost exactly coincides with the first year of the European war. The effects of the war on our system of education are apparent throughout the report; but it is distinctly reassuring to find that the Blue-book has by no means to chronicle a recurring series of disasters, and is able to record many gains to set against the losses which our educational services have experienced. We find, to give one example, that "there is everywhere reacting upon school-life and school-training a quickened consciousness of personal and national ties, a keener sense of common sacrifice and common duty."

It will be remembered that in 1914 proposals for the development of English education were before Parliament, and it appeared then as though a great step forward was to be accomplished, but the declaration of war in August of that year concentrated the attention of the nation almost exclusively upon that great struggle in which we are still engaged.

On May 4th, 1914, the Chancellor of the Exchequer, in his statement on the Budget, mentioned the proposals of the Government for a reformed system of grants for elementary education, for further grants for technical and secondary education, and for the training of teachers and other purposes, at an additional cost to the Exchequer which was estimated at £3,892,000 in the second year of the operation of the scheme. The proposals of the Government contemplated a comprehensive and progressive improvement of the educational system, but further progress on any large scale involving increased financial assistance was arrested by the outbreak of war. On the administrative side, moreover, the disturbance caused by the war and the special emergencies and pre-occupations arising out of it have rendered it very difficult to make much advance, especially in matters which have to be considered with reference to normal conditions. In spite of these disadvantages, however, some progress has been made. It is probable that some arrangements adopted in the first instance as emergency arrangements, especially those which make for simplification of administrative methods, will find a permanent place in our system. So far as circumstances permit, our ordinary procedure of informal inquiry and preliminary consultation and discussion of administrative changes is being carried on. We are fully alive to the importance of the problems which already press for solution in all branches of education and which will arise or will occupy a position of special importance after the war. We desire to record our strong conviction that the effect of the war and the conditions arising out of it will be to render a progressive improvement and development of public education more than ever essential to the national welfare.

In particular those higher branches of study which are concerned with the attainment of technical and scientific knowledge and with research must be greatly encouraged and developed, for upon them will depend in large measure the prosperity and security of our industry and trade. The establishment on July 28th, 1915, of a Committee of Your Majesty's Privy Council, and of an Advisory Council, for the organisation and development of scientific and industrial research is an event of great importance, not only in respect of the advancement of trade and industry, but also in respect of its probable reactions upon the system of public education.

At the same time we desire to emphasise most strongly the importance of adopting every means for making the pursuit of a sound general education more prolonged, more effective, and more prevalent among all classes of Your Majesty's subjects. Not only is it the necessary basis of all specialised scientific and professional work, but it is essential to the formation of a good citizen in the modern State, and to the cultivation of those humane interests and sympathies which, especially in an industrial community, contribute largely to the social value and enjoyment of life, and have no small influence on its conduct.

The report bears generous testimony to the ready and cheerful response of the schools to the country's call for men and for general war service.

At the present moment it is estimated that of the teachers employed by local education authorities alone some 20,000 have joined the colours, of the full-time students in university institutions aided by the Board some 5,000, and of the training college students some 3,000. Of our own staff 557 are now with the Forces. . . .

When peace is restored the teachers of England need have no fear if anyone asks them what they did in the war. They offered themselves freely, and, whether they stayed in the schools or carried arms, they did their duty, and the service of education is the richer for their own practice and exemplification of those principles of civic duty and patriotism which in times of peace they taught, and not in vain, by precept and exhortation. And even for individual teachers perhaps there is gain as well as loss, and many of those who come back to the service of education will come back both better men and better teachers. Those who do not live to come back will be honoured by us as men who have made a noble profession more noble.

That the financial stress created by the war has had important effects upon education in all its grades is well known; indeed, in some areas it has led to an economy which has been foolish and short-sighted, a parsimony which has resulted in indignant protests from well-informed educational bodies with our true national interests at heart. It is satisfactory, therefore, to find the report stating: "We desire to record our conviction that the claim

to regard reductions of expenditure on the public service of education as true economies requires, in the case of every item, the most careful scrutiny."

Of the value of the war work performed by the educational service throughout the country the report speaks in highly appreciative terms.

The possession of a large and capable staff of teachers and administrative officers, spread over the country and accustomed to concerted action under the guidance of local and central authorities, has enabled the education service to give valuable assistance to the military and other authorities in a number of ways during the year. Its value as a distributing agency, covering the whole country easily and speedily, has been widely recognised, and War Office notices concerning separation allowances and various publications of the Parliamentary Recruiting Committee and of the Board of Agriculture have in this way been distributed through the local education authorities. Even more noteworthy has been the assistance which teachers and other members of the education service have given in the organising and clerical work arising out of the compilation of the National Register, and the filling up of forms and cards and other features of the recruiting campaign which followed on registration. "One hundred schoolmistresses and teachers," reports a local paper in a large town, "working under the direction of two inspectors . . . disposed of a task that seemed overwhelming. Everything worked smoothly." In some cases selected pupils from schools assisted in the clerical work.

Space is available only for further reference to the chapter dealing with secondary education, though the whole report may be commended to the reader's careful attention.

The outstanding fact in the history of secondary education during 1914-15 is the increase in the number, not only of schools coming within the Board's purview, but also of pupils in them, in spite of many counteracting causes, e.g. the tendency of the elder boys in certain schools to leave early for national service, the strong and increasing demand for well-educated girls to take the places vacated by men of military age in all kinds of employment, and the general prevalence throughout all branches of industry of high wages and regular employment. While the attractions of employment have increased, parents have been better able to allow their children to continue their education. There is no doubt that in some cases the Army separation allowances have helped parents to keep their children at school. Some part of the increase in numbers must also be attributed to the efforts recently made by local education authorities to increase the supply of intending teachers; many schemes for this purpose reached their full effect first in 1914-15.

The depletion of the staffs of secondary schools owing to the enlistment of masters is shown by the fact that

In schools for boys, 87 full-time and 11 part-time masters had been replaced by mistresses during the year 1914-15. In schools educating both boys and girls there has been some increase in the proportion of women teachers, but it is not always clear that this is directly due to the war.

It may be added that fifteen Belgian refugees of suitable qualifications—twelve men and three women—have been appointed during the year to posts on the staffs of secondary schools, besides some others whose services were in use for short periods.

The Board of Education has suspended the great bulk of its statistical work, and the elaborate data of former reports are not forthcoming; but the following paragraphs give the essential facts as to the number of secondary schools and of the pupils and teachers in them during 1914-15.

The total number of schools in England regarded as eligible for grant during 1914-15 was 929, as compared with 910 during 1913-14. Of these, 436 were controlled by local authorities, 424 were endowed schools or schools of a similar type, 25 were schools of the Girls' Public Day School Trust, and 44 were controlled (whether with or without a formal educational trust) by Roman Catholic orders or communities. In these 929 schools there were, during 1914-15, 180,507 pupils (96,039 boys and 84,468 girls), as compared with 170,236 pupils (91,347 boys and 78,889 girls) in the 910 schools during 1913-14.

In addition to the 929 schools on the grant list there were 125 other schools recognised by the Board as efficient during 1914-15, being an increase of 8 on the number recognised as efficient during 1913-14. Of these, one was controlled by the local authority, 101 were endowed schools or schools of a similar type, 2 were controlled by Roman Catholic teaching orders, and 21 were private schools. In these 125 schools there were, in 1914-15, 23,033 pupils (14,079 boys and 8,954 girls), as compared with 22,138 pupils (13,506 boys and 8,632 girls) in 117 schools in 1913-14.

Thus during the year 1914-15 there were in England altogether 1,054 schools recognised by the Board as efficient, educating 203,540 pupils (110,118 boys and 93,422 girls), as compared with 1,027 schools in 1913-14 educating 192,374 pupils (104,853 boys and 87,521 girls).

On January 31st, 1914, there were, in the 910 schools then on the Board's grant list, 9,810 full-time teachers, of whom 4,893 were men and 4,917 women. The corresponding figures for the previous year were 9,424 full-time teachers (4,705 men and 4,719 women) in 898 schools. These figures give the number of pupils per teacher as 16.8 at the beginning of 1913 and 17.3 at the beginning of 1914.

To these numbers, however, must be added, in estimating the teaching power available, a large number of part-time teachers. These are engaged under very varying conditions, and their strength on the staff ranges from half or more of a full unit down to the fractional amount represented by occasional visits to the school for the purpose of giving some

special instruction, e.g. the weekly visit of a county instructor of physical exercises or handicraft. On January 31st, 1914, there were in all 3,140 of these part-time teachers (1,685 men and 1,455 women).

The following table shows the proportion of teachers on January 31st, 1914, who were graduates:—

	Head Teachers (a)		Assistants		Total	
	Graduates	Non-graduates	Graduates	Non-graduates	Graduates	Non-graduates
Men ...	547	41	2,960	1,351	3,507	1,392
Women ...	233	87	2,340	2,258	2,573	2,345
Total ...	780	128	5,300	3,609	6,080	3,737

(a) Two schools were under the same head teacher, and the head-teaching of one school was vacant; hence the total under this head is two less than the total number of schools.

The Board has no doubt of the value of secondary education, and the following paragraph deserves wide publicity:—

It is becoming more widely realised that education must in the national interest be taken more seriously, and the quality of the product which issues from the secondary schools improved. In a number of areas effective progress has been made towards this improvement, not only by increased zeal and competence in the teaching staff, but by grappling with the defects of late entry and premature withdrawal, and by a widened sense among parents of the duty which lies on them to do what they can towards supplying trained citizens for the nation of the future. The shrinkage of unemployment, and the relative prosperity of large numbers of the producing classes, have helped towards making this growing sense of the value of education translate itself into practice.

THE PLACE OF GENERAL HISTORY IN THE SCHOOL CURRICULUM.¹

By Miss BERRYMAN, M.A.

Headmistress, Notting Hill High School.

THE nineteenth century was not only the age of education for all, but also an age when a knowledge of science and mathematics was daily finding new applications. It is not, therefore, surprising that the new schemes for girls' education laid increasing stress on these subjects, and that less importance was given to the humanities with the single exception of classics. None whose scheme of education includes the power of clear and balanced thought can doubt the importance of a knowledge of science and mathematics. But is it not a commonplace that in every advance something is lost, and that our progress is in cycles? May it not be that the time has come when it would be to our advantage to give more *thought* to the manner of teaching such a subject as history, even though it may not be possible for it to appear more often in the time-table? Comenius says of it that "an acquaintance with history is the most important element in a man's education, and is, as it were, the eye of his whole life"; and Locke urges that history is "the great mistress of prudence and civil knowledge, and ought to be the proper study of a gentleman or a man of business

¹ From a paper read before the Association of Headmistresses on June 3rd, 1916.

in the world." In both cases the history of which they speak is "the view of the whole current of time and the several considerable epochs which are made use of in history." It is this history which I believe should be more definitely and clearly taught in our schools to-day. It is a history which includes some knowledge of the ancient empires, and, at the other end of the centuries, some appreciation of the work done by the empire-builders and by the greatest men of modern America. My plea is therefore for the teaching of general rather than European history, and I shall venture to use this term throughout the paper.

Twenty years ago a conference was held at Notting Hill High School on the teaching of history. The paper was read by Mrs. J. R. Green, the historian. After comparing and commenting on the schemes for history teaching sent to her by the various schools which took part in the conference, she went on to emphasise the need for a wider acquaintance with general history. I quote her words at some length, as I know they will carry with them the weight due to her wisdom and experience. She says:—"From all that I have been saying you will perceive that in my opinion the school course should consist mainly of what is in a slighting way called *outlines*—in other words, that the girl should have had the great panorama of history unrolled before her and, without being confused by too much detail, should have seen the continuous story of man in due succession of time and in just proportions of great and small, and gained some notion of the continuity, the relations, and the contrasts of that strange record. . . . Her work at school should be a very simple preparation for the knowledge of later and more mature years. . . . All that the teacher can do is to give to the pupil some sort of familiarity with names and the sequence of events and the relations of individuals, so necessary for the later learning of all true history; and, above all, to waken some impression of that great panorama which it unfolds of the life of nations, the procession of peoples, of men worthy to be praised. In quickening curiosity, admiration, and affection, in cultivating the beginnings of wisdom, it is of all studies the most elevating and enlightening to the soul, and the most stimulating to character; and if in childhood it is unfit to discipline the mind it can certainly arouse imagination, enlarge thought, stir the noblest qualities of the heart, and lay the foundations of a true philosophy."

Those who have taught general history will recognise the justice of the claims set forth so clearly by Mrs. Green, and to them I would venture to add a few considerations on its value as an instrument of education. General history is full of glamour and adventure, of wonder and heroic deeds. The sense that "the world is so full of a number of things" can not only stir the mind to curiosity, but plant in it that feeling of reverence on which all true education must be based. It is this, I think, that Bishop Stubbs meant when he wrote:—"The study of modern history is, next to theology, and only next in so far as theology rests on a divine revelation, the most religious training that the mind can conceive." It is a study which will touch even the severely practical

young person, the plodder, the "stupid" girl, to a sense of wonder at the greatness of the world. And wonder is a marvellously potent force in the development of the individual. "He who wonders reigns, and he who reigns shall rest." A knowledge of the main outlines, the chief facts of general history would do much to give to our children in the elementary schools that deeper interest in life and that wider outlook which education ought to bring.

And a knowledge of general history is a key which opens up a world of art, music, and poetry. There is scarcely a picture or a poem which does not become alive, and so informing to heart and mind, if the circumstances which made their appeal to artist or poet are understood. The same is true of many of the works of the musicians, and it is noteworthy how comparatively few and simple are the stories of the men and women "worthy of praise" which have been the themes of poetry, music, sculpture, and pictures throughout the ages.

Prof. Findlay somewhere points out that "it has been a reproach to our schools that our record of human progress has been too insular." A bond of sympathy with other nations is created, at least potentially, when we know something of their struggles and achievements and of the exploits of their national heroes, the great men whom they revere. This sympathy and knowledge our pupils must gain if they are to be free from narrowness and crudity of judgment. It will be much needed in the days to come, as will be the conviction, left by the study of general history, of the slow development of movements and of ideals. No attempt to state the advantages of an acquaintance with general history would have any pretence to be complete without a reference to its effect on a study of the Bible. It is not only that the histories of the ancient empires of Babylon, Assyria, and Egypt make real the story of the captivity and return from exile, and are a key to the prophetic books, but the whole of Bible history gains a new significance when its facts are seen in the light of a great world development touched by it, yet, in a sense, apart. It seems invidious and almost unpatriotic to say that a detailed study of English history does not have all the advantages which have been claimed for a study of what can be at best but "history outlines." But English history is to be understood only in the light of general history. It is a part of a whole, and can be clearly understood only by reference to that whole. I have found it difficult to teach English history pure and simple, and without the basis of a knowledge of European history, to girls below the age of sixteen; and the reason I think is this. There is not in the nature of the case in English history the same amount of material for story-telling or for the vivid descriptions of great scenes. Their place tends to be taken by a set of ideas unfamiliar to the child involved in the story of economic, political, constitutional, and ecclesiastical development. Here the conceptions are abstract, and the judgments passed on them are outside the child's experience. "History," therefore, too often seems to be something artificial, which it is impossible for the child to grasp or to make its own. And this, I think,

still remains the case in spite of the many efforts which are being made to give life to these abstractions by relating them to what is familiar in the child's experience. In some schools European history is taught in order to elucidate events in English history. But this method has grave dangers; it is almost bound to result in the conviction that England is, and always has been, the centre of the universe, and that the English man and woman are the Adam and Eve of all history. This is a false doctrine, and so must be harmful to those to whom it is taught.

There are obvious difficulties which lie in the way of carrying out a scheme of teaching which shall give to every pupil a knowledge of the main events and great men of European history before he or she leaves school. But they are not insurmountable. As Johnson makes Imlac remark to Rasselas, "Nothing will ever be attempted if all possible objections must be first overcome." The first objection is the vastness of the ground to be covered. But the great outstanding men and events are comparatively few, and there is in them so much of human interest that their stories can be told again and again, always provoking interest and curiosity. The sense of vastness, ever present with the teacher, grows gradually with the child, and it will have a clue to guide it through the maze if its interest has been aroused in the big, simple human stories which tell the tale of the greatest of mankind.

The main difficulty seems to lie in the lack of unanimity as to method and as to the value of different kinds of history at any given stage in a girl's career. It is still possible for girls who have passed from one school to another to finish their education without their stock of historical facts having extended beyond, say, "the Stuart period." In mathematics and science, in classics and modern languages some degree of standardisation has been obtained, so that it is possible to know what to expect on these subjects from a well-taught fourth- or fifth-form girl. But this is not the case in history. It is this unmethodical variety in history schemes which is the main obstacle to reform. The difficulty could, I think, be removed if we realised the enormous importance to every child of the possession of the broad outlines of world-history as a minimum with which he or she leaves school. The educated and intelligent person in the Continental countries, in America, and in the Colonies knows something of the place of England's national heroes in the development of their country's greatness and of our domestic and foreign struggles and achievements. Too many of our intelligent and educated English men and women know nothing of the great facts and the great people that have influenced the fate of other countries, and, what is perhaps an even more serious indictment, are ignorant of the very names of the Empire-builders whom those living in the Colonies revere as their heroes. I should like to urge that if the gravity of this ignorance be admitted it ought to be possible, by organised effort on the part of history teachers, to devise some scheme by which the main facts not only of English, but also of general, history may pass into common knowledge.

ITEMS OF INTEREST.

GENERAL.

THE next general meeting of the Association of Public School Science Masters will take place on January 3rd and 4th, 1917, at Eton, under the presidency of Prof. H. H. Turner.

In introducing his first Education Estimates, Mr. Henderson, in the House of Commons on July 18th, was able to give what was on the whole a reassuring account of the state of education in the country after two years of war. The estimated expenditure of the Board of Education for the year 1916-17 amounts to £15,186,732, less by £294,646 than the sum provided by last year's Estimates, but not less than the expenditure for last year. He was able to assure the House that the Board of Education is watching carefully the employment of school children in agriculture, and is determined to prevent any abuse in this direction, and that the Government will ask Parliament for further power, if this should prove necessary, to restrain employers of labour in agricultural districts. Referring to the inadequate supply of teachers, he insisted upon the necessity of fixing the emoluments of the teaching profession at a rate which would ensure an adequate supply of men and women qualified by character and by attainment to discharge their very responsible duties. He eulogised the war work accomplished by universities and technical schools, and explained the reorganisation plans of the Government.

THE President of the Board explained that the Government has decided to appoint committees to investigate three branches of education. The first, over which the Parliamentary Secretary, Mr. H. Lewis, will preside, will investigate the whole problem of the education of young persons after the war, with special regard to those who have been abnormally employed. One thing to be recognised, he said, is that at present children leave school much too soon, and that closer co-operation between elementary and higher schools is necessary. Two other committees will inquire respectively into the position of science and of modern languages in our system of education. A fourth committee is to be a reviewing committee, and will be a sub-committee of the Prime Minister's Reconstruction Committee. The first three committees are to be composed of experts appointed by the Prime Minister in consultation with the Board of Education.

LORD HALDANE did an important public service when, on July 12th, he directed serious attention in the House of Lords to the need of preparedness during the war for the reform of our educational system after the war, when the economic struggle will be full upon us. Unfortunately for education, Lord Haldane is under a cloud politically, and there are many people ready to ignore wise advice, if it is tendered by one with whom they are at general variance. In particular, as the Bishop of Winchester pointed out during the debate, they are ready to reject an argument supported by German examples and enforced by a man who has a first-hand knowledge of German efficiency.

The truth is, of course, that Germany really offers us the spectacle of a great example and of an awful warning. Though we probably have little or nothing to learn from her as regards elementary education, we should be foolish indeed if we refused to learn anything from the organisation and efficiency of her technical and higher instruction, and from her experiments in the way of continuation schools. But we should be equally foolish, or, rather, a thousand times more so, if we ceased to value at their true worth those ideals of character and personal honour, and those qualities of independence and initiative, which the best schools of this country have always fostered. We have been too contented, however, with first-rate training of character combined with third-rate training of intellect. There will be needed forethought, hard work, and more money for the accomplishment of reform. The debate initiated by Lord Haldane should help the nation to realise the facts.

We think it would be premature at this stage to offer any opinion as to the rights and wrongs of the unfortunate disputes which have arisen in connection with the City of Leeds Training College. The outstanding facts appear to be:—(1) That an admittedly capable woman vice-principal resigned her post some weeks ago; (2) that her resignation was followed by that of nine women lecturers, some of them of great experience in training-college work; and (3) that a great amount of publicity has been given to the details connected with these occurrences—the sort of publicity which reflects both upon the competence of the staff and upon the way in which the college has been managed by its municipal masters. Taken by themselves, and without any further attempt at comment, these facts appear to us to call for careful and impartial inquiry at the hands of the Board of Education. We may be quite sure that ten people would not commit the folly of throwing up good and well-paid posts without having a great deal to say in justification of what they have done. On the other hand, they may, after having borne much for a protracted period, have ended by acting indiscreetly; in other words, the local authority may have something to say for itself. There has been enough and to spare of newspaper controversy on these points. An official inquiry is the only chance of eliciting the truth and getting justice done.

We think it especially to be regretted that Mr. Graham's "talk" to the teaching and domestic staffs should have appeared in print. Such a compound of wisdom and folly it has rarely been our fortune to read. We pity the school or the college, of whatever social or educational grade, which is to be judged by sporadic instances of horse-play; and we fear that by this time the primmest of young ladies' academies has to some slight extent had the tobacco demon to exorcise. We think it grossly unfair, not only to the Leeds College, but to training colleges generally, that these things should have been put into cold print, unless they had been proved *beforehand* to betoken a really unsound moral condition. Even if the inquiry should show that the tone of the college was bad, we should still retain our opinion that the publication of

isolated instances of irregular conduct was unfair. We hope, too, that the inquiry for which we plead will make it clear that certain attacks on mixed colleges, suggested by the Leeds affair, are really irrelevant. Everyone knows that a mixed college requires good management, but many are of opinion that, when such management is forthcoming, a mixed college is a natural and a beneficent institution. Very careful heed should therefore be given to all the details before mixed colleges as such are condemned on the strength of the Leeds case. The Board of Education is eminently the right body to hold an inquiry, since the college is supported largely out of taxes. We trust that if the Board does act, it will act strongly, and will not shrink from what may turn out to be its duty because one of the parties to the dispute is a powerful local education authority.

THE July Cambridge Local Examinations were held at 211 centres in the United Kingdom and 10 centres in the Colonies. The total number of candidates was 9,503.

THE Nottingham Branch of the National Union of Teachers has just passed unanimously the following practical resolution: "This meeting of the Nottingham and District Branch of the N.U.T. is of the opinion that the attempt to impart the present English spelling involves a grave loss of time and energy without any compensating educational gain, and in the interests of economy and efficiency in education it resolves to give energetic support to a petition for the appointment of a Royal Commission to inquire into the feasibility of a reform of English spelling, and the best means of bringing about such a reform."

DR. W. GARNETT addressed the annual conference of the Association of Teachers in Technical Institutions on June 24th on the subject, "Technical Instruction after the War." Dr. Garnett strongly advocates a plan whereby the technical institutions shall facilitate research along industrial lines, so that the great discoveries and inventions of the first order may become a commercial asset. In co-operation with the Advisory Council for Research each senior technical school should become a research centre in connection with an association of manufacturers. The manufacturers should state the directions along which investigation is necessary, and the staff of the school should be so organised that its members should have time, facilities, and money to carry out the work. Continuation schools are necessary in order that the students of the technical institutions may be forthcoming in sufficient numbers. Finally, the curriculum of secondary schools should ensure that no boy of seventeen who leaves in order to attend a senior technical institute shall be a drag on the latter institution because of his inadequate knowledge of elementary mathematics, physics, and chemistry.

THE president of the Royal Geographical Society, Mr. Douglas Freshfield, in the course of his address at the anniversary meeting, referred to the great enterprise which had been undertaken at the society's house, viz. the construction of a map of Europe and the Near East on the scale of "one in a million."

The map was originally planned as an international undertaking, and the first suggestion was that six sheets of this map should be made for war purposes. Twenty-two sheets have, however, been published and are on sale, eighteen sheets have been compiled and are in process of reproduction, while seventeen others are in a state of preparation. The map has now established itself as the standard map for use in all the larger considerations which arise in the conduct of the war. Other special series of the maps are in course of preparation. Mr. B. C. Wallis has completed a thorough examination of the "Distribution of Nationalities in Hungary," which will be represented on a special series of sheets of "the million map," and will, it is believed, throw new light upon the intricate problems of race distribution in that kingdom. Miss Ethel Finlay commenced another series of maps to show the history of the boundaries in Europe for the last 130 years. As Miss Finlay has been prevented, by a well-deserved promotion, from completing the task, it has been placed in the hands of Mrs. Rolland.

THE Board of Education has issued a new Circular (No. 952) with reference to military service. Teachers and full-time students in public schools (elementary, secondary, and technical), in universities and university colleges, and in other teaching institutions recognised by the Board of Education, as well as officials in the service of public educational authorities and governing bodies of public teaching institutions, are not, for the present, to be called up for service unless they have been passed fit for General Service (Class A). The War Office will consult the Board of Education before issuing instructions to call to the colours any teachers or officials in the above categories who are not fit for general service; and such men are to be marked in Army Book 414 as not to be called up without reference to the War Office. Full-time students in the above categories who are not yet eighteen are to report for medical examination when they attain that age, but will not, for the present, be required to join the colours before the end of the term in which they reach eighteen. A limited number of students of science and technology, who are fit for general service and who are certified as having attained, or being likely to attain, a high standard of scholarship, may rely upon a most sympathetic consideration of an application that their military service may be postponed.

A TABULAR statement regarding the summer courses in England has been issued by the Board of Education (Wyman, *id.*). Full particulars as to fees, secretaries' addresses, dates, etc., accompany a short summary of the subjects of instruction and of the types of teachers and students for whom the courses are intended. In most cases the courses are to be held in August.

TEACHERS may be reminded of our recent appeal to them to overhaul their bookshelves and spare some of their text-books, etc., for the use of British prisoners of war interned abroad. The appalling news from the camps gives a poignant interest to

that appeal. Let us try to spare the men from the disastrous effects of having little to do in their time of enforced idleness. Mr. A. T. Davies, of the Board of Education, Whitehall, S.W., has charge of the arrangements, which have been recently extended to include other camps than Ruhleben, and the necessity for an increased supply of such books has been therefore accentuated.

MR. J. S. THORNTON has sent us a pamphlet, "A Forgotten Chapter in the History of Education," which has three chief objects: first, to secure the recognition of the fact that external school examinations were originated by the College of Preceptors, which was at that time an organised body of teachers in private schools; secondly, to demonstrate that in Finland, Norway, Sweden, and Denmark much of the educational progress of recent years has originated in private schools, which enjoy a form of State recognition; and, thirdly, to protest against the sidetracking of the College of Preceptors, with all its accumulation of wisdom and experience in the conduct of school examinations, when the delicate work of framing and conducting a leaving examination is to be undertaken. The point of the pamphlet appears, on the whole, to lie in the suggestion that the coming educational changes in Britain approach too closely the establishment of State schools on so comprehensive a scale that the private schools shall be superseded. Mr. Thornton urges that Britain should profit by the experience of the four northern countries of Europe, and pleads for the inclusion in the new educational system of the "inspiring, uplifting element," which is composed of the schools not provided by the State, especially those owned by "able, well-equipped individuals."

AN urgent appeal on behalf of the Secondary Teachers' War Relief Fund is made in the *A.M.A. Circular*. By the end of May sixty-five members of the Assistant-masters' Association were known to have fallen in the war. Others have been wholly or partially disabled. The executive of the association has agreed that it is imperative that the State provision to meet these cases must be supplemented, since it will be inadequate in many cases to the needs of the disabled teachers or of the widows and orphans. Teachers can readily measure, after a few moments' consideration, how inadequate the allowances would be for their own dependents were they in the position of their colleagues, from whom the State has taken most that a man can give to his country. The executive, therefore, appeals for financial assistance at once. The fund is for the benefit of secondary-school teachers or their dependents, and all secondary-school teachers should contribute according to their means. Neither those who receive nor those who give will be called upon to show their certificate of membership of the I.A.A.M. Teachers may promise a certain sum annually and pay the first contribution now, or they may send a contribution either direct or through a colleague as a result of a school subscription monthly or terminally on "pay-day." But, most important of all, they should contribute at once

The hon. sec. is Mr. J. Hart-Smith, The Secondary School, Latchmere Road, Battersea, S.W.

MR. S. P. B. MAIS contributes to a recent issue of the *School Guardian* an out-spoken article against the current methods of writing school reports. The present reports are useless; what master dares to write down his real impression at such a time? The vocabulary for reports tends to be stereotyped, and is certainly devoid of meaning: "He is unable to concentrate," "His work shows promise." When a man departs from the formal type of non-committal comment, the report is returned to him with a curt request to tear it up and revise his opinion. And such documents are preserved by parents in a locked drawer as a contribution to the family archives. Referring to his own case, Mr. Mais states that practically every prediction contained in his school reports has been, with the passage of years, given the lie direct, e.g. "In English he will never achieve any success." And the system may lead to worse evils, for a housemaster may endeavour to bully his colleagues into prophesying smooth things and saying comfortable words—"for the honour of the house"—whether they be true or not. We may add to Mr. Mais's condemnation a personal experience: reports are made by means of numerical coefficients, and the "powers-that-be" have a distinct objection to the use of the numeral, of which the interpretation is "unsatisfactory," on the ground that it may lead to correspondence with the parent, who will ask for a justification of the criticism.

In one of its leaders the *Journal of Education* for July deals with "Education and Reality." During the present time of trial much that is worst in education continues and even reaches larger proportions. Many recent writers agree in denouncing the consummate uselessness of public-school education on the intellectual side; it is urged that such schools produce nothing at all of any intellectual value: their studies have little relation to the work of modern life. Assuming that it is true that every subject can be made the medium of education and that it, therefore, contains a sufficient gymnastic in itself, it should follow that boys should deal with those subjects for which they have most capacity, and which bear on the life they will lead in later years. In fact, a rule might be laid down: if a boy is going, for example, into commerce, he should be definitely taught a good deal about the nature of commerce; he should learn much economic history and some economic theory; he should know thoroughly the theoretical aspects of so common an institution as a bank; he should know about the trade of foreign countries, not only the imports and exports, but also the reason why each country exports its particular specialities, as well as the reason why a country trades at all. In short, the education of the future must be real, in the sense that reality is that which has "to do with life."

THE appearance of the report of the Commissioner of Education in America for the year 1914 reminds us that it is now nearly fifty years since the department

was created over which the Commissioner presides. The distinguished Henry Barnard led the way as the first Commissioner. The equally distinguished W. T. Harris, fourth in order, held the office for the longest term of years. But all through the half-century many educationists in this country have been led to expect careful and comprehensive annual reports, not only on American, but also on European, education, and the present report well maintains the tradition. Setting aside the second volume, which is entirely statistical, and confining our attention to the first, we naturally find that most of the matter is peculiar to America. There is a general survey of progress, followed by special reports on city school systems, rural schools, secondary and higher education, various branches of professional education, civic education, and so on. Special interest attaches, we think, to the section on vocational education and guidance, a subject which is receiving much attention in the States; and to the section on school surveys, similar to those which were carried out in this country some years ago by Mr. Sadler and others. The report on "The Wider Use of School Plant" is suggestive, and there are useful summaries regarding educational literature, museums, and educational associations in America.

THE latter, and smaller, part of the report is devoted to education in other countries than the United States. First comes Canada, then the Central and Southern American States, then Great Britain and Ireland and practically all the other European countries, then certain parts of Asia and of Africa, and, lastly, Australasia. A short but interesting concluding section is devoted to events of international interest. The Roger Bacon celebration at Oxford on June 10th, 1914, and the Napier celebration at Edinburgh on July 24th-28th, 1914, are both briefly described. They now suggest melancholy reflections upon the terrible relations that were so soon to arise between the countries represented. So far as we have noticed, however, all reference to the war has been scrupulously excluded from the report of the Commissioner. Generally speaking, we envy American educators in having so rich a store of information and suggestion made available as is contained in this report. Beside it the reports of our own Board of Education, though good and useful so far as they go, seem "poor and single business."

SOME of the contributors to the discussion on "Practical Problems of the Curriculum" in our last issue referred to the kind of science that should be taught to pupils in the middle forms of secondary schools. Should it be a "general" course of elementary science, including nature-study, or should it be one special subject of science? In this connection an inquiry carried out with reference to the high schools of Iowa, and reported upon in the *American School Review* for June, 1916, is of some interest. The difficulties and dangers of a general course, and in particular the difficulty of getting suitably equipped teachers for such a course, are emphasised by many principals. On the other hand, it is held that "young people in the upper grades of the grammar school

and in the high school desire information from the whole field of science. They are in the depths of superstition about common things. The problems of real life are not differentiated, after the manner of specialised science, into astronomy, chemistry, zoology, physics, botany, and the like. The greatest need, and likewise the greatest demand, among even the highly educated, is for *information* rather than *training* in science. . . . All workers and students require training in *their specialty*, but in other fields they want knowledge in simple form and by the most direct method. This makes general science necessary." In England the present question seems to be that of a working compromise between a demonstrative and a "heuristic" treatment of a general course in science.

THE official report on Indian education in 1914-15 has just reached us, and it shows that, notwithstanding the effects of the war, general progress has, at any rate, not been impeded. In an absolute sense, Indian education is, of course, from our point of view, in an extremely backward state. It appears that about one-third of the boys of school age are at school, but only about 6 per cent. of the girls. According to a writer in the *Madras Mail*, quoted in the May number of *Indian Education*, the present attitude of the Indian public generally to the education of their girls is one of indifference rather than of active opposition. There appear, indeed, to be some signs that a belief in girls' education is spreading, but the belief, such as it is, does not amount to definite conviction and resolution. A deputation has asked the Secretary of State to appoint a Commission on the subject, but he has decided that a Commission can do no service to India at present. He thinks it is rather a time for all educated men and women to use their influence in promoting a desire for universal education. We notice that in the official report for 1914-15 the education of girls is placed under the head of "special classes," including the comparatively few Europeans, Mohammedans, "depressed classes," aboriginals, etc. The classification is numerically justified.

AN anonymous article, "The Present-day Students and Professors," is contained in the *Educational Review* (Madras) for March; it attempts to explain the lack of discipline which exists, and occasionally is manifested by turbulent conduct, in Indian high schools and colleges. The teachers are specialists, visiting class after class, and thereby lacking opportunity to become intimate with the pupils. Few teachers mix with their pupils outside the school building. The "foreign teachers"—a designation for British teachers—are young, and sometimes have to study their subjects *after* they reach India. They are permanently appointed and independent of the good will of the students, to whom they are usually inaccessible. They supersede in the educational service older and more experienced Bengali professors. The general Hindu public has a feeling that the foreign professors want to restrict higher education, and put as many obstacles as possible in the path of students struggling to pass the university examinations. Consequently the presence of a large number of "failed" students in a

class is not conducive to good discipline. The hostel system recently introduced into Indian colleges has not met with the anticipated success, partly on account of caste distinctions, and partly on account of the overbearing attitude of the wardens, who act as governors rather than as friendly advisers to the students.

IN the Cape of Good Hope Province enormous strides in education have been taken since 1892. The proportion of trained teachers in the State-aided schools has increased from 26½ per cent. to 65 per cent. In the year 1892 salaries were often miserably small, housing accommodation for teachers was inadequate, and the teacher's tenure of office was uncertain. Constant attention to these matters has resulted in general improvement during the past twenty-three years, although to English eyes the salaries offered in the official advertisements of vacant posts for teachers seem still an inadequate return for the arduous work of teaching after several years spent in professional preparation. The war has depleted the schools both of teachers and senior pupils, many of whom are on active service; but in no case has the work of a school been seriously disorganised. Mr. J. R. Whitton, rector of the Normal College at Cape Town for thirty-seven years, retired in March, 1915, and as one of the ablest and most successful of the teachers of the Province, his retirement is a serious loss to the educational service.

THE inhabitants of Norfolk Island are greatly interested in the education of their children. Recently a manual training-room was required at the public school, and a photograph, reproduced in the *Education Gazette* for New South Wales—the parent colony—shows a batch of twenty men busily at work constructing the requisite building by voluntary labour. It is noted that such an evidence of self-help is refreshing in these days when the governing authorities are expected to provide everything for education.

IN no subject has the direct influence of the war been more marked than in that of needlework. Such is a conclusion reached in an inspector's report for 1915, and printed in the *Education Gazette* for New South Wales. Surprise is manifested at the amount of sewing, knitting, etc., which has been done by the girls in many of the schools. In some places the material is provided and cut out by the local Red Cross Society; in others the school has found the material, as well as the labour. The number of girls who have, since the war, learnt to knit a pair of socks is astonishing. The inspector adverts to the tangible assistance given by these and other efforts to our soldiers, and also to the deeper moral effects accruing to the girls themselves in their new-found patriotism, self-sacrifice, and consideration for others.

WITH the July number *Science Progress* commences the eleventh year of its existence. The event is marked by a change of title defining it as a quarterly review of scientific thought, work, and affairs. As has been the case for some time past, the space devoted to the articles is limited, the bulk of the number being made up of notes, essays, and reviews. These are largely critical of the present state of affairs in the

world of science. The Neglect of Science meeting and the Anti-Science manifesto are both discussed, and there is a virile leader on "our duty." Mr. Bradford's historical sketch of the chemistry of rubber directs attention to an interesting chapter in the progress of science, though many will think him unduly optimistic in his anticipations as to the production of synthetic rubber. The Germans have apparently failed to produce this in spite of the great incentive given by the blockade. A popular science article on the romance of radium, by Mr. G. W. C. Kaye, contains a much-needed caution against un-certified radium treatment.

MR. W. STANWOOD FIELD, director of evening and continuation schools, Boston, Mass., contributes a striking article to *School and Society* (June 17th) on "Vocational Training and its Relation to the Democracy of Education." The school system has failed in regard to those children who leave school at an early age. Conservation of natural resources of timber, coal, birds, and animals has received Governmental and private attention for years, but the conservation of the men and women of the coming generation has been neglected. The work of the State is incomplete until every individual reaches his utmost possibilities as an industrial unit and as an appreciative citizen. The conventional schools cannot meet the needs of all children. Industry must no longer take youths at fourteen and leave them intellectually in the same condition when they are eighteen. The youth who works must attend a continuation school, and employers must co-operate by arranging for school attendance during working time. From fourteen to sixteen years of age children are usually employed running errands, and such children have become more efficient by the vocational training of these schools, which train craftsmen as well as clerks. The old school system began with all the children and ended with a favoured few; the new system begins and ends with all the children, and thus fulfils its obligation to the community.

In the same number Mr. Carl Holliday, of the University of Montana, traces a large proportion of the discontent among the workers, not to inadequate wages, but chiefly to the fact that the workers never create anything; they make parts of this article or perform one necessary operation in the production of something else, but they do not make anything from start to finish. The creative instinct common to all men is entirely dulled. The same lassitude, disgust, and lack of creative opportunities are manifest among students being educated as among workers. Five hours each day, five days each week, nine months each year, youngsters have learning poured into them, while they long to produce something tangible. An hour of handwork parallel with each hour of purely mental work would produce a marvellous change. Handicraft is, indeed, being pushed into the schools, but why? Merely as a matter of business, to make the future worker more readily able to continue the present system and add to the number of dissatisfied artisans. That is just the wrong motive; handwork in schools should be an

expression of talent in construction, should foster the ability to make something solid—a crude, unfinished, inelegant something, if you will, but yet something to which the student can point and say: "I planned that, and I made it."

IN the American *Educational Review* for May there appeared an article entitled "The War from a Schoolroom Window," reprinted from the *London Times*. In the June issue of the *Review* an American teacher of modern languages, whose name suggests German origin, supplies what seems to us a fair-minded comment on the article. Whilst agreeing with much of it, he objects, as one who is in constant touch with teachers in Germany, to the unduly exaggerated statement that German schoolmasters are daily poisoning their pupils' minds by preaching malice and hatred towards their national enemies, and by endeavouring to uproot foreign language instruction. He says that had the *Times* correspondent spoken of some German schoolmasters instead of many, he would have been less misleading. He points out also that the leading professional journal of progressive modern linguists, *Die Neueren Sprachen*, has recently published articles by German scholars who are practically unanimous in their declaration that modern language instruction in French and English should not be seriously disturbed after the war. We are glad to note these facts, because a disposition is observable in some quarters in this country to ignore the German language and literature—surely not good policy, either economically or spiritually.

"EDUCATIONAL progress, with its emphasis on practice as opposed to theory, decrees the cessation of the wasteful teaching which has been a large part of the work of our schools and colleges. The teacher of history who stands with his finger on the text, correcting the memorisation of the student, must give way to the modern teacher, who will use source and collateral material to supplement the recitation, and a method which will interest the student in his acquisition of fact and pave the way for the citizen ideals which are necessary aids to democratic government." This conclusion is reached in an article in the *School Review* on "The Problems of Sources and Methods in History Teaching," by Prof. G. H. Wesley, who pleads eloquently that history should be made real as a study of men in action. Sources should be used, but with discretion, in order to make the human element definite. Since most of the population never go to the university, the best work in teaching history should be done in the secondary schools; and since history implies the determination of the truth regarding the lives of men in the past, history instruction when vitalised should enable the pupil to leave school able to think correctly, logically, and intelligently on the social, political, and economic problems of life.

THE problem of the immigrant into the United States gives rise to much discussion. Mr. F. B. Lenz deals, in a recent issue of the *New York Educational Review*, with adult immigrants and evening schools for foreigners. The trained social worker should begin to educate the immigrants on shipboard; he should hold daily classes in English and give talks on

America, on the citizenship and government of the United States; he should warn them of the dangers to which they will be exposed. It is not necessary that the teacher of English should know the immigrant's language. The evening schools should be entirely separate from the public day schools, with different management, supervision, and teachers. These schools should become the social centres towards which the daily life of the immigrant ebbs and flows.

THE *Journal of Geography* for May is devoted to the State of Washington. Far away on the Pacific coast, Washington appears, perhaps, somewhat indistinct to the British mind, which is inclined to count New York as America, or to go no farther in thought than the Middle West. Yet this State has begun to specialise; here is a wheat district, there maize yields best; some areas suit apples, others are prolific in peaches and apricots. The practical lumberman speaks of "cedar swamps," "pine slopes," and "fir uplands." The highlands abound in water-power. Five-ninths of the State are covered with forests of merchantable timber, yet in 1910 the products of the farms were of greater value by 20 per cent. than the products of the forest. Almost as much coal is annually mined as in New Zealand. Seattle has a most advantageous site on Puget Sound; in 1880 there were 3,000 people, in 1900 more than 80,000. The railway went there in 1884; early trading was based upon lumber and fish, and progress was accelerated by the addition of the special trade with Alaska and the Far East. The rush to the Klondike in 1897 and the establishment of a steamship route to Asia in 1896 mark the beginning of this later epoch.

MR. PAUL MIJOUF writes from the Technological Institute, Petrograd, in the *New York Educational Review* for April on the "Influences of the War on Education in Russia." Before the war the influence of the Germans and their ideas was overwhelming in Russia, especially in higher education. A small committee of experienced teachers in secondary schools and in universities has been recently formed to elaborate a scheme for secondary education in order to admit of specialisation among the older pupils and to give them a measure of freedom. Among modern languages taught in Russian schools German in several cases overshadowed French; already the time allotted to German in certain schools has been shortened, and the time saved devoted to the teaching of English, which was practically unknown in Russian secondary schools before the war. Last spring in Petrograd and Moscow associations were formed for the purpose of popularising English and American educational ideas. Many prominent educationists who were thoroughly steeped in German methods have made public announcement of their change of view regarding the school system of Russia. The laboratories of the higher technical institutions have been offered for the purposes of the war for the solution of the technical and scientific problems which have arisen.

IN the review of "VB: Being Poems written by Members of a School Form at Shrewsbury," in our June issue (vol. xviii., p. 234), we reprinted from the

introduction to "English Verse Composition" some lines by a child of eight. The authors of this book, Messrs. A. E. Roberts and A. Pratt, say: "The best sets of verse should be printed in the school magazine. Sometimes a child whose work is bad in other respects shows considerable ability in versification. The following was written by such a one, an American child of eight:—

When to the flowers so beautiful

The Father gave a name,
Back came a little blue-eyed one,
All timidly it came.

"Dear Lord, the name Thou gavest me,
Alas! I have forgot."

The Father kindly looked on her,
And said, "Forget-me-not."

(Mistakes in spelling have been corrected.)

A CORRESPONDENT, "R. M. L.," directs our attention to the fact that the verse, from which three lines have been left out, is not new, for it is to be found in Hoyt and Ward's "Cyclopædia of Practical Quotations," fifth edition (London: Dickinson, 1883), the preface of which is dated December, 1881.

When to the flowers so beautiful

The Father gave a name,
Back came a little blue-eyed one
(All timidly it came;)

And standing at the Father's feet,
And gazing in His face,

It said in low and trembling tones:

"Dear God, the name Thou gavest me,
Alas! I have forgot."

Kindly the Father looked him down
And said: "Forget-me-not."

ANONYMOUS.

This book appears to be an American publication. Our readers will probably agree that the three extra lines scarcely add to the beauty of the verse, and that the minor differences in the version as quoted by us are improvements.

SCOTTISH.

THE forty-third annual report on education in Scotland is a slim volume when compared with the portly tomes of former years. This has been secured by dispensing with the printing of several separate reports and tables of statistics, and by the elimination of other non-essential matter. It is satisfactory to find that in spite of all the adverse conditions of the year, the work of the schools has progressed in a manner that reflects the highest credit on the depleted teaching staff. The number of pupils in the higher grade departments, notwithstanding the increased demands for juvenile labour, has actually increased during the year, and 5,458 intermediate certificates were awarded, as against 5,137 in the preceding year. The leaving certificates awarded showed a decline from 1,609 in 1914 to 1,596 in 1916. The decrease, of course, is accounted for by the rush to the colours on the part of many of the sixth-year secondary-school pupils. In one school in the West Highlands sixteen out of a class of twenty-five enlisted in the Imperial Forces. It is highly pleasing to learn that school boards and managers almost universally adopted the recommendations of the Department to make some allowance of salary to teachers on service. The De-

partment also notes the patriotic help rendered by the Teachers' War Service Committee in connection with war work of various kinds, and especially the invaluable assistance it gave in preparing the National Register.

TEACHERS throughout Scotland have learned with regret of the resignation of Mr. McKinnon Wood as Secretary for Scotland. His administration has not been associated with any great educational reform, but on all the great questions of the day he held thoroughly sound educational views, and sought to apply them as well as the circumstances of the past few years permitted. The reduction in the size of classes and the extension of administrative educational areas had his entire support, but unfortunately he was not able to give effect to these highly necessary reforms. On several occasions he showed a strong desire to meet the views of teachers and to work in co-operation with them. Teachers are well satisfied with the promotion of Mr. Tennant to the Secretaryship. He has won his spurs in a difficult field, and will no doubt welcome the quiet haven of the Scottish Office after the stormy waters of the War Department.

A SPECIALLY requisitioned meeting of the General Council of Glasgow University was held to consider the ordinance of the University Court of the four Scottish universities dealing with regulations as to preliminary examinations. The Rev. Dr. Smith, one of the council's assessors on the University Court, presided. Prof. Gibson moved a resolution to petition both Houses of Parliament to present addresses to the King praying his Majesty to withhold his assent from the ordinance. The chief ground of objection was that the ordinance stereotyped existing conditions without having any regard to the changes that would be absolutely necessary in education owing to the lessons learned from the war.

THE Edinburgh Provincial Committee for the Training of Teachers has had under consideration the question of providing special facilities for the training of teachers with kindergarten qualifications, in order to meet the needs of the baby classes now attached to some of the large schools in slum districts. The committee, in view of the fact that such classes are exceedingly few, and that the English practice of sending pupils to school between the ages of three and five shows no sign of spreading to Scotland, resolved not to make provision for a special type of teacher for such pupils, but recommended that an additional one year's course of kindergarten training be granted to those students who wished to add this qualification to their ordinary school teacher's certificate.

THE Department, to meet the convenience of teachers and school managers, has provisionally arranged the dates for the leaving certificate (written) examinations for the ensuing five years as follows:—

- 1917.—March 27th to April 4th.
- 1918.—March 19th to March 27th.
- 1919.—April 1st to April 9th.
- 1920.—March 23rd to March 31st.
- 1921.—March 15th to March 23rd.

The Department will be glad to receive any suggestions from parties interested as to the suitability of the proposed dates.

THE Joint Committee of the Teachers' War Relief Fund reports that up to date £32,000 has been received. Of this sum £12,750 has been earmarked for wounded teachers and the dependents of those who fall in action. The number of applicants under the latter head has been steadily increasing, and the "great push" will add very materially to the numbers. A special contribution of £450 was allocated to the Y.M.C.A. for the provision of a hut in France, to be called the Scottish Teachers' Hut.

IRISH.

It is a sign of the times that when anything goes wrong in State affairs the cry is raised that there is something at fault in education. In England there is a loud demand for a Royal Commission and for increased science teaching. The latter demand cannot, strange to say, be made in Ireland, which is generally regarded as backward in scientific teaching, because, as a matter of fact, since the beginning of the century science has secured a favoured and prominent (some people would say the most prominent) place in the curriculum of secondary schools. But, what is more remarkable, the teaching of history is attacked, and the cause of rebellion in Ireland is attributed to the perverse instruction of children in the relations of Ireland and England. This applies principally to the national schools, but also to some extent to the intermediate schools. The National Board, we are told, is inquiring into the facts. Meantime, at the annual meeting of the Presbyterian Assembly, some representatives actually went so far as to urge the abolition of all history teaching in the primary schools. It seems a desperate remedy, and they overlook the fact that a teacher who wishes to poison his pupils' minds can do it through the medium of any subject. *Non tali auxilio.*

THE rules and schedule containing the programme of examinations of the Intermediate Board for 1917 appeared on June 28th. This date is very late. They were ordered by the House of Commons to be printed on April 6th, which is a quite satisfactory date, and a fortnight earlier than last year. In the ordinary course, after being on the table of the House for forty days, they should have been published by the end of May, and there has apparently been an oversight somewhere.

THE rules contain no striking educational innovations. The most important is that in future the Intermediate Board proposes to examine students for a pass in experimental science, the practice hitherto having been to accept the report of the inspectors of the Department of Technical Instruction. The subjects of examination are rearranged so as to make it clearer which are only pass subjects and which are pass and honour subjects. The rules dealing with music are much shortened, and the Board has apparently dropped the idea of holding a special competition in Dublin for choirs and orchestras of intermediate schools. The

special regulations for the commercial course and for manual instruction and applied mathematics remain, nor have the regulations for the bonus school grant been altered, as might have been anticipated from the Board's circular issued early this year.

SOME changes in the programme call for observation. The junior grade pass geometry is changed from Book I. and part of Book III. to Books I. and II., and the honours course includes Books I. and II. and the whole of Book III. The special period of the middle grade course in history and historical geography is from 1625 to 1691, instead of 1688. In French and German and other modern languages in the middle grade the scale of marks is altered, and is now the same as in the junior grade, 20 per cent. being given for questions in the language to be answered in the language, and 35 for composition, instead of 20 and 40 respectively as before. The nature of the examination in shorthand is made clearer; in the middle grade there will be a ten minutes' test at the rate of sixty words per minute, and in the senior grade a similar test at the rate of eighty words per minute. In all three grades the syllabuses in commercial geography are given in clear detail.

A WORD of complaint. In the junior grade part of Ovid's "Tristia," book v., is prescribed, of which there is no school edition published, and in the same grade a selection of English poems is prescribed which are not all contained in any cheap English edition.

WELSH.

At a recent conference of the Baptist Association of Carmarthenshire and Cardiganshire a resolution was passed urging that the Welsh language should be made a compulsory subject in the Welsh training colleges. The Permanent Secretary to the Welsh Department of the Board of Education has addressed a letter to the secretary of the Baptist Association, in which he points out that the Board already gives every facility and encouragement to the study and teaching of Welsh in elementary and secondary schools and in the training colleges, and he suggests that the quarter to which this resolution should most properly be addressed is the local education authorities; the Welsh Department of the Board has done, and is doing, its part in fostering the study of Welsh.

ATTENTION has been directed to the forthcoming sale of the Bosanquet Welsh manuscripts, and it is suggested that they should be secured for either the Welsh National Library or one of the great municipal libraries. The collection was formed during the first half of the last century by Sir Richard Bosanquet, of Dingestow Court, Monmouth. It includes the copy of the Mabinogion, made from the Red Book of Hergest, which was used by Lady Charlotte Guest in making her translation, a fourteenth-century copy of Geoffrey of Monmouth, etc.

LORD TREDEGAR has presented to the Newport Museum the whole of the Roman remains in the museum at Caerwent found by his predecessor in the title, who took an active part in the exploration of

the site. The remains are not to be removed from Newport without Lord Tredegar's permission.

LORD ABERDARE, presiding over a meeting of the Welsh Industries Association, made an appeal for the establishment of works for the manufacture of the aniline and other dyes hitherto principally made in Germany. He suggested that such works should be started and be subsidised by the Government, as similar works had been in the north of England.

THE dispute between the Glamorgan Education Committee and certain of the teachers, who object to being forced to live within a short distance of their schools, is by no means closed by the decision of the Court of Chancery that the committee was acting within its powers in dismissing the teachers. Meetings of protest have been held in the county, twenty-two teachers in the schools affected have resigned, and a strike of all the teachers in the area is threatened. A writer to the *Western Mail* points out that a case of residence difficulty occurred in North Wales. A headmistress, whose school was in Bangor, lived in her father's house just across the Menai Straits in Anglesey, and the Carnarvon Education Committee tried to compel her to live in Bangor. The N.U.T. induced it to waive this requirement, and she still lives in her late father's house. She is the sister of the chairman of the Glamorgan Education Committee.

THE Cardiff Free Church Federation has passed a resolution directing the attention of the Royal Commission on University Teaching to the desirability of establishing a theological school with professorial chairs in connection with the South Wales University College. The proposal is not universally approved; one writer maintains that "one of the quickest ways to make a country atheistic is to found a school of theology in connection with universities." This is probably true if the findings of theological professors are to be held to have Gospel authority.

THE University Commissioners paid a visit to Cardiff and Swansea near the end of June. They took no formal evidence, and were occupied in obtaining a personal acquaintance with institutions and those who are responsible for them. Swansea is putting in a strong plea for the inclusion of its splendidly equipped technical school.

HUMANITY AND THE HUMANITIES.

"Sirs, ye are brethren; why do ye wrong one to another?"—Acts vii. 26.

THE age-long conflict between "science" and the humanities shows no particular signs of ceasing, and the question asked by Moses of the quarrelsome Hebrews may serve as a text for a short review of Prof. R. A. Gregory's new book, entitled "Discovery; or, The Spirit and Service of Science" (340 pp., Macmillan, 5s. net)—a volume rather apart from similarly devised works and full of beautiful stories and fascinating fragments of biography. The names of those who have popularised science and made its results

"as interesting as a novel" are many; many, too, are those who have pleaded and are pleading passionately for a much wider recognition of the claims of science in our national life; while the recent death of J. H. Fabre has brought home to all who pass by the pathos and the doggedness, the skill and the lack of reward, the intense devotion and the self-realisation of those who live only to know. But the present volume aims at showing men and methods, and it should, if a sentence or two can be forgotten, prove an eirenicon as well as a history and an exposition. No doubt the author is, in this sense, a pacifist.

The older hostility to "science" was that, not of religion, but of dogmatic religion. Of late the hostility has weakened; indeed, the dogmatist claims that science has shown a willingness to come to terms, and, apart from the religious phenomena of the present war, there is probably more real scepticism among men in the street than in the ranks of first-class naturalists. But the newer hostility is something very different; it is not "religious" at all, but moral and ethical; and in a world where "among nations and men whoever is shipwrecked, is shipwrecked on conduct," the fear of intense devotion to a non-moral Nature is real and insistent. It has been said a thousand times that the scientific mind, the scientific method, is no monopoly of the biologist and the chemist; and law, history, folk-lore, even religion itself, are studied with a care and an accuracy that cannot be excelled in an Edisonian laboratory. It would seem to be worth trying, for the hundredth time, to ask "science" not to claim too much and to beg the humanities not to deny the moral and spiritual worth, the immense imaginative gifts, the artistic self-realisation of those great seers who are, generally without an eye on lucre, lessening disease, fighting shadowy and substantial dragons, and improving with every decade the conditions of life. "How man may best here live no care too great to explore."

The book consists of twelve chapters, the titles of which imply that they are, *inter alia*, essays on testimony, the scientific mind, the conquest of disease, outlook and endeavour, practical purpose; while two titles, "Across the Border" and "Towards Infinity," deal with Röntgen and other rays and with some of the marvels of modern astronomy. The various essays aim at stating and illustrating particular sides of the scientific approach to all discovery; they range from Empedocles and Aristotle to Faraday and Agassiz and Lord Kelvin; and are crammed with stories, quotations, and sidelights of various kinds, all intended to keep the reader's attention fixed on the problem in hand and on the men who patiently studied it. The marvels of non-luminous stars, the prophecy of coal in Kent, the sanitation of Panama, the disease of silkworms, and the extirpation of Nature's death-dealing flies are all treated fully.

Thus the book is partly exegetical and partly biographical, and its scope is wide indeed. At the head of each chapter, as in Prof. J. Arthur Thomson's "Wonders of Life," are mottoes chosen mostly from

the humanities; and the plates, eight in number, are good reproductions of some of those modern decorative masterpieces in which art has laboured to define "science"; Rodin's "Thinker" is added, but Dürer's "Melancholia," so sad and elusive, is omitted. It is remarkable to find from the many quotations how much the scientific humanist has disappeared; perhaps Prof. Thomson to-day wears, most easily of all, the mantle of Huxley and even of Kingsley. Great stress is laid, as was to be expected, on the crucifixion of science in earlier days—on the Brunos and the Galileos; but the conspiracy of silence, which in some respects we are only now breaking, was a conspiracy in which scientific people took their full share, and Listerism was opposed not so much by the outside public as by doctors themselves. Science has always persecuted her own sons, and is doing so to-day; nor can she complain that persecution of man by man has been limited to scientific heresies. It is an error, too, for us to suppose that the humanists have not, again and again, assisted the work of science; and writers so far apart as Lady Mary Wortley Montagu, Browning, and Tennyson may, for diverse reasons, claim the title of friends of science. Perhaps when Prof. Gregory's new edition is called for we may see one or two rather harsh judgments of the humanistic position softened. "Sirs, ye are brethren."

The present hour shows us science engaged in the fearless combating of preventable disease, in the enriching of the world, in the improving of the conditions of the poor—and in the intensive killing of the flower of young Europe. Very unfortunately the wonderful improvement in artillery, in submarines, and in aviation has been accompanied by a most unexpected burst of savagery, and the laboratory has by its intellect ably abetted a campaign from which ordinary morals have been ousted. The author of this volume directs attention to this two-edged character of discovery, when the devotion of the student and the kindness of a gentle-hearted Pasteur may suddenly be twisted to serve special purposes of which Apollyon would be ashamed. It cannot be wondered at, however, if this recrudescence of the savage during an age of astonishing brilliance should not influence to some degree the response given to any claims for the extension of scientific teaching in the schools, if such demands include the lessening of studies which deal primarily with the moral, religious, or even the historical sense. Great support will be given to any change in the curricula of the schools which will point to the speedy re-circulation of wealth, to the instant and permanent conquest of certain diseases, and to the political advantages which it may be supposed would follow on wealth and health. But neither Prof. Gregory nor any other whole-hearted supporter of science would wish us to forget conduct or to lose romance. The men of science of whom he has treated in this interesting volume were almost to a man idealists, and in the best sense, humanists.

ARTHUR BURRELL.

THE DIRECT METHOD OF TEACHING FRENCH.

(1) *Further Steps in French.* By Walter Rippmann. 214 pp. (Dent.) 2s.

(2) *French Songs.* Compiled and arranged by Violet Partington. 42 pp. (Dent.) 6d. net.

(1) This book forms the sequel to "First Steps in French" published last year, and is intended to provide a second year's course. Like its predecessor, and like the still earlier "Dent's First French Book," it is written entirely on direct method—or, as Prof. Rippmann prefers to call it, reform method—lines, and it may at once be said that it represents the very best and most thorough example of the application of that method to the teaching of French. The text, which is continuous, introduces the reader to the daily life of a French family with whose members those who have worked through "First Steps in French" will be familiar. Considerable variety is obtained by the introduction of stories, letters, descriptions of places, accounts of visits, etc. Perhaps, however, the subject-matter would prove more interesting to girls than to boys in their second year of French, if we take that to mean boys of thirteen years. New words are printed in heavy type and explained in French at the foot of the page. This is well done, and the fallacy of *ignotum per ignotius* avoided so far as is possible.

Each chapter is followed by exercises of the "reform" type, dealing with vocabulary, word formation, conversation, and grammar. It is scarcely necessary to say that these are well and carefully compiled. It is perhaps doubtful whether such exercises as "*Desinez une tonnelle, une fraise, une framboise,*" etc., pay for the time expended, from the French teacher's point of view, while the prefixing of *le* or *la* to a long list of nouns strikes one as being of the nature of a pure gamble. Both types occur frequently. As to the sufficiency of the grammatical instruction, opinions will differ. Many teachers have come to the conclusion that a continuous text, followed by varied and discursive exercises, presents the pupil with too many grammatical problems at once, and offers too little opportunity for driving any of them home. For this reason they part company to some extent with the direct method in the second year; Prof. Rippmann, however, looks upon the first two years as a preliminary course, and contends for unity of method. There is very little grammatical exposition throughout the twenty-four lessons, but in addition to these is included a *résumé de grammaire*. This is, however, isolated from the body of the book, and is intended for reference.

Following the exercises already mentioned is a *dictée* in phonetic script, which can be done, if it is so desired, at home. This is an excellent idea. Finally, each lesson closes with one or two good *canevas* for free composition, arising from the text. There are also pictures to be described by the pupil.

Other excellent features are a list of the words contained in "First Steps" and "Further Steps," arranged in groups according to their signification, copious lists of words exemplifying word formation, materials for exercises on vocabulary, and an alphabetical index.

By way of minor criticisms it may be asked why verbs of the *venir* type should be omitted from the paradigms? Why is the archaic use of *ne* with *avant que* retained (pp. 68, 85, 192)? Should not *des* be *de* in note 2, 15.1? Is not *avant* used rather than *devant* to express the position of words in a sentence (36.44), reference being made to the spoken rather than the written language? Finally, did not Gautier tear *son pantalon* rather than *ses pantalons* (19.4 and note)?

The book is characterised throughout by that thoroughness and attention to detail which we have learned to look for from its author. Given a small, bright, homogeneous class, and a liberal number of hours per week, its use should prove delightful to both teacher and taught.

(2) In his introductory note Prof. Rippmann advocates the singing of French songs as "a way of adding brightness to our classes." It may be added that the practice is of real value in the teaching of pronunciation, especially as tending to correct the vice of diphthongisation so prevalent among English pupils.

Whether the present collection constitutes "something better than the hackneyed 'Au clair de la lune,' 'Sur le pont d'Avignon,' etc.," is, perhaps, open to question. These and others, such as "Ma Normandie," "Frère Jacques," "Cadet Rousselle," "Le roi d'Yvetot," "La Palisse," "Je suis un petit garçon," etc., are old favourites of which one does not soon tire, while it must be remembered that they come as something quite new to successive generations of school children.

The present collection consists of twenty-four songs, many of them action songs suitable for quite young children. Some are, perhaps, more interesting to the student of folk-songs than to the average schoolboy. Others, however, such as "La France est belle," possess words of considerable merit and beauty, set to bright and attractive tunes.

The little book will be welcomed by the French teacher, who will be able to select from it such songs as suit his purpose and his pupils. While boys will probably prefer the humour of "La Palisse" or "Cadet Rousselle," or the lusty round, "Frère Jacques," girls will doubtless like "A la claire fontaine" or "En passant par la Lorraine." We cannot have too many such French songs ready to hand, and the little song-book should readily find its way into our schools.

The words of the songs are written in ordinary spelling and in phonetic script, while the airs are given in both tonic sol-fa and staff notation. Detailed directions, in French, accompany the action songs.

AN AID TO THE STUDY OF THE BIBLE.

A Companion to Biblical Studies. Edited by W. Emery Barnes. xii+677 pp. (Cambridge University Press.) 15s. net.

It is now more than twenty years since the original "Cambridge Companion to the Bible" was published. Numberless students of Scripture owe it a lasting debt of gratitude, not only for light shed upon dark places, but for a whetting of the appetite for wider and more complete knowledge of the structure and contents of the Bible. The book is rightly named, and the literal reading of the title describes the use to which the volume must be put. The adjective "indispensable" might, with no loss of modesty, be reasonably added.

It is highly desirable that such a work should be re-written and brought up to date. The high reputation in which the book has always been deservedly held for accuracy, and for the catholicity of opinions where these had to be expressed, had given to the "Cambridge Companion" the voice of authority. Since its issue Biblical research has continued to be active and fruitful, and the original volume is not sufficient for the wants of the present day. The new edition is practically a new book, for it has been largely re-written in the light of modern conclusions, and whilst most of the old ground is covered, there are

many important additions, as well as a few minor omissions. Fresh articles have been added, old articles have been re-written, and every page has passed under a revising eye. Dr. Barnes must have found it a happy and satisfying task to arrange and edit matter of such outstanding excellence and authority, and the result is a volume of priceless information at the service of Scripture teachers and students.

Special attention has been given to the New Testament, and several valuable new articles fall under this heading. Nothing but the highest praise can be bestowed upon this comprehensive chapter. It furnishes a scholarly and intelligible analysis of great value. Dr. Swete contributes a section on the Book of Revelation, a most succinct and illuminating review. Dr. Brooke's summary of the Fourth Gospel is characterised by his usual striking insight, and is throughout wrought with wondrous delicacy and faithfulness. A notable addition, forming a worthy sequel to the whole chapter, is a new article by Mr. Clayton on the theology of the New Testament, one of the most logical and faithful pieces of interpretation in the whole book. The writer has altogether too little space at his disposal for his great theme, and yet no point of importance is overlooked.

Old Testament literature and theology are treated with equal care and skill, and in four main groups a complete dissection of each book is given, with an explanation of the object of the book. Dean Ryle's able chapters on the structure and growth of the Bible are fortunately retained, and so is the striking historical *résumé* from the pen of the late Dr. Moulton on the English translations. Dr. Bonney's revision of his own work on the geography and geology of Palestine has been very thoroughly done. It would not be easily possible to imagine a better short treatment of the subject. It is as interesting as it is informing.

The maps are excellent, and furnish a complete Bible atlas. Six of them are new, and all the old maps have been revised. A number of illustrations are included—they are so good that, at the risk of appearing ungracious, we could wish that more had been given. A picture of the Moabite stone, at least, might have found a place, and the Diorite block of Hammurabi is worth including in such a volume. The type used in the printing of the entitling words in the index of subjects and concordance is an innovation, and adds much to ease of reference. It is unfortunate, though, that the usual columnar arrangement of references in the concordance has not been adopted—a small point, but one that effects a big saving of time and irritation in practical use.

We congratulate Dr. Barnes on this really fine work. Wherever opportunity offers, the book is constructive and progressive, in no place merely destructive. It will more than replace its predecessor, and should prove invaluable to all teachers of the Bible for ready and frequent reference.

BOOKS FOR GENERAL READERS.

The People's Books. Browning. By A. R. Skemp. *Keats.* By Edward Thomas. *The Roman Civilisation.* By A. F. Giles. *India a Nation.* By Annie Besant. *Common Faults in Writing English.* By H. Alexander. *Home Nursing.* By Sister Matilda. 90 to 94 pp. (Jack.) 6d. each.

THIS series, so wide in its scope and so useful, goes on rapidly, until now it is nearly at its one hundred and fortieth issue. It has touched on most things, and it is bound to be occasionally unequal. The "Browning" of Dr. Skemp contains life and criticism; it emphasises the poet's Italianism, and has some good advice for young readers. Its treatment

of Browning's religious position is thin, and it lays no stress on the postulate of personal immortality which with Browning was basal. Probably Browning's influence as a poet is still felt, and will be felt, in quarters where his more definite teaching is neglected. The "Keats" is not idolatrous, and it has some hard things to say about the poet's mawkishness; the great poems, and especially Keats's Shakespearean way of hinting at immense backgrounds, have never been fully recognised. He lived nearer Beauty than do most, but the Beauty was not Shelley's and still less Wordsworth's. The virile touch in his own bodily frame "makes his memory confused." For workaday life, and more especially for young life in school, Keats and William Morris are safer guides as men than as poets.

Prof. Giles frankly takes the golden age of Trajan and Hadrian for his subject; and we hear nothing of the Rome that conquered Hannibal and produced Lucretius. So long as the reader understands that he is dealing with a Græcised empire it does not matter; but Roman Rome is answerable for the virtues, and it had fallen when Livy wrote his famous preface. The chapters on the cities, the Imperial services, family life and the like, are admirably clear, but in the chapter on religion there is a harking back to earlier days. "The People's Books" might give us a clear statement of the debt due to Rome; at present only scholars realise it.

Mrs. Besant's "India" is a plea from the inside for Home Rule; it is not altogether pleasant reading, but we must remember that some of our own Civil Servants have said the same after long acquaintance with the Indian problem. The usefulness of the book lies in the fact that the greater part of its small type refers to and quotes native opinion. And it is to be recognised that the present war is a passionate defence of the right of the smaller peoples to exist and to develop in their own way.

Mr. Alexander's "Common Faults in Writing English" is elementary, and it is to be doubted if the readers of "The People's Books" confuse "ascetic" and "aesthetic," "immanent" and "imminent." There was room for the book, but schoolmasters could have supplied a number of errors constantly made which here do not seem to be noticed. Slang receives a little recognition, but dialect none, and "didn't ought," "it's me," and the curious uses of "like" require not merely condemnation, but a certain amount of explanation. Usage lies at the back of English speech, but what lies at the back of usage?

Sister Matilda's "Home Nursing" will be eagerly looked at by the army of amateurs who have enrolled themselves since the war began; it is necessarily elementary, though the publishers have been good enough to illustrate it. Perhaps a second edition, which is sure to be called for, might contain hints of books, magazine articles, and prices of apparatus.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A New German-English Dictionary. Edited by A. G. Haltenhoff. 111+962 pp. (Hachette.) 4s. net.—From p. 1 it appears that this dictionary forms part of a "Technical German Course," and as such it may do useful service; but it is a curious book. In the first place, it is quite unnecessarily bulky, owing to large margins, every fresh word beginning a new line, and the use of rather thick paper. Incidentally it may be remarked that the book has been printed, and even bound, in Germany. The difficulty, in war-time, of dealing with proofs from that country probably

accounts for the rather large number of misprints. Thus we meet with the novel English words, "precipituous" (p. 2), "journey," "abolisch," "departement" (all on p. 3), and we learn that "Abschnitt" is a verb, "anpflanzen" and "gefallen" are nouns, "Affe" is feminine, "Höhle" neuter, and so on. The selection of words is not always happy. Such common technical terms as "Ablaut," "Anlaut," "Auslaut," are omitted, but "Inlaut" is given; "geistig" is included, but not "geistlich." A considerable number of slang expressions are supplied, which seems unnecessary in a technical dictionary; perhaps they are meant to justify the words "and numerous idioms [sic!]" on the title-page. Do our men of science and technologists really yearn to know the English for "das ist mir Schnuppe, Schnösel, schubsen, Schuftikus, randieren"? The renderings into English are not always the best that might be given. For "affizieren" Mr. Haltenhoff gives "to affix"; for "ankleben," "to fix to"; for "geistreich," "spiritual"; for "Konrektor," "senior assistant schoolmaster," etc. We regret that we cannot recommend this dictionary in its present form; it needs a thorough revision.

English.

The Sounds of Spoken English, with Specimen Passages. By Walter Rippmann. 383 pp. (Dent.) 3s.—This is a new version of two books with which students are now familiar: the "Sounds" and the "Specimens." We need not give any account of the contents; the sounds and their making, the variants in pronunciation, notes on the specimen passages, lists of difficult words, are all in their places in this much handier volume. A great deal of very useful information is added on minutiae of pronunciation. The writer will not take up—at least he has not yet taken up—the detailed study of English speech. That which differentiates good speech from inferior speech, that which enables us at a moment to pass a judgment on speech, that which classes the speaker in tram, train, or bus, has little to do with phonetics, with pronunciation, or even with standard English. Then what is it? And, more important still, where can we find out anything about it? We hope that Prof. Rippmann will let us have the benefit of his notes on the voices and the speech we hear. It is the book that might prove useful to tens of thousands; but—can it be written? Without it phonetics avail something, but not too much.

Visits to Monasteries in the Levant. By Robert Curzon, jun. With Introduction by D. G. Hogarth. 423 pp. (Milford.) 2s. 6d.—There appear to have been six editions of this fascinating book before 1881; yet neither it, nor its author, Lord Zouche, may be said to be well known to those who have pages of "Eothen" by heart. A schoolboy pathetically asked long ago for books like "Eothen"; and for a certain old-world charm, for adventure, and for the maintenance under all discomforts of a truly British grit, surely the present volume, though much longer, may rank, as the editor allows, with the more famous masterpiece. If Dr. Hogarth would write for us and not for scholars the truth about digging for treasures at Naishapur, or Babylon, or even in the Sinitic peninsula; if he would sail us down the Euphrates in one of those boats so like Noah's Ark and revive the enthusiasms of Dennis and Layard, then we should have a third volume for the schools. We say for the schools, for we know of many entrancing travel books of prohibitive price. Of the value of the book as an early account of acquisitions, pre-Tischendorfian, it is unnecessary to speak, for so much water has flowed by the mill-wheel since 1849.

A Medieval Anthology. By M. G. Segar. 132 pp.

(Longmans.) 2s. 6d.—There is a wealth of early lyric which can only be obtained in modern dress by search in various anthologies and in the works of writers like Mr. Bullen and Mr. Belloc. Nothing is quite so hard in the way of modernisation as to put into attractive English such little things as "This endnes night," "Lent is come with love to town." Perhaps the first warning is that so far as possible old spelling should be kept and the miserable modern apostrophe banished, and the second is that all notes and explanations should be on the page as they are here. All attempts are to be welcomed; yet, alas, no "Beowulf" that bears the slightest resemblance to the original has yet appeared. Most of the poems in Miss Segar's collection are religious, and are interesting enough to attract and lead to older collections. One of the very best is "My Leman is so true." The curious printing of the unnecessary explicit will deceive the beginner.

Griselda: a Poetic Drama. By E. H. Earle. 64 pp. (A. Brown.) 1s.—It is remarkable that no attempt has been made to make a drama fit for acting in the schools out of the beautiful story of Griselda. This we believe is because the present schoolgirl is taught that the story is frantically foolish, medieval, and destructive of the dignity of woman. But surely this is to miss the whole meaning of the tale, and Britomart and Jael may be allowed to have their counterparts. No one worshipped women as Chaucer did; and his envoy is sarcastic enough to please any feminist. Here, without unduly pressing the super-humility of Griselda, who, be it remembered, came from an ox's stall, the writer in tuneful verse has written an excellent play; and we hope permission to play it will be asked from him. A note which gives his address (48, King Edward Street, Hull) seems to hint that such permission might be obtained.

A Pair of Adventurers in Search of El Dorado. By H. Collingwood. 312 pp. (Sampson Low.) 3s. 6d.—An old-fashioned yarn of fabulous beasts and hairbreadth escapes, of countries like Erewhon and valleys like Sindbad's, of South Kensington reptiles come to life again, and armed baboons, should win the attention even though Jules Verne and Mr. Wells have marked out claims in the same country. The illustrations are quite in keeping with the story, and the picture of the gigantic Canterbury bell preparing to eat the traveller is eerie.

Selections from Carlyle. Edited by S. B. Hemingway and C. Seymour. 260 pp. (Heath.) 2s. 6d.—The editors intend this book for students. It contains an excellent introduction and equally good footnotes. Three works of Carlyle are chosen from which large excerpts are made—"Sartor," "The French Revolution," and "Past and Present." It is a pity that intimate revelations and worse innuendo should have been permitted to cloud the definite teaching of Carlyle, but nothing will take away from the interest of the man himself, and especially at this time is his real sympathy with man as crucified by man required, when, as we all think, we are once more at a parting in the path of civilised humanity. Carlyle, too, is the supreme instance of what a self-revealing style intentionally assumed can do to make a message more pointed. Read aloud, this book will be to many a trumpet-call. "I have come to raise Thy Trumpet from the dust."

The Indian Heroes. By C. A. Kincaid. 147 pp. (Oxford University Press.) 2s.

The Pandav Princes. By Wallace Gandy. 144 pp. (Macmillan.) 1s.

These two books deal with the same, or almost the same, high adventures. Let it be said at first that

Mr. Gandy gives us a much better introduction and Mr. Kincaid a better English—that is, a better setting to the old myths. Both books have been preceded by others on Indian mythology and early history; both writers are learned in an outside subject. We used to know only British mythology; then Greek mythology (for Roman there is none) came into the schools; then, and not so very long ago, America drew offended skirts away from Zeus and Aphrodite, and decided that Thor and Signy were better for the infant mind—Norse mythology and unpronounceable names were the order of the day; now in several little volumes the equally immoral India is trying to find a way into the schools. All mythologies are immoral, and the question for the instructor is only the kind of veil to be used. Now it seems to us that two things are necessary: long introductions for the teacher and exquisite English for the child. How exquisite such English can be when we are dealing with Indian writings may be seen in an unlikely quarter, viz. in the second appendix to Colonel Patterson's "Man-eaters." It is a good thing for the schools to hear of Ramayana and Ravana, and the re-births, and Bhima; but some Indian history must be presupposed, and Mrs. Steel has done it for us. On that the mythology may be based, for do we not all—British, Greek, Norseman, and Slav—see our faint beginnings in the East?

History.

A Year Ago. By Lieut.-Col. Swinton and Earl Percy. 217 pp. (E. Arnold.) 2s. net.—This paper-covered volume contains reprints of "Eye-Witness's" narrative of the war from March 30th to July 18th, 1915. It forms a sequel to a previous volume, which gave the narrative of the preceding six months. We have here the story—in so far as the Censor allowed it to be told—of the second battle of Ypres and of the subsequent fighting around Festubert. The period of comparative quiet which ensued gave "Eye-Witness" an opportunity to convey interesting information of a kind not likely to be useful to the enemy (or anyone else) concerning supplies, postal arrangements, the medical service, and similar matters. One remembers how extraordinarily aggravating at the time of their original publication were these placid, well-written, non-committal essays on general topics, when one was burning to know how things were really going at the front. Now that they are collected in book form they form a valuable record not so much of the events of "A Year Ago" as of what we were permitted to know about them.

Black's History Pictures. vii., *Our Early History to A.D. 1066.* Edited by G. H. Reed. 1s.—We have already commented favourably on other portfolios of this good and inexpensive series of historical pictures. Hence it is sufficient to note that the portfolio now before us contains eighty-one illustrations relating to early English history, and that these include photographs of antiquities (e.g. Stonehenge), drawings of prehistoric implements, mediæval maps, reproductions of manuscript illuminations, as well as copies of modern imaginative works of art dealing with the period.

Brahms: the Man and his Music. By E. Markham Lee. viii+185 pp. (Sampson Low, Marston.) 3s. 6d. net.—It is barely twenty years since Brahms died. Yet, as Dr. Hadow tells us, "that he stands beside Bach and Beethoven is hardly any more a matter of controversy." Musicians with almost complete unanimity recognise his greatness. They all, however, with equal agreement admit that he is not easy to understand or interpret. Hence this little

book from the competent hand of Dr. E. Markham Lee will be welcomed by many music-lovers. It is not intended for the expert musician or for the special student of musical history. It repeats the story of Brahms's comparatively uneventful life, which is familiar to all who have read the works of Dr. Hadow, Miss Florence May, or Dr. Max Kalbeck. It carefully avoids technical criticism. It is intended for the ordinary intelligent concert-goer, who is concerned to know the meaning of what he hears. It gives him a useful description of the main classes of Brahms's compositions, and enables him to recognise the characteristics which have given to Brahms his acknowledged eminence.

Because I am a German. A translation from the German of Hermann Fernau, edited, with an introduction, by T. W. Rolleston. 154 pp. (Constable.) 2s. 6d. net.—This is a damning indictment of the German Government as the originators of the present war, and as the conductors of the war on the plane of unprecedented barbarity. It takes the form of a defence, on the ground of true German patriotism, of the notorious book entitled "J'Accuse." It vindicates the anonymous author of that work from the malignant attacks of his assailants, exposes the hollowness of professorial explanations of Germany's conduct, and urges the need of frank and free discussion. The full significance of the book will be apparent only to those who are acquainted with "J'Accuse"; but every reader will perceive why the German Government has prohibited its circulation in Germany.

The National History of France. Vol. iv. *The Eighteenth Century.* By Casimir Stryjenski, translated by H. N. Dickinson. 345 pp. (Heinemann.) 7s. 6d. net.—Another volume of the English translation of this excellent popular history of France here makes its welcome appearance. It deals with the period of seventy-five years which elapsed between the death of Louis XIV. and the French Revolution. It is, therefore, concerned with the dealings of the old régime, and with the rise of those new political, social, and intellectual forces which eventually precipitated the catastrophe of 1789. It tells an absorbing story in a lucid and graphic manner. The reader is not troubled with footnotes and references to authorities, or with discussions on technical and disputed points. He is swept along in a strong current of interesting narrative. The book does not profess to add anything to the knowledge of students. Its purpose is to make known to the man in the arm-chair the leading lines of the history of the country now bound to this country by ties of so intimate an alliance, and this purpose it admirably fulfils.

Polish Pamphlets. Issued under the direction of the Polish Information Committee. (Allen and Unwin.) 6d. net each.—No problem raised by the war is more urgent or more perplexing than the Polish problem. The tide of the great conflict has already rolled three times over Polish territory, and over much of it it must for a fourth time pass. The Poles, still a nation, but no longer a political society, are fighting under compulsion in half the conscript armies of the Continent, and their fate hangs upon the issue of the yet undecided struggle. Even assuming that the Allies ultimately vanquish the Germanic Powers, the destiny of Poland is not clearly pre-determined. For the Poles differ widely among themselves as to what they want and what they should ask of Europe. Hence there is pressing need for the dissemination of sound information respecting all Polish questions, so that public opinion may be prepared to pass judgment on a matter on whose settlement depends, to no

small extent, the future peace of Eastern Europe. The half-dozen pamphlets before us, all of them written by Poles, and most of them prefaced by an introduction from the pen of a prominent Englishman, are as follows:—(1) "Landmarks of Polish History"; (2) "The Polish Question is an International Problem"; (3) "An Outline of the History of Polish Literature"; (4) "Poland as an Independent Economic Unit"; (5) "The National Music of Poland"; and (6) "Poland's Struggle for Independence."

Geography.

The Statesman's Year Book, 1916. Edited by Dr. J. Scott Keltie and Dr. M. Epstein. xlv + 1560 pp. + plates iv. (Macmillan.) 10s. 6d. net.—The "Statesman's Year Book" has now reached the fifty-third year of publication, and the new edition maintains the high standard of completeness and trustworthiness for which all previous issues have been noted. The sections relating to the principal Allies and neutral States have been thoroughly revised; in the case of belligerent countries (especially Germany) difficulties have been met with, and even here the facts and figures have been brought up to date so far as the latest official publications will allow. The section on Japan has also received the special attention of the revisers, and, among other additions, the terms of the Chino-Japanese Treaty signed in 1915 are stated.

The maps, as usual, provide much interesting information in a clear manner. In this edition three maps out of four have reference to Germany: one map shows the distribution of Germans throughout the world, a second the distribution of Germans in the United States of America, and a third the railway schemes of Germany in Asiatic Turkey.

Macmillan's Geographical Exercise Books. With Questions by B. C. Wallis. (1) *Asia and Australasia*. 7d. (2) *Key to Europe*. 2s. 6d. net.—This exercise book ("Asia and Australasia") is arranged on the same plan as the other books of this well-known series. The sectional maps (e.g. Northern India, South-east Australia, and others) are clearly drawn, and they provide ample room for the work which has to be entered upon them. The questions, which cover a wide field of study, may be used either as the basis of lessons in relation to the maps in the book, or they may be used for revisional purposes. Some of the exercises appear to be classified in the wrong sets; for instance, under the heading "Asia—Political," pupils are told to shade the areas in Asia where the rainfall is greater than 60 in. annually and to insert several isotherms; and under the heading "Australia—Physical," pupils are told to name the Australian States and the capital of the Australian Commonwealth.

The "Key to Europe" shows very clearly what may be expected from those using the exercise book; it will be of great assistance to teachers when marking their pupils' work.

Science and Technology.

A Senior Experimental Chemistry. By Dr. A. E. Dunstan and Dr. F. B. Thole. xiv + 522 pp., with 120 diagrams. (Methuen.) 5s.—The scope of this book corresponds very well with the range of information that a candidate for an Intermediate Degree examination is now expected to possess. The form of the book is, however, less pleasing than the contents, and the illustrations, which are of the character of blackboard-sketches, are by no means attractive; there is, for instance, no justification for the distortion which Morley's combustion chamber has suffered through

this method of treatment, nor for similar modifications of other well-known pieces of apparatus. The authors have followed closely the periodic scheme of classification, but have overcome the usual drawback of this method by the ingenious process of taking the families in reversed order, so that the non-metals are described (as they should be) before the metals. Thus the systematic part of the book deals first with hydrogen, then with the halogens, the oxygen, nitrogen, and carbon families, works backwards through the metals of the third, second, and first groups, and finishes up with the transition-elements and the inactive gases discovered by Ramsay. Attention may be directed to an exceptionally clear description of the manufacture of sulphuric acid by the lead-chamber and contact processes.

Biology. By Gary N. Calkins. x + 241 pp. (New York: Holt; London: Bell.) 7s. 6d. net.—The author is a firm believer in the method—introduced by Huxley—of basing biological teaching upon laboratory work with types carefully selected to serve as points of departure in subsequent study. Such practical work obviously needs to be supplemented by a commentary, pointing out the fundamental principles which underlie the somewhat bewildering variety of structure encountered in the laboratory. This book supplies exactly the kind of guidance which the elementary student requires. Its main theme is "animal differentiation for the performance of primary functions of protoplasm." The course begins with cellular activities, illustrated by yeasts, bacteria, and protozoa, and goes on to consider the biological significance of Hydra and the earthworm. Plant life, represented by Pleurococcus and a fern, is introduced in connection with Hydra to explain the sources of animal food and energy. Further chapters deal with the differentiation of organ systems, the principles of homology (illustrated by a lobster), parasitism, and modern theories of heredity. The whole scheme of the book is such as to develop in the mind of the student a sound idea of evolution and its main problems. The style is clear and interesting throughout, and secures the continued interest of the reader. The book contains 101 excellent illustrations. We notice one or two slips: *Oenothera biennis* (famous in connection with De Vries's work on mutations) is referred to as "a variety of primrose"; the number of species of earthworms is stated to be "six or seven"; while the misprint "sdnals" is weirdly suggestive of Gulliver.

A Student's Heat. By I. B. Hart. 376 pp. (Dent.) 4s. 6d.—This is a theoretical text-book intended for the use of the highest forms of secondary schools, for technical schools and colleges, and for students preparing for the intermediate and pass degrees of the universities. The treatment of the subject, and the standard to which it is written, do not differ widely from other text-books previously published. But we notice several cases where more information than usual is given on certain recent researches, and absolute measurements of physical constants; thus, the following are described in considerable detail:—Fizeau's interference method of measuring the expansion of solids; Callendar's modification of Regnault's apparatus for the coefficient of expansion of mercury; Hopkins's experiments on the effect of pressure on melting point; Ramsay and Young's researches on liquids and vapours, and Lees's measurements of conductivity. The chapters on conduction and radiation are particularly good. Directions for experimental work are not included. Some of the illustrations ought to be improved; thus, in some of the graphs (e.g. pp. 15, 74, 102, 103) the reproduction of the squared ruling is very dazzling to the eyes; several

illustrations lack clearness, and some are unduly large. In the diagram of the hot-water apparatus (Fig. 163) it is not quite clear what would happen if both radiators were turned off. In graduating a thermometer (p. 9) it is better to use the expressions "lower fixed-point" and "higher fixed-point" rather than "the melting point of ice" and "the boiling point of water."

EDUCATIONAL BOOKS PUBLISHED DURING JUNE, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

"Sur le Front" (War Stories). Selected by Jetta S. Wolff and edited by A. S. Trèves. viii+110 pp. (Edward Arnold.) 1s. 3d.

"Deux Contes de Paul Féval: Le Petit Gars, La Mort de César." Edited by A. C. Larmour. viii+72 pp. (Edward Arnold.) 1s.

George Sand: "Les Ailes de Courage." Edited by F. B. Kirkman. (Cambridge Modern French Series, Middle Group.) xii+120 pp. (Cambridge University Press.) 3s.

"Fables of La Fontaine." Edited by A. G. Macpherson. (Pitt Press Series.) xx+230 pp. (Cambridge University Press.) 3s.

"A Scientific German Reader." By H. Z. Kip. 459 pp. (Oxford University Press, American Branch.) 5s. net.

Grillparzer: "Das Meeres und Liebe Wellen." Edited by J. L. Kind. 344 pp. (Oxford University Press, American Branch.) 3s. 6d. net.

"Ein Wortschatz." By Albert A. Méras. 72 pp. (Harrap.) 6d.

"Pequeño Vocabulario." By Albert A. Méras. 72 pp. (Harrap.) 6d.

"Colloquial English." Part i., "100 Substitution Tables." By H. E. Palmer. 102 pp. (Heffer.) 3s. net.

Classics.

"Roman Life and Customs." A Latin Reader. By R. A. A. Beresford and E. C. Smith. 102 pp. (Blackie.) 2s.

"An Elementary Latin Grammar." By Arthur Sloman. Second edition. xii+170 pp. (Cambridge University Press.) 2s. 6d. net.

"The Germania of Tacitus." With introduction and notes by Prof. D. R. Stuart. (Macmillan.) 2s.

English: Grammar, Composition, Literature.

"The English Country Gentleman in Literature." By Guy N. Pocock. 96 pp. (Blackie.) 1s.

Scott: "Marmion." (Oxford Plain Texts.) 186 pp. (Clarendon Press.) Paper, 8d. net; cloth, 10d. net.

Mrs. Gaskell: "Cranford, The Cage at Cranford, and The Moorland Cottage." With introduction by Clement Shorter, and notes to "Cranford" by E. Limouzin. 382 pp. (Oxford University Press.) 2s. net.

"The War Speeches of William Pitt." Edited by R. Coupland. Second edition. 408 pp. (Clarendon Press.) 2s. 6d. net.

History.

"A Year Ago." ("Eye-Witness's" Narrative of the War on the British Front from March to July, 1915.) By Lieut.-Col. E. D. Swinton and Capt. the Earl Percy. 217 pp. (Edward Arnold.) Paper, 2s. net; cloth, 2s. 6d. net.

"A Picture Book of British History." Vol. i. By S. C. Roberts. (Cambridge University Press.) Alteration in price to 4s. net.

"Chambers's Periodic Histories." Book VII., "The

Story of England's Rise and Growth." 336 pp. (Chambers.) 2s.

"A New Government for the British Empire." By the Rev. F. W. Bussell. xiv+108 pp. (Longmans.) Cheaper issue, 1s. net.

"Writings of John Quincy Adams." Vol. vi., 1816-1819. Edited by Worthington C. Ford. (Macmillan.) 15s. net.

"Medieval Civilization: A Text-book for Secondary Schools." By R. L. Ashley. (Macmillan.) 5s. net.

"Early European Civilization: A Text-book for Secondary Schools." By R. L. Ashley. (Macmillan.) 6s. 6d. net.

"The German Empire between Two Wars, 1871-1914." By Prof. R. H. Fife. (Macmillan.) 6s. 6d. net.

Geography.

"Preliminary Geography." By A. J. Herbertson. Fourth edition. 160 pp. (Clarendon Press.) 1s. 6d.

"Macmillan's Geographical Exercise Books." V., "Asia and Australasia." With Questions by B. C. Wallis. (Macmillan.) 7d.

Science and Technology.

"Elementary Dynamics for Schools." By C. E. Ashford. Second (revised) edition. viii+276 pp. (Cambridge University Press.) 4s.

"Introduction to the Theory and Practice of Boot and Shoe Manufacture." By Frank Plucknett. With diagrams. xiv+322 pp. (Longmans.) 6s. net.

"Manual of Instruction, with Diagrams on the Cutting-out of Boys' and Girls' Undergarments (Eight-Fourteen Years)." By Bertha Banner. 32 pp. (Longmans.) 3d. net.

"The Science of Musical Sounds." By Prof. D. C. Miller. (Macmillan.) 10s. 6d. net.

"The Military Map: Elements of Modern Topography." (French School of War.) With diagrams and maps. (Macmillan.) 2s. 6d. net.

"Discovery; or, The Spirit and Service of Science." By Prof. R. A. Gregory. (Macmillan.) 5s. net.

"Bibliography of British Ornithology from the Earliest Times to the End of 1912." Part i. By W. H. Mullens and H. Kirke Swann. (Macmillan.) 6s. net.

"Theory of Errors and Least Squares." By Le Roy D. Weld. (Macmillan.) 5s. 6d. net.

Pedagogy.

"American University Progress and College Reform Relative to School and Society." By James H. Baker. x+190 pp. (Longmans.) 4s. 6d. net.

"The Essentials of Teaching: a Book for Amateurs." By T. J. Burnett. xvi+250 pp. (Longmans.) 3s. 6d. net.

"Froebel's Kindergarten Principles Critically Examined." By Prof. W. H. Kilpatrick. (Macmillan.) 4s. net.

Miscellaneous.

"Group Theories of Religion and the Individual." By C. C. J. Webb. 208 pp. (Allen and Unwin.) 5s. net.

"Ballads of the Fleet." By Sir Rennell Rodd, G.C.M.G. New and cheaper edition. 128 pp. (Edward Arnold.) 2s. 6d. net.

"The Growth of Music." Part iii. * By H. C. Colles. 194 pp. (Clarendon Press.) 3s. 6d.

"St. Luke." (Authorised Version.) Edited by G. E. J. Milner. 176 pp. (Oxford University Press.) 1s. net.

"The Oxford Song Book." By P. C. Buck. (i) 219 pp. Words and music, 5s. net. (ii) 159 pp. Words only, 1s. 6d. net. (Oxford University Press.)

- "The Book of Pirates." By Henry Gilbert. 350 pp. (Harrap.) 5s. net.
- "Pirates of the Sky." By Stephen Gaillard. 352 pp. (Harrap.) 6s.
- "Toymaking in Schools." By R. and M. Polkinghorne. 320 pp. 7s. 6d. net. Part i., 160 pp. 4s. net. Part ii., 160 pp. 4s. net. (Harrap.)
- "Fighting Dirt." By E. Hood. 224 pp. (Harrap.) 1s. 8d.
- "Hitting the Dark Trail." By Clarence Hawkes. 192 pp. (Harrap.) 3s. 6d. net.
- "The Essentials of Effective Gesture for Students of Public Speaking." By Joseph A. Mosher. (Macmillan.) 4s. 6d. net.
- "Second Thoughts of an Economist." By Prof. William Smart. (Macmillan.) 5s. net.
- "Foreign Exchange: A Study of the Exchange Mechanism of Commerce." By H. G. Brown. (Macmillan.) 4s. 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.

What Is Wrong with Education?

At the present time there seems a general consensus of opinion that something is wrong with education. That in itself is a hopeful sign. This discontent, however, is no new thing in England any time the last fifty years. If a permanent cure is to be effected we must go to the root of the disease. Mere palliatives may effect a temporary improvement, but we shall soon return to our easy-going and self-satisfied incompetence.

The fundamental defect that pervades our educational system is lack of seriousness in all but a very few who are connected with it. Parents, pupils, teachers, inspectors, examiners, and administrators are all alike infected with the disease, though it is most prevalent among the first two. It is waste of time discussing methods, examinations, curricula if the majority of pupils and parents are indifferent to success or failure, if examiners are compelled to set standards which they cannot but consider inadequate, if inspectors and administrators tolerate inefficiency for the sake of peace. Education in this country is carried on in an atmosphere of cynicism, incredulity, and discouragement, which renders all effective work well-nigh impossible. We place talk before results, lump together in the same category efficient and inefficient, and give boundless advantage to the garrulous and self-laudatory quack. The only hope is that the stress of the present crisis and the dread consciousness of a still more strenuous struggle to come may induce each of us to lay aside the proud consciousness of his own impeccability and make an honest endeavour to work for the common good. Hitherto we have all been abundantly conscious of each other's imperfections and pharisaically intolerant of any criticism of our own. Cannot the stress of national emergency constrain us to forget our neighbour's sins and humbly to confess our own; to discuss the question of educational reform with a single eye to the attainment of some useful result instead of scoring off our critics or defending our own dignities; to seek remedies rather than retorts?

No one with any school experience can deny that

in general the pupil does not work to the best of his ability. It is possible to overrate the importance of examinations, but, after all, if the pupil has spent six or more years in studying certain subjects, presumably of value to himself, and at the end can only display ignorance in most of them, he must have been either idle or incapable. How many candidates who present themselves for the various examinations fail to reach the infinitesimal standard of a pass, and how many more shirk any test whatever in the full consciousness of their own incapacity? The English schoolboy was a disciple of "ca' canny" long before the working man, and is far more proficient. His output is about 30 per cent. of his capacity, and his normal standard about 50 per cent. of his possible. There is no method which will educate a pupil who opposes a stubborn, if passive, resistance to all attempts at education, and who is supported by the open or veiled indifference of his parents and the traditions of the social class to which he belongs or of the school of which he is the pupil. So long as ignorance is good form there is little chance of any real intellectual progress in school or after it. If one's object were to find excuses for the pupil, much of the blame might be laid on his parents. The English do not attribute any importance to success at school, unless it is such success as expresses itself in prizes or scholarships. If the boy is not a prize-winner the parent is indifferent whether he learns anything or not. He is not pleased when, after several years of expensive schooling, he finds his son cannot pass some necessary examination without coaching, but then it is too late. And is there not always the comfortable consolation, so often heard on school speech-days, that the most successful men have usually been duffers at school? Nor is it only that the parent does not care about education; he is usually woefully ignorant of anything connected with it. He chooses a school for any but educational reasons, he has the smallest idea of what kind of education would be suitable for any calling, and when he finds fault his criticism is so misdirected and ill-informed that his victims have little difficulty in refuting it and leaving him baffled but exasperated.

While, however, parent and pupil may alike plead ignorance, the teacher knows only too well the value of his work, and how far it falls below the ideal. Always on the defensive, he extenuates where he ought to condemn. He will claim to form character rather than to train the intellect—as if intellectual loafing, slovenliness, and inaccuracy were not vices. He parades his prize pupils, whom anyone could have taught, while discreetly silent about the undistinguished majority. He talks of the ennobling influence of the classics, when the mass of his pupils would take a crib to read Cæsar. He ingeniously hints at intangible successes while deprecating any search for visible results. He indignantly demands freedom—from being found out. Excuses there may be in plenty for him, for he is confronted with every material and moral obstacle, but the difficulties must be faced if they are to be overcome; they cannot be airily waved aside as non-existent.

The temptation of the administrator is much the same as that of the teacher. Were he to speak out he would involve himself in the condemnation he dealt out to the others. So all is for the best in the best of all possible worlds. His work is organisation. He must produce an intricate but smoothly running and highly polished machine; the value of the output is almost negligible. His mainstay is statistics; for the most part meaningless to any outsider, but imposing in their elaborate detail. He will tell you the number of pupils, but not what they have learnt; the number of teachers, but not which are efficient; the

cubic content of a classroom, but not its intellectual atmosphere. Next to his beloved statistics come bricks and mortar, apparatus and fittings—tangible things which the business men who are his immediate employers can see and appreciate. With these materials he concocts his beautiful annual reports, which, while devoid of any educational information, give no handle to critics, and are incontrovertibly accurate. On the other hand, the really educational activities he is supposed to direct do not lend themselves to statistical methods, are not attended by invariable success, and, if criticised, might lead to painful recrimination. Therefore even administrators tremble and forbear.

If the administrator is led astray by the very human desire to glorify what is, at least in theory, his own work, the examiner and inspector have not the same excuse. It is only in their very early days that they say what they think—not always with the happiest results even to themselves. But experience always brings leniency and a capacity for writing reports which require a deduction of 50 per cent. to arrive at their real meaning. A long course of dealing with schools and pupils enables them to discover degrees of badness in what appears to the uninitiated as a monotonous level of incompetence. The inspector must grade a considerable number of schools and teachers as efficient, for the public mind is not prepared for a drastic reconstruction of the educational system. The examiner must pass the customary percentage of candidates, even at a matriculation examination. An irresponsible professor in an exalted moment may complain that his students come to him without proper preparation—he will not face the alternative of doing without any but those who are properly prepared.

The most hopeful sign at the present time is that the parent seems to be awakening at last. Unless, however, his efforts are to be as ineffectual for lasting reform as they have been before he must have the help and direction of all who are actively engaged in education. "Eyewash" and "window-dressing" must be given up. Vested interests and reactionary prejudices must be disregarded. Then when the ground is cleared it will be possible to erect a lasting and efficient system of education.

G. W. SAMSON.

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Junior O.T.C. and Cadet Corps.

ABOUT two hundred secondary schools possess recognised Cadet Corps. Of these, more than half have Officers Training Corps, less than half Cadet Corps. In many instances it is pure chance which corps a school possesses, and it does not follow that all O.T.C. are able to turn out officers, while all Cadet Corps can produce only privates. It is on behalf of the latter that I am now pleading.

Of course, some Junior O.T.C. are of a higher average age than Cadet Corps; they are also granted £1 for every efficient cadet over fifteen years of age. On the recommendation of their C.O., O.T.C. cadets may be admitted to an Officer Cadet Unit.

A few years ago it was not difficult to obtain recognition as an O.T.C. Now such recognition is unobtainable. Consequently there may be Cadet Corps more efficient than Junior O.T.C. recognised some years ago.

In the case of Cadet Corps no grant is given by Government (except £5, which the T.F.A. annexes); their officers provide their own outfit, defraying camp and other expenses out of their own pockets. Thus Cadet Corps labour under great difficulties, to which they have risen superior. From corps such as these

boys have obtained commissions direct; they have produced serviceable material, quite equal to any demand made on it; many of the members could have passed certificate A examination with ease. In some schools 25 per cent. of the old boys serving hold commissions, more in others. Certain schools have an old boys' company attached to the corps.

Under the new regulations school Cadet Corps are not given the privilege of recommending eligible candidates above eighteen for any Officer Cadet Unit. Though their cadets may have had years of training and experience of several camps, they must go into the ranks like the most inexperienced slacker.

Can it be expected that the labour and money privately expended on school Cadet Corps will be continued when the members of the corps are treated with less recognition than conscientious objectors, who have a special corps to themselves?

G. H. CLARKE.

Acton County School.

Should all School Books be the Property of the Boy?

THE letter in your July issue entitled "Should English Texts be the Property of the Boy or of the School?" raises the further question whether all the books used at school should not become the property of the boy. The present practice, in most secondary schools where the fee includes books and stationery, is to collect the books of a form at the end of the year and redistribute them to another set of boys when the new school year begins. The custom is as nasty as it is cheap. No boy can be expected to take any pride in a book that comes to him soiled by another's use. Further, the custom is as insanitary as it is uninviting. Fees in secondary schools are so low that a few extra shillings added thereto, in exchange for permanent possession of one's books, would prove no financial strain and an ultimate educational blessing.

Our present practice is to confiscate all a boy's books when he leaves school, his atlas, his dictionaries, and all the useful works of reference he has accumulated, and so to deprive him of any immediate incentive to further study that might be contained within any of their covers.

ERNEST YOUNG.

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The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

FURTHER NOTES ON GERMAN SCHOOLS.

By THOMAS F. A. SMITH, Ph.D.

Author of "The Soul of Germany," "What Germany Thinks," etc.

THE higher classes in German secondary schools have been very seriously affected by the war. The masters' ranks have been depleted to a much greater extent than those of university professors. There are 1,687 higher schools in the German Empire, staffed by 24,870 masters. The Government of Baden issued a report last year on its secondary schools during the first eight months of hostilities, from which it appears that 693 out of 1,564 masters had been called up by Easter, 1915, of whom 75 had been killed. If this proportion holds good for the whole of Germany, then something like 11,000 masters are in the Army. In January it was stated in the Prussian Diet that 7,000 masters from Prussian schools alone had taken up arms, of whom about 1,000 had fallen. A large percentage of German secondary-school masters are reserve officers, for their chances of promotion in the school world are considerably enhanced by making the necessary sacrifices entailed in taking that rank.

German schoolboys are accustomed to a military atmosphere, both in their games and class work. The latter is permeated with a patriotism suggestive of a hothouse; while every class—or school—excursion is more or less devoted to "Kriegsspiele" (war-games or sham fights). In school the boys are trained to look upon service to the "Vaterland" as the highest and noblest of life's duties. It is the cult of "Deutschland, Deutschland über alles!" Hence it is not difficult to understand the enthusiasm with which they flocked to the colours in August, 1914. According to the "Statistisches Jahrbuch für das deutsche

Reich," 1915, there were 420,000 boys in these schools at the close of 1911. A very considerable number of the boys leave school after passing an examination at the end of the sixth class (age fifteen to sixteen); the certificate obtained on passing this examination gives its holder certain civilian privileges and reduces his military service to one year. The "Einjährige-Prüfung" (one-year examination) acts as a powerful incentive to the lower-middle classes to have their boys educated up to this standard. Unless a boy attains it he belongs to the uneducated, and must put in full time in the Army, *i.e.* three years in the cavalry or two years in either of the other branches.

About 15,000 young men (age nineteen to twenty-one) pass the final examination at the end of the ninth class every year. The certificate ("Reifezeugnis") admits its owner to practically any university in the world, to the Army or Navy and the higher branches of the Civil Service. From these figures it is easy to perceive that a large number of intellectual units—in fact, a steadily increasing number—is added to the German nation every year. It would not be saying too much to assert that, in matters educational, Germany is the most democratic country in the world. She has reaped a large harvest from the seeds sown during a century; her triumphs in peace, as well as her military successes in this war, are to be ascribed almost entirely to the popular, efficient system of schools and universities which she has built up, and with which she has bridled the intellectual forces of the nation. England, unfortunately, has been less progressive in this domain—the most important part of the national life. In order that certain classes may be in a position to monopolise the higher walks in life—official and otherwise—the brains of the nation have been starved, sacrificed to class interests. Germany, on the other hand, has thrown open every position

to the best men, which has raised the standard of efficiency in every phase of the national life. General von Kluck is the son of a builder, Marshal von Mackensen the son of an estate agent. Many other facts might be cited to show that the officers' corps is by no means recruited from the aristocratic classes. German boards of education exist for the purpose of developing the nation's brains—not those of one class alone.

Another interesting point of comparison is the payment of salaries. In England higher officials in the educational world are paid salaries far beyond the intrinsic value of their individual work. Often an educational organiser receives a sum equal to or double that paid to a German Minister of Education; the same is true of many school inspectors. In justification of this system it would be useless to urge the higher cost of living in this country, because in that case we should expect English teachers to be in a better financial position than their German *confrères*. That is by no means the case. Both elementary- and secondary-school teachers in Germany are better paid than those in England, although under normal conditions the cost of living is less than here. The total cost of secondary education in Germany is £8,800,000, including the sums paid by parents in school fees. For a mere trifle of £2 to £7 10s. per annum a German father can obtain for his son an intellectual training superior to that provided in our best or oldest English schools. Perhaps the most scathing commentary on English schools is to be found in the absence of higher spiritual and intellectual interests which distinguishes the average Englishman. Our schools, it must be admitted, for the most part fail to implant or awaken them, probably because these institutions are run on the lowest commercial lines. The intellectual in-breeding which has sought to keep a monopoly of departmental and other Government positions for certain classes of the community has caused a lack of fruitful ideas in peace and a dearth of brainy men in war.

At present it is impossible to determine the causes for Russia's breakdown before the German armies in 1915, but the Germans themselves ascribe it to their higher education and superior general intelligence, man for man. In support of this hypothesis they point out that there are, roughly, 700 illiterates to every 1,000 of the population in Russia, whereas Germany has less than one per thousand.

Up to the present no statistics have been published giving the total number of German schoolboys who have participated in the present war. Baden's contingent numbered

1,295 (166 killed), but reports agree that over 80 per cent. of all schoolboys above fifteen years of age have joined the Army as volunteers. Reckoning on this basis, then, at least 35,000 left school during the first year of the war to enter the Army. Here again the military authorities had excellent material at hand for making officers. Many of the letters from schoolboys published in the Baden report mention that their writers have become "Officers-Stellvertreter" (officer substitute, or, more probably, officer's understudy). One letter, dated May 24th, 1915, contains the following: "*Non scholae sed vitae discimus!* How often have we heard that from the lips of our masters in the past. And yet I believe that none of them foresaw the advent of this time. Perhaps it was better so. For it is just that education which we received in the German school which, in spite of the concessions to the practical side of life, still aims at a lofty ideal; it is this which gives us in the field a bitterly necessary counterbalance to the compulsory, one-sided activities of war."

Another letter written from before Ypres runs: "Our troops have performed wonders at this part of the front, perhaps the greatest in the campaign; not dashing deeds, but hard, very hard work. The English possess incredible powers of endurance." In November, 1914, "Eye-witness" reported that German regiments advanced to the attack singing their national songs. They were regiments of volunteers, for the most part schoolboys, and their losses were appalling. On November 11th, 1915, memorial articles appeared in the German Press. Incidentally, it was mentioned that "many a family was still in suspense as to the fate which had befallen their sons in that dreadful struggle."

At the commencement of hostilities 50,000 elementary-school teachers were called to the colours, out of a total of 148,300 male teachers in the German Empire. Since that time the number has been considerably augmented. Up to January 1st, 1916, 8,568 had been killed. These men have been used extensively as non-commissioned officers, being given commissioned rank according to merit. A large number of school buildings were requisitioned for military purposes, e.g. in Munich out of sixty schools thirty-four were taken as barracks and hospitals. The instruction in the schools has—in the widest sense of the word—become war teaching. Special "war-method books" and "war readers" have been got out for use in the schools. The war has invaded every classroom and every subject. Besides bringing home to the young mind the lessons of order, obedience, discipline, self-sacrifice, hero-

ism, and patriotism, some teachers at least seem to have taught war as a gospel and hate as a virtue. One extract will suffice to illustrate the point:—

"Gott strafe England!" is also the prayer of our pupils. May they rightly understand how the English State has diverted riches into England's harbours by piracy, slavery, and the shameless plundering of her Colonies. Now, aided by her Colonies, grown arrogant by reason of her industry, world-commerce, and her mighty fleet, she seeks—under a mantle of cunning hypocrisy—to drive a peaceful competitor from the markets of the world. It must be brought home to the children that English avarice, Russian lust of power, and France's thirst for revenge are the real causes of the war. That which we have not inherited as a tradition must be taught to the nation in and through the school—the necessity for our world, commercial, and political activities. ("Die Schule und der Krieg," by M. Hantke.)

The special reading-books and the numerous war-books for the young have more than a leaning to the bloodthirsty. If credence may be given to one or two writers who have criticised the weekly "Kriegsstunde" (war-lesson), then that institution has been devoted to war-horrors. All in all, it would seem that those responsible for the education of the young, in their endeavours to inflame patriotism, have exposed their charges to the brutalising influences of war. On the other hand, much good work has been done by appealing to the children to work for their soldiers and the Fatherland. In a book, "Krieg und Schule," by the Educational Adviser for Stuttgart, its author reports that during the first war-winter the Catholic children in Würtemberg made and sent the following articles to the front:—65,200 pairs of socks, 20,000 pairs of pants, 11,000 pairs of gloves, 7,500 body-belts, 12,000 scarves, 11,000 knee-warmers, 8,000 storm-caps, 2,250 shirts, 240 vests, etc. Besides these a sum of £1,130 was collected for war charities, and hundreds of packets containing food were sent to soldiers. The children of Stuttgart alone collected 500 cwt. of old metal for the authorities, and 350 cwt. of acorns as a substitute for coffee.

Dr. Kerschensteiner, Munich, has also issued a report of the trade schools in that city. Out of fifty-five schools only fifteen were able to commence work in October, 1914, *i.e.* a month late; but most of the others reopened during the winter. From 474 teachers 135 were in the Army and 12 more doing ambulance work. Only 473 elder pupils presented themselves instead of 2,058, as in the preceding winter; the remainder were doing military service. From the younger pupils 192 volunteered, and 86 were called to the

colours; 30 have been killed and 30 wounded. Further, 900 boys over sixteen joined the military training classes, while 1,853 received a milder form of training during the daytime. Altogether, 2,000 boys in Munich joined the battalion for youths over sixteen; by June, 1915, the number had fallen to 800, but the decrease was not caused by declining interest, for 500 had entered the Army, and most of the others were young factory hands who were doing overtime because of the shortage of labour.

Unless the signs of the times are deceptive, Germany will grow still more militaristic as a result of the war. Compulsory training for boys aged twelve to sixteen has been introduced in all schools throughout the Empire, and voluntary battalions for youths over sixteen. Quite a number of writers are now pleading that the whole of this pre-army training should be made compulsory. Count Moy, one of the most important writers and lecturers on the subject, proposes that boys from the age of six to twelve shall be taken once a week by their teachers for a three hours' march and field-drill, weather conditions to be ignored. At the age of twelve every boy must enter one of the existing boys' brigades, which Count Moy argues should be placed under State control. After the age of eighteen every youth must join the "Junglandsturm," in which he will learn to shoot. The fate of the military spirit in Germany will probably be determined by victory or defeat, but at the present public opinion seems willing to devote more of the national energies to armaments in the future than in the past. Moreover, we may expect to see the educational institutions forced into the service of the great Moloch to a far wider extent than hitherto. A Socialist, speaking in the Saxon Diet on December 9th, 1915, said: "This war has proved the importance of popular education. Those nations with the greatest number of illiterates have gone down before the better educated peoples, which strengthens our case that education is a most important investment for the national funds. In fact, it is at least as important as the military education of our manhood."

Meanwhile, the war has called into existence another type of school: that for the maimed and crippled. Nuremberg possesses already thirty-five such institutions, where the one-armed, blind, etc., are being trained to earn their living in one or other of the handicrafts. According to a local newspaper a successful exhibition of works made by the maimed in these schools was held at Nuremberg in December last. Government lecturers are visiting the various towns and cities to assist

in the work of organisation. In the report of one such lecture it is stated that the speaker impressed upon his audience the necessity of the movement owing to the hundreds of thousands of cripples in the land.

LIBERAL AND VOCATIONAL EDUCATION.

By T. RAYMONT, M.A.

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I THINK it is Mr. Chesterton who somewhere remarks that a washerwoman's philosophy, so far from being the least important, is really the only important thing about her. The paradox is perhaps not quite so extravagant as it looks at first sight. All of us, whether learned or simple, have some sort of philosophy, some sort of total outlook upon life; and it is that total outlook, dim though it may be, which goes far to determine all that one thinks and does. The accomplished philosopher is he who has consciously tried to make his outlook as unified and consistent and complete as possible. But we all try to some extent and on some occasions; and according to the measure of our attempts we are all philosophers.

A number of half-conscious efforts to construct, or to shadow forth, a philosophy of education have lately appeared in the newspapers. Persons of distinction in their respective spheres have extolled the merits of science—often at the expense of the humanities; and of the humanities—often at the expense of science. Others have insisted upon what they call a liberal, as contrasted with a vocational, education. Again, more than 500 parents of boys now at Eton have expressed opinions, usually not lacking in definiteness and strength, about the sort of education, or, rather, the sort of instruction, given at that famous school. But the point at present is that these writers have commonly supported their opinions by arguments which clearly imply their philosophy of life. They have exemplified again what many thinkers, from Plato onwards, have borne witness to, that a philosophy of education and a philosophy of life come ultimately to the same thing.

One of the most remarkable of these essays in the philosophy (and therefore in the practice) of education is that contributed to the *Times* of August 4th by a writer signing himself "D. P." He confines himself to higher education, though, of course, much of what he says would inevitably apply to the lower ranges also. Avoiding the troublesome process of defining his terms, for which I do not greatly

blame him, he makes a sufficiently remarkable distinction between "technical and scientific" education on one hand and liberal education on the other. The former is concerned with such "secondary" matters as chemistry, economic botany, Russian, French, petrol engines, and mathematics. These "come naturally in the way of business"; they are questions of more or less important detail; they are mere "attainments, accomplishments," items of "business equipment"; their significance is "merely occupational." A liberal education, on the other hand, is concerned with the great and primary things, those that touch man's "relation to God and the universe"; and a liberal curriculum would therefore comprise philosophy and history, the latter being understood in a very broad and generous sense so as possibly to include, for instance, the history of scientific discovery. "D. P." accepts, as appropriate starting-points in the present, the Oxford final schools in *litterae humaniores* and in modern history, and the Cambridge classical tripos. Other existing standards of liberal education he would modify in the direction of making them more philosophical and historical; whilst still others, such as the Cambridge mathematical tripos, he regards as hopelessly beyond the pale, so far as liberal education is concerned.

Some of "D. P.'s" detailed conclusions are certainly rather startling. Whether, for example, French and mathematics are to be regarded as "merely occupational" must surely depend upon the sort of French or mathematical studies undertaken, and also upon the occupation. But in the estimation of many people his speculations will be held to deserve attention, if only because they lead him to declare that the controversy about classics and science is "simply silly," and that a person brought up on mathematics alone, or on language alone, or on physics and chemistry alone, is not liberally educated at all. Yet there appears to be a grave weakness in "D. P.'s" contentions, and this weakness is especially apparent when he deals with the question *who is to receive* a liberal education. The fact is that we need, after all, to be clearer about the terms we are using. As Prof. John Dewey reminds us, in a very important volume¹ recently issued, the separation of liberal and vocational education goes back to the time of the Greeks, and was formulated expressly on the basis of a division of society into freemen and slaves—persons who were ends in themselves, and persons who were means to the ends of others; persons who were privileged to live the life of reason and leisure,

¹ "Democracy and Education." (The Macmillan Company.)

and persons who were limited to the life of desire and labour. Now the chief cause of our present educational discontents is that, having gradually abandoned this basis of society, we still maintain the corresponding conception of education, or else adopt a confusing compromise. Nominally at least, and to a great extent really, we have abolished serfdom at one end and privilege at the other, and yet the educational accompaniments of these institutions still flourish. We have advanced far in the direction of democracy, but we have not yet realised that exactly in so far as we are democratic the ancient antithesis between liberal and vocational education ought to have lost its point.

In a democratic society every man's vocation falls into two principal parts. He has a call to the rights and duties of citizenship,² and he has, or should have, a call to the performance of some specialised function by which he commonly, but not always, earns his livelihood. All education is in this sense vocational. Or, if we prefer to retain the narrower meaning of the word "vocation," everyone's education should be at once liberal and vocational. Every citizen, whether rich or poor, peer or peasant, should have a vocation, and should therefore have a vocational education. Fortunately, though we know something of the problem of the "idle rich," the wealthier classes in our own country have risen nobly to the first half of this requirement, but unfortunately not to the second; they are too often amateurs at the jobs they undertake. Again, every man, being born to the rights and duties of citizenship, should receive that liberal education which befits the free-born. So far from this being the case, we have drifted into a position in which no adequate provision is made for the education, liberal or otherwise, of persons between fourteen and eighteen years of age, though they are shortly to receive the full responsibilities of citizenship. In a vast number of cases we have followed Robert Lowe's advice to "educate our masters" only so far as to confer upon them an uncertain ability to read and write by the time they reach the age of fourteen. This gravest fault of our system comes of applying an ancient conception of liberal education to a modern organisation of society; it comes, in other words, of trying to pour the old wine of aristocratic ideals into the new bottles of democracy.

So far, I have written of liberal and vocational education as if only problems of curriculum were involved; but this is not the case.

² I omit here the case of women, assuredly not because I have forgotten them, but because I do not wish to complicate the issue by reference to what is at the present time emphatically "another story."

Our greater public schools and universities tend to maintain the superstition that a subject is illiberal because it is useful, and liberal because it is useless; and when their position is attacked their reply partly takes the form that, after all, their main function is to train character. Intellectual training is held to be in any case subsidiary to moral training, and if the actual results of instruction in Latin and Greek are in most cases useless, yet the very difficulty of the subjects reinforces the hardening effect upon character which other parts of a public school education are calculated—and well calculated—to bring about.

Those of us who have been accustomed to regard the intellectual and æsthetic aims in education as subordinate to the moral aim would, I think, do well to ponder Mr. Clutton Brock's brief but weighty contribution³ to our educational discussions. He insists that unless each of these three aims is desired for its own sake things are bound to go wrong. We must aim at truth for its own sake, goodness for its own sake, and beauty for its own sake. Directly we begin to desire truth for the sake of goodness, or for the sake of anything else but truth, we begin to miss the real value of both. Modern Germany has gone wrong because it has allowed the intellectual aim to predominate, and has sought, not truth for its own sake, but truth for the sake of Germany. And some of us in England have gone wrong because we have allowed the moral aim to predominate, and have in consequence failed to work the intellectual and æsthetic aims for anything approaching what they are worth, whilst at the same time morals have in the long run suffered because of the injury which has been done to the intellect and the heart. After all, it is a maimed sort of character that we get when truth is valued only to the extent to which we can make a profit out of it, or to the extent to which its pursuit hardens the disposition; and when æsthetic culture, whether by way of literature or of art, is carried only to the point of learning to like what it is "the thing" to like.

To sum up, though it may be convenient to retain the distinction between liberal and vocational studies, it is misleading in a modern democracy to speak of a liberal education as suitable for some people and a vocational education for others, because everyone should have an education which transcends this distinction. And, as Mr. Clutton Brock insists, such an education must care for each member of that trinity in unity—the intellect, the heart, and the will—and must care for each for its own sake.

³ "The Ultimate Belief." (Constable.)

OLD PUPILS' ASSOCIATIONS.

By ERNEST YOUNG, B.Sc.

Headmaster, the County School, Harrow.

FOR many years old boys' associations, in connection with boys' schools, have been common enough, though they are not, usually, very active institutions; still they exist. Girls' schools have more recently imitated boys' schools in this respect, while the newer mixed or dual schools have followed suit with even more rapidity and often with more success, for they are able to offer to each sex the undoubted attraction of the presence and co-operation of the other. The war has played havoc with many of these associations, and the present is probably not the most fitting moment to call new bodies into being, but it is certainly a very fitting moment to direct attention to problems concerning their organisation, management, and operations, with the view of securing greater activity and usefulness when the war is over and our former pupils return to us with a renewed sense of duty and loyalty, loyalty to be expressed not in the more narrow view of military service for one's country, but in the wider one of service of all kinds for school, city, and State.

OBJECTS.—The usual objects of such an association are clearly set forth in the Rules and Regulations of the Hornsey County School, though I shall hope to show that there is an even wider field of activity for these associations:—

1. To maintain and preserve association of old pupils with the school.
2. To afford opportunities of intercourse between old pupils.
3. To facilitate the formation of athletic and other organisations for the benefit of old pupils.

MANAGEMENT.—The usual officials are:—

1. *President.*—In many schools this is the headmaster or headmistress. But where the school is one of long standing and there are old pupils of proper age to hold such an office, there is no doubt that the president should be an old scholar.

2. *Vice-Presidents.*—Here there need be no limit as to number. They should include some members of the staff, and in mixed schools these should be equally divided. When I was headmaster of the John Lyon School at Harrow we had a rule to the effect that all old boys obtaining a university degree were added automatically to the vice-presidents' list. In schools where large numbers of pupils afterwards attain university rank this might prove unworkable. Probably the list of candidates for the office could be reduced by expecting vice-presidents to pay an

annual subscription of one guinea instead of the ordinary subscription.

3. *Two Secretaries.*—One of these should certainly be a member of the staff, because he forms a link between past and present in a way that is quite impossible to any former pupil. The County School at Tottenham has tried both kinds of secretary, with the following results. In 1905, when an old student was secretary, there were 40 members. In 1916, with a member of the staff as secretary, there are 470.

The second secretary, who might undertake most of the routine work, such as the issue of notices of meetings, can well be a former pupil, acting under the direction of the principal secretary.

4. *Treasurer.*—Either a member of the staff or an old student; it all depends on the age of the school. We founded an old boys' association at the Harrow County School when we had only ten old boys and the school was less than one year old. In this case there was no member over sixteen years of age, and the work of the treasurer was undertaken by a master, in whose hands it remained till he went to the war. His successor is another master.

5. *Committee Members* not to exceed, say, ten, and to be equally divided in the case of dual schools. Usually, membership of committees is limited entirely to old pupils. In schools less than ten years old, each "year" should have at least one representative on the committee, so that the younger generations, equally with the older, may feel that they have an interest in the management. Where this is impracticable or inadvisable, the last three years should certainly have one representative each. It is important that the most recent of the old pupils should be obliged to take an active part in the management.

GENERAL RULES.—1. The session commences with the school year in September.

2. The annual general meeting is held in September.

3. The annual subscription. The usual subscription is 2s. 6d., but it is as low as 1s. 6d. at the Tottenham County School. Hornsey County School has a subscription of 1s. 6d. for foreign and country members. This subscription includes a copy of the school magazine, which is thus made the medium of communication, an especially valuable one when, as in the case of the Harrow County School, the magazine is issued monthly (three times each term). At the latter school the subscription also includes free admission to all out-of-door functions like sports, when an admission fee is charged, and half price to all indoor functions such as concerts, lectures, etc.

In some schools it has been found that a subscription of 2s. 6d. does not nearly cover expenses, but that the profits on refreshments supplied at social gatherings make up the balance.

4. At least two meetings per term must be held.

A really active association holds a great many more than two meetings a term. Before the war broke out we had, at Harrow, a meeting every Saturday evening during the winter and spring terms.

5. The committee, at the commencement of each year, arranges the complete programme.

This programme is an important matter. If it be unvaried, unskilfully devised, or slackly carried out, it will soon come to an end. Amongst the things undertaken at various schools, one may note the following: Games tournament, draughts tournament, whist drive, debates, lectures or papers either by old pupils or others, informal concerts, the reading of a Shakespearean play, an annual ball, a fancy dress ball, and cricket, football, tennis, and other matches between past and present. The football and cricket matches can profitably be followed by an informal "feed" and sing-song.

It will generally be found that where there are many members there are many interests, and that these interests clamour for expression apart from, but in connection with, the usual meetings and work of the association. Dramatic, football, cricket, chess, and other clubs are almost sure to be demanded. All these side shows have their own sub-committees and are self-supporting. They can make no claim upon the finances of the parent body.

The president and the two secretaries of the association should be members *ex-officio* of all the subordinate committees. Where the school is new and the members of the association are young, the committees need guidance or they may get themselves into all kinds of difficulties. The writer knows of one such young association, where an unfettered dramatic sub-committee got up a theatrical performance and lost £25 over the business. As they had no funds, this debt had to be paid by the school.

One or two other points have been brought to the notice of the writer of this article that may form useful suggestions for those interested in this matter of old pupils' associations.

SPORTS PRIZES.—At the John Lyon School, Harrow, each old boy is asked to subscribe 1s. towards the purchase of prizes at the annual sports. A special prize, for the mile, is bought out of the subscriptions, and the balance is carried forward to the general

funds. Where no prizes are given, as is the case at the Harrow County School, these shilling subscriptions were continued long enough to pay for challenge cups (held for one year only, by the house, and not by the individual winner) and then discontinued. But the idea might be useful in other connections.

MILITARY.—The Old Dunstonians (St. Dunstan's College, Catford) have a company attached to the local Territorial Battalion. This company is officered by masters from the school, and, in peace times, has its headquarters at the school. When the war is over, we may expect the military fever to persist for many years, and it should be possible for most schools to possess, if not a company, at least a platoon, composed of its own old pupils. This should prove a particularly attractive side to the work, especially in small towns, where a stronger local and civic sentiment exists than in London and its suburbs, or even in the largest of our provincial cities.

SOCIAL WORK.—We are all familiar with the valuable work done by means of university settlements such as Toynbee Hall and Oxford House, or by means of the East End missions, such as those supported by Harrow and Eton. A similar field of activity, lying nearer home and capable of development at much less expense, is surely open to the modern secondary day school. The school is free from those sectarian and political divisions that embitter so much of our ordinary lives, and has, in its young and energetic members, already fired by the love of the school with an idea of duty and service, an army of willing workers, ready to devote themselves to useful social work in their own district. So far as the writer knows, only one old pupils' association does much work in this direction. The Hornsey County School has a social work club, the girls of which make clothing for the poor, while the combined forces entertain to tea (with a concert afterwards) the children at a certain school in a poor neighbourhood in London. At the Harrow County School a similar kind of tea and entertainment is undertaken by the Scouts. But the writer has in view the multifarious activities of such an institution as Toynbee Hall. It should be possible for the day school in a small, and for the several schools in a larger, town to form a centre where help of all kinds can be had for the asking from the Old Pupils' Association. Such work would include classes and lectures in various subjects, something on the lines of the University Extension Courses; classes in different kinds of handicrafts, held, if need be, at the homes of the instructors; officers for Scout troops, Church lads' brigades, Girl

Guides; clubs for working-class boys and girls; helpers for bodies like the Guild of Help and After Care Committees, and representatives on District and County Councils, who will keep educational and social questions well to the fore, and so on. The amount of social work that falls to the ground for want of trained, adequate, and enthusiastic help is a disgrace to the schools of the past; its success in the future should be the hope and glory of the schools of the present.

Finally, if an old pupils' association is to be the centre of so much work it should, wherever possible, have its own home. There seems to me little doubt that, where the association is strong in members, a permanent club house could be established on the lines of the ordinary social club. It could not be run on a subscription of 2s. 6d. per annum, but many working men's clubs are carried on merely by the subscriptions of the members plus the profits that come from billiards and refreshments. The chief expenses are rent and servants, and these will vary with the locality. Possibly some school that has already solved this problem might contribute to these columns the results of its enterprise.

EXAMINATIONS IN ENGLISH.¹

By STANLEY LEATHES, C.B., M.A.

WHEN the history of education in England during the last sixty or seventy years comes to be written, the influence therein of examinations and of the examination system will be seen to have been potent for good and for evil. While schools and schooling were being rapidly developed with inadequate support of experience, tradition, and *personnel*, an objective test was needed to ascertain progress and evaluate the results. Thus a vast congeries of examinations grew up, and examination came for a while to dominate teaching and method. Examinations were conducted on a great scale; the work of thousands and of hundreds of thousands was submitted to mechanical tests; and the work of teachers was estimated in accordance with examination results. All those elements in education which cannot, or cannot easily, be tested by examination suffered neglect. The teacher and the student who travelled outside the schedule and the syllabus suffered in their reputations and even in their careers. All were examined alike, tried by the same tests; personality, individuality, originality, were not in that field of vision. Examination ruled the schools; the emancipation of study and teaching has but recently begun. But we are now

enabled, by accumulated experience and tradition, by development of theory and method, by a clearer understanding of the ends and aims of education, to put first the question: "What do we want the teachers to teach and the pupils to learn?" and not until afterwards the question: "By what tests should the results of teaching and study be judged?" We are even able to perceive that there are many results to be desired from teaching and study which escape, and must always escape, the tests of the examination-room.

But it is idle to suppose that we can hope to dispense with written examination. We can devise other tests and give them due weight in our estimation. We can improve written tests and bring them into harmony with better, more sympathetic, more intelligent study and teaching. But we shall not be able to exempt any future generation of pupils from the tests of the examination-room. We may put examination in its proper place and reduce it to its proper proportions. But we shall not be able to do without it.

In approaching the subject of examinations in English—and I shall not be able to do more than approach it—I shall first inquire what we wish our pupils to learn, what study we desire to encourage, and what results we desire to obtain. Then I shall endeavour to indicate how far the results we desire to obtain can be tested by written examination, how far such testing is apt to assist our purpose, and what methods are likely to be most successful. I shall confine myself to examinations designed to test a completed elementary course, or secondary education to about the age of sixteen, or complete secondary education up to eighteen or nineteen. Important examinations are carried out in English of children about the age of eleven or twelve. Of these I have no direct knowledge. The study of English in universities has high importance, perhaps the highest, but I cannot on this occasion even touch upon that.

The importance of the teaching of English is beginning to be widely recognised. Some proportion of intelligent people have always recognised it. In that old, bad public school which professed to teach me only classics and mathematics I can assure my readers that forty years ago the teaching of English was very good, though it was not on the official curriculum and had no visible place in the examinations. I do not say that we all learned our own language and literature; but we all had the opportunity, the stimulus, the necessary assistance. Liberty of study and of non-study was perhaps carried rather far, but some of the results were good. But, whereas then only a small minority had the ideal of English

¹ A paper read at the Stratford-on-Avon Conference of Teachers of English, August, 1916.

study set before them, now the desire at least for effective English study is abroad among all those who wish to improve our elementary and our secondary schooling. We are even dimly beginning to perceive that education has failed if it does not enable the pupil to understand his own language exactly and to use it effectively.

The first need of social and civilised man is to express his experiences, his needs, his knowledge, his feelings, and ultimately his thoughts. His second need is to understand his fellows. His third need is to be able to use a book for whatever purpose of utility, instruction, recreation, or inspiration, circumstances may suggest. His last and perhaps his highest need is of access to the great literature of his country. The first three are accomplishments which can be taught, functions which can be exercised, faculties which can be developed; examination can test the progress of the pupils in methodical, orderly, and correct expression, in the exact comprehension of words, sentences, and periods, and to a certain extent in the capacity to use printed material.

But the highest gift that education can bestow is a taste for good books, a familiarity with the best works of the best writers. Even in the elementary schools it has been found possible to introduce selected pupils before the leaving age to a considerable number of good books. In secondary schools the field can be much further widened, and if a good library is available and the taste is once awakened, a boy or girl of eighteen or nineteen may have, often has, an extensive knowledge of English literature. But this love of good books is a delicate plant. It is one thing to say to an enthusiastic child: "Read this book and that; you will like them." It is quite another thing to say: "Read these books; you will be examined in them." If reading be gently and judiciously encouraged, in process of time great things may be gradually and insensibly achieved. But I doubt if a love of good books was ever fostered by books set for examination. In fact, I think it more likely that the books thus treated have too often become distasteful for ever. The more formal and serious the examination, the greater the results dependent upon it, the worse the effect. A holiday task read at leisure, with an informal paper of questions at the beginning of term, may do good rather than harm. I daresay a school prize for English literature open to volunteers may do good. But it is my belief that set and regular examinations in English literature for schoolboys and schoolgirls are likely to defeat the end which enthusiasts have in view.

I do not think that it is possible to dispense with the English text or texts to be

studied during the term. English can hardly be taught beyond a certain point without texts for study and elucidation. That being so, the form-master may, and indeed should, examine on those books at the end of the term. But I have never been convinced that we—the Civil Service Commissioners—should be doing any service to the study of English by introducing a paper on English literature in our examinations for boys and girls of eighteen and nineteen who have been trained in all manner of schools—still less that there would be any profit in such papers at earlier stages.

The worst result that might be expected from such set and regular examinations would be that the unfortunate candidates would learn up a text-book of English literature. There is no more barren study than the study of a text-book of English or any other literature. If the student has read the works or some of the works of an author, he may get some little benefit by reading in a text-book about him and his contemporaries. But it stands to reason that these young creatures, however wide their reading, cannot be familiar with one-tenth of the authors that properly find a place in a text-book. To learn names of authors and of books, with some brief description of the several works, is sheer waste of time; it improves neither the taste nor the temper of the victims, and teaches them nothing worth knowing.

The next worst result might be that a convention would be set up that certain books should be read and questions might be expected upon them. The field of English literature is so great, and tastes are so various, that it is not desirable to force a specified diet upon anyone; we should be thankful if our pupils read at large, and should refrain from poisoning their happiness, where they can find it, by thoughts of examination.

It is not, in fact, easy to set questions on books that are suited to young people, even if you know what books they have read. In examinations intended for great numbers it is no use bothering the candidates with critical questions on general literature which they cannot as a rule be ready to judge, or on special works which they may not have read. Questions of psychology, analysis, and comparison are equally inappropriate. Questions on matters of fact are unprofitable.

I shall be told that, after all the pains and skill and tact that instructors and advisers have expended in persuading these young folk to read for themselves, it is hard that they should not be able to gain credit in an examination. But I doubt if these pains are really wasted, even in an examination in which English

literature is not one of the subjects. There will be tests of expression in the examination—essays, *précis*, or what not; and expression is best cultivated by reading the best authors. Ideas come by reading; and any test of expression is easier if the writer has ideas to express. Moreover, a good examination as a whole should be a test of mental development. And even if none of these compensations should accrue, we are bound by the limitations of examination; and unless I am mistaken those limitations are in this case inexorable. The wise adviser will take his course nevertheless, and if the choice be between the literature and the examination, he will throw his weight on the side of the literature.

I have urged this view at some length and with as much vigour as appeared to me suitable because I understand that the English Association is likely to advocate elaborate examinations in English literature for boys and girls of eighteen and nineteen. I yield to none in prizing the study of English literature; but I doubt if examinations are a good way of encouraging that study.

We come back then to tests of expression, tests of power to understand, tests of capacity to use printed material. These tests can be conveniently graded to suit different stages of education and development. They are excellent examination tests, because they are not tests of acquired knowledge, and therefore cannot be crammed. They are tests of an accomplishment, of an art, and an art can be more or less tested by a specimen produced under observation. If you wish to learn whether a child can dance, you set it to dance; you do not examine it in the history of dancing, you do not ask it questions on the nature of musical time and the names of the various steps used in dancing; you do not ask it to sit down and write out, *e.g.*, a description of the sixteen evolutions of the sailor's hornpipe. You ask it to stand up and dance. Similarly, grammar must be taught, the distinctions of words must be brought to the notice of the child, the various constructions of sentences must be explained so far as necessary, and spelling must be mastered. But you do not need to examine the children in grammar. You set them an exercise to do, and the child that does its exercise best has also best learnt its grammar and the other things.

An examination in the art of using English is also good because it can be varied; it will not therefore encourage the teachers to teach their pupils tricks. It will leave them free to teach the pupils to find something to say—that is, to use their minds—and to say what they find to say in an orderly and correct manner. The French are far ahead of us in

the teaching of their language; they attain results which at every stage are ahead of those which we have been able on the whole to reach; moreover, they make the teaching of French an exercise in observation, in reasoning, in inference, in reflection. I recommend to the attention of those who are interested in the teaching of English the three books of MM. Rudler and Berthonneau entitled "*Le Français par l'observation sensible*," "*Le Français par l'observation réfléchie*," and "*Le Français par l'observation raisonnée*." I have never met books that seemed to me superior in general method, or, on the whole, more careful and happy in the selection of their examples, though the working out of some of the detail may not always seem felicitous. I confess I am astonished that French children should be capable at the respective ages of dealing with these very difficult exercises. But the work is obviously the result of long experience and prolonged experiment; it is not the product of a theorist in a library.

Examination in the art of using English is therefore a good thing in itself, and a good thing in its effect on the teaching. It sets the teachers to train their pupils in a necessary art and assists in mental training and development.

But in a good examination and with a good tradition of examining, the power to write English, to read and understand, and to use printed material, will be tested not only in the papers directly devoted to English. It will be tested also in the history papers, in the geography papers, in the science papers; in fact, in all papers except the mathematical papers, and even in these the art of orderly exposition can and should be tested. In any examination in which foreign languages appear, translation from one language to another should be a careful test of power to read and understand, and to express in the medium of another language. Not one or two papers only, but all our papers, should be tests of English expression.

Now a few words about grading. The old idea of setting children of fourteen or even of sixteen to write an essay or even to write a letter is now, I think, out of court. The main staple of the paper for such children should be a suitable passage from some book. The passage can easily be graded to suit the age. After the candidates have written a summary of the passage, or a summary of it from some definite point of view, they can be asked questions upon it, one or two of which may be grammatical, while others would require explanations of words or phrases; direct speech may be given to be turned into reported speech or *vice-versâ*. If

time allows, a story may be given for expansion, or a picture or a series of pictures to form the basis of a written description.

Above sixteen the passage for *précis* may grow longer; a passage may be read aloud to be reproduced from memory. At about seventeen a general knowledge paper may be introduced. I am a firm believer in general knowledge papers, if properly constructed. It is true that they are the most difficult to construct. Examiners who can be trusted to set an appropriate general knowledge paper are rare. General papers test the imagination, the invention, the sympathy, the understanding, the range of thought, the common sense of the examiner, more than any other kind of paper. But, well constructed, a general paper should be not only a test of knowledge, but also an excellent test of expression and exposition.

Above eighteen an essay may be introduced; but *précis* and general knowledge should also have a place in the examination. Properly conducted, an examination in *précis* is a test of sense of values, of proportions, of mental agility and mastery, as well as of understanding, expression, and exposition.

I wish to acknowledge my debt to some of the examiners of the Commission, from whom I have learnt much, both of principle and of practice.

THE TEACHING OF LANGUAGES IN A RUSSIAN SCHOOL.

By KATE DOWNING.

AT the close of a brilliant lecture delivered by Dr. Charles Sarolea at Stratford-on-Avon on Shakespeare's birthday, Sir George Trevelyan said that, although he could read with delight in three or four languages, he could only speak like a fool in any but one. My thoughts immediately flew to the statement made by Miss Lucy A. Lowe in her admirable paper published in the March issue of THE SCHOOL WORLD that only one out of four English Ministers who went to Paris for a conference with Ministers of the French Government could speak French. Here Miss Lowe touched a very weak spot in our education, one which is greatly due to the method of teaching languages in this country. As a kind of sequel to her paper I want to emphasise the very serious need there is that languages should be taught much more practically than they are in our schools.

I have had first-hand experience of the extent of our weakness in this respect, gained during four years' residence as English mistress in a Höhere Töchter Schule at Libau (Courland). I had not been in the school a week before

there came over me a sense of pity for the sterility, so far as practical purposes are served, of the mental energy expended on the part of teacher and taught in the average English school life covering a period of from one to six years. Pity deepened when I came into contact with mistresses and girls in Riga, and with ladies and their daughters in the country, with and among whom conversation in English never flagged. Four languages were spoken with equal facility, namely, Russian, German, French, and English.

In addition to teaching English in the school, I gave a good many private lessons, and had, moreover, every opportunity of becoming acquainted with social and family life in town and country, so that my experience of the linguistic proficiency of the people inhabiting the Baltic provinces is not limited to the schoolgirl. I think I can point out how it is others succeed where we fail. The best way to do this is to outline briefly some features of organisation that prevailed in the school in which I was teaching, for they had a very direct bearing on the results attained.

But first I should like to direct attention to a conversation I had soon after my return with the headmistress of an English high school on the subject of the difference between English and foreign girls in the matter of being able to make a practical use of languages. I maintained that the practical and the theoretical can go hand in hand, but her idea was that the grammar of a foreign language should first be taught, slowly and thoroughly, and practical knowledge should be acquired abroad. The chatter of the foreign girl, she said (her experience, I gathered, had been gained during a summer holiday in Switzerland), consisted of a vocabulary of about 1,000 words, and the method by which the ability to converse had been gained would not be of great mental value to the "serious student." She was quite sure the English girl's vocabulary of French and German would be larger than that of the foreign girl's of English, because she had read more. Then, probably, the foreign girl had not been well grounded in our grammar (she doesn't think we have any!) or literature. On all these counts I can prove my friend and colleague to be in the wrong so far as my knowledge goes of Russian and of German girls in the Baltic provinces, and, I might add, of young girls in shops in Bergen, with whom I have had long chats. All *their* knowledge of English had been gained at school.

But, whatever may be the extent of the English girl's vocabulary, of what use is it to her if she cannot string half a dozen sentences together concerning ordinary domestic

requirements, to say nothing of being quite unable to "chatter" on general matters, as the foreign girl can do? The subjective study of a foreign tongue is extremely interesting, and I am with Miss Lowe in all that she says of the value of having a good working knowledge of French so that the great and grand French classics may be studied for the sake of their influence on English thought and mentality for the betterment of the nation. Language as an influence on character is another interesting aspect of the question, but what is wanted for our boys and girls is that the study of languages, within the limitations of school life, shall be more practical than it is. For boys and young men certainly, and almost as certainly for girls with the ever-widening spheres of work opening to them, a knowledge of modern languages is of vital importance in order that our nation may keep its head above water in the future. To the argument of my colleague that the practical knowledge should be attained abroad, I would ask: How many English boys and girls belonging to the middle class can have the advantage of a year abroad after leaving school? If Russians and Germans can speak and write English with ease without leaving their country, why cannot we gain similar proficiency in their respective languages?

How are these more practical results obtained in the schools abroad? In the first place, the whole subject of language acquisition is looked at from a very different and a much more serious point of view than it is with us. The utilitarian idea is in the blood. I do not say that we have nothing whatever of the same point of view, but it is not the stimulus with English parents that it is with Germans or Russians, nor with our young men themselves, unfortunately. With the foreigner a working knowledge of modern languages is regarded as a necessity in life, and not merely as a *dilettante* "extra," an ornament to education. Hence far more time is given to the subject in the schools (and in the homes) than is the case with us. As a typical illustration of the teaching in schools generally in the Baltic provinces, I will give a few details of how languages were treated in the school in which I was English mistress. I am presupposing that my readers are acquainted with the history of the Baltic provinces, so that there is no necessity to explain why a school in Courland thirty years ago should be described as a "Höhere Töchter Schule," or that German was the mother tongue. But it is a point, nevertheless, to be taken into consideration.

Although a private high school, this Libau establishment was under Govern-

ment inspection and followed the Government curriculum. It need scarcely be said that Russian was compulsory throughout the whole school. The youngest children learned to read and write Russian at the same time that they were learning to read and write German, and, as they had to master both Latin and German characters, they were, I thought, rather to be pitied in having to tackle yet another set of symbols. French, compulsory in the first four forms, came next, and English (not compulsory), begun in the third form, occupied the fourth position. In the first and second forms there were few girls who did not take English, and in the third form quite two-thirds learned. In 1889, in connection with the Russification of the Baltic provinces, a change—of which long notice had been given—took place with regard to the use of German. It was relegated to the second place, and Russian was made the official language. All school books had to be in Russian. It was a great metamorphosis, and for a time there was a rather chaotic condition of things. One result was that, in order that the German girls might cope with the difficulty, less time had to be allowed for English.

But in 1884 these were the hours allowed for English—the third foreign tongue, remember:—In Form I., five 50 minutes' lessons a week; in Form II., four; in Form III., three. In Forms I. and II. the instruction was entirely in English. On two days a week the English, French, and Russian mistresses were respectively *du jour*. This meant supervision for the day, when the language of the *du jour* mistress had to be spoken. The opportunities for so doing for the day-boarders were in a 10 minutes' interval which occurred between each lesson and a 20 minutes' luncheon interval. On my own *du jour* days we played English games, in which the three classes learning English joined. And very enviously did the non-learners stand looking on at "Nuts in May," "Oranges and lemons," "Here we go round the mulberry bush," etc., which we played in summer-time. In winter, "How, when, and where" and other indoor games were enjoyed.

But to come to the teaching. Of course with five lessons a week it was possible to do something, and a condition most helpful to progress was that the girls were all at the same level. There were not two or three divisions. One half of a class was a little in advance of the other half in all subjects, because the first half consisted of the girls who were doing their second year in that class (a two years' course was followed in each class), and who would be moved up at the end of

the year; but all did exactly the same work. If a new girl, entering the school and passing the examination for the second class, had not learned English and wished to do so, she had to have (at her own expense) private lessons until she had caught up. This was not so difficult to do, as she was sure to be keen, and, by having individual attention, she got on very quickly. Moreover, she was always present when the English lessons were being given to the class, and as soon as she could she followed on her own. It might also be that a girl passing from a lower to a higher form, which she had to do after two years, would be weak in English or any other subject. In this case she had to take private lessons and be examined at the beginning of the term in which she was to enter her new form.

There were special features of organisation affecting all the teaching. The first had to do with a member of the staff called the *Classen Dame*, who was the directress's right hand in organisation. I am not going to detail her multitudinous small duties. Her chief duty was to sit in a classroom and report on teacher and taught. She had to be well educated and certificated, and she was quite well paid. The schools in Riga had a *Classen Dame* in all the upper forms. There was only one in the schools in smaller towns. The reason for having a lady for this purpose was that the teacher's mind should be free to concentrate on his lesson: he had not to worry about conduct.

But the great controlling feature of the work of the school, making for thoroughness and efficiency and keeping pupils and staff up to the mark, were the conferences of masters and mistresses which were held twice a year—namely, at the end of the summer and the Christmas term—and by the mistresses only each mid-term. While the teaching of all subjects came under review, languages held a very important place. The whole staff was keen, and quite three parts of the time was taken up with the arranging of the lessons of the language masters and in criticising their methods of teaching.

The conference consisted of the directress, nine masters from the gymnasium (a gymnasium is the highest grade secondary, classical, school), who taught in the first and second forms, and seven mistresses. The masters remained only while Forms I. and II. were under consideration, which was generally from three to four hours. The tribunals of the present day are not more severe! Each girl was discussed individually in respect of conduct, progress, attention, order, etc.; in point of fact, she was morally and mentally dissected by the staff,

each member being asked in turn the mark given, individually, under these respective heads. Five was the highest, and if full marks could not be assigned, the reason had to be stated for dropping a whole or half a point. Private note-books faithfully recorded sins of commission or omission in respect of work or character.

But that part of the conference which more directly concerns the subject in question is that which had reference to the arrangement of the work of the school, the number of lessons that had to be given by the individual teachers, the methods to be adopted, etc. The directress and the inspector were somewhat in the position of censors. The masters were questioned on many points—the division of their lessons into oral and written work, and the amount of home work given; and the conference arranged for them the number per week, fortnight, or month of translations, compositions, dictations, grammar exercises, reading and literature lessons, memory tests, etc.

In Form I. I arranged two reading lessons a week, two grammar lessons, and translation and literature alternate weeks. Dictations were generally given in the last quarter of an hour of the grammar lesson. We were urged to combine conversation with the reading lesson by making the girls relate whatever was read in class or set as home work to prepare. To give some idea of the standard of what was read, I can recall, amongst other things, "Julius Caesar," "The Merchant of Venice," "As You Like It," "Lamb's Tales from Shakespeare," "Evangeline," "The Courtship of Miles Standish," and "The Christmas Carol." What made the reading lesson far more interesting and far more useful than in the case of reading a French or German work in our high schools is that we were not studying some set book for an examination, with a certain number of girls getting the lion's share of attention, and I myself feeling more or less worried in cramming and the girls in being crammed. We all worked with equal interest and equal care.

Of course, far more time was given to Russian and to French, and, as regards the former subject, discussion was very critical. At the conference the work done during the session was duly chronicled in official books, with the addition of remarks. The final subject dealt with had to do with the girls who were going in for their examination, and in connection with this matter I think the arrangements were admirable. Those who were considered satisfactory were drafted from the first form into a class called "selecta," and had special instruction to themselves, their classes being held in the afternoon

by the masters. I think this plan far better than that prevailing in our high schools, where, for a whole year, *all* the girls in certain forms take the prescribed amount of work set for a University Local. The examination girls cram at a limited amount of bookwork, and, as regards languages, although they may have swallowed all the Wellington College French grammar and Aue's German grammar (including the small print), they will be quite unable to converse.

I could enumerate many instances of astonishing practical acquaintance with English that I met with abroad. I recall to my mind two Russian children, aged respectively eleven and twelve and a half, who had learned English with their mother, a Russian lady who had never lived in England but who spoke English fluently. I was enchanted with her children, who chatted with the greatest ease, and showed an intimate acquaintance with the most familiar stories and events of English history as related by Charlotte Yonge, whose history for children they had read all through. We do not read nearly enough in our schools, and our foreign mistresses speak too much English. In Forms I. and II. of the Libau school, whatever the language being taught, instruction and explanations had to be in that language.

To go outside school experience, I might refer to the diligence with which clerks studied English after business hours, and to the eagerness with which German merchants (new-comers to the province) learned Russian by taking lessons daily. They knew languages were the best door to business, and in recent years the German has made tremendous strides in the Baltic provinces by starting factories and building up trade in all sorts of commodities.

In our boys' municipal and commercial schools I should like to see French and either Russian or Spanish compulsory in the upper forms. Of course, after the war we are hoping not to trade with Germany, and it may be thought by some people that that language can be dropped. I am not one of these, for the same reasons as those given by Miss Lowe, but I do not think we can be too insistent about learning Russian. We want it for commerce and for the diplomatic service. It will enable us to capture markets which the Germans have long controlled. I have only resided in one corner of the Czar's great Empire, but I saw quite enough to open my eyes to what the German was scooping in, and what we were missing even in that little corner.

Languages for colloquial purposes have been far too long neglected by us. But it is not too late to make good our remissness. Our

schools must be the reformers, and reform can be made in many directions. To take one alone (I could point out many others), hours spent in analysing Shakespeare and Milton might with advantage be devoted to foreign languages, but we should see to it that they are taught primarily for objective ends rather than for subjective enjoyment.

PERSONAL PARAGRAPHS.

IT is with very great regret that we record the death of Sir W. Ramsay, late professor of chemistry at University College, London. Sir William Ramsay was born in Glasgow in 1852. Educated at the Glasgow Academy and University, he proceeded to Tübingen, and there took his doctorate with a thesis in organic chemistry. He returned to Glasgow in a teaching capacity, and after six years was elected to the chair of chemistry at Bristol University College. From 1881 to 1887 he occupied the important post of principal of Bristol University College. His life-work, however, was carried on in the laboratories of University College, London, whither he was called in 1887. From that date until 1912 a stream of masterly and brilliant researches in inorganic and physical chemistry issued uninterruptedly. The most important of these were the molecular surface energy of liquids; argon, a new constituent of the atmosphere, followed by the isolation of neon, krypton, and xenon; the identification of helium, until then only known to exist in the sun's atmosphere; and of late years epoch-making work on the emanation of radium, its properties and transformations, its characterisation as an element, and the determination of its atomic weight. Sir William Ramsay published a text-book of chemistry quite unique in its treatment of the subject, an excellent volume dealing with the gases of the atmosphere, and edited the well-known series of "Text-books of Physical Chemistry." He was an ideal teacher; he infused enthusiasm into his students; his geniality and kindness endeared him to all; his brilliance of conception was unsurpassed; and therefore he collected around him a school of research second to none. He died full of honours; he was created K.C.B. in 1902, was F.R.S., Commander of the Crown of Italy, Knight of the Prussian Order Pour le Mérite, Officier de la Légion d'Honneur, and was an honorary member of important scientific societies throughout the world.

* * *

MR. CYRIL NORWOOD, headmaster of Bristol Grammar School, has been appointed master of Marlborough in succession to the Rev. St. J. B. Wynne-Willson, now Dean of Bristol.

This appointment will give great satisfaction to the teaching profession, for few living schoolmasters have shown a greater natural bent for the teaching profession or have been more successful. Mr. Norwood did not drift into the teaching profession; he took the first place in the Home and India Civil Service List, and was for about two years a First Class Clerk at the Admiralty. He then went to Leeds Grammar School as classical sixth-form master, a position he retained until he went to Bristol some ten years ago. While at Leeds he was one of the men who put immense energy and good will into the organising of the Assistant-masters' Association in the north. His success at Bristol has been notable. He goes from two city day schools to Marlborough with the hearty congratulations and best wishes of everyone who has come in contact with him.

* * *

DR. W. ECCLES has been appointed to the professorship of electrical engineering and applied physics at the City and Guilds Technical College, Finsbury, in succession to the late Prof. Silvanus P. Thompson. Dr. Eccles is reader of graphics at University College and the author of "Wireless Telegraphy and Telephony"; he has also written numerous papers on subjects connected with electrical engineering.

* * *

THE Council of Bedford College has appointed as secretary of Council Miss Margaret S. Clarke, Natural Science Tripos, Cambridge (since 1912 assistant-inspector under the National Health Insurance Commission), in succession to Miss McKnight, who has been appointed principal warden of the Hostels for Women Students, Edinburgh.

* * *

CAPT. H. M. ADCOCK, Lancashire Fusiliers, was killed on July 5th. Mr. Adcock was educated at Ellesmere College, Salop, and Christ's College, Cambridge, where he took his B.A. degree in the Medieval and Modern Languages Tripos. After spending a year at the Realgymnasium, Frankfurt-an-der-Oder, he returned to this country and joined the staff of Bablake School, Coventry.

* * *

THE death of Capt. F. H. Emmet, of the Leicestershire Regiment, is announced. Mr. Emmet was born in 1890, and educated at Lancing College and at Keble College, Oxford. At both places he was a keen member of the O.T.C. After taking his degree he was for a short time a master at Allen House, Woking. In August, 1914, he joined the O.T.C. camp at Aldershot, and shortly afterwards received a

commission. In January of last year he was promoted to captain. His Colonel writes: "He had such a very charming personality that we all feel his loss very deeply. He met his death in a most gallant manner."

* * *

SECOND-LIEUT. A. T. VARDY, Royal Warwickshire Regiment, killed on July 4th, was the only son of the late Rev. A. R. Vardy, of King Edward's School, Birmingham. He was educated at West House School, Edgbaston, and King Edward's School, Birmingham, going from there to Shrewsbury before joining Pembroke College, Cambridge. On completing his degree he was appointed classical master at Highgate School.

* * *

CAPT. E. A. HASELDEN, West Yorkshire Regiment, died of wounds on July 9th, in his thirty-fourth year. He was a schoolmaster trained at Carmarthen College. He enlisted in the 1st City of London R.A.M.C., rising quickly to the rank of sergeant, and was afterwards transferred as lieutenant to the West Yorkshire Regiment.

* * *

CAPT. R. S. SMYLLIE, Royal Scots Fusiliers, has been killed in action. Mr. Smyllie, who was a London graduate, was formerly one of the principals of Lewisham House School, Weston-super-Mare; he joined the staff of Chelmsford Grammar School in 1907, and remained there until he was appointed headmaster of the Grammar School, Sudbury, Suffolk, in 1911.

* * *

CAPT. H. F. THOMPSON, Rifle Brigade, is now reported killed. Mr. Thompson was a master at Edinburgh Academy and afterwards at Charterhouse School until he joined the Rifle Brigade. He was educated at Trinity College, Dublin, where he obtained in succession a sizarship, scholarship, and gold medal for mathematics.

* * *

LIEUT. W. H. MILBURN, of the Suffolk Regiment, is reported killed. Mr. Milburn was educated privately and at Emmanuel College, Cambridge, where he obtained a first class in the Natural Science Tripos. On leaving Cambridge he was appointed a master at Framlingham College, where he remained until he joined the Forces.

* * *

LIEUT. FRANK STREET, Royal Fusiliers, was killed on July 7th. Mr. Street was educated at Honiton Grammar School, at Westminster, and at Christ Church College, Oxford. While at Oxford he captained the football team in '93 and played for the Corinthians. He was

formerly a master at the Forest School, Walthamstow, at Glenalmond, and at Uppingham. On the outbreak of the war he joined the Public School Battalion of the Royal Fusiliers, received his commission in February, 1915, and went to the front in the following November.

* * *

MAJOR G. M. CLARK, Northampton Regiment, was killed on July 14th, at the age of thirty-six. He was educated at Bradfield College and at St. Catharine's College, Cambridge, of which college he was a scholar. Since 1903 he has been on the staff of Bradfield College, where he will long be remembered as the popular secretary of the Old Boys' Club.

* * *

CAPT. H. C. HARRIS, Royal West Kent Regiment, was killed on July 3rd. Mr. Harris was educated at St. Olave's Grammar School. He graduated at London University and entered the teaching profession. On the outbreak of war he received a commission and went to the front at Easter, 1915; in January last he received his captaincy. His C.O. writes: "He was a most able commander, whose place it will be difficult to fill."

* * *

LIEUT. R. G. SCRASE, Gloucester Regiment, was killed on July 20th. Mr. Scrase was educated at Clifton College and at Oriel College, Oxford. For a time he was a master at Clifton College, and for some years at St. Michael's, Westgate-on-Sea.

* * *

CAPT. C. J. S. WRIGHT, Leicester Regiment, who was killed on July 14th, at the age of twenty-six, was educated at Radley School and at Hertford College, Oxford. On leaving Oxford he obtained a mastership at Earleywood School, Ascot, which he retained until the summer of 1914.

* * *

LIEUT. E. H. HARPER, of the South Staffordshire Regiment, who was killed, at the age of thirty-three years, was assistant-lecturer at the University College of North Wales, Bangor. He was a graduate of Dublin and of the Royal University of Ireland.

* * *

LIEUT. L. P. ABBOTT, who was killed on July 14th, was educated at Clee, Grantham, King's School, Canterbury, and Exeter College, Oxford. He was a member of the O.T.C. for three years, and having passed in military strategy and history received a commission in 1914. Before receiving his commission he was a master at Bramcote School, Scarborough.

ONLOOKER.

SCHOLARSHIPS FOR HIGHER EDUCATION.¹

By H. BOMPAS SMITH, M.A., M.Ed.

Professor of Education and Director of the Department of Education in the Victoria University of Manchester.

IN 1913 the Consultative Committee began an inquiry into the provision of scholarships and exhibitions from secondary schools to universities and other places of higher education. This inquiry was interrupted by the war, but in 1915 the Board of Education requested the Committee to report on the provision of such scholarships in relation to the needs of industry and commerce. The Interim Report gives us the results of this more limited inquiry, and the special circumstances in which it has been produced are reflected both in the scope of the investigation and in the point of view from which the whole problem is approached.

The Committee was impressed by the need for preparing the nation for the commercial struggle which will follow the conclusion of the war, and has endeavoured to indicate the measures by which the existing scholarship system may be made a more effective instrument for promoting this preparation. The efficiency of a scholarship system, however, depends largely upon the character of the schools and other institutions at which the scholarships are tenable or in which the candidates are trained. The Committee was therefore led to discuss the chief changes in our schools and institutions for higher education which are needed in order to provide adequate educational opportunities for the various classes of scholarship holders. It lays down the general principles that "general education should be carried on for each grade of pupils as far as it seems likely to be profitable and circumstances permit. But after it terminates abundant opportunity should be given for further practical technical, or technical and scientific, or scientific instruction" (p. 13). It suggests that these principles might be applied in the case of boys and girls leaving school at or before sixteen years of age by increasing the number of trade schools and junior technical schools for children who had previously attended elementary schools until they were about twelve or thirteen respectively. For boys and girls who will continue their full-time education until they are eighteen or older further facilities must be provided. The public schools might with advantage devote more energy to scientific and practical training, and the strengthening of the upper

¹ Interim Report of the Consultative Committee on Scholarships for Higher Education. [Cd. 8291.] 4½d.

parts of selected secondary schools is urgently required. Senior technical schools providing continuous scientific and technical instruction for boys and girls from sixteen to eighteen should be made more numerous and efficient. It ought also to be possible for able students in part-time schools to pass by means of scholarships to universities and higher technical institutions.

The greater part of the Report is devoted to the consideration of the various classes of scholarships which lead from the secondary schools to the universities. The present system is criticised on the ground that the scholarships are usually treated as rewards or as a means of enabling meritorious students to enter universities, not as an instrument for promoting national efficiency. "Scholarships may be reasonably regarded as ear-marked for the special purpose of training youth in such learning as is likely to be needed for national service" (p. 36). The opportunities for such training have been increased by the foundation of new universities and the widening of university curricula. Literary training is needed for some forms of national service, *e.g.* in the higher branches of the Civil Service, but there is a special need for training in technology and science. The nation requires a more widespread knowledge of science, both pure and applied, and a more general interest, especially among employers, in scientific principles and results. This requirement can be met largely by a liberal supply of scholarships for students of science and technology. There should be no lack of suitable openings for men and women who have completed a university course in technology or commerce.

The methods by which scholarships should be awarded are discussed at some length in the Report, and its chief recommendations are summarised in the extracts reproduced below. The proposal that the award should be made by a board of examiners who would not be guided solely by the marks obtained in a written competitive examination has much to recommend it. It is perhaps more doubtful whether this board should be composed exclusively of representatives of a single university without any representation of the secondary schools or other outside body.

As regards the adequacy of the present provision of university scholarships, the Committee considers that there are not enough scholarships to secure for the universities as many qualified students as they could advantageously admit, nor are there enough to provide the nation with the highly trained men and women it requires, or to secure practical equality of opportunity for merit. If, however, we regard only the number of properly

qualified candidates which the secondary schools are now able to produce, the existing supply of scholarships is adequate. Hence an improvement in our higher secondary education must precede any large increase in the number of scholarships provided. On the other hand, the present supply is unequally distributed, and there is a deficiency of university scholarships from senior technical schools, and particularly of scholarships for women.

Incidentally the Report directs attention to two important points which are sometimes forgotten by hasty educational reformers, *viz.* the necessity for carefully considering the chances of suitable employment for scholarship holders at the conclusion of their course, and the undesirability of expending public money upon men and women who are unable, owing to lack of ability or other causes, to take full advantage of the educational opportunities afforded them.

The valuable information and suggestions contained in the Report cannot be appreciated without a careful study of its full text. We shall most of us agree with its main contention that there is urgent need for a more general application of scientific methods in many departments of our national life. Its detailed recommendations also deserve the respectful consideration of the authorities concerned. But in spite of its merits I cannot think that the Report gives us a satisfying discussion of the important subject with which it deals. In reading it one has the feeling that the complexity and difficulty of the social and educational questions raised have been inadequately realised. I may instance the light-hearted commendation given to a system of part-time technical schools established by individual firms. Moreover, the Report is open, in my opinion, to the serious criticism that it is based upon a one-sided conception of the purpose of education. Undoubtedly one of the chief aims of a national system of education is to train men and women for the service of the nation. But if this aim is accepted as paramount we are committed to the German doctrine that the nation's welfare is the supreme end to be achieved, and that other ends, such as the welfare of individuals or the realisation of spiritual ideals, are of subordinate importance either because they are intrinsically less valuable or because they are wholly included in it. No doubt the authors of the Report would deny that such a theory underlay the recommendations they have made. They appear, however, to have had before their minds a picture of the nation organising itself on scientific lines to meet industrial competition, and using education as an instrument for rendering its organisation

more efficient. In contemplating this picture they have not quite remembered that education, even if technological, is ultimately concerned with the realisation of truth, goodness, and beauty in individual lives, and that national prosperity is valuable just because it is a means for the attainment of this same end.

Education can help the State and the State help education, but neither can be subordinated to the other. Moreover, while our boys and girls are citizens, finding in national service one of the chief aims of their lives, yet they are also members of other associations, such as the family and the church,² and cannot, therefore, be educated as citizens and nothing more. The nationalist view of education, while valid within limits, is too narrow, and confounds the ultimate purpose of human life, and hence of education, with one of the temporal forms in which it finds expression.

It may be objected that the more comprehensive educational ideal is that of liberal, as contrasted with technological, education. Without altogether denying the force of this objection, I should reply that the definite line drawn in the Report between general and technological education cannot be maintained. But even if we isolate the question of technological instruction the wider aim must still be kept in mind. Is our object to increase the pecuniary value of the articles we produce, or is it to train craftsmen with a real joy in their work? Are we to think primarily of the workman or of the man? The answer to this question will affect the methods by which our scholarships are awarded as well as the course of education which the holders will pursue. Undoubtedly we should endeavour to attain both aims, but the lower aim must be subordinated to the higher, and not *vice versa*.

Perhaps the gravest danger which threatens English education at the present juncture is that of being dominated by the impulses of the hour. Unfortunately the Report before us illustrates this danger.

EXTRACTS FROM THE REPORT.

GENERAL CONCLUSIONS.

Perhaps we should have begun this inquiry by raising the question whether the scholarship system was either necessary or useful. But in our opinion it is too firmly rooted in the manners, habits, and character of this country to be dislodged, even if it were thrice condemned by theory. Moreover, there are many to whom knowledge is unattainable by whatever sacrifices without assistance. We have thus accepted the system of scholarships as a thing given, which has grown up with a benevolent purpose, though without a plan. Legislation comparatively recent and the policy of

Government, local and central, have made it possible to frame a plan, though it may be more difficult to secure its adoption. We shall be content if we have made some contribution to such a general plan.

Considering scholarships from secondary schools to universities in organic relation to a system of national education, we found that scholarships at certain stages of that education were relatively abundant, at others absent or deficient. Considering scholarships—for the purposes of this interim report—especially from the point of view of scientific and technological education, we have been led to suggest the establishment or further development of scholarships from elementary schools to junior technical schools; scholarships from secondary schools and—to meet exceptional cases—from junior technical schools to senior technical schools; scholarships from senior technical schools to universities or other places of higher education; an improved position of scholarships for higher secondary education; scholarships for students trained in evening classes or works-schools to the universities or technical colleges; and prolongation of scholarships at universities for training and initiation in scientific and technological research. We have also indicated the necessity of drawing, by whatever means, the better talent from the rural districts and from the rural labouring class for higher education. With regard to scholarships from secondary schools to universities and other places of higher education, we have formulated certain recommendations set forth below. Though the system of scholarships is already expensive, we consider that judicious expenditure, wisely directed and well administered, will be quickly repaid, with abundant profit, to individuals, to localities, and to the nation, at any rate on the scientific and technological side, provided that the scholars are well selected.

Having regard to the history of the past, and the probable course of events in the future, we do not think it desirable to rely upon the local authorities for any considerable part of the expense required for the purposes considered in this report. Progress in these matters should be rapid, and rapid progress can only be secured by a liberal provision of funds from national revenue. The investment will be, in our opinion, abundantly remunerative, and the more rapid the progress the greater, as well as the earlier, will be the return. We endeavour in the next paragraph to indicate roughly the nature and amount of the expenditure which will, in our opinion, be necessary for these purposes only, leaving out of account grants of capital sums and annual subsidies to universities and schools of technology, and the sums necessary for founding new technological and technical schools or departments when required. In this connection it may be noted that Government subsidies to universities in Germany amount for the year 1912-13 to not less than £1,500,000. Similar subsidies in England and Wales to universities and university colleges were, in 1913-14, only £265,000.³ We have spoken in this report of the new secondary-school examination which

² I use this term to cover all associations which aim directly at the development of ethical and religious interests.

³ These figures do not include the grants to the German technical schools of university rank, nor the Parliamentary grant to the Imperial College.

was recommended by this Committee in its report to the Board on that subject. We urged in that report that the necessary expense should not be spared for bringing this important reform into operation. Whatever is necessary for this purpose must be added to the sums mentioned below. We must be prepared after the war for a great increase in the cost of education, and not only of scientific and technological education, if we are to make good our shortcomings in the past.

Larger grants will be required for the upper parts of such grant-aided secondary schools as may be able to give to an increased number of pupils the higher secondary education which is at present so deficient. For this purpose a grant-in-aid to selected schools of £100,000 a year, to be met by a similar annual sum from local funds, might be sufficient as a beginning. It is further necessary that between sixteen and eighteen, at the time when special inducements to begin earning press upon parents and scholars, maintenance grants of sufficient amount should be offered to promising scholars. If these maintenance grants averaged £25 for each scholar, if 1,500 such maintenance grants were given every year, and the average tenure were two and a half years, the cost would be something more than £90,000 a year. As regards scholarships in scientific and technical subjects from the secondary schools to the universities, etc., if only 250 of these were provided every year, and if the normal scholarships at the universities be estimated at £90 a year for three years, the annual cost would be £67,500 a year. . . . A further sum of £25,000 would be well expended in grants-in-aid to the local authorities to encourage them to increase the number of their scholarships to the universities, and a considerable proportion of this sum should be set aside for the encouragement of such scholarships for women. If 100 scholarships from senior technical schools, etc., to the universities were given annually, the cost would be £27,000 a year after the scheme had come into full working. We have suggested in our report that £20,000 would be well expended in the prolongation of scholarships at the universities, and that this sum should be wholly provided from national funds. Much of the ultimate value to the nation of the best of these scholars will depend upon the facilities which can be given to them for research and post-graduate work after taking their degrees or diplomas. . . .

We consider that the system of scholarships at every grade of education should be judged from the point of view of national needs. The nation needs men and women proceeding from each of these several grades who possess definite acquirements. Scholarships should be devised with the conscious purpose of aiding the most fit to gain the acquirements needed. The exceptional needs of the nation are at the present moment, and will be for some time to come, rather on the scientific and technological side than on the literary side. Those of us whose main affection is for letters and all that letters can give concur, however reluctantly, in this conclusion.

On the side of science and technology in relation to the industries and commerce of the nation the greatest needs of the nation are ranged by us in order of prac-

tical priority as follows, though their satisfaction should proceed as far as possible contemporaneously and concurrently.

The first need is the wider recognition, especially by employers, of the benefits that can be obtained by the employment in industry, agriculture, and commerce of men trained in science—in all grades, but especially for directive and advisory posts. A great improvement is already seen; but public opinion needs further enlightenment.

Secondly, the most useful thing that can be done without any great increase in the means at present at our disposal is to encourage research in existing institutions after graduation. There were probably before the war more men and women fitted to be trained in research than were secured for this public service. The prolongation of scholarships in suitable cases, which we recommend, is one means that is available; other means fall within the province of the Committee of the Privy Council.

Given a limited amount of money available annually, the next need would be to assist existing institutions for training in science and technology, to enable them to improve their equipment, increase their staff, attract more highly qualified teachers, and introduce new subjects of study; and to establish new places of higher technical and scientific instruction where needed. To bring existing institutions fully up to national needs a great capital sum and income would be required. But any sum, well expended, would be useful. However, in view of the needs of the nation and the Empire, it seems probable that the larger sum will be forthcoming, at whatever sacrifices in the immediate future.

Improved and extended higher secondary education is needed. Side by side with this, with the strengthening of universities and technical schools, and with an increasing demand for scientific workers, an increase in the supply of scholarships from secondary schools to universities will be required. This should move forward *pari passu* with other improvements. •

RECOMMENDATIONS.

Methods of Award of Scholarships to Universities.

That every local authority offering scholarships from secondary schools tenable at a university entrust to some university the award of such scholarships. That Government scholarships be allotted to the several universities and be similarly awarded.

That such award be made according to the responsible judgment of a board of about five awarding examiners, after consideration of the marks allotted and the reports made by the examiners in the several subjects, after interviewing selected candidates, after such further scrutiny of the written work as may seem to the board desirable, and after weighing in cases of doubt such further evidence as may be made admissible by the regulations.

That evidence of general education up to an adequate standard be required as a qualification for appointment to scholarships from secondary schools to universities.

That a serious test in English be imposed on all

candidates in such competitions, and be taken into account in the award of scholarships.

That subjects be grouped for purposes of examination according to some reasonable principle so as to discourage excessive specialisation on the one hand, and heterogeneous study on the other.

That the examination be designed to encourage an adequate breadth of study, but that nevertheless the boards of examiners have full discretion to recognise either exceptional merit and promise in one subject, or general excellence over a wider range, as they think fit.

That, in view of the special need of encouragement for scientific and technological studies, scholarships be awarded somewhat more readily to candidates who intend to pursue such studies than to others.

That no examination for scholarships from secondary schools to universities be regarded as satisfactory in which more than two hundred candidates are examined in one batch.

THE EDUCATION REFORM COUNCIL.

THE Education Reform Council was initiated by the Teachers' Guild in April last. Its object is to consider the condition of education in England, and to promote such reforms and developments as may appear desirable. Already the Council includes more than a hundred persons prominently associated with education and industry. Among the officers may be mentioned:—President, Sir Henry A. Miers; vice-presidents, Prof. Gilbert Murray and Dr. M. E. Sadler; chairman, Dr. William Garnett; and honorary secretary, Mr. G. F. Daniell.

At the outset the Council appointed nine committees to inquire into and report upon desired reforms and developments in the following directions:—

A.—Administration, including co-ordination of various grades of education, public and private. Chairman, Mr. Stanley Leathes; secretary, Mr. G. F. Daniell.

B.—University and higher technical work, particularly in relation to industry and commerce. Chairman, Dr. C. W. Kimmins; secretary, Mr. T. Ll. Humberstone.

C.—The training of women for professional, technical, and commercial occupations, and for domestic life. Chairman, Miss A. Hitchcock; secretary, Miss E. M. Zimmermann.

D.—Public-school and other secondary-school curricula and methods, including the relation of instruction to vocations and to citizenship. Chairman, the Bishop of Southwark; vice-chairman, Mr. Nowell Smith; secretary, Miss Crosby.

E.—Elementary-school curricula and methods, and further education after fourteen.

Chairman, Prof. T. P. Nunn; secretary, Mr. T. G. Tibbey.

F.—Training and status of teachers; educational research. Chairman, Miss Lloyd Evans; secretary, Mrs. Bannister.

G.—Medical service and physical education. Secretary, Miss H. A. Martin.

H.—Character training and training for leisure. Chairman, Canon Masterman; secretary, Miss K. Stevens.

I.—Examinations; methods of selecting candidates for scholarships and public appointments; promotion of pupils. Chairman, Prof. Whitehead; secretary, Mr. E. K. Hanson.

The Council has now circulated among its members an interim report. The document is in no sense a final pronouncement upon the issues raised; rather it is a record of preliminary work and of tentative expressions of opinion by the committees. In view of the urgency of the problems, it appears desirable that a wider circle of educational workers should have an opportunity of considering them before the committees resume their sittings in September. We therefore bring before our readers the following summary of opinions gleaned from the various reports:—

(1) There should be (i) universal full-time education up to the age of at least fourteen years; (ii) part-time education of all children not in attendance at full-time day schools or boarding schools up to the age of at least seventeen years. This part-time education should be carried out in the daytime for three working half-days (or equivalent).

In order to carry out (i) and (ii) it will be necessary to secure an adequate supply of properly graded schools, and to link up the universal full-time education with the State-supervised further education of children above the age of fourteen years.

(2) (a) For the purpose of increasing the number of students receiving higher education, the State, in conjunction with the local authorities, should give assistance so far as is required to all who at the appropriate age show ability indicative of special aptitude for higher education.

(b) Assistance should be given for the purpose of higher education (including university, higher technical, and professional education), and it is better to allot such assistance on the basis of a standard achieved than as a competitive prize.

(c) For the contemplated extension of higher education it will be necessary to give assistance to enable the school life of suitable boys and girls to be prolonged from sixteen to eighteen.

(d) The "two-examination" scheme of the Board of Education could be utilised, with modifications, for awarding assistance (i) at the age of sixteen for prolonging school education, (ii) at the age of eighteen for university or other education of university standard.

(3) (a) It is desirable that the age for admission to a training college should not, as a rule, be less than eighteen.

(b) It is desirable that candidates should have some practice in teaching before admission into a training college, and that this practice should be carried out in specially selected schools staffed by persons with special qualifications and paid at special rates.

(c) The present academic standard which qualifies for admission may be regarded as a satisfactory minimum, but the committee would strongly urge an extension of the post-graduate professional course of training.

(d) Future teachers should not be considered fully qualified until, after having passed through a training college course, they have also satisfactorily completed as probationary teachers a period of not less than one year in the same school, or not less than eighteen months in not more than two schools.

(4) (a) Further education between the ages of fourteen and seventeen should, for reasons of health, be in the daytime.

(b) All schools should be medically inspected annually, and a report of such inspection should be furnished to the central or local authority. (It should be noted that the status of the school medical officer fundamentally affects the efficiency of medical inspection.)

(c) A knowledge of school hygiene should be required for admission to the Teachers' Register; and no person without such knowledge should be regarded as fully qualified to be head of a school, whether publicly or privately owned.

(5) Prevention of infant mortality is largely an educational matter, hence opportunity should be given for women students who purpose being senior school teachers to take a special course of mother-craft and associated hygiene. This might be taken within a post-graduate course of training, or as a post-training course by non-graduates.

(6) (a) More adequate provision should be made for the instruction of young parents in the moral problems connected with the upbringing of children, and there should be closer co-operation between school teachers and parents.

(b) Among the various ways in which this co-operation may be fostered are: interviews with parents when children enter the school, or come up from the infant school; reports on school work, which should be as detailed as possible, on character as well as educational progress; gatherings to which parents are invited, and at which opportunities are afforded for friendly conversation between the staff and the parents. Medical inspection has helped to foster co-operation between the school and the parents, and "school journeys" have been a valuable influence in the same direction.

(c) One special direction in which closer co-operation between parents and teachers is greatly needed is in regard to the sex question, in its moral rather than its physiological aspect.

(d) The psychology of adolescence should be, even more than at present, a specialised department of medical science, and the school doctor has an important part to play in character training.

(7) The importance is urged of the employment in great concerns of graduates duly approved in respect

of character (in its widest sense, industry, punctuality, perseverance, integrity, tact, imagination, etc.) and ability. It is important that employers who desire to bring graduates into their businesses should consult the appropriate university authorities before making their selection.

(8) Generally, it is urged that great importance should be attached to the educational side of business. This educational aspect is well understood in many American businesses. The need for this kind of educational organisation in a great concern is becoming recognised in some quarters in this country, but as yet little has been done towards creating such organisations. There are notable exceptions, but in general the problems of training the future leader or director have not been thought out

(9) (a) All girls leaving school at the age of fourteen should be required to attend day continuation classes during working hours. In connection with the London County Council Central Schools, it is recommended that each child should be allowed to finish a four years' course at these schools, and that further facilities in the way of scholarships should be provided to enable promising children from these schools to enter the secondary schools at the age of fourteen.

(b) The first aim of continued education in the future (as of the women's institutes at present) should be to help the woman worker to increase her general education and to prevent her from sinking intellectually below the level at which she left the elementary school—in short, to make a good citizen as well as an intelligent craftswoman. As a result of experience it has been found that good trade or business training induces a desire for general culture. A better development of schemes for physical exercises would be good for character and physique, and might meet the requirements of special bodies—e.g. women police.

(c) There is need for additional facilities for the study of the sciences and occupations concerning public health.

(d) Early action seems desirable to remedy (i) the lack of provision of daytime instruction for girls compelled to leave the elementary or central school by the age limit; (ii) the injury to education by the action of Government departments who secure girl labour through Civil Service examinations.

THE CONFERENCE OF TEACHERS OF ENGLISH.

THE Conference of Teachers of English held at Stratford-on-Avon on August 7th-12th was well attended; there were about 180 members, and, as a rule, the audience numbered well over 200. This result was mainly due, as in previous years, to the enthusiasm and organising capacity of the secretary, Miss Dorothy Macardle. The great room of the Grammar School, in which Shakespeare had passed many a day, was filled every morning by an eager company of teachers—mainly women, as was to be expected in war-time. The subjects of the morning lectures, with subsequent discussions, were almost without exception eminently practical. Mr. Stanley

Leathes dealt with examinations in English; Mr. Guy Kendall, the new headmaster of University College School, gave his views on the ideal school edition of Shakespeare; Miss Jones, head of the training department, Alexandra College, Dublin, gave an illuminating address on "The Literature Lesson"; Miss Nellie Dale discussed the teaching of reading, and supplemented her lecture by an interesting demonstration lesson; Mr. Fowler, of Clifton, gave an address on essay-writing at school; and Prof. Walter Rippmann spoke on "The Study of Phonetics as an Aid to Good Speech," the Conference endorsing his views by passing resolutions urging that a test in "reading aloud clearly, intelligently, and expressively" should form part of all examinations in English up to and including the senior standard, and recommending that the study of the spoken language, "based on a sound knowledge of what is fundamental in phonetics and voice production," should form an integral part of any course of training for teachers in elementary and secondary schools. Other lectures were given by Mr. John Drinkwater on "The Significance of Drama," in which the present state of the drama in England was painted in gloomy colours, and by Mr. Walter de la Mare on the realistic element in fiction, a lecture noteworthy for its fine literary flavour. Prof. Rippmann also spoken on spelling reform.

In addition to the opening gathering on the Saturday preceding the Conference week and an "At Home" at Hall's Croft, where Mrs. Leggett allowed her guests to view the exquisite contents of that charming old house, there were other attractions in this busy week. The theatre was for once not tenanted by the famous Benson Company; its place was taken by the company which has been doing such fine educational work in the Royal Victoria Hall (the Old "Vic."), close to Waterloo Station. This company, under the enthusiastic management of Miss Lillian Baylis, with Mr. Ben Greet to produce the plays, did its work extremely well. Opportunities were provided of seeing plays not often performed, such as "The Comedy of Errors" and "The Winter's Tale," as well as "Othello," "The Tempest," and "Much Ado About Nothing." The performance of "Hamlet" was somewhat marred by the mannerisms of speech of the actor specially invited to take the chief part. Among the most satisfying achievements of the company were "The School for Scandal" and "She Stoops to Conquer," in which Mr. Ben Greet as Tony Lumpkin made a great impression.

There was further an interesting lecture-demonstration by the London School of Dalcroze Eurhythmics. M. Dalcroze was unfortunately prevented from being present; but an excellent teacher took his place, and the general principles of eurhythmics were ably expounded by Mr. P. B. Ingham, director of the London School. The six students who took part gave an admirable display; their leader, Miss Margery Gilmour, proved a convincing exponent of eurhythmics. The programme was well suited to show the various stages of instruction, culminating in some examples of "the expression of musical construction," which received well-merited applause.

INSTRUCTION IN COAL-MINING.¹

THIS Memorandum is another addition to the series of excellent publications issued by the Board; it breathes the spirit of progress and freedom both in matter and method of teaching. There are many conspicuous features in the Memorandum, and very many less conspicuous, but all nevertheless units essential to the coming "push" in technical education. The man of science who thinks that the only way to the development of an industry is by giving its officers and rank and file a training in pure science will receive a shock to his cherished convictions sufficient to make him put down the Circular with many misgivings.

It is difficult to find in the Memorandum much teaching of pure mining, though it comes definitely in at the third year of the senior course; this third year actually represents the fifth year of work by a student. The scheme provides for two types of junior courses, extending over two years, before the senior course is reached. The way for the younger students is through a junior course, and the way for the older students is through another junior course, differing in matter from that for younger students. These two groups of students, after two years' training, meet and enter for the first year of the senior course, which shows no variations for students of different ages. The scheme so far is the same as that launched by the West Riding Education Authority in 1913 for mining areas in the administrative county.

In place of lecturing on mining practice the Memorandum lays stress on the use by the teacher of the students' practical mining experience—this particularly applies to the work of the senior course—as a basis for the elucidation of scientific principles. We find in part iv. outlines of work for junior and senior courses, and in the latter an extensive application in the suggestions on teaching mining practice.

There are elementary science for boys and mining science for men in the junior courses, followed by mining science in the first-year senior course and engineering science in the second-year senior course; in the third-year course both mining and engineering science are mentioned. It appears to the writer that this division of science into mining and engineering is not very scientific; the phrase "mining science" might cover both parts. In the third-year senior course the Memorandum has the following headings: "Engineering Science (Mining, Machinery, and Electricity)," "Mining Science (Mine Working)." The latter consists of geology and mine practice; it is thought that Mining Geology and Mine Practice in the brackets would give a more appropriate heading, just as the first heading in brackets shows the constituent parts of Engineering Science. The Board's influence on schools in dominating the nomenclature of subjects is great, and it is thought an advantage would be gained if the use of the phrase "mining science" replaced entirely the phrase "engineering science"; the

¹ Memorandum on the Teaching of Coal-mining in Part-time Schools. Board of Education Circular 953.

latter at present connotes definitely a certain type of work for engineering students, and it is regarded as an advantage to make the adjective describe the occupation or industry to which the science is applied.

There is in the second year of the senior course a syllabus which is academic in character—it deals with force, work, and power. The relationship of the principles of timbering to the principles of the resolution of forces is not mentioned, yet it is an excellent way of teaching the relationship between theory and practice. The syllabus of this year's course also mentions the study of power as rate of doing work, and suggests a consideration of the electrical units of power, although the student at this point has not entered on the study of electricity.

There is an omission throughout of any reference to that property of materials called elasticity. This is closely related to the strength of materials, and should therefore find a place in any further issue of the Memorandum. The Board, in its prefatory note, says it is prepared to consider carefully any criticisms or suggestions with the view of embodying the results in the new issue. It is hoped that consideration will be given to the few points of criticism here raised.

We have dealt only with the science part of the Memorandum, but the parts dealing with English, practical mathematics, and drawing are of the same order of excellence. The Memorandum deserves the widest consideration by all interested in mining education.

ITEMS OF INTEREST.

GENERAL.

MR. HENDERSON has resigned the office of President of the Board of Education in order to be free to devote himself to his work as Labour Adviser to the Government. The Marquess of Crewe has been appointed to succeed him at the Board of Education.

THE first business of the Government is, of course, to bring the war to a victorious conclusion; and it must be presumed that any rearrangements of the Cabinet which may be necessary from time to time are made solely with this object in view. When, however, the right time arrives to consider the needs of education on their merits, and to estimate the value of education as a means of ensuring future national security, it is earnestly to be hoped that the President of the Board of Education will take the prominent place in the Government that is due to the paramount importance of his office, and that the emoluments attaching to it will be commensurate with the value of the work which a judiciously constituted Board of Education could perform for the nation. As we noted last month, Government Committees are to investigate educational matters, and are to receive expert assistance in their work. It is, perhaps, not too much to hope that the result of their labours will be to bring into high relief the need for the best President of the Board of Education the country can provide, and that no pains will be spared to secure his services, and to retain them for a reasonable period of time.

ON August 26th the announcement was made of the appointment of two Committees to inquire into the position of science and modern languages respectively in the system of education in Great Britain. The terms of reference and constitution of the Science Committee are as follows:—To inquire into the position occupied by natural science in the educational system of Great Britain, especially in secondary schools and universities; and to advise what measures are needed to promote its study, regard being had to the requirements of a liberal education, to the advancement of pure science, and to the interests of the trades, industries, and professions which particularly depend upon applied science; Sir J. J. Thomson, O.M., P.R.S. (chairman), the Rt. Hon. F. D. Acland, M.P., Prof. H. B. Baker, F.R.S., Mr. Graham Balfour, Sir William Beardmore, Bart., Sir G. H. Cloughton, Bart., Mr. C. W. Crook, Miss E. R. Gwatkin, Sir Henry Hibbert, M.P., Mr. William Neagle, Mr. F. G. Ogilvie, C.B., Dr. Michael Sadler, C.B., Prof. E. H. Starling, F.R.S., Mr. W. W. Vaughan; secretary, Mr. F. B. Stead, H.M. Inspector of Schools. Owing to unforeseen circumstances Lord Crewe finds that it will not be possible for him to act as chairman of the Committee, as previously announced.

THE terms of reference and constitution of the Modern Languages Committee are as follows:—To inquire into the position occupied by the study of modern languages in the educational system of Great Britain, especially in secondary schools and universities, and to advise what measures are required to promote their study, regard being had to the requirements of a liberal education, including an appreciation of the history, literature, and civilisation of other countries, and to the interests of commerce and public service; Mr. Stanley Leathes, C.B. (chairman), Mr. C. A. Montague Barlow, M.P., Mr. E. Bullough, the Rt. Hon. Sir Maurice de Bunsen, P.C., G.C.M.G., G.C.V.O., Mr. A. G. Coffin, Dr. H. A. L. Fisher, Mr. H. C. Gooch, Mr. J. W. Headlam, Mr. L. D. Holt, Dr. Walter Leaf, Dr. G. Macdonald, Mr. A. Mansbridge, Mr. Nowell Smith, Miss M. J. Tuke, Sir James Yoxall, M.P.; secretary, Mr. A. E. Twentyman. Communications intended for the committees should be addressed to the secretaries, Mr. Stead or Mr. Twentyman, as the case may be, at the office of the Board of Education, Whitehall, London, S.W.

It has been decided, with the full approval of the boy's parents, that the national memorial to the boy hero, John Travers Cornwell, whose fortitude after being mortally wounded in the Battle of Jutland received such warm tribute from Admiral Sir David Beatty, shall take the following form:—The endowment in perpetuity of a "Jack Cornwell" Ward, to be reserved for disabled soldiers, in the Star and Garter Home at Richmond. Every boy and girl attending school throughout the British Empire will be invited to give one penny towards the ward. This fund is being organised by the Navy League, and is intended for boys and girls only. A handsome poster with illustrations of the boy hero and the Star and Garter Home, for display in the schools, is being prepared,

and will be ready shortly. A little booklet containing a portrait of young Cornwell and the story of his life and splendid death is also in course of preparation. Subscriptions for the ward in the Star and Garter Home should be forwarded to the secretary, Navy League, 13 Victoria Street, S.W.

THE recent revelations respecting the conditions and needs, physical and mental, of some of the British prisoners of war interned abroad, coupled with the recently imposed restrictions on the transmission, by private individuals, of any printed matter to enemy or neutral countries, makes it more important than ever that friends and correspondents of our interned men, when writing to them, should acquaint them with the existence of an educational book scheme under which they can get their wants supplied. Under this scheme any such prisoner can obtain, free of charge and carriage paid, good books of an educational character (not fiction or light literature) on almost any subject for reading or private study during his internment by communicating (either directly or through a correspondent) with Mr. A. T. Davies, of the Board of Education, Whitehall, London, S.W. Prisoners are invited to state as precisely as possible on a form (which can be had gratis on application) what kind of books they desire. The evidence that has already reached this country shows that it is necessary to provide not merely physical, but also mental, sustenance for British prisoners during their confinement—and this the educational book scheme aims at doing. Offers of suitable books for the latter will be gladly received by Mr. Davies, but they should be accompanied by a submission of the list of books proposed to be contributed.

THE Stutis—i.e. the Secondary, Technical, and University Teachers' Insurance Society—deserves the support of every teacher. No eligible teacher should hesitate to apply for membership. The teacher who has never had a day's illness cannot be certain that his happy condition will continue, and should he be very fortunate and retain his health, yet, as a member of this society, he may trebly rejoice: first, because he himself is well; secondly, because he is insured against the expenses of accidental illness; and, thirdly, because at a small cost to himself he is helping the society to extend to less fortunate colleagues considerable assistance during sickness. The fact that the society is a mutual-aid organisation is one of its strongest claims on members of the teaching profession. At the third annual meeting recently held Sir John McClure and Miss Busk were unanimously elected to the chair and vice-chair respectively. The society is an approved society under the National Insurance Act, and the address is 10, Mecklenburgh Square, W.C.

DR. R. MULLINEUX WALMSLEY opened the discussion on the subjects of "Scientific Habits and Knowledge" and "Scientific Methods in Education" at the recent annual meeting of the Secondary Schools Association. His remarks are reported in *Education* for August 4th. Those teachers, he maintained, who receive the pupils from secondary schools and pass them on to the professions lament that their students come to them

without the slightest idea of thinking for themselves. Secondary-school pupils should, above all, be taught to think; this is more important than knowledge, than even scientific knowledge. After the war we shall have to face more strenuous times; there will certainly be German competition, but there will more certainly be American competition, and the Atlantic will prove less of a barrier in the future than the silver streak which has for so many years separated this country from the rest of Europe.

MR. J. G. LEGGE continued the discussion, and, in reference to secondary education in Germany, pointed out two important facts which arose out of his experience. People in Germany are willing to starve themselves to secure that their boys stay at school long enough to obtain the certificate which exempts them from all but one year's service in the Army. This means that the boy remains at school until he is eighteen years of age, and this fact alone, without any superior moral stamina, has built up the German system of secondary education. The second point deals with employment in the Post Office. A boy who leaves school at fourteen enters the lowest class in the Post Office service; if a boy remains at school until he is sixteen, then he enters the second class, and only the privileged who stay at school until they are eighteen may enter Class I. Such a system, which runs through the State service, involves a caste system which we cannot possibly copy in this country.

THE headmaster of Eton has submitted, to the *Times Educational Supplement* for August, a plea for a sense of proportion in the pending discussion of our educational system. Bad education, if it is thorough, is a mighty power for playing havoc with human life; Germany's activities demonstrate how great may be the power of a lie if it is taught with consistency and unanimity and for several years on end; what, then, asks Dr. Lyttelton, might be the power of truth if taught with equal thoroughness? But, then, in place of this thoroughness we find at home divergence of aim; we have discarded the old ideal—the product of the centuries—and cannot agree on an alternative. Among the fighting men there is a widespread hunger for truth on which they may live, for spiritual nourishment. Yet this nourishment has been withheld from our manhood. A clamour has arisen: some insist that boys should be taught more chemistry, others more languages, and so on; and with the double-mindedness dear to Englishmen we have been swayed by two sets of ideas. Either we thought of truth as offered us by God from heaven, or as something spun out of each man's mind. Compromise has resulted, and has sucked away the foundation of all truth. The peril under which we have been sinking is that of a hazy and sentimental toleration which leads us to include in one name truth divinely revealed and its exact but disguised opposite. Our education requires not to be reformed, but reinforced, for it has nearly lost its very soul.

"SCOUTING in Preparatory Schools" is reported upon favourably by Mr. Lionel Helbert and Mr. E. F. Johns in two articles in *The Preparatory Schools*

Review for July. In Mr. Helbert's case the school lay, in September, 1914, midway between two camps of 20,000 men apiece. The New Army was forced upon the attention of the boys, and it was essential to find a new outlet for the boys' excitement. Boys and masters learnt scouting together; they have found that more solid hard work and very much more unselfishness are demanded from a scout than they expected, and some few boys have turned into new creatures. School organisation was adjusted to the new movement, prefects were superseded by patrol leaders, and seconds and patrols were all housed in the same dormitory. In practical matters the scouts are extremely useful; each patrol goes on duty for a week, and performs many necessary routine duties. The relations between masters and boys have never been more satisfactory than they are to-day. Mr. Johns had a similar experience, and is convinced that the introduction of scouting has effected a marked improvement in discipline, tidiness, and the general "tone" of the school. Mr. Helbert urges, in conclusion, that scouting is educative among poor children and depends upon the efficiency of scout-masters, and hence that the preparatory schools will meet the needs of the future by training scouts, some of whom will become scoutmasters in later years.

WHEN and in what circumstances is a pupil intelligent? Some teachers urge that the intelligence of a pupil is inseparable from the subject-matter—from the medium in which the intelligence is displayed. Their views will find support from a phenomenon to which Mr. J. R. W. Tanner directs attention in an article, "Material Efficiency as the Aim of Education," in the *Preparatory Schools Review*. Thousands of really able minds—minds which have proved their ability in business, science, or finance—show themselves utterly incapable of reason or logic in matters outside their own province. They may not, however, agree with Mr. Tanner's explanation, that this phenomenon is due to early training, which has led a man to suppose that, whereas his little speciality requires his whole life to master, all the larger problems of life may be understood and settled by an occasional cursory glance. Rather may they suggest that this limitation is inherent in humanity, and that the dictum which assumes that a man with a good brain may be equally successful as President of the Board of Education and as Foreign Secretary is demonstrably invalid. They would, therefore, not agree with Mr. Tanner's conclusion that practical maternal knowledge should not be instilled into the growing mind, which should only be trained; schools should aim at turning out the finest possible human being, "for he who has learnt to understand and master himself can the better understand and master his trade." Is the latter true or false?

An article in *Modern Language Teaching* deals with the relative value of languages in education. Practically there is no question of comparison between the dead and the living; apart from the question of utility, about which there can be no dispute, there remains the educational question. Those who have

made a thorough study of one or more living languages will admit that living languages are difficult, disciplinary, and educative. No discipline can well surpass that afforded by a careful study of French composition. There is, also, the matchless discipline for the pupil's mind and memory, his ear, tongue, and pen, which is afforded by a living language, by the necessity of exchanging "winged words" with his fellow-men, and of satisfying the thousand living critics and teachers who are ever ready to correct and guide him. The classicist may be a very learned man, but he certainly ploughs a lonely furrow through an interesting field; he is as isolated as a deaf-mute among his fellow-men. All languages, dead and living, should be freely admitted to equal rights of citizenship, and should be all taught with equal zeal and efficiency; and the "strife of tongues" will be for ever silenced. Education will immensely benefit once this ideal is realised.

THE June issue of *Indian Education* contains an article by Mr. K. M. Kelkar which deals with the use of the direct method of teaching English in schools in India. At the end of eight years of trial he submits that the problem of teaching Indian boys to talk English well is still unsolved. The direct method appears to be successful in the first three standards. The oral work is good, but the written work is not so satisfactory. The boys think in the vernacular and answer in English, which implies an unconscious use of the translation method. In the higher standards the direct method has been a failure. The boys can neither speak nor write well. This failure is not due to the method, but is inherent in the circumstances in which it works, for the difference arises as work done at home becomes an important factor in success at school. Parents are apathetic, and, since the quantity of ground to be covered in the higher standards necessitates an increasing amount of homework and lessens the frequency of repetition and revision in the class-room, the main cause of failure rests upon the inability of the boys to study at home.

OUT of twenty million children in the public schools of the United States three-fifths have physical defects sufficiently serious to interfere with their school work. Most of the schools are true to a type; two stories in height, with class-rooms opening into corridors or a central hall, they appear to resemble an old-fashioned English school. The schools were until recently heated with hot-air furnaces. Investigation has shown that the fan system of ventilation which is generally in use tends to the accumulation of dust. To combat the evils which are due to poor ventilation, dust, and insufficient sunlight, Mr. J. B. Todd suggests, in an article, "Constructive School Hygiene," in *School and Society*, the general adoption of a new scheme of school buildings, the one-story cottage school. A central building contains the hall, baths, gymnasium, offices, and heating plant. As many class-rooms as are required are provided in detached buildings. Experience has shown that such schools are cheaper to build and cheaper to maintain, while they minimise the risk from fire and danger of infection. From the

point of view of health there is no comparison between the multiple-unit school and the old-fashioned two- or three-storied building.

"HABIT and the Social Order" is the title of an address to the New York Schoolmasters' Club recently given by Prof. R. McDougall, of New York University, and printed in *School and Society*. A right habit formed during the early days of childhood is permanently valuable, and efficiency in living implies automatic response to the situations which recur during life. Such habitual reactions should result from education. The expert is the man saturated with knowledge and training, and the true man, the expert in life, acts from habit, without hesitation, and with the ease which comes from training and practice. Education is necessarily concerned with the formation of definite mental habits by the pupils, who must gradually realise that their activities are constrained by authority—not the capricious authority of the individual, but the collective authority of the community as developed through many generations. Schools foster definite habits; obedience is required; truthfulness is expected; promptitude is trained; orderliness is inculcated, sometimes even by an excessive minuteness of regulation of the pupil's exercises. But the public school (in America) has fallen short of its ideals, for example, in three essentials of discipline: the sense of fair play, the perception of continuity in development, and the habit of resolution.

THE sense of fair play is a manly virtue. The historical development of woman has differed from that of man, and she is moved by pity or loyalty where a man is actuated by the sentiment of fair play; and a certain laxity of moral fibre, which in certain ranges of action sets the end above the means, and in others appears as an inability to distinguish between fair and foul means, cannot be dissociated from the predominance of woman in education. The mastery of the expert betrays no trace of the long discipline which he has endured, and as a people Americans imagine that native resourcefulness will achieve greater success than the mastery due to habit and training. Thus they lack the conception of continuity in development. Progress necessitates persistent endeavour, and the methods of the public school tend to make light of this requirement. In almost every department of education there exists evidence of a tendency on the part of the teacher to forestall all the difficulties before the pupil, so that he meets no obstacles and puts forth no exertion. The child's education is vain if he leaves school without resolution and capacity to work. But the home is, after all, the chief factor in these conditions; the first lesson of life in society is service, and this lesson is taught at home. The daily life of the family forms the habits which may lead to political corruption and dishonesty in business, or to steadfastness and probity in dealings with other men.

At the annual meeting of the active members of the National Education Association of the United States on July 7th, the following resolutions, among others, were passed, we learn from *School and*

Society:—That the President of the United States be requested to appoint a commission to investigate and report upon the condition of the woman of the farm and of the rural home of the United States. That Congress be urged to vote £10,000 to disseminate information as to the education of immigrants and to stimulate the extension of educational facilities towards the Americanisation of foreign-born or alien residents in the United States. That the association declares its belief in equal suffrage for men and women. That the association directs the attention of the American people to the fact that teaching is a profession and requires a special training; that the members of the profession can have and serve but one client—the public; that the public owes a duty to itself to see that only professional considerations enter into the employment, retention, and dismissal of teachers. The association believes that the public can elevate and strengthen the professional status of teachers by securing legislation to give the power of nominating members of the educational staff to the superintendent of schools, and to make the office of teacher, after a probationary period, permanent, with a salary adequate to the standard of living in keeping with the teacher's position, and with a definite retiring allowance or pension.

"A SCHOOLMASTER'S View of Compulsory Military Training" is the title of a powerful address to the Academy of Political Science by Mr. Alexander Meiklejohn, of Amherst College, and printed in *School and Society* for July 1st. The subject is stated in this form: Is the proposal of universal compulsory military training good as a matter of educational policy? It is argued that children are undisciplined, and that the drill sergeant must do for the teacher what he cannot do for himself. To this the schoolmaster replies: Universal compulsory military training will yield an army of eight millions; the bulk of sober thought in the nation holds such an army to be unnecessary; therefore, as an educational procedure, the scheme would fail, because the parents would not recognise the need. In Switzerland this need is felt, and the common danger drives the Swiss to compulsory military training. In Germany a similar dominating national impulse urges the nation in the same direction. In Britain the Navy, "which is perhaps the most successful weapon in the present war," has been so well maintained because it was needed, and men have therefore been willing to pay and to serve in the common cause.

SCOTTISH.

MUCH attention has been devoted in the Press during the past month to the subject of educational reform. For this the admirable debate on "Education after the War," initiated in the House of Lords by Lord Haldane, must be held to be mainly responsible. The speeches throughout were in keeping with the high note struck by Lord Haldane at the outset, and it is questionable if ever before in either House of Parliament the subject of education has been treated in such a sane, broad-minded, and practical fashion. The

leading articles in the Press have not been unworthy of the source whence they drew their inspiration. Without exception they recognise the momentous and urgent bearing of the question of education on the national life, and they are insistent on the need for adapting our educational system to meet the changed industrial, commercial, and economic situation that will eventuate from the war. Perhaps the most striking feature in the speeches and leaders on this subject has been the recognition that it is the teacher, and not the administration or equipment, that makes or mars the education of our youth. It cannot be denied that in recent years the teaching profession has not been attracting to itself in sufficient numbers the type of individuals best fitted for rearing future citizens, and Lord Bryce, in the course of his remarks, plainly put his finger on the cause. "In my belief the thing that is most needed in our education is to improve the quality of the teaching, and you cannot do that without making the teacher's career more attractive in two ways. You must pay him better, and give him a better social *status* and better opportunities of promotion."

DR. LESLIE MACKENZIE, medical member of the Local Government Board, in opening a child welfare exhibition at Keith, said that while the fathers were dying for us abroad it was more than ever the duty of the nation to see that their children received all the attention and care that medical skill could give. The recent emergency Act making further provision for the oversight of children from their birth until the age of five conferred wide powers on local authorities. It is open to them to arrange centres where nursing mothers may come for medical advice and treatment, and to establish a system of home visitation by health visitors or doctors. They may also provide or arrange for hospital accommodation for sick children when satisfactory treatment is impossible at home, and for convalescent homes for children in impaired health. The Act marks a great advance on existing conditions, but it is unfortunate that its most valuable provisions are permissive rather than compulsory. From our experience of the futility in most cases of the permissive clauses of the Education Act, we fear that in many districts, and these probably the most necessitous, the new Act will remain essentially a dead letter.

THE Workers' Educational Association, which has made great progress in England, has not yet "caught on" in Scotland. The association has for its object the provision of education of a university standard for adults who have not had the opportunity of a regular university career. In England the universities have taken up the movement very heartily, and local education authorities have given material help to the Workers' Educational Association. Representatives from the four university centres met in the Outlook Tower, Edinburgh, to consider how best the new movement could be popularised in Scotland. It was decided, in view of the differences between the English and Scottish educational systems, to establish a Scottish Council of the Association, and to empower it to

enter into communication with the Scotch Education Department, the universities, and the local education authorities in order to enlist their interest and support for the movement.

DURING the debate in the House of Commons on the Scottish Estimates, Mr. MacCallum Scott directed attention to the new university ordinance regulating the preliminary examination which had been submitted to Parliament for approval. He contended that the defining of the standard of attainment to fit a student to enter a university should not lie with the universities alone, but should be in the hands of a body representing all educational interests in the country. By this ordinance the university courts had it in their power to raise or lower the standard of entrance without any regard to the conditions in schools. The Secretary for Scotland, Mr. Tennant, agreed with Mr. MacCallum Scott that there were objectionable features in the ordinance, and he suggested that it should meanwhile be withdrawn in order that time might be given to the universities to reintroduce it in a modified form. After a protest from Sir Robert Finlay against the Education Department having control of the portals of the universities, this course was adopted.

IRISH.

THE substitution of a written examination for inspection as a test for pass candidates in experimental science by the Intermediate Board has aroused considerable indignation and protest among Irish teachers, and if the proposal had been published earlier, before the last week of the term, the feeling against it would have been much more pronounced. The Schoolmasters' Association has forwarded a memorandum to the Board pointing out that a written examination will bring about a serious change in the method of teaching experimental science, and that it will discourage practical work in favour of the learning of text-books. Not only is this unsound, but it will bring the schools into conflict with the Department's inspectors, who will naturally favour the old method, and whereas the Intermediate Board and the Department have hitherto worked in harmony, there is now the almost certain prospect of friction, to the detriment of the teaching. The memorandum further points out that when the Intermediate Board abandoned the written examination in science in favour of inspection by the Department, it bound itself not to hold an examination until a year's notice had been given; also the Intermediate Board is acting in opposition to its own declared policy of substituting inspection for examination; and a written examination involves extra expense which can only be provided out of the already too small grant paid to schools.

THE teachers of science from intermediate schools present at the summer courses in Dublin held a meeting in the Mansion House to protest against the new rule. They, perhaps naturally, regarded it as an attempt on the part of the Intermediate Board to kill the teaching of science, and they recalled that last January the Board suggested to the Treasury that

the £28,000 grant paid by the Department to secondary schools in aid of science teaching might be saved if the science work were transferred from the Department to the Board. No one who knows Irish schools will imagine that science teaching can be carried on without this grant, and there is no doubt that the immediate result of the withdrawal of this grant would be a startling diminution in the teaching of science. The teachers of science accordingly formed a committee to send a protest to the Intermediate Board, stating that (1) the rule was against the spirit of the prefatory note to the Department's "Syllabus of Experimental Science"; (2) it is contrary to the opinion frequently expressed in the Board's annual reports; (3) the only excuse for the change would be the failure of the present arrangements; (4) the present system has been a marked success; and (5) if the new rule is maintained, the teaching of experimental science cannot be continued on its present lines.

THE charge frequently made since the Sinn Fein rebellion that seditious teaching was prevalent in Irish national schools has led the Commissioners of National Education to hold an inquiry, and they have had conferences with representatives of associations of managers of the various religious denominations, and with their inspectors, and as a result they state that two or three instances of alleged disloyal teaching have been brought to their notice which are being investigated, but no evidence has been adduced which would warrant the conclusion that seditious teaching exists in the national schools to any appreciable extent. There are about 5,700 men national school teachers, and of this large number, as a result of the rebellion, two are undergoing penal servitude, fifteen others were imprisoned, of whom seven have since been released, and, in addition, three others were reported to the Commissioners as being members of the Irish Volunteers, and have been required to sever their connection with this body as a condition of further recognition as teachers.

A SPECIAL course in secretarial and library training has been established for women students in Alexandra College, Dublin. The course extends over a year and does not involve a university degree. Its object is to prepare students for posts as private secretaries, registrars, office assistants, etc., and training is given in shorthand, typewriting, secretarial work, book-keeping, and business methods, suitable for the examinations held by the Department, the Royal Society of Arts, the National Union of Teachers, the Incorporated Institute of Commerce, and various banks. Classes are also held in commercial French and German, and in library work, including Dewey classification and card-cataloguing.

WELSH.

WELSH institutions have of late benefited largely by munificent donations. The National Library, which is expected to be open for public use this summer, has received, through the National Provincial Bank, a sum of £5,000 for the credit of the building fund, the gift of an anonymous donor. The council of the

South Wales and Monmouthshire University College has received a gift of books from the library of the late Dr. W. T. Edwards, together with a bust and portraits for the library of the college. The National Museum has been enriched by the gift, again anonymously made, of an important picture representing the contest between Apollo and Marsyas, by J. M. Strudwick; and one of the most remarkable gifts of recent times is the set of eleven statues of Welsh historical personages presented by Lord Rhondda, to be placed in Cardiff City Hall.

IN the selection of subjects for these statues a public competition was held, a prize being given for the list most nearly approaching that made out by the late Sir T. Marchant Williams, Mr. W. Llewelyn Williams, K.C., M.P., and Prof. T. Powel. Mr. J. Havard Thomas was appointed assessor to the acting committee, and after some slight modifications had been made the following subjects were chosen:—St. David, the patron saint of Wales, by Sir W. Goscombe John, R.A.; Buddug (Boadicea), by J. Havard Thomas, R.W.A.; Harri Tewdwr (Henry VII.), by Ernest G. Gillick; Llewelyn the Last, by Henry Pegram, A.R.A.; Hywel Dda, the law-giver, by F. W. Pomeroy, A.R.A.; Bishop Morgan, the translator of the Bible into Welsh, by T. J. Clapperton; Williams of Pantycelyn, the hymn-writer, by L. S. Merrifield; Dafydd ap Gwilym, the fourteenth-century poet, by W. W. Wagstaff; Giraldus Cambrensis (Gerald de Barry), Archdeacon of Brecon, by Henry Poole, R.B.S.; Owain Glyndwr, by Alfred Turner, R.B.S.; and Sir Thomas Picton, Wellington's second-in-command at Waterloo, by T. Mewburn Crook, R.B.S. A private view of the statues has been held at the Grafton Galleries, where they were also inspected by Queen Alexandra. They are to be placed on bases of Pentelicon marble, with Siena marble panels.

THE Appointments Board for Wales reports that during the first half of 1916 130 candidates for posts registered, as against 106 for the corresponding part of 1915, and 97 were placed, as against 84 for the first half of last year. A special feature of the work was the demand for boys from the secondary schools with a training in chemistry fitting them for work in factories making explosives for war purposes.

THE question of the position of women in the Cardiff Medical School has been raised by the fact that the Charing Cross Hospital has decided to admit women students as a temporary measure. This particular decision affects only fourth- and fifth-year students, as at present only the first three years can be put in at Cardiff, but with the completion of the new school the question is to be raised, the policy of the council being to put men and women on an equal footing.

IT has been reported to the National Union of Teachers that the Glamorgan Education Authority is finding grave difficulty in filling up the places of the teachers who have been dismissed for refusing to undertake to live within a specified distance of their schools. The president of the Union advocated the

setting up of a court of appeal for teachers on the model of those existing in the Colonies. In this connection it is worth while to note that the Cardiff Education Committee has a grievances sub-committee specially appointed to deal with such matters.

UNEXPECTED interest is being taken in the work of the Welsh University Commission; the questions that are being most actively debated in educational circles are that of one university or three, that of the position of theology in the reconstituted university or universities, and that of the inclusion of training and technical colleges within the new constitution. A mass of evidence and opinions has been collected which bids fair to take some months to sift. This may turn out to be no disadvantage in view of the larger inquiry set on foot by the Central Welsh Board and the suggestion of a National Council to deal with all grades of Welsh education. Such a council might well form one of a series of local councils which, as has been suggested elsewhere, would deal with an educational province and be centred on an existing university, or one to be founded. Certainly the idea seems reasonable that where there is sufficient difference of conditions and needs to warrant the formation of a separate university, such a council would find a suitable and adequate field of work, and, of course, Wales would provide at least one such area. There is also at least one precedent for what is beginning to be demanded for Wales—that all education shall be free to those who can make use of it—in Neuchâtel, where the benefactions of David de Purry have long made this possible.

An excellent opportunity for town-planning on a large scale is afforded by the establishment of new shipbuilding works at Chepstow. There exists already a shipbuilding and engineering company at that place, originally formed to construct Brunel's ugly bridge which carries the G.W.R. over the Wye; this has been absorbed, and the new firm is to apply the principle of standardised interchangeable parts to the construction of ships. A large number of workmen will, of course, be employed, and the plans include the laying out of a garden city. We notice also that a new cattle market, cinema, theatre, and railway sidings are to be provided.

THE British Association, which is meeting at Newcastle this month, is to receive a formal invitation to visit Cardiff in 1918. Principal Griffiths is to introduce the deputation, and the Lord Mayor will represent the city, Lord Mostyn the National Museum, Lord Aberdare the University College, while the Chamber of Commerce will be represented by its president, Mr. T. E. Watson.

MR. LLOYD GEORGE has suggested that 5,000 copies of the book of words of the *Cymanfa Ganu*, or National Singing Festival, in connection with the Aberystwyth Eisteddfod should be distributed among Welsh soldiers at the front, and the committee decided to carry out the suggestion.

WELSH schoolboys have found a very useful way of doing national work. In Flintshire and in some parts of South Wales they have taken to making crutches

and splints for wounded soldiers. In the woodwork centre for Pantég and Pontymoile, Monmouthshire, the boys took up this work early in the year at the suggestion of the teacher, Mr. W. J. Harris, and up to July 31st had delivered to the Military Hospital at Newport 120 split crutches and 194 splints. They provided the wood out of their own pocket-money, and put their best work into the making.

FROM all parts we hear of teachers and students who are spending their summer holiday in work on the land; and though much yet remains to be done, a very encouraging response has already been made to the appeal issued by the I.A.A.M. for the fund for the dependents of all secondary-school teachers killed or wounded in the war.

THE pupils of Lewis's School, Pengam, have published, with the help of Mr. Christopher Williams and Mr. G. H. Baker, and under the editorship of Mr. T. Matthews, a collection of verse, folksong, stories, and sketches, with the title *Dail y Gwanwyn*. The price of it is 2s. 4d. per copy, and it may be had from Mr. D. W. T. Jenkins at the school. The boys have themselves provided the cost of production, and the whole of the receipts from sales go to the Welsh Hospital.

GREEN'S "SHORT HISTORY."

Short History of the English People. By J. R. Green. New edition, with Epilogue by Mrs. A. S. Green. xlviii + 1040 pp. (Macmillan). 5s. net.

It is forty-two years since Green's "Short History" was first given to the world. That means that the original edition is now out of copyright, and that cheap reprints may be expected. This is a doubtful blessing, as the original edition, with all its merits, contained a good many errors, which friendly criticism and further research enabled Green to correct in later editions. Messrs. Macmillan, who still possess the copyright in all the revised editions, have been exceedingly well advised to issue an authoritative reprint of the fully corrected work, together with a new Epilogue from the pen of Mrs. Green, bringing the narrative down to the year 1914. They have, moreover, reduced the price, so that the eleven hundred closely printed pages of this classic of English historical literature can now be obtained for the absurdly small sum of five shillings.

Of Mrs. Green's Epilogue it is unnecessary to say much more than that it is conceived in the spirit and written in the style of the original work itself. It provides an excellent, concise summary of the crowded and critical century of British history which has elapsed since the year of the Battle of Waterloo and the Congress of Vienna. Mrs. Green's sympathies with social and economic movements are evidently as keen as were her husband's, while her leanings towards democracy and nationality in politics are certainly no less clearly marked than were his. In a remarkable manner, indeed, Mrs. Green's supplement displays both the merits and the defects of the famous "Short History." It may be of interest briefly to set down what, in the opinion of capable critics, these are.

The merits of the "Short History" are, of course, eminent and conspicuous. They far outnumber and outweigh such defects as can be discovered in it. *Securus judicat orbis terrarum*, and the fact that

since 1874 the book has had to be reprinted twenty-six times is a proof of its widespread and enduring popularity. It owed its popularity to, and it has deservedly maintained it because of, the following, among other, good qualities.

First, it is written with remarkable enthusiasm, with high moral elevation, with a pure and glowing patriotism, with a noble faith in human nature, with a consecrated devotion to good causes: it appeals to all that is best in the national character. Secondly, its literary style is extraordinarily vivid and picturesque. Its descriptive scenes make an impression never to be forgotten; its character-sketches give new life to dead historic figures; its narrative portions are rapid and dramatic in the splendour of their movement. Thirdly, it conveys beyond all its predecessors and rivals a sense of the unity and purposeful continuity of the history of the English people. The whole story of the evolution of the nation seems to be an unfolding of the principles of popular government, insular independence, and economic expansion. Rarely has any writer succeeded so well in welding so many diverse elements into so harmonious, well-proportioned, and organic a whole. Fourthly, it boldly makes the nation, and not the nation's rulers, its central theme. Wars and diplomacy are made subordinate to social progress and industrial development. The English people, as Mr. G. P. Gooch well says, received from the "Short History" "its first coherent and intelligible account of its own past." Fifthly, in accordance with the novelty of its point of view, it manifests a striking originality and independence of judgment, so that even professed historians go to it for inspiration and ideas. It ignores conventional periods, adopts new and suggestive divisions and methods of grouping, and provides novel and highly interesting re-estimates of familiar characters and events. Sixthly, it recognises, as no popular historical work before it had done, the importance of spiritual influences—religious, moral, literary, æsthetic—in the development of the national life. Finally, it is a pioneer in the elevation of the life of town and county to its proper place in the historic scheme and in the recognition of the ceaseless operation of geographical factors. With merits and distinctions such as these, no wonder that the "Short History" achieved instantaneous and unparalleled success.

Amid the chorus of praise and delight, however, some critics found it necessary to point out that the great work was not wholly without flaws. Some of the criticisms were captious—for example, that of Prof. Brewer, who said it was merely "a democratic manifesto." But others had weight, and it is well that they should be noted, lest the charm of the "Short History" should lead the fascinated reader to regard it as infallible. It is admittedly too Teutonophile: Green was an adherent of the school of Stubbs and Freeman. We are not at the present moment disposed to follow him in regarding as sacred the first spot in this island which was touched by a Germanic foot, even if that foot did belong to our ancestor. Moreover, no modern historian can possibly agree with him in passing over as unimportant both Celtic and Roman influence in the moulding of the English nation: he begins his history with A.D. 440 almost as though nothing significant had happened before. Then, again, he keeps the national idea prominent throughout, and writes as though the English people were conscious of their national unity in the Middle Ages as in modern times. This is a serious anachronism, which gives a false perspective to many a medieval incident. A similar result also flows from Green's insularity: he does not adequately co-ordinate the events of English history with those

of the Continent, and so sometimes (as in the case of the Reformation) misses much of their meaning. He further, and in a like manner, fails fully to interpret the phenomena in his own chosen spheres, social, industrial, and intellectual, because his own training in political economy and political philosophy had been too slight. Though he is strong in narrative and description, he is less powerful in tracing the sequence of cause and effect in history and in providing satisfactory explanations of the course of events. This defect becomes the more marked as the story comes down to modern times. Green's accounts of the Puritan Rebellion, the Industrial Revolution, and the Imperial Expansion of the eighteenth century are all far below the level of his accounts of the Norman Conquest, the Peasants' Revolt, and even the Reformation.

It would be possible to add other minor criticisms of a similar kind. But, when all is said, how little they amount to, and how ungracious it appears to seek for spots on the face of the sun from which all of us have derived so much light and warmth. For Green's "Short History" is a great national asset. Few books have done more, or will do more, to train and educate a patriotic and intelligent democracy.

BOOKS FOR STUDENTS OF CHEMISTRY.

(1) *General Chemistry*. By L. C. Newell. Part i., *Principles and Applications*. Part ii., *Experiments*. 410+174 pp. (Heath.) 5s. net.

(2) *An Elementary Chemistry for Schools*. By A. Smith. 441 pp. (Bell.) 5s. net.

(3) *Representative Procedures in Quantitative Chemical Analysis*. By F. A. Gooch. 262 pp. (Wiley.) 8s. 6d. net.

(4) *The Gases of the Atmosphere*. By Sir W. Ramsay. Fourth edition. xii+306 pp. (Macmillan.) 6s. net.

(1) THIS book is based on the assumption that not only must the student be taught the principles of chemistry and their applications to daily life, but he must be taught in such a way that he can use chemistry in earning a living. This is vocational training as perhaps it is understood in America, but it is more than doubtful whether the over-emphasis laid on the acquisition of a superficial knowledge of the wonderful ramifications of modern science is ever going to produce a body of trained and expert practitioners. The reviewer has on several recent occasions directed attention to the tendency that has appeared of late to make the teaching of chemistry merely a *résumé* of the industrial progress of applied science. It cannot be emphasised too strongly that, as a school subject, chemistry should be taught as a means to an end, namely, the inculcation of clear thinking and dexterous manipulation. The applications of chemistry are a side-issue—not to be ignored and not to be thrust prominently forward.

What the author calls "special strategic points" in his exposition are: (a) adequate description of the manufacture of gas, acid, steel, cement, lime, etc.; (b) modern electrolytic methods for making aluminium, caustic soda, etc.; (c) recent inventions, such as the oxygen helmet, oxyacetylene blowpipe, etc.; (d) food and nutrition.

Part ii. contains an excellent selection of 244 experiments, most of which are to be carried out by the student. These consist of preparations, tests, food experiments, and demonstration. One or two organic preparations are described, such as ethyl alcohol, ether, and formaldehyde. The book is very attractively got up.

(2) Prof. Smith has written an interesting introduction to the science of chemistry. He points out that his book is suited to the needs of those who do not later require to continue the study of the subject, and therefore he has been at pains to awake an interest in chemistry by directing attention to materials and processes used in the household and in commerce. In common with many works emanating from America, no limit is put to the inclusion of quite abstruse phenomena in an elementary text-book. For example, the salting out of soap is discussed, both in the light of the colloidal theory of the constitution of soap solution, and as an example of an increased ionic concentration. Such explanations are not only, in point of fact, incomprehensible to the junior student, but, what is worse, leave him only too often with the impression that he quite understands the interpretation of phenomena which are still under discussion. Sections on explosives and plastics, petroleum, organic acids, food values, digestion, nutrition, and so forth are not without a certain value, but their place is not in an elementary school course. The get-up and printing are excellent, and the book is enriched with plates of Lomonossov, Mayow, Ramsay, Perrin, and Becquerel.

(3) This admirable treatise on quantitative analysis is worthy of the author's reputation. In contradistinction to the usual method of teaching the subject quite didactically, Prof. Gooch discusses at considerable length the various procedures in relation to their essential features, underlying principles, and varied applications. Explicit directions, however, are given for some of the more representative experimental processes, and based on these the more general descriptions of related determinations afford scope for a wide practice in the art of analysis. Full importance is attached to the necessity for collateral reading, and ample references are given to aid the student in his researches into the original papers.

The book is divided into five sections, in which are discussed the theory of chemical reactions from a physico-chemical point of view, the processes of weighing and measuring, the procedure of gravimetric analysis, the procedure of volumetric analysis, with a remarkably full description of iodometric methods, and with the systematic analysis of alloys, minerals, and mixtures. The volume can be most highly recommended.

(4) A brief notice of this new edition is all that is necessary to bring before the teacher who is interested in the history of discovery this classical work. The book was written with the intention of conveying to the general reader the story of the epoch-making investigation which led to the isolation of the rare gases of the atmosphere. Naturally this necessitated the inclusion of the history of the earlier researches on the composition of the atmosphere, and we have in the present volume added to these the description of the work of Ramsay, Rutherford, Soddy, and Strutt on the radio-active gases, products of the breakdown of radium and thorium. The fascinating account of the almost superhuman manipulative dexterity brought into action in the determination of the atomic weight of niton brings the book to a fitting conclusion.

The Girls' School Year Book (Public Schools), 1916. lii+654 pp. (Year Book Press.) 5s. net.—The new issue of this useful work of reference well maintains the high reputation secured for it by previous editions. Part ii. of the book, in particular, provides answers to the difficult question, "What shall we do with our girls?" No girls' school should be without a copy of the Year Book.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

The Year's Work in Classical Studies, 1915. Edited by Cyril Bailey. Tenth year of issue. xii+142 pp. (Murray.) 2s. 6d. net.—This publication, which is indispensable to the student, appears this year in spite of all difficulties, and we offer our congratulations to the editor. One of last year's contributors has fallen on the field of honour, G. L. Cheesman, a man of great promise; and this year we have nothing on Latin or Greek inscriptions, except such as are included in the historical sections. Nor is there any Greek excavation, for no one seems to have paid attention to this with the armies in Macedonia and the Chersonese, although many things have been found by accident. Italy has a good deal for us, however, especially in Ostia. All the chapters contain less matter than usual: the wonder is that there is so much.

A History of Sculpture. By H. M. Fowler. xxvi+446 pp. With 195 illustrations. (New York: The Macmillan Co.) 7s. 6d. net.—This is another of the *compendia compendiorum* which are so common in America. To include in one volume Egyptian sculpture with Babylonian and Assyrian, Hittite, Persian, Phœnician and Cypriote, Greek, Etruscan, Roman, Byzantine, mediæval sculpture in Italy, France, Germany, England, and Spain, the Renaissance in the same, modern sculpture in all important countries, including the United States, and sculpture in the Far East—India, China, and Japan—is obviously impossible except in the barest outline. Indeed, the more modern parts are too often lists of names and dates, and some very insignificant names too. There is a lack of proportion where we see sixteen women's names in a list without an illustration and only two sentences of description, while the whole sculpture of the East is crammed into twelve pages. There is a useful bibliography—usually the best part of such books—and an index of names, where Polyclitus and Mrs. Anna Coleman Ladd have a line each. The illustrations are necessarily very small and show little detail; they give a general idea of the subject, and that is all. Doubtless these books have a public, but they attempt too much.

English.

The Rise of English Literary Prose. By G. P. Krapp. 551 pp. (Oxford University Press.) 6s. 6d.—Not much has been written on the development of prose, though Minto still holds his place in the library. The present volume begins with Wiclif and ends with Bacon, and the implication is that literary prose was not until Wiclif's time, and that it was fixed by Bacon's. The writer deals with Wiclif, controversy and free speech, the pulpit, the Bible and Prayer-book, the courtly writers, history and antiquity, the modernists, and Bacon. The chapters, which are mainly critical and informational, contain quotations, it is true, but usually of no great length, and it would be a service to the student if a companion volume of equal size and smaller print could furnish us, not with snippets, but with prose extracts of sufficient compass to allow us to understand and appraise the critical remarks. No such volume, so far as we know, exists, and few students' libraries can give examples of Pecoek's Repressor, the Tindale Tracts and Letters, Latimer's Sermons, the 1536 New Testament, and Capgrave's or Hall's Chronicle, even though a small library may be able to show a Euphues, an Arcadia, a Britannia, and a late edition of North's Lives.

We are grateful for this full and learned work; but, away from a large library, what are we to do with it? How different is Mr. A. W. Pollard's "Records of the English Bible," in which we find eighty pages of conclusions and 300 pages of actual texts to allow us to test the conclusions. The answer is obvious, but the rejoinder is conclusive also, and it is this:—"If you write for students, you must show the grounds on which you stand." This rejoinder, in our opinion, applies to every single book intended for schools. If the book be intended for the learned it is another matter. One crucial instance occurs to anyone. It is admitted that our language owes an immense debt to the English Bible; without it, as Prof. Krapp says, what would English literature look like? Now no attempt either in this book or in others that deal with the English Bible is made to show us whence Bible English came. Its variations, its vocabulary, we can trace from the time of its founder, Tindale, but these are not Bible English. Whence did Tindale draw his inspiration or even his syntax? Surely this is a question worth asking. It cannot even be propounded without at least sixty pages of printed Bible text, not to speak of extracts from other 1530 work. Therefore we say we need a second volume to counteract the academic character of this.

Patriotic Poetry: Greek and English. By Dr. W. R. Roberts. 143 pp. (Murray.) 3s. 6d.—We have here an address given at Leeds, where the writer is professor, but it is something much more than an address, and it has enlarged itself into a study of ancient Athens, Æschylus, Henry V., and a good deal that centres round Salamis and Thermopylæ. It contains, too, a portrait of M. Venizelos, and a photograph of a soldier's grave near the Dardanelles. It can easily be understood that Dr. Roberts has had a theme which allows him to appeal to Aristophanes and modern Greek poetry, to Shakespeare and to records from the front—and to the history of his own land, Wales. Yet the book is not conglomerate, for behind all is the patriot cry that is heard equally well at Shiloh, at Marathon, and at Ypres. The notes are a mine of interesting learning, the Greek quotations are well translated and are always correctly printed, and the general effect is that an enthusiastic scholar has persuaded us how modern the ancient world was. Henry V., that favourite of Shakespeare's, whom people looked askance at in the early months of 1914, has come into his own again. "I need not to be ashamed of your Majesty, praised be Got, so long as your Majesty is an honest man." And the soldier-king neither smiles nor storms, but says quietly, "God keep me so."

English Romantic Poets. Edited by A. H. Thompson. *Shelley.* xxix+198 pp. *Keats.* xxxii+172 pp. (Cambridge University Press.) 2s. each.—These are the first two volumes of a series which is intended to guide the student to a fuller acquaintance with the larger work, textual, biographical, and critical. The lovers of Shelley will probably quarrel with some of the passages chosen, when the last lines of the "Prometheus" are omitted, but the preface is full and sympathetic. Shelley was the most careless as well as the most inspired poet of his generation, and though the world has marched since his day, he is as yet neither understood nor rewarded. Francis Thompson's essay has not revealed him; he is part of the wind and the storm, and in mystic terms they are ever being interpreted. With Keats, so-called Greek, we are in quite a different country, and the editor makes it clear that, however much we admire, we are admiring pictures. This pictorial poetry rises to its height in "The Nightingale" and "Autumn," neither of

which Shelley or Aprile could have written. Full notes accompany each volume; but they are often elementary, and there is at least one difficulty in the "West Wind" that annotators leave alone, while Keats is, in his few pages, as full of hard matter as Shakespeare.

A French Mother in War Time: being the Journal of Madame Drumont. Translated by Grace E. Bevir. 167 pp. (Edward Arnold.) 3s. 6d.—A *bonâ-fide* set of impressions, letters, and comments on the letters by a literary French lady is veritably a human document. The translation is excellent, and the result of the combination of mother love, the French view, and the stirring descriptions given by the young hero himself is to make a volume which, in spite of its peculiar intimacy, is one of the most welcome presentations of the war. Madame Drumont's son made his first aeroplane—the "bird," as he calls it—in which he actually flew, when he was at school, and his vivid accounts of the "machine and I"—for they are one, as a Cossack is one with his horse—rival Mr. Wells's famous lines written on Blériot. The book emphasises without meaning to do so the differences between English and French, though we as a nation are scarcely mentioned. Again and again sharp French sentences meet us, crisp in thought; and we are grateful to the writer for preserving from one of her son's letters the powerful metaphor in this: "There are places in life when one should know how to throw out ballast."

Irving's Alhambra. Edited by E. K. Robinson. 370 pp. (Ginn.) 2s. 6d.—This edition of one of the best travel books ever written, adorned as it is by the many delightful illustrations of Mr. Norman Black, will, it is to be hoped, help to bring back Irving to the schools. No English has more purity than his; and the many tales with which a master story-teller fills his pages will, we expect, be new to most people in this generation, adult and juvenile. The story of the mason, the enchanted soldier, the Arabian astrologer, and the hints of buried gold that run through Spanish writings will all fascinate. It is a pity that there was not room for a preface on that sad dreamer, the author, who has so well understood our own nation, though he was, in his own phrase, a "stranger and a sojourner in the land."

The New Hudson Shakespeare. Richard II. 146 pp. (Ginn.) 1s. 6d.—No explanation is given of the word "new" in the title, but possibly the beautiful predecessors, so shapely and well printed, are o.p. This edition, revised by Dr. E. C. Black, follows the old lines and contains most useful variants and an excellent introduction. The notes, as of old, are at the foot of the page. We hope other editors of all sorts of classics may be induced even at this late date to follow the lead which Prof. Hudson set so unpromisingly.

Stories for the Story Hour. By Ada M. Marzials. 256 pp. (Harrap.) 2s. 6d.—At last the reviewer has lighted on an inspired story-book. The extremely modest preface cannot hide the evident skill of one who knows exactly what she is talking about. The fact is that good stories, whether intended for children of six or seven, as these are, or for the adult, are very hard to find, and to get five of them you have to wade through a dozen volumes. Then, all at once, in Stephen Graham's "Caucasus," or in Jules Lemaitre's "Vieux Livres," or perhaps in "The Golden Windows," you get a handful—all choice. So it is here; though, of course, we would not say that all the tales will suit everyone, or are

equally successful. But an author who can write "One misty, moisty morning," "Hickamore Hackamore," and "Pirates" can, when the story-teller's moods come on her, do anything. Teachers of small children, when introduced to this book, will be in a hurry to get to school, to share treasure-trove. And who was it that drew the illustration, "Where do Stories Come From?" that, like so much of the book, is itself inspired?

Indian Tales of the Great Ones. By Cornelia Sorabji. 96 pp. (Blackie.) 1s. 6d.—Miss Sorabji has proved in her other work that she can tell a beautiful story beautifully, and no one need be surprised to find that here we have in "The Throne of Justice," "The Man Who Made Himself an Archer," and "The Perfect Host" tales that may be put along with "The Mohammedan Woman and the Dog." An introduction would be useful, and possibly some guide as to the pronunciation of Indian names. The illustrations, by Warwick Goble, are very "Eastern." The book is dedicated to "my Baby Friends in all Worlds," but this need not deter the teacher of older children from reading it. Indeed, it is not for babies.

Dent's School Pamphlets. Junior, 3½d. each. Intermediate, 4½d. each. Senior, 5½d. each.—Under the above title Messrs. J. M. Dent and Sons have issued three short sets of supplementary readers dealing with history, geography, and literature suggested by the Great War. Each of the books contains from forty to sixty-four pages of matter, and all are attractively illustrated. Among the subjects will be found brief introductory sketches of the British Empire, the Army, the Navy, the Boy Scouts, the Victoria Cross, the sources of our food supply, and other kindred themes. The books should prove useful in the hands of teachers for impressing upon the minds of children such lessons of the present crisis as they are capable of comprehending.

History.

What is Coming? A Forecast of Things after the War. By H. G. Wells. 295 pp. (Cassell.) 6s. net.—Whatever one may think about Mr. Wells as a prophet, one must frankly recognise that he is a first-rate literary man. Nothing that he writes fails to be absorbingly interesting. He is, moreover, full of ideas, strikingly original, and markedly free from conservative prejudices. His attempts to forecast the future, therefore, command attention, even if they do not always carry conviction. They are none the less impressive because the method of their generation is evident. They are not, and do not claim to be, supernatural revelations; they are quasi-scientific inductions from observed phenomena. If they do not always compel belief, their failure to do so is due partly to the fact that Mr. Wells has not observed all the visible phenomena, and partly to the fact that what Mr. Wells thinks will come to pass is to some extent determined by what he would like to come to pass.

With Mr. Wells's political predictions we are not here concerned. Suffice it to say that they differ widely from those to which Mr. Wells gave utterance in the early stage of the war. It is his educational forecasts that specially interest us. These are to be found specially in chap. vii. ("The New Education") and chap. x. ("The United States, France, Britain, and Russia"). Mr. Wells discusses suggestively the objects of education and classifies them in order as (1) the formation of character; (2) the development of capacity; and (3) the impartation of knowledge. He regards our present systems of education as failures when judged according to these three standards.

Particularly he emphasises the need of a more general thoroughness in our teaching and learning. The education of the future, he holds, will be much more scientific than it is at present, but he does not use the term scientific in its narrow sense, for he is careful to insist that the very essence of the higher education is philosophy. In the chapter on America and the Allies he treats of the difficult problem of language. How can the language-barrier to the unity of nations be overcome? The two chief obstacles to be surmounted are, he considers, the English spelling and the Russian alphabet. The means for surmounting them will be, he predicts, phonetics and transliteration. He is probably correct; but he seems to be unaware of how much has already been done in the sphere of phonetics.

Patriotism and the Fellowship of Nations. By F. Melian Stawell. 91 pp. (Dent.) 1s. net.—This little book contains six essays, the main object of which is to reconcile nationality with cosmopolitanism, to moderate excessive patriotism, and to emphasise the importance of international fellowship. Mr. F. S. Marvin appropriately contributes a preface, for Miss Stawell is obviously his disciple. Her teaching is indeed much the same as that conveyed in Mr. Marvin's excellent collection of papers on "The Unity of Western Civilisation." Miss Stawell writes with studious moderation and in an easy, attractive manner. Her point of view seems to be that of a reasonable pacifist, who grieves that war has come, and is anxious above all things that its recurrence in the future may be prevented. Condemnation for the guilt of causing the outbreak she distributes with extreme impartiality. "This war has come about," she says, "because the different nations have all been grasping for power at each other's expense." The hope of the future she sees in the establishment of an International Court. Following the example of Dr. T. J. Lawrence in his famous essay on "The Evolution of Peace," she contrasts the process by which law and order have been established in England with the chaos of lawlessness and violence in which international relations are still involved. Her study suffers from two defects. On one hand she shows no appreciation of the difficulties to be overcome before an International Court can be set up, and no realisation of the principles which its establishment would imply. On the other hand, she manifests an imperfect acquaintance with the details of English constitutional history. The Assize of Clarendon was not, as she asserts, "the beginning of our famous trial by jury," it did not put an end to wagers of battle, and it did not arrange that "whenever there was a quarrel there should be an inquiry by twelve honest men."

Ourselves and Germany. By Dr. E. J. Dillon. xii+312 pp. (Chapman and Hall.) 7s. 6d. net.—The Hon. W. M. Hughes, Prime Minister of Australia, contributes an introduction to this book, which its author describes as a "partial presentment of the beginnings of a world-cataclysm." The note which both Mr. Hughes and Dr. Dillon strike is one of warning and exhortation. Says the one: "We are as yet not fully alive to the immensity and necessity of our task. We must awaken, or be awakened, ere it be too late." Says the other: "Germany is wholly alive, physically, intellectually, and psychically, and she lives in the present and the future. We either drowse or vegetate in and for the past. Unless we wake up to reality and readjust our ideas and methods, the outcome of the present war will be a draw, and the final upshot of the larger contest will be our utter defeat." Such is the burden of the book. Dr. Dillon, from his wealth of knowledge and wide experience, gives evidence of the marvellous

manner in which Germany, before the war, penetrated and secured control in Italy, Russia, Scandinavia, the Balkans, Roumania, and other regions. He contrasts Germany's unscrupulous activity with British supineness, and indicates what must be done if the perilous position of 1914 is not to be repeated with fatal results.

Progress to History: a New Series of Historical Reading Books. (1) *Pictures of Long, Long Ago.* 128 pp. 1s. (2) *Peeps into Old Books.* 176 pp. 1s. 2d. (3) *Decisive Days in British History.* 224 pp. 1s. 4d. (4) *The Story of the United Kingdom.* 256 pp. 1s. 6d. (5) *Children of the Seven Seas.* 288 pp. 1s. 9d. (6) *Britain and European Liberty.* 320 pp. 2s. Edited by Dr. Richard Wilson. (Macmillan.)—Dr. Wilson has a gift approaching genius for the planning and editing of educational books for young children. His series entitled "Progress to Literature" is well known for its many excellences. The series before us is a companion to it. The special feature of this historical series is the attempt to combine the merits of the periodic and concentric systems of teaching. The periodic system provides variety and maintains interest, but it lacks continuity and cumulative effect. The concentric system impresses by repetition and enlarges knowledge by constant accretion, but it tends to collapse under the dead-weight of its own monotony. Dr. Wilson invents what he calls a "graduated overlapping," or "tortoise," system, by means of which sufficient old ground is covered to preserve continuity, while sufficient new matter is introduced to ensure interest and progress. This is the general characteristic of the series. Each volume, however, has some novel feature or other which merits attention. No. 1 centres in its pictures, which relate to stories drawn from Biblical and general history. No. 2 is also pictorial, but the sources used are wholly early English. No. 3 is based on places marked by events notable in British history. No. 4 tells the story of the United Kingdom, bringing into one narrative the early histories of all the four peoples once separate but now joined together. No. 5 continues the story from the seventeenth century, but makes the growth of the Empire its leading thread. No. 6 is devoted to the past century, and it is world-wide in its scope. No intelligent child who is conducted through the six stages of study as planned in this notable series can fail to acquire a valuable grounding in historical knowledge, and a useful measure of the historical spirit.

Geography.

A Geography of the British Empire. By W. L. Bunting and H. L. Collen. 166 pp. Maps and illustrations. Second edition. (Cambridge University Press.) 4s.—Messrs. Bunting and Collen have added to this work a brief summary of frontiers in general and of the British Empire in particular. They use the Scottish Highlands as one of several illustrations of the mountain range as a frontier. The statement regarding frontiers, "We find the violation of the general rule almost as frequent as the observance," suggests that the rule is valueless. It is surely unwise, in dealing with Hull and the Baltic or with Bristol and Liverpool in relation to the New World, to say that the port *faces* the land across the sea. The authors ignore the *föhn* effect and the storminess of the Great Lakes area in the explanation of the continental climate and the summer rainfall of Central Canada. Karachi is described as the "outlet port of the Indus valley," although Calcutta and Bombay both export produce from the Punjab. New Zealand is summarised as being in shape, surface-features,

zone, and direction of wind "somewhat similar to the British Isles"; better no summary at all than one so misleading. The sketch-maps, on which exercises are based, are badly indexed—e.g. a child will probably find considerable difficulty in distinguishing the hills, lakes, and coast-line in the map which deals with the situation of Montreal. These are points which might have been revised in the second edition of a work which is well conceived, and is evidently the work of practical teachers.

Junior Regional Geography. The World. By J. B. Reynolds. 279 pp. Maps and diagrams. (Black.) 2s. 6d.—The author's design is to treat the continents by regions, to base the study of the life of the inhabitants on the relief and climate, and to conclude with a view of the world as a whole. The book hardly realises the promise of the preface; the treatment is not systematic—e.g. at the beginning a climatic introduction refers to European illustrations, and then the reader plunges into the consideration of Scotland treated regionally, and follows on with England, where the text is not related to the two maps showing natural regions for northern England and southern and central England respectively; the treatment of the mainland of Europe, which comes next, is largely based upon political considerations. There are signs of apparently hasty writing: (p. 78) "one railway, called the Orient Express"; (p. 97) "the upper parts of the rivers unfreeze [*sic*] before the mouths"; (p. 138) Sind is scantily treated in the description of the plain of the Indus, yet there is probably no better illustration of the effect of elevation upon rain-bearing winds; (p. 168) Pittsburg is mentioned in relation to the region of the Appalachian mountains, while (p. 174) Buffalo is mentioned in reference to the central prairies and plains. Finally, there is no particularly obvious relation between the passages which deal with the world as a whole and the rest of the book.

The Military Map. Elements of Modern Topography (French School of War). 130+vi pp. Diagrams and maps. (Macmillan.) 2s. 6d. net.—This work is suited both to the student of maps, whether for military or geographical purposes, and to the general reader. The teacher of geography will find within its pages practically all the information which is requisite for class instruction; and the facts are stated with such clarity and precision as will assist him in presenting the matter to his pupils. The chapters on hachures—a subject which presents difficulties to some students—and on orientation are especially helpful. From the point of view of the schools, it may be suggested that a similar work based upon the English Ordnance Survey Map in regard to the particular details of topographical practice would have appealed to a larger public.

Mathematics.

Statics: A First Course. By C. O. Tuckey and W. A. Naylor. 299 pp. (Clarendon Press.) 3s. 6d.—In this book we have a skilful presentation of the fundamental principles of statics. The authors, breaking with the tradition of English text-books, which regards the parallelogram of forces as the foundation-stone of the subject, have taken as their starting point what is historically the earliest of statical principles, namely, the Archimedean law of the lever. This law and its generalisation in the principle of moments form the subject of the first chapter. In the next chapter it is shown how forces may be resolved, and the student is led on to a consideration of some of the simpler mechanisms. Graphical methods, including the determination of the stresses in frameworks, are explained in the fourth chapter,

and here we are glad to see that Bow's notation is used. In the three following chapters the parallelogram of forces, work, centres of gravity, and couples are discussed. The final chapter deals with the connection between the statical principles. This is a decidedly novel feature in an elementary text-book, and may present some difficulty to the younger pupils, but its introduction is justified by the logical completeness which it affords. When mastered, it will clarify the student's ideas, and it will enable him to understand how all branches of mathematics ultimately rest upon a set of unproved assumptions. It is shown that there are alternative sets of assumptions which may be taken as the basis of a science of statics, and it is further shown that these sets are equivalent. Although the theoretical side of the subject receives the greatest amount of space, the experimental side is not neglected. The student will also find plenty of opportunity of becoming familiar with the applications of the science in working the carefully selected examples.

Arithmetic for Engineers. By C. B. Chapman. xi+436 pp. (Chapman and Hall.) 5s. 6d. net.—The exigencies of modern warfare have given to fine measuring instruments and to decimal fractions a degree of prominence hitherto not known in English engineering practice. Concurrently has arisen the need for greater skill in arithmetic on the part of the workmen and others engaged in fashioning the instruments of warfare. Many of the older engineers have found it necessary to take courses at university and technical colleges in order to familiarise themselves with newer methods, and, so far as our experience goes, in the majority of cases some instruction in the use of decimals, contracted methods of calculation, the slide-rule, and graphs has been a necessary preliminary to their other work. Mr. Chapman's book gives exactly the sort of information these men require. It is not merely a collection of rules; it explains thoroughly the reasoning upon which the rules are based, and every principle is followed by worked examples. Needless to say, it is as well adapted for use by students who are beginning their engineering work as by the class of men we have mentioned. We can recommend it thoroughly.

Science and Technology.

Toymaking in School and Home. By R. K. and M. I. R. Polkinghorne. 209 pp.+551 diagrams. (Harrap.) 7s. 6d. net.—An interesting and practical book which teaches how, with very few tools, nearly all the simple toys used by children may conveniently be made. In part i. the authors deal with toys in paper and cardboard for very little folk; in part ii. other materials are introduced. The exercises are carefully graded, and might serve as basis for a hand-work scheme for children from three to twelve. Primarily intended for teachers, the book is also suitable for home use, as the diagrams are of full dimensions, and the instructions are clear and intelligible. Teachers of kindergarten in particular will find the book a mine of suggestive and useful information, but we wish that the methods adopted were not didactic, and that readers had been warned of the importance of cultivating their pupils' individuality.

MESSRS. L. OERTLING (Turnmill Street, E.C.) have submitted to us their latest catalogue of chemical balances, weights, hydrometers, and saccharometers. The items include both long-beam and short-beam balances, taking maximum loads from two kilograms to one hundred grams, and all types are available, from the most costly down to the simplest physical

balance priced at thirty shillings. The range of sets of weights is equally extensive. The high reputation for workmanship and accuracy which has been maintained for so many years by Messrs. Oertling justifies the fullest confidence in their productions; and we may add that the apparatus is entirely British-made.

On the Manufacture and Testing of Prismatic Compasses. By F. E. Smith. (Reprinted from the Transactions of the Optical Society, 39, Victoria Street, Westminster, S.W.) 1s.—The Optical Society has done well in publishing this pamphlet. The author's object is twofold: to explain to manufacturers the causes of the various errors in the instruments and the methods of estimating them employed at the National Physical Laboratory, and to suggest ways by which the makers themselves may perform the tests and improve their work. One of the difficulties met with by manufacturers is that in so many workshops the direction of the resultant magnetic field varies within considerable limits from causes which are not under their control. Mr. Smith points out how this difficulty may be got over by the use of a control magnet and a single standard compass, so that, for the purposes of the tests, a magnetic hut is not essential. The same trouble is met with in most laboratories, and the suggestion is of value to others besides makers of instruments.

The errors of compasses are due to a number of causes: eccentricity of suspension, magnetic material, friction, etc.; all these are dealt with in detail. The analysis of the damping effects of the three kinds of friction—fluid, solid, and electrical—is particularly interesting. It was not a part of the author's purpose in writing, but the testing of a compass with the help of this pamphlet would be a useful exercise for a student. We hear so much in these days of the gaps which lie between manufacturers and scientific workers that it is good to find one more bridge across them.

Miscellaneous.

A Public School in War Time. By S. P. B. Mais. xiv+164 pp. (Murray.) 3s. 6d. net.—This is a genuine "human document," although the picture will sometimes seem false to many. We must believe that it is true of the schools which Mr. Mais knows: but there are others, we are glad to say, of which it would not be true to say that boys "a year ago might have looked askance on poetry as all rot"; that the war has caused an "almost unbelievable renaissance" in the matter of school work; and there are many other phrases of this sort. It is very likely that the war has proved a test of school work; if so, those who find that the imminence of realities like life and death has not made their daily tasks seem unnatural or useless may congratulate themselves that they are not far astray. It has certainly brought home to the classical teacher that his subject can bear the test: the great works of Rome and Greece ring true, and no more inspiring or useful reading can be found for these great days.

Apart from a certain self-consciousness which is present in many of these sketches, they are pleasant reading and give a very fair picture of school life. Some of the author's criticisms are much needed. He warns us that there is too much chapel at school, and that the hymns which are sung are often very poor stuff; he pictures the foibles of masters and the inanity of their meetings with a zest which we hope his colleagues share. Many familiar types meet us, both of boys and masters. School magazines, school societies, school stories, each have a turn. Altogether it is a book worth reading.

EDUCATIONAL BOOKS PUBLISHED DURING JULY, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

- Leo Tolstoy: "Sevastopol." The Russian text, accented. With introduction, notes, and glossary. Edited by A. P. Goudy and E. Bullough. xx+280 pp. (Cambridge University Press.) 5s. net.
- "L'Armée Française sur le Front." Selected from Franc-Nohain and Delay's "Histoire Anecdotique de la Guerre" by G. H. Clarke. (Oxford French Plain Texts.) 48 pp. (Clarendon Press.) Limp cloth, 6d. net.
- "French Songs, with Airs, Tonic Sol-fa, and Phonetic Transcription of the Text." By Violet Partington. 48 pp. (Dent.) 6d. net.
- "Elementary French Reader." By Louis A. Roux. (Macmillan.) 2s. 6d.

Classics.

- "Additional Latin Exercises to North and Hillard's Latin Prose Composition." By the Rev. A. E. Hillard and C. G. Botting. 144 pp. (Rivingtons.) 2s. 6d.
- "Rivingtons' Graded First Latin Books, containing Latin into English and English into Latin Lessons, with Grammar and Accidence, and a Latin-English and an English-Latin Vocabulary." Book V., "The Subjunctive Mood in all its Uses, both Dependent and Independent." 148 pp. (Rivingtons.) 1s. net.

English: Grammar, Composition, Literature.

- "Selections from the Poems of Samuel Taylor Coleridge." Edited by A. Hamilton Thompson. (English Romantic Poets.) xxxviii+164 pp. (Cambridge University Press.) 2s. net.
- Shakespeare: "Much Ado About Nothing." Edited by F. S. Boas. (J. C. Smith's Series for Schools.) 217 pp. (Clarendon Press.) 1s. 6d. net.
- Scott: "Lady of the Lake." (Oxford Plain Texts.) 157 pp. (Clarendon Press.) Paper, 8d. net; cloth, 10d. net.
- Scott: "Lady of the Lake." Edited by A. R. Weekes. xxiv+184 pp. (Clive.) 1s. 6d.
- Scott: "Lady of the Lake." Cantos i. and v. Edited by A. R. Weekes. xxiv+68 pp. (Clive.) 8d.
- "Shorter Poems of Wordsworth." Edited by G. Mackaness. 144 pp. (Dent.) 10d.
- "Select Prose of Robert Southey." Edited by J. Zeitlin. (Macmillan.) 6s. 6d. net.
- "Macmillan's New Senior Class Readers." With illustrations. Book I. for Class IV., 1s. 4d. Book II. for Class V., 1s. 6d. Book III. for Class VI., 1s. 6d. Book IV. for Class VII., 1s. 6d. (Macmillan.)
- "A George Eliot Reader." Compiled by E. B. Collins. 185 pp. (Oxford University Press.) 1s. 6d.
- "Scottish Selections from the Waverley Novels." By J. K. Craigie. 213 pp. (Oxford University Press.) 1s.

History.

- "Europe in the Nineteenth Century (1815-1878)." By John E. Morris. vi+278 pp. (Cambridge University Press.) 2s. 6d. net.
- "Warrior Saints." By Estelle Ross. 128 pp. (Harrap.) 8d.
- "Scotland." By R. L. Mackie. (Great Nations Series.) 520 pp. (Harrap.) 10s. 6d. net.

- "Story of Lord Kitchener." By H. F. B. Wheeler. 256 pp. (Harrap.) 3s. 6d. net.
- "Stirring Deeds of Britain's Sea-Dogs." By H. F. B. Wheeler. 320 pp. (Harrap.) 5s. net.
- "Graphic History of Modern Europe." By C. Morris and L. H. Dawson. 400 pp. (Harrap.) 5s. net.
- "Story of Indian Mutiny." By Henry Gilbert. 350 pp. (Harrap.) 5s. net.
- "V.C. Heroes of the War." By G. A. Leask. 300 pp. (Harrap.) 3s. 6d.
- "Municipal Life and Government in Germany." By W. H. Dawson. 402 pp. Second and cheaper edition, revised. (Longmans.) 7s. 6d. net.
- "The Successors of Drake." By Julian S. Corbett. 480 pp., with 4 portraits (2 photogravures) and 12 maps and plans. New and cheaper impression. (Longmans.) 10s. 6d. net.
- "Readings in the Economic History of the United States." By E. L. Bogart and C. M. Thompson. 804 pp. (Longmans.) 12s. 6d. net.
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CORRESPONDENCE.

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Should any School Books become the Property of the Pupil?

IN his letter in your August issue Mr. Ernest Young, the headmaster of the Harrow County School, suggests that text-books should be the property of the boy, and states that the common practice is to collect the books of a form at the end of the year and re-distribute them to another set of boys when the new school year begins. Many years' experience as librarian for all the school text-books of a boys' secondary school leads me to make the following suggestions, which may be helpful, and may give rise to comment and criticism which will be useful.

(1) When once a pupil has received a book he should retain that book so long as he needs it, whether for one or fifteen terms. This end can be achieved by means of a card index system, whereby each boy's card indicates at any time the books which he has, and for which his parents are responsible. Dictionaries, grammars, geometry books, may thus remain in the boy's possession for five or six years.

(2) It is not economical for the school to provide new copies of language texts, primers, etc., which are in use in the lower forms, and are really introductory books of little value to the mature boy when he leaves school. There are many books, e.g. the "First French Book" or "A Treasury of Verse," suitable to Form I., which are used by a boy for a short time only. Reasonable supervision, and a system of fines for damage to books, make it possible for such books to be used by six boys ere their condition becomes too bad for further use. What value accrues to a boy to load his bookshelf with books such as "Mateo Falcone," "Cæsar, I.," or "In Golden Realms"? To provide a new copy for each boy would soon exhaust the store of money available for books, and it is surely better to use such a book for six boys and spend the money upon a greater variety of texts.

(3) It would be wise to allow a boy to retain possession of advanced texts and of books which he has used for a long time. The following regulations might meet the case:—(a) When a boy has had a book continuously for three years, he may retain it as his own property, should he so desire; (b) when a boy has had a book for a shorter period than three years and desires to retain it, he should be allowed to purchase the book at a regular rate of discount, say one-ninth off the published price for each term he has used the book. The card index readily shows how long a boy has had a book.

The net result of such a system would be that new copies of important books would be distributed to each boy, and the boy would have a personal interest in his books, as they might eventually become his own property.

B. C. WALLIS.

Equality of Treatment of History and Geography.

DURING the past two or three years it has been urged that history and geography should be taught together as one subject. I will not venture to say whether such a proposal is either advisable or practicable; but, putting the suggestion on one side for the

present, I would urge a matter of more immediate importance, namely, that history and geography should receive equality of treatment in all schools except where specialisation is necessary in one subject or the other. Although history and geography are now taught separately in secondary schools, there is often a strong bias in favour of history; this is probably due to the fact that history has been recognised for a long time at the older universities, and geography is still regarded as a new subject.

The following example shows this bias as regards the time allotted to the two subjects respectively. In a large secondary school near London the forms on the classical side of the upper school have two history lessons a week (one of which is prepared) and one geography lesson (unprepared); consequently, two hours per week are given to history and three-quarters of an hour to geography. On the modern side, Form VI. has two lessons in history, but only one in geography. At least 95 per cent. of the boys from this school go into commercial life, where a sound knowledge of geography would be of use to them, and yet during their school career they are compelled to spend an undue proportion of their time in studying history because the senior masters are still influenced by the ideas which prevailed at Oxford and Cambridge twenty years ago, and because some years ago an abnormal boy gained a history scholarship at Oxford.

The bias in favour of history is also shown in certain examinations, which reflect to some extent the teaching in certain schools; for example, the Army Entrance Examination is taken largely by boys who have been educated at the public schools. In this examination 2,000 marks are assigned to history and geography (counted as one optional subject); of these marks, 1,400 are given to history and only 600 to geography. Surely prospective officers in the Army need a thorough training in map reading, map construction, and the general principles of geography, and they should certainly be able to obtain as much credit for this knowledge as for a detailed study of English history. A satisfactory solution of the difficulty will probably depend (1) on the equal distribution of the time allotted to history and geography in the various schools; (2) on the enthusiasm of teachers trained in geography as well as in history; and (3) on the readjustment of those examination syllabuses in which history is now valued more highly than geography.

MAGISTER.

The Growth of Reason and the Syllabus.

IGNORANCE sometimes chances upon the revelation of more truth than imperfect knowledge laboriously achieves. The professional teacher inherits a method which, though blind, is the fruit of the experience of scores of years, and is often at an advantage compared with the professed psychologist, who is too prone to generalise from half-truths. "Psychology," says H. G. Wells, "like sociology, is still in the scholastic stage; it is ignorant and intellectual, a happy refuge for the lazy industry of pedants; instead of experience and accurate description and analysis it begins with the rash assumption of elements and starts out upon ridiculous syntheses."¹

Many of the syntheses of the psychologist are at variance with accepted belief, and never more so than in relation to the best distribution of the syllabus over the period of school education. The teacher is accused of over-reliance upon mere power of retention on one hand, and of making a premature call upon the power to reason on the other. The laboratory, in

which alone can lie the ultimate reply of the psychologist to Mr. Wells, has proved conclusively that it is unwise to prolong the exercise of mechanical memory as the chief mental process after the onset of adolescence. The prematurity of the call to reason has not yet been demonstrated. Indeed, so far as the elementary school is concerned the charge is seldom made. In many secondary schools, however, syllabuses are framed to meet a temporary backwash in the tide of developing reason, which is supposed to occur at about the age of fifteen and to last for about a year.

It was for the purpose of examining the truth of this assumption that the experiment to be described was devised. At the outset there was the difficulty of making any direct measurement of reasoning power. An indirect method was adopted, which in simplicity at least conforms to the ideal formulated by Munsterberg:—"The laboratory must always reduce the living facts with their abundance of relations to the simplest possible terms, which seem to stand far behind the actual experience, but which allow the recognition of the real principle."²

The method was based upon the recognition of the essential difference between mechanical and rational memory. In the former case we are dealing with sheer power of retention, the result of which is the reproduction of the matter learnt, unaltered in sequence or internal relationship; in the second case we have the reason discriminating between, comparing, and re-arranging what the memory retains, resulting in what Prof. Rein terms "altered reproduction."

Two memory tests were applied to 130 boys, whose ages ranged from twelve to seventeen. In each case the matter to be learnt was exposed to view for seven minutes, and was then immediately reproduced upon paper. Test A was designed to exercise the reason as an aid to memory, and was as follows:—To the north of the Atlantic Ocean is a cold sea with much ice in it. The south-west winds which blow across the Atlantic drive its warm waters north, where they melt some of the ice. The cold water from the melted ice drifts south and cools the Atlantic. A cool Atlantic weakens the winds which blow over it, so that less water is driven north. Less ice is therefore melted, less cold water drifts south, the Atlantic becomes warmer and its winds stronger, so that more warm water is driven north, more ice melted, and so on.

Test B consisted in a Romany poem, the retention of which was necessarily an exercise solely of the power of mechanical memory. It ran:—

The rye he mores adrey the wesh
The kaun-engro and chiriclo;
You sovs with leste drey the wesh,
And rigs for leste the gono.

Oprey the rukh adrey the wesh
Are chiriclo and chiricli;
Tuley the rukh adrey the wesh
Are pireno and pireni.³

The percentage learnt in each case was carefully noted and plotted against the age of the boy. In this way two curves were obtained, that for Test A showing the variation of judicial memory, that for Test B the variation of mechanical memory, with age. By subtracting the ordinates of Curve B from those of Curve A, and plotting their difference against age, a curve was obtained which might reasonably be taken to show the variation of reasoning power *per se* with age.

Taking the mean difference between the ordinates

over a period of one year as the numerical for that year, the results were as follows:—

Age.	Numerical.
12-13	2.9
13-14	6.8
14-15	15.7
15-16	24.1
16-17	25.0

It thus appears that, so far from there being any stationary or retrogressive phase in the development of reasoning power, there is an exceptionally rapid development over the whole period from the age of fourteen to that of sixteen. The practice which obtains in the elementary school of making a serious demand upon the reason in the top standard seems to be justified, while those syllabuses of secondary schools which reserve work calling for much reasoning power until the period of puberty is passed entail much loss of valuable time.

If teachers shake their heads and insist that the age of puberty is characterised by slowness and dullness, I would suggest that these are not, as they suppose, signs of an afflicted and disturbed mind, rendered incapable of mental process of a high order by enervating physiological changes, but rather the natural result of the teacher's failure to supply the stimulus proper to such a period of revolution. In most cases the secondary school takes refuge in a fruitless paradox; the teacher is content to see the child mark time in school, but takes extraordinary pains to keep his mind fully occupied out of school. "Sports are not an end in themselves, but they give the boy something to think and talk about and so keep him clean." The "Higher Standard School," however, has clearly proved that it is possible, by applying the proper stimulus, to keep the mind vigorous as well as clean. A change of curriculum is involved, but it is a fruitful as well as a practical change. W. H. S.

Modern Language Teaching after the War.

THE war has produced many new educational problems, besides accentuating others; and in no field of human activity is there greater need for good statesmanship after the war than in the educational field. This country has been brought into intimate relations with France and Russia, to say nothing of Germany, Austria, Turkey, etc., and while old markets may be permanently closed to us, new, and perhaps more valuable, ones will be opened to us if we but show a greater willingness to adapt ourselves to the requirements of our customers. Again and again the Germans have ousted us from markets in which we had previously been supreme, and the reasons for our displacement are invariably given as (1) our inability, or our unwillingness, to adapt ourselves to changing conditions, and (2) our ignorance of foreign languages. One thing is certain: modern languages receive more than their fair share of attention in the average secondary school, and if a higher standard of work is demanded, it must be secured by the application of newer and better methods. No more time can be given to this branch of the curriculum at the expense of English, science, mathematics, etc.

The average secondary-school pupil, after a four years' course, may, at the age of sixteen, possibly reach the matriculation standard in French or German. After passing this, or some other, qualifying examination, he rarely uses his foreign language again. Indeed, fully three-quarters of the teaching profession, including elementary teachers, have never been abroad, nor ever will go abroad; they never read French books or French papers; and, although they were well "grounded" in French at school, they cannot carry on a sustained conversation with

Belgian or French refugees until the latter have first learned English. The utility of modern languages is nil, except to the few thousands of men and women engaged in commercial life. This fact is of the greatest importance in dealing with the problem of modern language teaching. Personally, I am strongly of opinion that the only foreign language taught in our secondary schools should be Latin, as a subsidiary subject to English; it would give a valuable mental training, and would greatly enrich our pupils' vocabularies. French, German, Spanish, etc., are so important that they ought to be banished entirely from the average secondary-school curriculum (a course permitted by the Board of Education in special circumstances).

If this were done, the rest of the four years' course would be completed in from three and a quarter to three and a half years. The remaining six or nine months gained could then be devoted to preparing boys and girls for their future careers: the boy who intends to enter an office would be taught shorthand, book-keeping, etc., instead of secretly messing with these subjects during his last (and most important) year at school; those who are preparing to enter one of the professions would be worked through more advanced courses in English, science, mathematics, etc.; some of the girls might prefer to study domestic subjects during their last six months at school, and those who had definitely decided on a commercial career could specialise in French, German, etc. In six months, studying from three to five hours a day, they would gain a good working knowledge of at least one modern language before they left school. Further, they would, in most cases, have made an arrangement with their future employers to study a particular language, perhaps Spanish or Russian. Now, pupils all learn French, and often when they leave school they find that their firms are almost entirely engaged in, say, the South American trade. Their French is useless to them (for commercial purposes), and they have to attend evening classes for the next two or three years in order to learn Spanish; whereas, if employers informed headmasters of their requirements, boys could be trained to fill definite posts. It might be necessary to open special language schools in a few populous centres, the pupils attending from a distance being granted free travelling facilities. The only real difficulties that would arise would be questions of organisation, and these are not insurmountable.

The country would, in my opinion, gain enormously by the changes that I have suggested, and would not suffer in any respect. The standard of attainment in the other school subjects would be no lower than it is to-day; but instead of everybody receiving a smattering of French, some pupils would be brought to a higher standard in science, English, or mathematics; while boys entering on a commercial career would be well grounded in the languages most useful to them in their business careers. W. R. F.

Fleetwood.

"Further Steps in French" and "Sounds of Spoken English."

I HAVE read with great interest the reviews of the above books in your August issue. "Further Steps" has been most generously treated by one who is in evident sympathy with the reform method. If I write about his review, it is because he raises some points of method of general interest.

Exercises requiring the pupils to draw certain concretes of which they have just learned the French names are useful, because they help the direct association and test a knowledge of the meaning without

requiring translation—always a difficulty with concretes. Our pupils are nowadays so much encouraged to use their pencils for illustrative sketches and diagrams that the time and labour involved are insignificant. The best way to learn the French genders is to associate article and noun; and if this be so, exercises requiring the prefixing of articles to nouns have their full justification.

As for the doubt expressed whether there is enough grammatical instruction, I must leave teachers to judge. The summary of the grammatical material included in the book seems to me to show that a good deal of ground is covered in the two years' course. It is true that most of it appears in the "First Steps"; I regard the second year's work as concerned mainly with consolidating the ground won and extending the vocabulary.

As I state in the teacher's book, I believe there should be daily lessons (five a week) during the first two years of learning French; and if the class be not dull, uneven, or excessively large, I believe the two books will be worked through without difficulty in two years.

As for the review of the revised version of "The Sounds of Spoken English," it perplexes me not a little. The reviewer asserts that he "will not take up—at least he has not yet taken up—the detailed study of English speech," and proceeds to say that "that which differentiates good speech from inferior speech, that which enables us at a moment to pass a judgment on speech, that which classes the speaker in tram, train, or 'bus, has little to do with phonetics, with pronunciation, or even with standard English." May I suggest that your reviewer would do well to take up "the detailed study of English speech" before despairing of phonetics as a means of differentiating good and inferior speech? General impressions in matters of speech are necessarily vague; it is the trained observer of details who obtains the essential data for criticising the speech of those he encounters in tram, train, or 'bus—or whom he hears lecturing or reciting or preaching. And perhaps it is only such a one who can supply the helpful criticism I desire for this book, which represents the further experience of eight years and the strenuous work of a whole winter.

WALTER RIPPMMANN.

How far the vocabulary of a foreign language can be acquired by direct association, without the aid of either intentional or sub-conscious translation, is a question on which opinions differ. Those teachers who hold that the mother tongue should be rigidly excluded at all costs will have recourse to graphic representation in order to explain the meaning of the names of "certain concretes"; others will prefer to make use of translation. In either case, however, it would seem to be a work of supererogation for pupils who "have just learned the French names" of such objects to spend time in drawing them. This is just the sort of exercise upon which children naturally like to bestow an excessive amount of time and pains out of all proportion to results, and, whether the drawings are done in class or as homework, in view of the great amount of work that has to be got through in an all too limited number of *periods*, "the time and labour involved" will probably not be regarded by all teachers as "insignificant."

That "the best way to learn French genders is to associate article and noun" is—or should be—universally admitted; but does it follow from this that exercises which easily degenerate into guessing competitions with even chances "have their full justification"? Of course, if the pupils are made to verify the gender of each noun before prefixing the article, the element of chance is eliminated; but in that case the exercise

is no longer a test of knowledge, as it is presumably intended to be.

The "doubt expressed whether there is enough grammatical instruction" will not be removed, for all teachers, by Prof. Rippmann's explanation. Many have been led by experience to reverse the process which he advocates. They prefer to devote the initial stage of language teaching to laying the foundations of pronunciation and vocabulary, and believe that in the second year earnest, insistent, and systematic grammatical instruction must be given if the minimum amount of grammar necessary for speaking or writing simple French is to be properly assimilated. Moreover, it must be borne in mind that it is only the privileged few who can count on "daily lessons (five a week) during the first two years of learning French," or on classes that are not "dull, uneven, or excessively large." In the lower stages classes usually number from twenty to thirty pupils—more often the larger number—in most schools.

THE REVIEWER.

I AM sorry that Prof. Rippmann mistakes the drift of my notice of his book. That notice was intended to be laudatory, and indeed it contained a request that the writer would add to our debt to him by giving us more from his note-books. There is no point at issue between us, except perhaps this, that, following Dr. Sweet, I would lay more stress on the live teacher than on the best book. Phonetics is mainly concerned with what we may call the coarser difficulties of articulation and pronunciation, in which it offers help that is invaluable; but the wave-tones in sentence, syllable, and vowel, the finer stresses, the cadences, the illimitable shades and values of the voice that is speaking good and easy English, cannot be learnt from books, or even, as Sweet admits, from instrumental phonetics; printed modulation and intonation curves are but the clumsiest approximations. It is just where phonetics stops, must stop, that the study of good spoken English begins. Prof. Rippmann's books go to their limit; and I always use them with pupils. I still hope that the talented writer will insist in another volume on the further, and as I venture to think the higher, study of the subject of easy speech. If any critic should reply that I have confused the provinces of the phonetician and the "teacher of elocution," I would point to the elocutionary advice given by Prof. Rippmann himself in his transcribed passages.

THE REVIEWER.

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SIXPENCE.

THE ADMIRALTY METHOD OF TRAINING DOCKYARD APPRENTICES.¹

By G. J. PARKS, D.Sc.

Headmaster of the Portsmouth Boys' Secondary School.

TIME and the stress of a great European war have worked many changes, not the least interesting and promising of which, to reformers of education whose voices have been crying in the wilderness for many years, is the public recognition by the Board of Education of a system of technical and general education of apprentices which has been carried on with conspicuous success for upwards of seventy years.

This system of education was described in a British Association paper published in *THE SCHOOL WORLD* for November, 1911, but the attention of educationists had already been directed to the subject by an article in *THE SCHOOL WORLD* for January, 1909, and the application of a similar system to the whole country was then earnestly advocated by the present writer.

The searching test of the great war has triumphantly demonstrated the soundness of the Admiralty training, for not only have our naval architects and engineers proved themselves equal to every demand made upon them, but the Dockyard workmen as a whole have received the highest praise for their loyalty and devotion to the country.

And here it may be remarked that an education, even though it be largely directed towards the practical ends of shipbuilding or engineering, cannot fail to develop the mind and character as a whole; indeed, no hard and fast line can be drawn between development of mind and of character, a trite remark which is, however, necessary when so many educa-

tionists affect to despise education directed to practical ends as having no moral value.

Let us now consider how far, if at all, and with what modifications, if any, the Admiralty system can be applied to the training of the youth throughout the country as a whole. It is quite certain that the Admiralty system, like the German or Swiss or any other system, is incapable of being taken up bodily and transplanted into any other community where different industrial conditions prevail. Any educational system which works well is like a delicate and complicated piece of mechanism; remove a single screw, or pivot, or cog-wheel, and the whole system is thrown into disorder. Thus it may very well happen that an attempt to introduce the Admiralty system in another part of the country would result in failure on account of the omission of some essential feature of the scheme which might escape the notice of anyone who had not closely studied its working from all points of view.

As a matter of fact, we have in England at the present time an excellent system of free and assisted education, but it is not being utilised by those for whom it was intended, and this is largely because it has no very obvious connection with the industrial activities of the country, and the mass of the people do not realise its practical value. But if our masses have lacked ideals, surely also our educational idealists have sometimes failed to take a practical view of things. They speak of the "educational ladder," by which a boy from the poorest home may pass on from one scholarship to another and at last perhaps find his way to the university, but the parents require the boy to secure remunerative and progressive employment with a sure place as a wage-earner at the end. The boy who once treads the "educational ladder" has to climb to the very top, or, too frequently, alas, to fall back to the ground bruised and maimed and incapable of any more climbing. What is re-

¹ Board of Education, Educational Pamphlets, No. 32.

quired is not a "ladder," but rather—to continue the argument by analogy—a succession of educational "planes" or "plateaus," each accessible from the next lower, yet each providing on its own level sufficient scope for the activities of those who choose to remain there, and each educationally complete in itself.

Now this is in effect what the Admiralty system affords, for whilst the most brilliant students stand a chance of selection for the highest education and the appointments depending on it, the less gifted students are also able to secure educational facilities and fairly good appointments on any plane for which they are fitted by their attainments. This requires that the educational system, *though not necessarily narrow and utilitarian in its outlook*, should be closely linked with the industrial system, and this implies some form of compulsion, direct or indirect, applied not only to the apprentices and their parents, but to the employers also. How British people seem to shy at the sound of this word *compulsion*! Yet it is obvious that no system of continued education can be made generally effective without it.

In the Board's pamphlet, p. 4, we notice the reluctance to admit that the excellence of the Admiralty system is due in any way to compulsion: "In one sense the term 'compulsion' is perhaps unfortunate, as attendance at school is regarded by the apprentices as a great privilege, and idleness or indifference brings summary dismissal from school." Now, as a matter of fact, this satisfactory state of things is due to compulsion extending over a long period of years until it became an established custom. The apprentice regards attendance at school as a duty no less than attendance at the workshop, and any absence from either is followed by loss of pay, and if the offence is often repeated, by suspension or dismissal from the service altogether. It does not necessarily follow that idleness or indifference brings summary dismissal from school, the decision in such cases resting with the Admiral Superintendent of the Dockyard in consultation with the headmaster. Boys have often been punished without dismissal from school, and in any case, whether the boy is dismissed from school forthwith, or otherwise punished, the bad record tends to debar him from further promotion.

In actual practice the rewards attending success in studies and satisfactory conduct at school are so great, and the shame and loss of prestige arising from an adverse school report so much to be feared, that the question of punishing apprentices for bad attendance, idleness, or misconduct at school seldom arises; nevertheless, the element of compulsion, both

direct and indirect, has played an important part in making the Admiralty system successful. Moreover, the compulsion applies equally to the foreman of the workshop to let the boy attend school however much he may be pressed with work in his own department. The foreman and the schoolmaster are both under the same authority and neither is allowed to put difficulties in the way of the other.

Here again, compulsion has operated so long that it is no longer obtrusive; the Dockyard officers have themselves been educated under the Admiralty system and they usually take an interest in the education and advancement of their boys. The boy is taught his practical work by a skilled workman under the actual conditions of the workshop, and during the course of his apprenticeship he becomes acquainted with different branches of work, thus avoiding the narrow specialisation on commercial lines to which apprentices are subjected in many private firms. It is clear, therefore, that if the Admiralty system is to be imitated throughout the country as a whole, it must be made compulsory for both apprentices and employers, and the whole system of training, both theoretical and practical, must be placed under Government inspection and control. Employers whose works were approved for the purpose could be allowed a Government grant for each apprentice under training, skilled workmen of good character could be paid for instructing the apprentice in his work, and when once the goodwill and hearty co-operation of employers and skilled workmen had been gained the success of the system would be assured.

Schemes of education of apprentices based on the Admiralty system have already been carried on with considerable success by large companies and corporations, but legislation is required to make the system at all general in the country. Many cases are known in which employers with a few apprentices have generously sent them to continuation classes, paying their fees and giving them every encouragement in their studies, but where the attendance at school is optional and no special inducements are held out to successful students, the attempts are usually fruitless.

On the other hand, those who have during recent years gained some experience on Juvenile Employment Committees know quite well that the great mass of juvenile workers are hopelessly cut off from continued education by the long hours and exacting nature of their work. If our race is to survive in the great struggle for existence which will go on after the war, this exploitation of juvenile labour for mercenary ends must be ruthlessly stamped out, for it is as evil in its effects as some crimes

against children which are already punishable by law. Yet employment of adolescents may be of commercial value and at the same time highly educational, *provided it is properly controlled in the interests of the young people and of the race.*

The employment of young persons should be made illegal unless they are working in the capacity of apprentices or learners of industry, and then their education, both practical and theoretical, should be compulsory, and subject to Government inspection and control, whilst the number of hours spent in the works should be strictly limited. The employer could assist the authorities by reserving employment and promotion to the best positions for the best students. Apprentices who showed the greatest ability and devotion to study could be privileged to enter drawing offices, or to take up specially good classes of work, and they could be granted text-books, instruments, and other aids to study, and at the end of their apprenticeship they could be granted special certificates of merit in addition to their indentures. In such ways as these the system could be made popular, and compulsion, although never entirely absent, could be rendered unobtrusive.

Another indispensable element of success is the requirement of a definite educational standard at entry and, where the number of candidates exceeds the number of vacancies, selection by competitive examination. No system of training can be very successful where the students commence with widely differing standards of ability and knowledge, nor should we overlook the importance of such a system of entry as that of the Admiralty in its reactive effect on the education of the boys throughout the whole district from which the candidates are drawn. When the training of all apprentices has been placed under Government control it must follow that a definite minimum standard of education and physique at entry to the course of training will be fixed, just as it is in fact at present on entry to many departments of the Army, Navy, Dockyards, Post Office, and various national and municipal offices, as well as to all the professions.

The age of entry should not be fixed too low, certainly not lower than 15 years, a limit which in time may be raised to 16 years. Compulsory training should go on till the apprentice reaches 18 years, and after that the best students may be encouraged, by generous offers of scholarships and by prospects of promotion, to continue their studies at a university college.

Finally no educational system can be successful if it does not lead with tolerable certainty to remunerative employment with opportunities of rising to the highest positions

through ability and hard work. Parents will not willingly allow their sons to go through a course of training unless they can see that it will lead to an adequately remunerative position, and boys cannot be expected to take interest in their studies when they see other boys succeed equally well or better without study. It is therefore the employers, and particularly municipal corporations and large companies, who can give a stimulus to education by offering the best positions to those of the highest character who most distinguish themselves in their studies and work and all-round development. Such a scheme finds no place for premiums, or nominations, or any form of individual or class favouritism, and is therefore democratic in the proper sense of the term, but it has nothing in common with that spurious conception of democracy which would place all men on a dead level of mediocrity, irrespective of their character, ability, and attainments. It is rather a process of sifting and selection by which the ablest are chosen for the positions of greatest responsibility, whilst those of more moderate capacity are also cared for and are given work which it is within their power to perform efficiently.

To ensure the complete success of such a system there should be equality of opportunity for all, but this depends as much upon the parentage and the home conditions as upon the employer, the workshop, and the school. All that can be done here is to secure by legislative action that the more serious disabilities under which the poorer children suffer through early neglect and premature employment for mercenary ends shall be removed so far as possible.

It is not possible or desirable here to draw up any general scheme of studies, for this would necessarily differ in different places, and in large towns various schemes of studies could and should exist side by side, but in all parts of the country greater attention should be given to physical development, and the gymnasium and the playing field should receive their share of attention with the schoolroom and the workshop, and if later any scheme of compulsory military training be decided upon, this should be incorporated with the general educational system, which it will tend to unify and strengthen.

Lessons in Colour and Flowers. By H. A. Rankin. 40 coloured plates. 183 pp. (Pitman.) 4s. net.—A book useful for naming and identifying specimens, but it fails somewhat in stimulating the student to work from Nature. The methods described leave little room for individual treatment, and the drawings lack vitality, especially with regard to the colour. It would be desirable to emphasise the last paragraph in the preface before each lesson.

GRAMMAR AND THE ORAL METHOD OF TEACHING LIVING LANGUAGES.

By E. CREAGH KITTSON, B.A., B.-ès-L.

OF language teaching there are two opposed forms of theory and practice, both of which are at present represented in our schools. The first, the oral method, regarding language as speech, aims at teaching to read and write the foreign language by first teaching to speak it; it is based primarily on the scientific study and practice of speech-sounds. The second, which may for the sake of brevity be called the old method, aims at teaching to read and write the language by the study and application of its grammatical rules. The former method is now generally admitted—and it has, indeed, been sufficiently demonstrated—to be, from the practical point of view, superior; that is to say, it leads to a better command of the foreign tongue. From the strictly educational point of view, however, the objection is raised against it that it fails to impart a proper knowledge of grammar. In order to deal with this objection it is necessary in the first place to define what grammar is; our ideas on the subject need, perhaps, to be clarified.

One of the earliest definitions I recollect learning ran as follows: "English grammar is the art of speaking and writing the English language with propriety." The author of this definition, I think, was Lindley Murray. It was divided—he went on—into four parts: orthography, etymology, syntax, and prosody. It is probable that the views of most persons on the subject are still not widely different: grammar is regarded as an instrument for the learning of languages. But since it has been proved that a language can be better acquired by speaking it than by the instrumentality of "rules," what then becomes of grammar considered as an art? However, it is not only because there is no function left for it to perform that this applied grammar—that is, what has heretofore been taught as such in schools—falls into disrepute, but also because it is to a large extent unscientific and misleading, and founded on a false conception of the nature of language. We live in a scientific age, when the human mind seeks eagerly for exact knowledge about such diverse things as rocks and stars and earthworms; it would be strange indeed if such a common human phenomenon as language were to escape this tendency; and so it is expected, very reasonably, that a grammar of a language shall provide a scientific description and explanation of all its features.

Now on approaching a new tongue the very first phenomena that call for our attention are

the sounds of which it is composed, their nature, and the number of them; the use it makes of stress or accent; and its intonation. And this is so no matter whether we come to the language with the object of learning to speak it, to read it, to study its historical development or its relation to other languages. The phonetic characteristics of a language go to the very root of its life and being, and a knowledge of them can throw more light on its genius and development than almost any other circumstance whatever, explaining many features that are otherwise incomprehensible. For the practical enterprise of learning a foreign tongue, the study of phonetics is absolutely necessary; on theoretical grounds, it is at least equally desirable. Historical grammar, for instance, which used to be founded on the unmeaning and now discredited *Buchstabengesetze*, is at the present day based on the scientific study of sound-changes, becoming thereby an exact science—probably the only branch of history that could make that claim. Sweet, in his valuable "New English Grammar,"¹ devotes no fewer than eighty pages to phonology alone.

But important though phonology is, it is not included at all in the most prevalent conception of grammar, and the pupil taught by the old method acquires no knowledge of it. Most books either ignore these interesting aspects of linguistic study entirely, or else their remarks on the subject are so meagre and so untrustworthy as to be not only valueless but harmful. On the other hand, they include orthography and tell us how many letters there are in the alphabet, dividing these latter into vowels and consonants; a classification which, even when it is applied, as it should be applied, not to the letters, but to the sounds, is not the most satisfactory. But orthography is no more a part of grammar than prosody; at least it could only be so regarded if it could be shown that the spelling of words has had a definite influence on the development of language, a proposition that would scarcely admit of proof. For the purposes of serious linguistic study spelling is merely an obstacle in our way; we must set it aside and get to the real word beyond. (For fear I should be misunderstood let me hasten to add that I do not in the least advocate the neglect of either orthography or prosody. Indeed, in regard to the latter, it may be remarked that the study of phonetics throws much light on it and makes it much more interesting and intelligible.)

What the word grammar suggests to most

¹ "A New English Grammar." By Henry Sweet. 2 vols. Oxford Press. First published in 1891, and so far as most schools and schoolmasters are concerned, still, alas! quite true to its title.

minds, however, is the mass of rules, paradigms, and classifications grouped in most books under the headings of *accidence* and *syntax*. Now, undoubtedly, the pupil taught by the oral method must learn his *accidence* and *syntax* also; but he learns them in a different manner; he learns them to use them and he learns them by using them. He learns to talk the language, not to talk about it; the pupil taught by the old method does not learn to talk the language, though he can sometimes talk about it with singular readiness. When the oral method is a success, that is, when the pupil attains to speaking the foreign language fluently, he must of necessity know all its forms and constructions; it would be absurd to suppose that a youth could speak French fluently without knowing the plural of *cheval*, the future of *parler*, and the right use of the conditional tense or subjunctive mood. On the other hand, it must be admitted that, notwithstanding his practical command of the foreign tongue, he may be lacking in readiness in answering certain types of grammatical questions, especially those that demand a knowledge of rules and classification. Thus, I know from experience that a boy who has been learning French for a year or two may, on being suddenly asked to give, *e.g.*, the third person singular, perfect tense, of the verb *s'asseoir*, require a period of reflection before he can answer, although he could have used this grammatical form with readiness and in a perfectly natural manner had it been necessary to do so in conversation with his teacher. This is due to the fact that he is not trained to answer such questions; he is trained to concentrate his energies on the attainment of fluency. The grammar book he uses, at least in the early years of instruction, mainly as a work of reference; for this purpose, also, I am inclined to prophesy that its place will be taken in years to come by a handy grammatical glossary, in which he will be able easily to refresh his memory (for instance, when doing written work at home) with regard to the plural of a noun or the preposition to be used after some verb or adjective.

But although his efforts are mainly directed, as I have said, to achieving practical command of the language, if he is properly taught he will be led at the right time to make an intelligent survey of the material he has mastered, and to establish such generalisations as appear either instructive or significant.

He is not taught grammar as most of us were taught it when we were young, and it is for this reason that he is supposed to neglect it; that kind of grammar, however, was neither

practically useful nor theoretically sound. To take a very simple and familiar example: All the old-fashioned books stated that a French verb forms its future tense by adding *-ai* to the infinitive; but if we add [e] to the infinitive [*parle*] the resulting word is certainly not [*parlère*]. The rule is, in fact, merely one for *spelling* the future, and inculcates the mistaken view, abhorrent to the scientific grammarian, that words are composed of letters. The importance some persons attach to rules, moreover, appears to be due to a confusion of a *rule* with an *explanation*; most grammatical rules explain nothing and have no scientific value; they are merely statements of fact. To state that in German the verb stands at the end of a dependent sentence is not to throw any light on this phenomenon; to explain *why* it is so we must have recourse to comparative philology.

It seems to me, therefore, incontestable that the orally taught pupil, both in regard to what he learns and what he avoids learning, gains a better knowledge of grammar than the pupil taught by the old method; at any rate, so far as descriptive grammar is concerned.

As regards explanatory grammar—which is almost entirely either historical or comparative—this is not usually considered to be a school subject; in so far as it is taught in schools, however—and the more of it we can teach the better—it must be admitted that the youth who is trained to think of language as a thing that lives and grows and changes gains a better introduction to it than those who are taught to suppose that linguistic problems can only be solved by ingenious theorising; for the theoretical and historical methods are as sharply contrasted in philology as they are in political science, and the explanation of any given development is best arrived at by tracing it to its origins in the past—a process, moreover, which shows the growth of language to be by no means always in accordance with strict reason, but merely the outcome of the usage of a great number of ordinary persons.

In conclusion, it would be unwise to commit oneself to the statement that grammar is well taught in all schools where the oral method is nominally in use, for, as I have pointed out before in these pages, I believe this method is often misunderstood and wrongly applied. The truth probably is that the scientific teaching of grammar in our schools is pretty generally neglected—notably the teaching of English grammar. We are in a transition stage: the old views are falling into discredit and new conceptions are taking their place. And in these circumstances probably what we

need most is that the distinguished university teachers who are qualified to do so—I by no means suggest that they are all qualified to do so—should take an interest in scholastic education and write better grammars for the use of our pupils—and ourselves!

THE VALUE OF A TRAINING IN SCIENCE IN INDUSTRIAL WORK.¹

By E. F. ARMSTRONG, D.Sc., Ph.D.

THE subject of this paper is so complex and so wide in its ramifications that it is necessary to speak to a very definite programme, avoiding any attempt at generalisation, if any clear deductions are to be drawn. I have been asked to deal with the relative value in works of knowledge gained and power of command acquired by those who have been trained in universities and technical colleges.

Such comparison is difficult, if not impossible. What the industries want are men capable of leading, men with knowledge who can apply their knowledge, men who can inspire others and can work together with others. The same racial qualities which have enabled us to govern India and other countries with a native population are of equal value in the works: it is a loss to our industries that too many of those possessing such attributes have been attracted to the outposts of Empire. The man possessed of such qualities will come through wherever and however he was trained; the man who lacks them, be he ever so good a chemist or engineer, will fall short of complete success.

It may be argued that the school system which has given the nation such men in the past will be sufficient for the future. This is clearly not the case. Conditions have altered; industries have arisen based on the latest developments of science; the old empiricism has vanished under stress of competition. Above all, a greater co-ordination of effort is required. Each part of an industrial process is dependent on others; much depends on the quality of the raw materials. The problems of industry as it is to-day can only be grasped by those who have had real scientific training. Unless the problems of the business are understood by the management, the firm is bound to go under in competition. I therefore claim that industry wants the best type of English gentleman adapted to modern conditions by some scientific training, so that he will have acquired a knowledge and appreciation of scientific method. How this is to be done is a matter for the schoolmasters. But the public should

believe that there is money in science, and put their sons into scientific careers. Parents need to be told this.

As regards the training of the chemist for industry, there is no doubt that we have suffered in the past from a lack of touch between the teachers and industry, with the consequence that the manufacturer has experienced many disappointments on employing a chemist. There are, fortunately, abundant signs that all this is to be altered in the future, but I would put in a plea that the advice and criticism of the manufacturer should be sought more often by the universities and technical colleges, and that these should make it their first object to train men for the industries.

At the outset a distinction must be sharply drawn between *scientific knowledge and scientific training*. From the industrial point of view the knowledge of scientific method is the more important—in fact, almost everything. Mere scientific knowledge—book knowledge—has a very low commercial value. Unfortunately, at least so my experience teaches me, it is this type of man, and not the man of method, who is the main product of our universities and teaching institutions. It is not for me to discuss the reasons; probably the examination fetish is the main cause. The existing system of education aims at bringing the men up to a certain standard and hall-marking them by the award of degrees, only if they reach this standard by a display of knowledge in the examination room. I believe that the success of the German system of university education is due to the "Lehr und Lehrn-Freiheit" which exists there, though it may be inferior to the British university system on the social side.

I wish to state most emphatically that what the manufacturer wants, what industry—both on its technical and commercial side—wants, is graduates trained in method who know how to apply knowledge scientifically. Almost of necessity any really progressive business has a far more detailed and thorough knowledge of everything pertaining to its own manufacture than is available outside. When a university graduate is added to the staff the firm does not expect him to bring new information to them, but rather to arrange and co-ordinate and build up from the facts which they put at his disposal.

I think that if the universities can be brought to understand our requirements and to plan their courses of instruction so that their graduates are able to apply scientific methods of organisation to any type of problem, then most of the needs of manufacturers will be met, and there will be a great development in our industries.

¹ A paper read before the Section of Educational Science of the British Association at Newcastle-upon-Tyne on September 8th, 1916.

There is room for the scientifically trained organiser in every department of the factory—buying, selling, advertising, and distributing, as well as in the works proper. Nothing exceeds in importance the proper organisation of the labour force and its rates of payment, as well as those details of a large works which are comprised under welfare schemes. I believe half the labour difficulties of the present day could be avoided if works made a practice of engaging officials specially for this purpose, instead of leaving the labour to be dealt with mostly by foremen and under-managers.

I trust that I have sufficiently emphasised the need for the man with scientific training as opposed to scientific knowledge. It is obvious that scientific training can begin in the schools—indeed, the earlier the better. Were such training universal I believe that all would have some understanding and appreciation of what scientific method meant, what were its merits, and what were its limitations. The more leisured classes would be attracted to such professions as diplomacy, law, the Government services, and the higher posts in commerce as heretofore, but an increasing number would take to the full science course. What is most important, however, is that all would have a clear understanding what science is and what can be achieved by it. Nothing can be more deplorable or more injurious to the State than the present total ignorance of science and the treatment of the man of science as a magician which are so characteristic of the classes indicated. The more universal training in method by means of science teaching in the State schools is likewise of the utmost importance for our national welfare, but I regard this for the moment of subordinate importance to the necessity of enlightening those classes of society from which the leaders are chiefly drawn.

In order to crystallise opinion it is worth while to discuss from the point of view of a large business the knowledge and training required by those in various grades:—

The Board or Partners.—The ordinary board of management of a British company is composed of men of affairs who in very many cases have a limited knowledge of the details of the company on its technical and scientific side, and are content to be guided by their general or departmental manager. In consequence they tend to require immediate returns for any expenditure they may make on experimenting, and are not the best critics of new inventions or improvements. A weak case presented before them by a good advocate will triumph over a stronger case weakly presented.

A more general scientific training at school of such men, in the future, would enhance their value as men of affairs, and enable them to discuss new projects much more critically, inasmuch as it would add a new and powerful weapon to their armoury. As this class comprises our best and most mature brains in industry, it is all-essential that a scientific training should be general. Otherwise it is difficult to see how we are to progress in such industries as chemistry and electrical engineering, which are entirely based on science. Scientific knowledge is only rarely combined with business acumen: it is imperative that there should be at least one fully qualified technical member on the boards of such industries as have just been mentioned.

Heads of Departments (a) on the technical side.—These represent a selected class who have won their way to the positions they occupy. They are bound to possess technical knowledge gained by experience, but their success will be all the greater, and, above all, they will gain in breadth of outlook, if they have started life after a training in scientific method at school, followed in exceptional cases by a similar training at the university or technical college.

(b) On the commercial side.—Commercial ability is to a considerable extent based on quickness in dealing with figures, an ordered mind, good judgment—that is, ability to perceive the chances of success—and, above all, on breadth of mental outlook. The ideal training will be that which encourages the development of all these attributes to the full. This is just what is claimed for the school training in science by its advocates, and at least this should help commercial men to understand and sympathise with the special difficulties of their technical colleagues. Many commercial departments, such as buying, are highly technical and actually demand a knowledge of science, and the same often applies to the heads of export departments. Their mental attitude, however, is essentially commercial, and a discussion of the exact training required falls outside the present subject.

Juniors.—These are undergoing a process of selection, and in a progressive works should be fully in touch with the most modern developments. With the increased educational facilities, particularly evening classes at the technical schools, practically all are now getting some scientific training, and it is obvious that this should begin at the schools. The larger firms in Britain practically all take an interest in the continuation of the education of their employees, and it would be an advantage to educationists if the experience of these firms could be collected and summarised.

THE GOVERNMENT COMMITTEE ON THE STUDY OF MODERN LANGUAGES.

By Prof. WALTER RIPPMMANN, M.A.

EVERYONE interested in the modern humanities welcomed the decision of the Government to "consider the position occupied by the study of modern languages in the educational system of Great Britain," and was curious to know how the Committee would be constituted and what the terms of reference would be. That curiosity has been satisfied, as readers of the last issue of THE SCHOOL WORLD will have gathered from the announcement on p. 343.

It is safe to say that no modern language teacher would have guessed more than four of the sixteen names included in the list of members; I doubt whether even the collective wisdom of the Modern Language Association would have been more successful. At first sight I was taken aback by the selection, which included not a single school teacher, or a single modern language inspector of the Board of Education or any other inspecting body, or anyone prominently identified with the great movements in modern language teaching. Further consideration, however, compels me to view the question in a different light; and, with one important reservation, it seems to me a very good committee. As a whole, it frankly represents common sense, combined with broad experience, rather than expert, specialist knowledge. These people may be trusted to take large views and not to get lost amid the details dear to the specialist heart or to stick to the groove in which the expert is wont to move. They will invite the specialists to place their views before them, and many divergent views they will doubtless hear; and they will then discuss and digest those views, and issue a really helpful report.

I alluded above to an "important reservation." Of the sixteen members of the Committee only one is a woman. I can make no comment on that. It just staggers me.

The terms of reference are wide, and the Committee will find that the scope of their work is even wider, as every student of the question knows. They are asked to consider the study of modern languages, but they cannot do so without reference to the study of English, and of Latin and Greek; they are to deal especially with secondary schools and universities, but the work in evening classes and in the trade schools that we all want to see established cannot be ignored. It is a very big task they are taking in hand, and as it is important that the report should not be long

delayed, there will be serious demands on their time. Yet they will not grudge the sacrifices they may have to make, for it is work of great national importance; and it behoves all who realise this to assist, in however modest a way, the deliberations of the Committee.

For the sake of those who have a general interest in the matter, without having had opportunities of going into it at all thoroughly, it may be well to state some of the questions which the Committee will have to consider.

Elementary Schools.—Should a foreign language form part of the curriculum? If so, at what stage? (I believe the attempt to introduce a foreign language would be a great mistake. Even if a year were set free by the introduction of a rational spelling, we should need that year for more pressing subjects.)

Secondary Schools.—When have pupils acquired a sufficient knowledge of the mother tongue to start a foreign language profitably, *i.e.* without unduly protracting the elementary stage of instruction? Is non-intensive teaching at the outset of any value? How much time should elapse before the second foreign language is begun? Should all pupils be expected to take a second foreign language? Should any take more than two foreign languages before the age of specialising begins? Should there be a choice between an ancient and a modern language as regards (a) the first, (b) the second foreign language to be studied? What foreign languages should be studied in schools, and in what order? What standard of attainment may fairly be expected at the age of about sixteen? At what stage should account be taken of the needs of those preparing for a commercial career? What special facilities should be provided for those who require a reading knowledge only, to enable them to utilise scientific, technological, medical, etc., works written in foreign languages? What form should specialising in modern languages take in the last stage of a full secondary course? (Many of the points raised have been dealt with in the Board of Education Memorandum on the Teaching of Modern Languages, and in the article contributed by me to the July issue of THE SCHOOL WORLD.)

I do not propose to touch on questions of method, for if I started, this article would grow unduly long; and I imagine that the Committee will suggest outlines and schemes, leaving the experts to fill in details. But it seems desirable to refer to some points affecting the teachers.

How are the teachers to be trained? How can we make the prospects attractive enough to secure an adequate supply of competent

teachers—bearing in mind that the training of modern language teachers is necessarily costly? How should the modern language department of a school be organised? Do we want “exclusive specialists”? What place in our schools, if any, should be occupied by the teacher of foreign nationality? How can the *assistant* be utilised, if at all?

At what intervals should teachers visit the foreign country whose language they are teaching? Should this be in term time or in the holidays? What pecuniary help should they receive for this purpose, and from whom?

Universities.—How should the honours courses be framed, so as to suit the requirements of the prospective teacher as well as of the prospective scholar? Can a student take up more than one foreign language fully, *i.e.* with due appreciation of the history, literature, and civilisation of the foreign country? Is it not desirable to couple with a foreign language as the main subject certain subsidiary subjects, so that we may turn out teachers ready and willing to teach something more than the one foreign language? What arrangement can be made to ensure that students spend an adequate time abroad? And—in connection with this, perhaps—what is the value of foreign holiday courses and of temporary membership of foreign universities? Should the professors of modern languages be natives or foreigners? If they are natives, should they have foreigners as assistants? Last, and not least, what can be done to ensure sympathetic and intelligent contact between universities and schools?

Examinations.—Should oral tests be compulsory? Is efficiency in modern languages rewarded by a due proportion of marks in the various competitive examinations? Is there anything in the scope of the syllabus, the relative difficulty of the papers, or the standard of marking that favours the ancient languages and reacts unfavourably on the modern? What considerations should determine the choice of examiners in modern languages? The whole question of entrance scholarships to the universities will naturally call for discussion.

Then, as I have hinted, we want to know how the work of the evening classes can best be conducted—a difficult problem. Where are we to find enough competent teachers? How can we secure good work and regular attendance on the part of the pupils? And we may also ask how far the private student receives benefit from the system of Extension Lectures on one hand, and from the Workers' Educational Association classes on the other—though I cannot say off-hand whether the latter have yet included modern language work.

This list of problems to be solved by the Government Committee is far from exhaustive; but it will suffice to show what a formidable task is theirs, and will, I trust, help to secure for them that sympathetic support which will alone enable them to carry through their work to a successful conclusion.

THE GOVERNMENT COMMITTEE ON SCIENCE IN SECONDARY EDUCATION.

By E. H. TRIPP, Ph.D.

The Modern School, Bedford.

THE announcement of the *personnel* of the Government Science Committee had been awaited with eagerness and not without some trepidation by those interested in pressing the claims of science for a fuller meed of recognition in national affairs. The closing of our national museums to save a few thousand pounds; the appointment of an aviation committee consisting almost entirely of lawyers and without a single aviation expert; official lack of prevision, and disregard of science and men of science until the Government was compelled in its hour of extremity to summon them to its aid, made many people doubtful whether marked ability would be manifested in selecting the most capable men and women to investigate the means of fashioning our educational organisations to the scientific requirements of the State.

Emile Faguet, in his much-read book, “*Le Culte de l'Incompétence*,” has endeavoured to prove that, just as honour is the principle of monarchy, and terror that of despotism, so incompetence is the hall-mark of democracy. Though much evidence in support of this thesis may be gleaned from recent events, the contention errs on the side of pessimism. We may not be able to stem the tide of democracy, but by means of efficient organisation and by the institution of a truly liberal education for the many, supplemented by a highly specialised education for the few, we may do something to counteract much of its unwisdom. Democracy in its highest form, it has been said, means government by experts, and if there are many who dread the rule of the specialist because he is too often incapable of taking the broad view, there are probably more who would prefer government by experts to government by amateurs. Those who identify expertness with narrowness of outlook must not forget that the two are not necessarily or always connected, and that many of the politicians and others set in authority over us who enjoy a reputation for broad-mindedness

are in reality as narrow as any of the specialists, because they are ignorant of the value of physical science to civilisation and will not invite to their counsels those who have the knowledge and who know how to apply it.

An examination of the credentials of the members of the Science Committee leaves no doubt that it was intended to appoint a body of experts. The majority of those appointed have at one time or another been in close touch with educational work, but on the other hand it is important to note that those who combine educational with scientific qualifications are in a considerable minority. The main criticism to be made is that the Committee is not adequately representative, and in this respect it errs perhaps more on the side of omission than on that of commission. In an inquiry which, from its terms of reference, must to a considerable extent centre around secondary schools, the necessity of the inclusion of secondary-school teachers—*i.e.* of men and women who have a live practical acquaintance with the working of such schools—would seem to be obvious; and in an investigation into the means of promoting science, the selection of science teachers, of "those who do the work," would appear equally necessary.

But this practical principle is apparently not accepted. Those who, we had fondly hoped, had begun to realise the vital importance of science as a necessary condition of security and material progress (which in their turn form the condition of the possibility of spiritual progress) are content to leave the representation of school science to a classical headmaster of a public school and to a mathematical head-mistress! It is true that one or two of the other members have taught science in secondary schools in the more or less remote past, but, speaking generally, the science master and the science mistress have been completely overlooked.

Among the important matters which will come up for discussion, and upon which the views of science teachers should be of the greatest service, are: the age at which science instruction should begin; the time to be devoted to science; the relative value of different branches of science and the order in which they should be taught; the organisation of science classes; the question of "science for all" and science for the future expert; and the cost of school science. Surely those who are in intimate touch with the schools are best qualified to judge such matters.

Further, the question of the training of teachers is held by many to be of the first importance, but no training college expert has been included. Similarly, representatives of technical education and of housecraft are con-

spicuously absent. Among the many lessons which the war is supposed to have taught us is that of the vital importance of agriculture and of chemical industry, yet the interests of these and of the multitudinous other industries "which particularly depend upon applied sciences" are entrusted to the care of two eminent engineers! In Sir J. J. Thomson and Profs. H. B. Baker and E. H. Starling we recognise three men of the highest eminence in pure science, but, except in one case, we are not aware that they have taken any prominent interest in education; and, moreover, at least two of the three are extremely busy men, and it is difficult to see how they can give adequate attention to their new duties without sacrificing those upon which they are at present engaged. It is more pleasant to note the selection of such an able, experienced, and well-balanced expert as Dr. M. E. Sadler, of Mr. F. B. Stead of the Board of Education, who has had unique opportunities of studying the science work in secondary schools, and of Mr. Crook, whose knowledge of elementary education should be unrivalled. It should have been possible to select a more expert and a more representative body of men and women without appreciably increasing the number.

A better basis of selection would have been: Two or three university professors of science, of whom one was also conversant with secondary schools and one with experience of technical education; four or five science teachers from secondary schools of different types, and with different scientific qualifications; two educational administrators; single representatives of engineering, chemical industry, agriculture, elementary education, and the training colleges; one or two men of literary proclivity who had "seen the light" of science and recognised it; one official of the Board of Education; and no politician.

In conclusion, it is devoutly to be hoped that, in the event of the Committee producing any satisfactory recommendations for reform, every science teacher and others who sympathise will agitate to prevent them sharing the fate of the Report and Recommendations on Examinations by the Consultative Committee of the Board of Education issued in 1911. It is a monstrous thing that nothing should have been accomplished in the direction of reforming our examination system, and the suspicion that the Government and the Board of Education are not really in earnest is not without some justification. Recent events have proved that those who sit in high places can be compelled to act by the pressure of public opinion, and it is the duty of every educationist to provide another illustration of the fact that "needs must when an enlightened democracy drives."

PROPOSED REFORMS IN WELSH EDUCATION.

By A. E. L. HUDSON, B.A.
County School, Pontypridd.

PROBABLY one of the first bodies to set about preparing for the reconstruction of things educational that is inevitable with the return of peace was the Central Welsh Board, which controls and inspects about 90 per cent. of the secondary schools of Wales. In May of last year it called a conference at Llandrindod to consider the two-examination scheme of the Board of Education: while the prospect of a Royal Commission was welcomed, immediate changes were deprecated, and sub-committees were appointed to submit proposals to the Board before the holding of the inquiry.

These proposals are embodied in a pamphlet, "To-day and To-morrow in Welsh Education," which has been sent to the education authorities in order to elicit their opinions for collation. It contains a review of the Board's work since its inception, suggestions for the unifying of Welsh education, and memoranda on the constitution of the Board and the internal conduct and administration of the schools. Relations with elementary and university education were considered, and the committee of inquiry concluded that, "pending the establishment of complete Welsh autonomy, the most satisfactory solution of Welsh educational difficulties would be the constitution of a National Council of Education for Wales, controlling all forms of education in the Principality other than university education."

There are many who will ask why the Central Board should be thus willing to commit suicide: doubtless some matters call for reform, but Wales owes it the highest gratitude for its broad-mindedness and devotion to its proper work and its success in that work; and the necessary reforms could be secured without breaking up the present system.

There are three chief failings in Welsh secondary education: (1) Imperfect organic connection with elementary education, although 87 per cent. of the pupils come from primary schools: in many cases the choice, quality, and preparation of these pupils leave much to be desired; some that come in are not worthy, and many more that should come in do not get the chance; often, too, those that come in do so too late, and without preparation suitable to their age. Details vary in different places, and it is difficult either to state the conditions both accurately and broadly, or to suggest a certain remedy; but, generally speaking, we would advocate co-operation in the task of choosing between the elementary-school

teachers who are sending the pupils on, and the secondary-school teachers who will have to be responsible for them afterwards. At present it is always an anxious question at the beginning of the school year, "What sort of a Form II. do we get?"

The duration of school life is a burning question: every teacher must remember instances of regret at losing pupils who might have done great things. This difficulty, together with those caused by the fact that the elementary schools have to provide both for those who go on to the secondary school and for those whose education ends at the age of fifteen, with the questions of upper technical departments, of true technical training, and of part-time education for ex-elementary pupils—all these can only be solved by the liberal provision of money, wisely used; and any scheme of correlation that may be devised will also find application outside Wales.

(2) The secondary-school system itself is not sufficiently adapted alike for local needs and for the provision of an adequate liberal and vocational training for those who will go further afield. The call for definite relation between the school and the occupations of its neighbourhood is reasonable enough, but the teacher knows he is bound to protest against too early specialisation. And even in the larger schools very often the work in the top form varies from year to year—sometimes languages, sometimes science—and its members may be receiving what amounts to advanced private teaching. What, then, must be the difficulties of organisation and the loss of opportunities to pupils in a school of, say, fifty or eighty scholars? One of the finest things in Welsh education is the gallant way in which many of the small schools have grappled with these difficulties and turned out suitable pupils with an equipment that has enabled them to do infinite credit to the teaching—at the cost of great strain on the teachers and of great self-sacrifice and devotion on their part.

The schools are not too numerous; a smaller number would be so widely scattered that country pupils could not reach them. Pembrokeshire reasonably prides itself on having several smaller schools instead of one large central one; but it has to pay the penalty in the difficulties that arise in arranging the curriculum.

There ought to be more pupils in the schools and more money spent on them, and the pupils ought to stay longer in them than they do.

(3) The secondary-school system should be more closely linked up with the university. This subject has already been dealt with in THE

SCHOOL WORLD for August; it is only necessary here to repeat that the connection should be twofold, through the *personnel* and through the examinations.

Whether the Council for Wales can devise and work a system that will satisfy these requirements will depend on its constitution. The Central Board cannot do it with its present limited powers. Such a council must certainly be composed in large part of *people who know*. One essential to the establishment of a healthy educational system, in Wales as elsewhere, is that the actual teachers shall have a considerable share in control and management; they are as a class not less public-spirited and clear-sighted than other people, they include among them many men and women of great administrative ability, many of them are ratepayers—and some pay income-tax! The number of those who do not is a disgrace to the Principality.

Certain demands the teacher must resist: when an employer complains that schoolboys cannot add figures or write a decent letter, his complaint is just, but the boy must be left at school long enough to get a good general education. And the business man who wants young—and cheap—office boys, and insists on their early years being spent on subjects such as typewriting and shorthand—subjects which are educational only by virtue of the sound knowledge of English which they presuppose—is depriving the boys of their educational birthright. So is the employer who says: "I don't want trained chemists. Send me smart, strong boys of fifteen, and my man in the laboratory will teach them all I want them to know in a few weeks," and then turns them into the works, workmen trained in one detail of manufacture. Of course, no captain of a ship wants a crew of mates with captain's certificates; but boys so treated are cramped and deprived of opportunities of development and of promotion. They are the victims of the worst form of division of labour.

Wales, and the rest of the country, will get the kind of education it is prepared to pay for; and the sooner the elector—the man in the street—realises that he will have to treat his schools as he treats his Navy, the better it will be.

Decorative Design. By J. C. Chase. 73 pp. (Chapman and Hall.) 6s. 6d. net.—As only one page is devoted to historic ornament, the book well illustrates the truism that there is no royal road to successful design. Many of the drawings lack feeling—e.g. the acanthus, p. 70—and in some cases doubtful ornament is introduced—e.g. the book cover for "Robinson Crusoe," p. 43. We do not consider the suggested use and treatment of photographs entirely satisfactory, but it is certainly ingenious.

ROMAN BRITAIN AND ARCHÆOLOGICAL RESEARCH.¹

WHOLE provinces of ancient history would lie beyond our ken—often through the mere loss of the works of classical authors—were it not for the results of archæological research. At other times again it has redressed the balance where certain aspects of the ancient world have been brought into unequal prominence, it may be, by mere accidents of literary style. Even if we take the Greek world, generally so rich in its literary sources, how comparatively little should we know of its brilliant civilisation as illustrated by the great civic foundations of Magna Græcia and Sicily if we had to depend on its written sources alone. But the noble monuments of those regions, the results of excavation, the magnificent coinage—a sum of evidence illustrative in turn of public and private life, of art and religion, of politics and of economic conditions—have gone far to supply the lacuna.

Look, too, at the history of the Roman Empire—how defective and misleading in many departments are the literary records! It has been by methodical researches into evidence such as the above—notably in the epigraphic field—that the most trustworthy results have been worked out.

Take the case of Roman Britain. Had the lost books of Ammianus relating to Britain been preserved we might have had, in his rugged style, some partial sketch of the Province as it existed in the age of its most complete Romanisation. As it is, so far as historians are concerned, we are left in almost complete darkness. Here, again, it is through archæological research that light has penetrated, and thanks to the thoroughness and persistence of our own investigators, town sites such as Silchester in Roman Britain have been more completely uncovered than those of any other Province.² Nor has any part of Britain supplied more important contributions in this field than the region of the Roman Wall, that great limitary work between the Solway and the mouth of the Tyne that once marked the northernmost European barrier of civilised dominion.

Speaking here, on the site of Hadrian's bridge-head station that formed its eastern key, it would be impossible for me not to pay a passing tribute, however inadequate, to the continuous work of exploration and research carried out by the Society of Antiquaries of Newcastle, now for over a hundred years in existence, worthily seconded by its sister

¹ From the presidential address to the British Association at Newcastle upon-Tyne, September 5th, 1916, by Sir Arthur Evans, F.R.S.

² See Haverfield, "Roman Britain in 1913," p. 86.

society on the Cumbrian side, and of which the volumes of the respective Proceedings and Transactions, *Archaeologia Aeliana*, and last, but not least, the *Lapidarium Septentrionale*, are abiding records. The basis of methodical study was here the survey of the Wall carried out, together with that of its main military approach, the Watling Street, by MacLauchlan, under the auspices of Algernon, fourth Duke of Northumberland. And who, however lightly touching on such a theme, can overlook the services of the late Dr. Collingwood Bruce, the Grand Old Man, not only of the Wall itself, but of all pertaining to Border antiquities, distinguished as an investigator for his scholarship and learning, whose lifelong devotion to his subject and contagious enthusiasm made the Roman Wall, as it had never been before, a household word?

New points of view have arisen, a stricter method and a greater subdivision of labour have become imperative in this as in other departments of research. We must, therefore, rejoice that local explorers have more and more availed themselves of the co-operation and welcomed the guidance of those equipped with comparative knowledge drawn from other spheres. The British Vallum, it is now realised, must be looked at with perpetual reference to other frontier lines, such as the Germanic or the Rhaetian *limes*; local remains of every kind have to be correlated with similar discoveries throughout the length and breadth of the Roman Empire.

This attitude in the investigation of the remains of Roman Britain—the promotion of which owes so much to the energy and experience of Prof. Haverfield—has in recent years conducted excavation to specially valuable results. The work at Corbridge, the ancient *Corstopitum*, begun in 1906, and continued down to the autumn of 1914, has already uncovered throughout a great part of its area the largest urban centre—civil as well as military in character—on the line of the Wall, and the principal store-base of its stations. Here, together with well-built granaries, workshops, and barracks, and such records of civic life as are supplied by sculptured stones and inscriptions, and the double discovery of hoards of gold coins, has come to light a spacious and massively constructed stone building, apparently a military store-house, worthy to rank beside the bridge-piers of the North Tyne, among the most imposing monuments of Roman Britain. There is much here, indeed, to carry our thoughts far beyond our insular limits. On this, as on so many other sites along the Wall, the inscriptions and relics take us very far afield. We mark the grave-stone of a man of Palmyra, an altar of the

Tyrian Hercules—its Phœnician Baal—a dedication to a pantheistic goddess of Syrian religion, and the rayed efigy of the Persian Mithra. So, too, in the neighbourhood of Newcastle itself, as elsewhere on the Wall, there was found an altar of Jupiter Dolichenus, the old Anatolian God of the Double Axe, the male form of the divinity once worshipped in the prehistoric Labyrinth of Crete. Nowhere are we more struck than in this remote extremity of the Empire with the heterogeneous religious elements, often drawn from its far Eastern borders, that before the days of the final advent of Christianity Roman dominion had been instrumental in diffusing. The Orontes may be said to have flowed into the Tyne as well as the Tiber.

THE TRAINING OF CHEMISTS.¹

THE opportunities for chemical instruction in this country are immensely greater than they were thirty years ago. The claims of chemistry to a leading position have been recognised by all our universities, even the most ancient, by the provision of teaching staffs, laboratories, and equipment on a fairly adequate, if not a lavish, scale, and in this respect many of the technical colleges fall not far behind. The evening classes conducted in a large number of technical institutions are scarcely fitted to produce fully trained chemists, if only because lack of the necessary time prevents the student from obtaining that prolonged practice in the laboratory which cannot be dispensed with, unless indeed he is prepared to go through a course of study extending over many years. At the same time these evening classes play a most important part, first in disseminating a knowledge of chemistry throughout the country, and secondly in affording instruction of a high order in special branches of applied chemistry. Moreover, in a large and increasing number of schools a more or less satisfactory introduction to the science is given by well-qualified teachers.

With our national habit of self-depreciation we are apt to overlook the steady progress which has been made, but at the same time I do not suggest that there is no room for improvement of our system of training chemists. Progress in every department of industrial chemistry is ultimately dependent upon research, and therefore a sufficient supply of chemists with practical knowledge and experience of the methods of research is vital. This being so, it is an unfortunate thing that

¹ From the presidential address to the Chemical Section of the British Association at Newcastle-upon-Tyne, September 6th, 1916, by Prof. G. G. Henderson, F.R.S.

so many students are allowed to leave the universities in possession of a science degree but without any experience in investigation. The training of the chemist, so far as that training can be given in a teaching institution, must be regarded as incomplete unless it includes some research work, not, of course, because every student has the mental gifts which characterise the born investigator, but rather because of the inestimable value of the experience gained when he has to leave the beaten track and to place more dependence upon his own initiative and resource. Consequently one rejoices to learn that at the University of Oxford no candidate can now obtain an honours degree without having produced evidence that he has taken part in original research, and that the General Board of Studies at Cambridge has also made proposals which, if adopted, will have the effect of encouraging systematic research work. Perhaps it is too much to expect that practice in research will be made an indispensable qualification for the ordinary degree; failing this, and indeed in every case, promising students should be encouraged, by the award of research scholarships, to continue their studies for a period of at least two years after taking the B.Sc. degree, and to devote that time to research work which would qualify for a higher degree.

In this connection an excellent object-lesson is at hand, for the output of research work from the Scottish universities has very greatly increased since the scheme of the Carnegie Trust for the institution of research scholarships has come into operation. Thanks to these scholarships, numbers of capable young graduates, who otherwise for the most part would have had to seek paid employment as soon as their degree courses were completed, have been enabled to devote two or more years to research work.

Of course, it must be recognised that not every chemist has the capacity to initiate or inspire investigation, and that no amount of training, however thorough and comprehensive, will make a man an investigator unless he has the natural gift. At the same time, whilst only the few are able to originate really valuable research work, a large army of disciplined men who have had training in the methods of research is required to carry out experimentally the ideas of the master mind. Moreover, there is ample scope in industrial work for chemists who, although not gifted with initiative as investigators, are suitably equipped to supervise and control the running of large-scale processes, the designing of appropriate plant, the working out on the manufacturing scale of new or the improve-

ment of existing processes—men of a thoroughly practical mind, who never lose sight of costs, output, and efficiency, and who have a sufficient knowledge of engineering to make their ideas and suggestions clear to the engineering expert.

Further, there has to be considered the necessity for the work of the skilled analyst in the examination of raw materials and the testing of intermediate and finished products, although much of the routine work of the industrial laboratory will advisedly be left in the hands of apprentices working under the control of the chemist. Lastly, for the buying and selling of materials there should be a demand for the chemist with the commercial faculty highly developed. There is, indeed, in any large industrial establishment room for chemists of several different types, but all of these should have had the best possible training, and it must be the business of our higher teaching institutions to see that this training is provided.

THE COMBINATION OF LITERARY AND SCIENTIFIC SUBJECTS IN GENERAL EDUCATION.¹

By the Rev. H. B. GRAY, D.D.

THE general principle sought to be enforced in this paper is that a due balance should be maintained between naturalistic studies on one hand and literary studies on the other in the education of all boys up to a certain limit of age—which limit should vary in accordance with the age at which they are destined to end their school life altogether.

I. THE PREPARATORY SCHOOL.—To begin with the preparatory school, where children of the prosperous classes are generally educated. The subjects to be taught may be summed up as follows:—

(a) English, to include reading aloud (with just emphasis and elocution) of simple literature.

(b) History grouped round lives and characters.

(c) Arithmetic, with mensuration.

(d) The elements of mechanics.

(e) Nature-study on a gradually expanding scale from local to national environments.

(f) Geography on a modern and scientific basis.

(g) One modern language, which should be French.

(h) Drawing—freehand.

(i) Manual training, to be taught for one-

¹ Abstract of a paper read before the Educational Science Section of the British Association at Newcastle-upon-Tyne, September 8th, 1916.

third of the weekly periods now spent in non-productive games, such games to be limited to three afternoons a week, while one afternoon at least should be devoted to physical training.

II. THE ELEMENTARY, THE CONTINUATION, AND THE TECHNICAL SCHOOLS.—(a) In the elementary school instruction in English, history, geography, and arithmetic should be supplemented by a more co-ordinated training in science, beginning with nature-study, and continuing with elementary physics and chemistry. Manual training should also receive more careful attention from an early age, the sloyd system, or some similar system, being graduated, until the pupil learns the practical connection between mind, eye, and hand in the carpenter's shop.

(b) The continuation and the technical schools should be made compulsory on all boys up to the age of eighteen, on the plan known as the Cincinnati system, according to which two boys, pursuing the same trade, are paired, one pupil attending the school, and the other the works or shop, every alternate week.

III. THE PUBLIC AND THE SECONDARY SCHOOLS.—For the purpose of dealing with the subject in hand a distinction must be drawn between the (so-called) public school, where the leaving age ranges from seventeen to nineteen, and the secondary school, where it ranges from fifteen to sixteen. This distinction of name is in itself illogical, but the variation in the leaving age involves slightly different problems, and therefore somewhat different treatment.

(a) In the public school the educational curriculum should, from the age of twelve or thirteen to sixteen, be conducted on the Grand Trunk principle. There should be no such line of demarcation as that now in vogue, known as "the classical and the modern sides."

The subjects should be:—

1. Science—that is, the ascertained facts and principles of chemistry, physics, mechanics, biology, geography, and geology.

2. Mathematics, studied with a view both to their commercial utility and their applicability to scientific pursuits.

3. English language and literature, together with training in elocution and in composition. Easy *précis*-writing and essayship should form part of the course.

4. French, taught orally and practically, and with due regard to literature.

5. Drawing—freehand and geometrical.

(b) In the secondary school the course should be the same as in the public schools until fourteen, and after the age of fourteen—

1. English, French, science, and mathematics, or, alternatively,

2. English, French, one other modern language, and commercial mathematics.

As regards (2), science will have been previously studied between twelve and fourteen. The alternative courses (1) and (2) are arranged so as to suit those boys who are entering on technical and commercial careers respectively.

(c) In the public schools, after the age of sixteen, specialisation could begin, and be organised according as the boy is to enter:

1. The literary professions.

2. The commercial professions.

3. The scientific professions.

1. On the literary side one or both ancient languages should be studied on a reformed method, while mathematics and science might be dropped.

2. On the commercial side one further modern language should be combined with French, according to the career which the pupil is likely to enter, but history and economics should form part of the classical curriculum.

3. On the scientific side one or two special branches of science should be pursued, adapted also to the pupil's future career.

The principles of biology should be a subject of study for all boys over sixteen, whether on the literary, the commercial, or the scientific side.

Finally, a graduated system of manual training for all boys in public and secondary schools should be insisted upon as part of the course, and should take up one-third of the hours now devoted to non-productive games, while one-third of such periods should be devoted to military drill.

Space forbids a recital of the reasons which have guided the writer in the working out of the different schemes of study sketched above. Suffice it to say that the aim has been to combine the acquisition of facility and power of expression gained by literary study with the breadth of interest produced by a study of natural phenomena. A course which preserves a balance between the two would produce the man of greatest width of intelligence.

The pupil who has studied the capabilities of the human spirit by studying the history of the past would be equipped with an aptitude for dealing with his fellow-men, while he who has investigated the laws of nature would be enabled to encounter the new industrial and scientific conditions and novel political phenomena which are involved in the development of a complicated Empire.

It is necessary to insist upon the importance of a real educational touch between those who

are training pupils of all grades and ages in literary and naturalistic studies respectively. There has hitherto been, especially in our public schools, an unnatural divorcement between the methods of the two, both in sentiment and practice. In the lower grades of education a teacher, equipped by his own school training with both kinds of knowledge, would apply scientific method to the teaching of languages, and literary expression to lectures on the natural sciences. There must be, in fact, no watertight compartments in knowledge on the part of teachers, any more than on the part of pupils.

All that can be ventured here is that, if a balanced scheme of education, such as has been set forth in this paper, is carried out, it will bear its natural fruits in producing the right kind of teachers and the right kind of teaching in the following generation. This is as much as can safely be predicted.

EDUCATION AT THE BRITISH ASSOCIATION.

AFTER the President's address,¹ the Educational Science Section entered upon a discussion of the reform of the primary school. Mr. J. G. Legge, director of education in Liverpool, read the first paper, dealing with the "Place of Handicraft in Schools." To the great disappointment of the section, Mr. Legge devoted nearly the whole of the half-hour allotted to him to what were in fact purely introductory considerations. His historical survey began with the manual arts of the cave-men, and wandered through classical and medieval education to the modern period, which begins with Rousseau, Pestalozzi, and Basedow. After an interesting reference to the part played by the British Association and the paper read by Sir Philip Magnus in 1886 in the development of technical education in England, he dealt with the physiological, psychological, moral, and social arguments in favour of handicraft in school, quoting William James and Stanley Hall amongst other authorities. At this point the President warned him of the lapse of time, and we were unfortunately left only with the brief abstract to arrive at Mr. Legge's constructive suggestions. He directed attention to the dearth of men in our boys' schools and the necessity of finding new sources of supply. Wounded soldiers might perhaps be trained—a fine type of men to introduce into our schools as instructors. A scheme for student-teachers, to be worked in connection with the new trade schools, is men-

tioned in his abstract, but the details did not appear. The paper ended with an appeal for the preservation and extension of local initiative and local responsibility unfettered by a central bureaucracy bent not only on laying down general lines of policy, but on administering every detail of that policy. "The hope of the future lies in the working out of our own salvation under the control of an unambitious, unsentimental central authority, with some sense of humour, whose aim is guidance, encouragement, and co-operation, not forcible feeding on a diet of codes and regulations. Only by hard, honest, skilful, intelligent work with a living element of spontaneity in it, handwork as well as headwork of every kind possible to man, can we redeem our future as we should."

Prof. T. P. Nunn discussed the subject from the point of view of the intellectual outcome to be expected when handicraft attained its right place in the life of the elementary school. The normal course of events in regard to the elementary curriculum was for a new subject to be imposed by an external authority. It was accepted in an undigested form and taught by outsiders. Then the schoolmaster took it in hand and gradually reduced it to a sound pedagogic form. This was true of arithmetic and science. "All of us remember the stage of the peripatetic teaching of science. The same course is being followed in handicraft. The real danger of teaching subjects in this way comes from the notion of formal training which evaluates them as developing this, that, or the other faculty. It leads to the divorce of subjects from any central interest, as has happened in the case of mathematics. Geography is another illustration of how easy it is to achieve such a separation. To avoid danger of this kind we need action—a central body of activities which shall give life and meaning to other studies. There is a twofold need for handwork in schools. It is the natural mode of approach to intellectual subjects. It provides problems for active thought, and makes real what might otherwise degenerate into mere words. And not less important is the introduction it offers to craftsmanship and art. Artistic power is not confined to the few, and the work of the hand is the most universal avenue to the appreciation of beauty."

Prof. J. A. Green followed with a paper on the place of books in the primary school, which we hope to publish next month.

The discussion of these papers in the afternoon was opened by Mr. Crook, president of the National Union of Teachers. He felt that it was easy to exaggerate the claims of handi-

¹ Printed in full in this issue, p. 381.

craft, and emphasised the importance of not separating it from the rest of the school work. He did not agree with Prof. Green's advocacy of the school library. The public library, he said, made libraries for schools unnecessary. He lamented the decay of reading aloud by the children, and the fatal flaw in Prof. Green's advocacy of reading aloud by the teacher was the fact that so many teachers had not got that power.

Prof. Mark Wright thought there was a danger of a too hurried change in school curricula. We need more experimental inquiry. Handwork itself is faced with two dangers: it might, on the one hand, degenerate into triviality, or it might, on the other, put children into trammels. Above all, the schools should concern themselves with physical, religious, and social education, and the problem of the recruitment of the teacher must not be longer neglected.

Major Gray put the lengthening of school life as the first plank in educational reform. Handicraft was especially important for sub-normal children, but literature must, if needs be, give place to the cooking of potatoes.—Mr. Sharp (secretary to the Education Committee of Newcastle) thought finance the sole key to the problem of reform. Magnificent work was being done, and, given more money and freedom to the teachers, better things lay before us.

The second day of the meeting was devoted to the thorny question of the place of science in secondary and higher education. Papers were read by Mr. J. S. Talbot, Dr. H. B. Gray, Dr. Hadow, and Dr. E. F. Armstrong dealing with the subject from the points of view of the school, the man of letters, the university, and industry respectively. Mr. Talbot described the work of a committee of headmasters which had met recently at Wellington. They had, he said, agreed unanimously that no boy in any school should be allowed to specialise in any subject before he had achieved a satisfactory general education such as might reasonably be expected of a boy of sixteen. They had agreed that science should have a place in this fundamental scheme, and that from two and a half to four hours a week should be given to it. They were not agreed as to whether any bias in one or other direction might properly be provided before that age, particularly in schools where the leaving age was sixteen. Any examination for sixteen-year-old boys on this general curriculum ought to be accepted by the universities for matriculation and so leave schools to specialise and concentrate, thereby incidentally getting rid of the time-

table trouble. In the examination itself the principle of compensation should be admitted. After sixteen neither science nor Greek should be compulsory. The present scholarship concentration was an evil. English ought never to be dropped, and nothing could exceed the importance of thorough training in an inflected language. Locality must determine largely the nature of science, and something might be done in the way of teaching larger views of the great problems of science. Names like Pasteur, Metchnikoff, Darwin, ought to stand for something in the minds of all well-educated boys.

Dr. Gray urged the importance of combining literary and scientific subjects in a general education. He developed his plea in relation to the preparatory, continuation, and public schools. The bad influence of the public schools upon the preparatory schools was emphasised. Our primary schools were in point of fact much freer than the schools in which the young children of the prosperous classes are generally educated. In the public schools a general education for all boys up to sixteen should consist of science, mathematics, English, and French. The division into classical and modern sides should be dropped, and classics be reserved for the period of specialisation after sixteen. In the ordinary secondary school, partition might take place at fourteen, up to which age the curriculum should be the same as in the public schools. After fourteen, courses suited to boys entering technical or commercial careers should be distinguished. All boys who remain at school beyond sixteen should learn the principles of biology. Manual training should be throughout compulsory and occupy one-third of the time now given to games. Another third of that time should be given to military drill.

"The place of science in higher education is one of national importance. It is in danger of becoming a subject of academic controversy," said Dr. Hadow. Men of science had now the ear of the nation; he hoped they would not spoil their chance by over-emphasis. "Let them not say that the universities are doing nothing for science or that classics are studied for the sake of conversational amenities. We need an *eirenicon*: both sides must admit the value and the necessity of the work that is being done." The universities must not be confined to the products of the secondary schools, though these must provide the normal avenue. He agreed with Mr. Talbot as to the general basis for all education; but what of after fifteen or sixteen? Some pupils cannot take in more science, and scientific method may be learned in literary subjects. He thought a harmony in logical

method in the sixth form or in the first year of the university would be valuable. In the newer universities a broad general basis of science was offered in the first year, followed by specialisation. This first-year work might be done at school, and the universities begin with the work which was now done in the second year. Science teaching in the university should be kept in constant touch with reality. Engineering students, for example, should have regular workshop practice. As to research, this should begin immediately in the case of pure science. In applied science it is best postponed until the student had taken his coat off for a year or two in the workshops. After that let him come back to the university.

Dr. E. F. Armstrong pleaded for a better supply of scientifically trained men from the best classes of our people. Parents should be told that there is money in science. But it is not book knowledge that is wanted. Our system of science training still results in booky men who are of little use for business. Scientific methods of attacking difficulties should be learned. Even labour difficulties were often capable of solution when dealt with in a scientific way. There was a great place in industry for men who, having got a good scientific training, had also capacity for direction and command.

In the discussion which followed, Prof. A. Findlay disagreed with the suggestion that universities should give up present first-year science courses. The extent and variety of the courses offered by the universities could not be provided at school. Nor must the needs of future teachers be forgotten.—Bishop Welldon would like employers to say more clearly what they want, and would insist on the retention of Latin. Scholarships for more subjects than one should be instituted, and specialisation before sixteen was in any case an evil.—Prof. Worthington mentioned the Dockyard schools as typical of what science in education can do, and directed attention to the lack of discussion of the question of mathematics. A closer co-operation between teachers of mechanics and of mathematics was necessary: the mathematicians were apt to aim too high.—Father Cortie objected to the divorce of literature and science. We must teach to think first, and that came best of all from Latin.—The danger at present was that a clever young boy was seized by the classical men, and then he was lost for ever.—Mr. Bothamley pointed out that major scholarships of county councils were not single-subject scholarships.—Mr. Cary Gilson hoped that the problem of the position of science would be dealt with in a spirit

worthy of its importance. Balanced judgment was above all things necessary. A classical headmaster like himself had a right to ask what he was charged with. Much had been done in the last forty years. The atmosphere of public schools in the seventies was morally bracing, but intellectually relaxing. Specialisation was early and in one direction. We should contrast with this the many-sided specialisation of the present day. He thought this still began too early, and that we had too much of it.—Prof. R. A. Gregory emphasised the folly of allowing university requirements to dominate the work of the schools, of whose pupils only 3 per cent. were affected. All are agreed that some science was necessary to a good general education, but what science? He did not expect the Board of Education Committee would give them much useful guidance on this question. Much of school science was lost in meaningless trivialities when, at any rate, it concerned boys whose interests and tastes were literary.—Mr. Berridge, Mr. J. S. Thornton, and Prof. Vernon Harcourt continued what had been an extremely interesting and well-organised discussion.

The place of science in girls' education was considered in the afternoon. Dr. Mary H. Williams dealt with it chiefly from the point of view of future medical women, though in general she urged that science was the best method of learning to weigh evidence. She would teach first biology—*i.e.* botany, elementary zoology and physiology—ignorance of which led to such mistakes as the Daylight Saving Act, which has so seriously lessened the sleeping time of children; and some account of the origins of life in plants, protozoa, insects, birds, and mammals; secondly, chemistry and physics.—Miss M. E. Marsden said that from the point of view of domestic craft success depended on manipulative skill, accuracy of work, and knowledge of physics and chemistry.—Miss Laurie would allow a girl of fifteen to choose the branch of science she would like to continue.—Miss Rich dealt with the importance of teaching the art of putting questions to Nature.—Dr. Kimmins pleaded for the study of the new psychology, when we should hear less of teaching subjects for the sake of faculty, a point in which he was supported by Miss M. Frosham, who held further that all science teaching in girls' schools should lead up to hygiene and housecraft.

The last meeting of the week was given to the discussion of a report from the Mental and Physical Factors Committee. It dealt with normal performances in elementary arithmetic, extending and developing work which had been begun in England by Dr. P. B. Ballard.

PERSONAL PARAGRAPHS.

THE death of William Esson, F.R.S., Savilian Professor of Geometry, and Estates Bursar of Merton College, removes a well-known personality from University society in Oxford. A favourite pupil of Henry Smith, he won the highest mathematical distinctions open to an undergraduate, and in 1860 was elected to a Fellowship at Merton College. His success as mathematical tutor at both Merton and Magdalen Colleges was pronounced, and his great aptitude for business led to his appointment as Estates Bursar in the former college, a post which he held up to the time of his death. He did good work also for the University in many other capacities, and but for his activity in these practical directions his contributions to mathematical science, valuable as they are, would no doubt have been more extensive. At the time of his death he was Savilian Professor of Geometry, having succeeded to the chair on the death of Prof. Sylvester in 1897. His funeral took place at Oxford on August 28th, and was attended by a large number of his colleagues in the University. He will long be remembered for the strength and keenness of his intellect, the open directness of his character, and his frank geniality as a friend and associate.

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SECOND LIEUT. HARRY WATSON, of Ormskirk Territorials, was killed in action in France on August 12th. He had been mathematical master at Ormskirk Grammar School since January, 1912. He was educated at Burnley Grammar School and Manchester University, where he graduated with first-class honours, obtaining his degree of B.Sc. in 1907. Before going to Ormskirk he was master at the Technical Institute and Secondary School, Salford. On the outbreak of the war he immediately enlisted and his soldierly qualities were soon recognised. In June last he received his commission, and was gazetted as second lieutenant in the King's Liverpool Regiment. A letter from Rifleman Green, of the same regiment and classical master at Ormskirk Grammar School, states that Lieut. Watson was killed in a bombing attack. He was leading his men and got several yards in front, when he was shot through the head by a sniper. His headmaster writes: "Strong and tender, impetuous and coolly daring, a boy in temperament, a man in experience and knowledge, a scholar of keen mathematical grip and insight, a spirit of gentle touch and lively temper, chivalrous in his valorous strength, a hater of sham and artificiality and a lover of all true and genuine things—how the England that is to be will miss such as he."

CAPT. FENTON, of the Dorset Regiment, who was stated to be missing at the end of July, is now reported killed. He was educated at Lancing College and at Keble College, Oxford, and was a keen member of the O.T.C. From Oxford he was appointed a master at the King's School, Worcester, and later became house tutor at the School House. In 1911 he left to become headmaster of the State School, Singapore. He returned early in 1915 to take a commission in the Dorset Regiment, and was quickly promoted to a captaincy. He was a brave soldier, a most efficient disciplinarian, and a sympathetic teacher.

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SECOND LIEUT. TURNER, who was killed on August 21st, was educated at St. John's School, Leatherhead, and Durham University. When the war broke out he was a master at Darlington Grammar School, but at once enlisted in the Royal Artillery and went to France in the spring of 1915. In September of the same year he received his commission in the R.G.A. His commanding officer spoke of him as being remarkably cool under fire and very keen.

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SECOND LIEUT. G. H. ALINGTON, Royal Sussex Regiment, was killed on August 9th, aged twenty-seven. He was educated at Horris Hill, Marlborough, and Magdalen College, Oxford, taking his M.A. degree in 1914. When the war broke out he was teaching at Summer Fields, St. Leonards. He obtained a commission, and went to France in November, 1915. The officer in command of his company writes: "He was always ready to undertake any duty, however unpleasant."

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LIEUT. G. R. DAY, Bedfordshire Regiment, was killed on August 27th, aged twenty-eight. From Marlborough he passed to Peterhouse, Cambridge, where he gained a double first in history. For a short time he was a master at the Gresham School, Holt. He was appointed to a fellowship and history lectureship at Emmanuel College, Cambridge. Enlisting at the beginning of the war, he obtained a commission in the Bedfordshire Regiment and received four wounds at Suvla Bay, his jaw being broken in two places. In July, 1916, he was attached to the Royal Warwick Regiment on the western front.

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LIEUT. J. R. M. ELLIS, Canadian Infantry, died on August 9th of wounds received on August 7th. He was educated at Worksop College and Bromyard Grammar School, where he afterwards became a master. He was

wounded in April, 1915, near Ypres; after his recovery he returned to the front and was promoted lieutenant on the field. A brother officer writes: "I want to tell you how very sorry we all are at losing one of the finest and best that ever lived. He was just loved by all, he was so keen in his work, so brave, and a splendid soldier."

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LIEUT. W. C. MORGAN, Norfolk Regiment, killed on July 20th, entered the Public Schools Brigade in September, 1914, received his commission in November of the same year, and went to the front in July, 1915. He was educated at King Edward VII. Grammar School, King's Lynn, and at Durham University. Before the war he was a master at Caterham. His colonel writes: "He was one of the most proficient officers; you are aware, perhaps, he was selected by the General of the Division to be bombing instructor at headquarters. He was probably one of the best bombing officers in France."

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LIEUT. W. H. MILBURN, Suffolk Regiment, is reported killed. He was educated at Emmanuel College, Cambridge, of which he was a scholar and prizeman. At the outbreak of the war he was a master at Framlingham College, Suffolk.

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CAPT. C. P. HILL, of the Staffordshire Regiment, was killed on August 10th. He was educated at Elizabeth College, Guernsey, and at Heversham Grammar School; in 1896 he gained a school scholarship to Balliol College, Oxford. In 1902 he entered the educational department of the Transvaal Civil Service, and became vice-principal of King Edward VII. School, Johannesburg.

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LIEUT. A. W. BROWN, Rifle Brigade, was killed on August 18th at the age of thirty-five. In 1894 he won a house scholarship at Uppingham School; he then gained an open scholarship at Caius College, Cambridge. In 1908 he returned to Uppingham as a master, and while there held a commission in the Leicestershire Territorials. In 1910 he was appointed rector of Michaelhouse Diocesan School, Natal, and took up his duties there in 1911. In July, 1915, he obtained leave to return to England in order to enter the Army, and was gazetted to the Rifle Brigade.

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SECOND LIEUT. T. E. AINGER is now reported as killed in Gallipoli on August 21st, 1915. He was a scholar of Eton and King's College, Cambridge. Second Lieut. Ainger

was a junior examiner to the Board of Education from 1908-13.

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CAPT. JAMES MOULD, who was killed in action on September 3rd, was a master at the Dudley Grammar School. He joined the 3rd Worcester Regiment in March, 1915. He was awarded the Military Cross for gallantry at Gallipoli, and returned to England, invalided. Later he joined his regiment in France, and was awarded the D.S.O. in August, 1916. At school he was in command of the cadet corps.

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SECOND LIEUT. W. R. HEATH, Oxford and Bucks Light Infantry, was killed on August 23rd. He was educated at the Royal Naval School and at Hatfield Hall, Durham University, where he was senior scholar and took honours in classics and philosophy. He was for a short time a master at All Saints, Bloxham, one of the Woodard Schools, and from 1903 was at Cairo in the service of the Education Department of the Government.

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LIEUT. J. A. PEARSON, Royal Fusiliers, was killed on August 4th. After graduating with honours (B.Sc.) at the University of London, he became a master at the Sir George Monoux Grammar School, Walthamstow. On the outbreak of the war he enlisted in the Duke of Cornwall's Light Infantry. Three months later he received a commission in the Royal Fusiliers. His C.O. writes: "As Lewis machine-gun officer he was of inestimable value to me. I feel that it is indeed hard that I cannot repay the debt I owe him."

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LIEUT. S. B. McLAREN, R.E., was wounded in the head on July 29th, and died in hospital on August 13th. Coming to England from Melbourne University, he entered Trinity College, Cambridge, was second wrangler, was a Smith's prizeman, and afterwards won the Adams prize. He was for a time lecturer on mathematics in Birmingham University; he then became professor of mathematics at University College, Reading. One who knew Mr. McLaren well writes: "His teachers and contemporaries alike regarded him with particular admiration and esteem, as a man of exceptional talents, not merely as a mathematician, but as a student of many versatile abilities and attainments. . . . Ever lively and physically vigorous, to the extent, perhaps, of being even bovishly so, those who knew him at Trinity will not forget, amidst some mirthful pranks, the ingenuousness of his nature, his kindly disposition, and the resources of an intellect which gave a fair promise of some great

achievement in research, to the advancement of knowledge."

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MR. A. S. TETLEY, headmaster of the Yorkshire County Secondary School at Scarborough, has died suddenly at Taunton, aged forty-eight.

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MR. J. A. NEWSOM, second master of Epsom College, died suddenly on August 26th. Mr. Newsom was educated at Christ Church, Oxford, of which college he was an exhibitor.

ONLOOKER.

SPIRIT AND INTELLECT IN EDUCATION.¹

It is a great responsibility, as it is a great honour, to be allowed the opportunity of delivering the presidential address to the Education Section of the British Association this year. The whole subject of education is more before the public mind than it has been for a generation at least, and one is tempted, therefore, to range over the whole field. I shall indeed range pretty far, but, of course, an individual's opinions are only of real value so far as they reflect at least some experience of his own. My experience has been entirely with education of the secondary-school and university type, and with the effort, of which I shall speak incidentally, to supply university teaching to adult working men and women; this is indeed an instance of the university type of education. Of elementary schools, which I suppose constitute, for the present at least, the main part of our problem, I know nothing directly and very little indirectly. But I see two things with regard to them: first, that all reform is conditional upon our securing smaller classes; and, secondly, that the elementary schools ought not to be the most important part of our English problem, for we ought to be turning our attention to the building up of an adequate secondary system. It is in the sphere of secondary education that our whole equipment is most conspicuously and lamentably deficient.

One other word of introduction. The present interest of Englishmen in education is partly due to the fact that they are impressed by German thoroughness. Now let there be no mistake. The war has shown the effectiveness of German education in certain departments of life, but it has shown not only its ineffectiveness but its grotesque absurdity in regard to other departments of life, and those the departments which are, even in a political sense, the most important. In the organisation of material resources Germany has won well-merited admiration, but with regard to moral conduct, and with regard to all that art of dealing with other men and other nations which is closely allied to moral conduct, she has won for herself the horror of the civilised world. If you take the whole result, and ask whether we prefer German or English education, I, at any rate, should not hesitate in my reply. With

¹ An address delivered to the Educational Science Section of the British Association at Newcastle-upon-Tyne, September 6th, 1916 by the Rev. W. Temple, M. A., President of the Section.

all its faults, English education is a thing generically superior to the German. It is to perfect our own, and not to imitate theirs, that we must now exert ourselves. And so I turn to the discussion of some parts of this task.

There is a great deal of public interest at the present time, and very nearly as much mental confusion, with regard to education generally, and especially with regard to the place of technical training in education. The discussion in the public Press and elsewhere follows the lines of a number of cross-divisions. We sometimes have the division into literary and scientific education, sometimes the division into general and technical; and there are those again who confuse these two divisions.

It is worth while, perhaps, to point out the particular confusions which are thus involved. There is no contrast in principle between a literary and a scientific education; the study of literature is a mere dabbling with amusements if it is not a scientific study. The real distinction, at which one only hints, concerns, not the method of inquiry, but the subject considered. It is the distinction between the study of man and the study of the physical universe; and so soon as this is clearly realised it becomes apparent that no education can pretend to completeness at all which does not, in a very considerable degree at least, cover both fields. Human faculty being what it is, the time available is for most people too short to make possible a thorough study of both human and natural science, which we may take to designate the inquiry into the behaviour of man and the inquiry into the behaviour of the physical world. But an education which leaves either entirely out of sight, and indeed which fails to implant in the mind the governing principles and ideas of both, can scarcely be said to deserve the name of education at all.

Before pursuing this theme it is worth while to turn for a moment to the other distinction, which, as I have said, is sometimes identified with this. Here, again, the principle of the distinction is false. A general education must include, if it is to be truly general, the training of all the faculties, and this plainly covers manual work as well as mental work. Moreover, it appears to be established that manual work is for children the best means of developing brain faculty, and therefore has a direct value for the purely mental side of education.

Anyone who has taken any part in administering our present educational methods must surely be convinced that we are relying far too much upon books as our method of instruction. There are many people of very decided intelligence and capacity who can scarcely learn anything at all out of books. One of the developments which we need is the far freer use of manual and productive work as a means of education in the strictest sense; as a means, that is, of developing human faculty quite irrespective of the practical or commercial value of such faculty when developed.

But here again, as in the former case, there is, underlying the false distinction, a real distinction between education the aim of which is the employment of leisure, and that the aim of which is the practical work of life. But inasmuch as work and leisure are both of them essential and necessary parts of human

life, it is clear that the distinction, though quite real, ought not to be allowed to become a contradiction, so that the dilemma can arise whether we are training people for work or for leisure; plainly we must aim at training them for both.

At this point it will assist the clearness of the subsequent discussion if we refer to yet one more distinction which arises out of what has already been said—namely, the distinction between technical education and technical instruction, if by the latter of these terms I may be allowed to indicate the training which aims at supplying some specific skill quite irrespective of the general human development of the personality, and by the former phrase such a training in either physical science or its practical application as may be a real part of the development of an entire human being. If the words are used in this sense I should desire to say that technical instruction may be of commercial value, and should, for aught I know, be definitely encouraged or even enforced by the State for the sake of its commercial value. But it has nothing to do with education, and we, as interested in education, have nothing to do with it; except, indeed, this: That we need vehemently to protest against such early specialisation as may develop the wealth-producing capacities at the cost of dwarfing the human nature as a whole.

When we analyse the prevailing conceptions current in most educational discussion in the way in which I have attempted, it appears that there are two broad divisions of the subject, one concerned with the matter of study, and the other concerned with the educational needs of human nature. The former gives us the broad distinction of human studies and physical studies; the latter gives us the broad distinction of spiritual and intellectual. The confusion to which allusion has been made arises in large part from the natural tendency to identify these two methods of division as though it could be said that the study of man developed the spiritual but not the intellectual side of our nature, and physical studies the intellectual and not the spiritual. But the fact is that both of the main elements in human nature with which education is chiefly concerned can be developed by means of either of the two broad sections into which we have divided the possible subjects of study. The study of literature can be so conducted as to develop a scientific habit of mind, and natural science can be so studied as to expand the imagination and, through that, the sympathies.

There is indeed one side of human nature of which I have said nothing, namely, the physical; but though a complete education must concern itself with this, it is a part of the subject capable of separate treatment, and we may here omit it, only remarking that education is very vitally concerned to see that the physical condition is such as may be the basis for the intellectual and moral life. It is now a commonplace of the subject that it is impossible to teach, and indeed cruelty to try to teach, those who are hungry or who are over-tired. It is not always recognised, however, that, apart from physical condition at the time when teaching is given, vigorous intellectual work, and still more moral character, can scarcely be expected when the physical system is either stunted or disproportion-

ately developed. I suppose it is technically possible to extract perfect melody from a violin the strings of which are not in tune, and for aught I know it may be strictly possible for a perfect character to work itself out upon the basis of an ill-developed physical system; but it is clear that the difficulty is for all practical purposes insuperable.

I am told that an inquiry made in our industrial schools and reformatories has shown that those children who are most difficult from the point of view of discipline, and as to whose future in the matter of moral development there is least ground for hope, nearly always prove to be in some way physically under-developed or mis-developed. Certainly if the body is in a condition of instability we should expect the mind and soul to be correspondingly fretful and irritable. The whole matter therefore of physical health and development is one that is vital to education, not only as a part of education itself in the largest sense, but as a condition which must be satisfied before education in the narrower sense can satisfactorily do its work.

From this we may return to the two broad divisions of human personality which are the actual concern of education in the narrower sense—the spiritual and the intellectual. The spiritual side of human nature, the capacity for fellowship and for devotion, is best trained by the life of membership in a society. No instruction or study can take the place of this. This is the great inheritance that comes down to us, in England at any rate, from the Middle Ages. The side on which those great private institutions which are called public schools, and the older universities, are particularly strong is the social life which is their most leading characteristic. As the personality begins to develop it requires some society of which it may be a member other than the home on the one side and the nation on the other. The nation is clearly far too big for the child to realise, or indeed to possess any effective membership in it; and the home, though not too small, is yet unsuitable in one respect, namely, that it is bound to be too much under the direction of the parents. Where life in a schoolroom is possible and where there is a large family to share that life, some of the conditions which we require are present, but what is needed is a society which shall indeed be under general supervision, but of which the members actually determine the character and life, so that each feels that he is a member of this community in the fullest sense, that its welfare depends upon his loyalty, while his welfare depends upon its general character.

I confess that I doubt the possibility of securing this fully realised membership otherwise than in a boarding-school, but here I speak with great ignorance; at any rate I am sure that for the spiritual development of the rising generation we urgently need that corporate life in schools which the so-called public schools possess in so large a measure. Every member of one of these schools, or of one of our older universities, knows quite well that what has been most valuable to him in his training has been the whole life of the place, and not the specific teaching of the class-room or laboratory. It is probably true that the educational institutions which have especially cherished this ideal

have tended to be slack, as they have certainly been amateurish, with regard to the intellectual or scientific life; but they have maintained this fundamental principle, that the spiritual nature is best developed through life as a member of a society, and that a society of such a kind that the membership can be real and effective. Recent experiments, such as that of the "Young Republic," are carrying into new developments precisely this idea, and their success—for I think we may already pronounce them a success—is a great vindication of the idea itself. But for the supreme testimony to the value of this education we must turn to our Colonial and Imperial administration. There has been nothing to equal it in the history of the world. It has faults, of course, and some of them arise from just such an amateurishness as we have noticed in our public schools. Yet there has been the sense of "fair-play," the readiness to take whatever comes as part of the day's work, the absence of self-advertisement and personal "push," the capacity to take command and act with authority when called upon, which are the very qualities most developed by public-school life, and most vitally needed in the public servants of a world-wide Empire. The great evil has been that the boys of a public school all come from one social class, so that, though their public spirit is keen, their horizon is very narrow, and they do not see the need or even the opportunity to exercise public spirit except in the ways traditional in their class.

In order that this social life may exist in any real completeness it is necessary that its control should be in the hands of members of the school itself. There should, of course, be supervision by masters or mistresses, who can in case of necessity take complete charge and prevent the occurrence of disaster; but the normal life should be under the control of senior members of the community itself. This will involve the acceptance within that community of boy or girl standards, and this is wholesome. It is not desirable that the growing conscience should be perpetually confronted with standards which are forced upon it but which it does not accept; it should be left free to form and to follow its own judgment under the stimulus of wise leaders who, without impatience at its youthfulness, will yet guide it onward to fuller and fuller development. The things that are important to a child may often seem trivial to the adult, but they are genuinely important to the child, and provided that his growth is being encouraged, and not artificially arrested, it is quite right that at each stage he should take interest in those things that are appropriate to that stage. Moreover, when children are thrown into a social life of this kind they immediately exhibit the root principle of all morals, namely, the sense of membership in the community and of obligation to serve it. The community in question is a narrow one. The boy of fourteen on arriving at a public school scarcely regards himself as standing in any ethical relation, for instance, to the masters. If he can outwit them, that is just a score for him. So, for example, dishonest work, when the boy cheats in order to avoid punishment, is very leniently judged by his fellows; whereas precisely the same act, if done for the sake of gaining promotion over others, is regarded as disgraceful.

The schoolmaster is often tempted to class both of these together under "cheating," because he does not realise that the latter is a sin against a community to which obligation is recognised, while the former is merely an act of hostility against a natural foe. But so it is; and there is no harm in it provided it is only a stage in development. After all, if Jael had treated Barak in the way in which she did treat Sisera, Deborah would not have sung her praises.

Now, one main activity of a society composed of children or adolescents will necessarily be found in games. This is partly because physical growth is one of the main businesses of life at that stage, and it is right that the growing boy or girl should delight in developing and exercising the physical faculties. But it is also because a game is felt to be more communal than school work. With work arranged as it now is, it inevitably follows that school work is regarded as being done for one's own sake, while the boy who plays hard is regarded as serving the community; he does it for his house or the school as much as for himself. I shall suggest in a moment that experience shows that by changes, which are otherwise desirable, with regard to school work itself a good deal of this difficulty may be overcome, but it will still remain true, at any rate with boys, that games are the dominant interest, and athletic heroes more admired than boys of intellectual promise; and I desire to insist that this is a perfectly right thing provided only that the elders, whether parents or teachers, do not themselves adopt the boy's standard, and so fix it in the boy's mind, but while sympathising with the boyish interests, yet constantly lead the mind forward to a truer perspective.

I have already said that we give too exclusive a place to books in school education. Many boys, not at all really stupid, are failures at school because they are bad at books. If manual work is given a larger place, it can be so arranged that the great moral difficulty about school work is removed—namely, its individualistic and competitive character. Co-operation cannot be carried far in book work. If a boy does the work of another, as I used when at Rugby to write all the Latin prose for the boys in the Army class in my house, he may benefit himself, but the others lose. Learning from books must be done by each for himself. But manual work can be done in teams, so that a large co-operative element comes in, which is of great value as a training for citizenship.

It is possible to do something of this sort with regard to book work. At Repton a challenge shield is at this time being presented, to be held by the house the members of which together gain most marks according to a scheme which allots so many marks to a form prize, so many to a school prize, and so forth. This in so far as it is successful in its aim will bring the communal and co-operative spirit into the school work.

Before we leave this question of social life in the school or college and its influence as an instrument of spiritual education, let me point out what the adoption of this view involves. It requires in the first place that the school should have some individuality which ought to be expressed in its buildings and institutions. Improvement is already being made in this

respect, but it is a monstrous crime that our big towns should be studded with vast barrack-like buildings which have no individuality whatever, and are merely, as it were, blocks of class-rooms and laboratories. It is much better to have a definitely ugly building than a building with no sort of feature. The school must be recognised as having a real life of its own in which its members must find their place; for instance, the monstrous regulation which allows a child to leave school on a certain day because his or her individual birthday is come is full of the evil suggestion that the school exists for the child but has no claim upon it. Then, again, real playing-fields are needed in the neighbourhood of each school—not just an asphalt yard for the children to run about in, but grounds where organised games as part of the normal life of the school are possible. This is needed for physical growth, but it is also vitally needed for the production of that social spirit in the school which is the best of all trainings in good citizenship. The teachers in our elementary schools have in many cases done wonders in developing such a social spirit even under present conditions, but their good work is grievously hampered. I confess that unless such a social life can be developed I take comparatively little interest in the actual subjects of study; for I agree strongly with Plato that the primary aim of education is to fashion the inclinations and mould the growing will; and if this is not done, if there is either no real will developed at all, or a self-seeking anti-social will, I would rather that there should be no intellectual training. If a man is going to be a knave, for heaven's sake let him also remain a fool.

In discussing the general atmosphere in which teaching is given, and the effect which by its constant though often unnoticed influence it produces upon the character, something must be said about the suggestion implied and offered by our present educational system, and the changes which are needed to remedy its evils. In the first place it is clear that the system rests on the belief that for most people all that is really required is a beggarly minimum. This is most of all apparent in that curious regulation which permits clever children who might profit by continued education to leave school earlier than others, while those who are more slow-witted and less likely to profit by prolonged education are kept at school for the full time. Clearly this regulation rests on and suggests the belief that there is a definable minimum to which all citizens should attain, but beyond which there is no vital necessity that they should pass. The point selected is unfortunate in the last degree, and that in two ways. First, it releases children from the discipline of school just at the moment when discipline begins to be most essential. Down to the beginning of adolescence what we need is something that may more fitly be called supervision, and for myself I have great sympathy with those who hold that under a general supervision there should be the utmost possible freedom for the child. But with adolescence there comes a temporary chaos in the psychological make-up, and during that period there is an urgent need, not only for supervision, but expressly for discipline as that word is commonly understood, namely, the

imposition of restraint, forcible if need be, in order that certain impulses may not break loose and destroy the harmony of the whole nature. But the school-leaving age is unfortunate in another respect also. We teach the child to read, and then send him away from school at a time when it is too early to have begun the training of his taste and judgment. We have made him a prey to all manner of chance influences, but have not supplied him with the power of selection between these, or the means of resisting those which his better judgment condemns.

Something no doubt can be done by means of continuation classes provided that the time for them is taken out of the hours of employment and not added on to these; but nothing will really meet the case except an all-round raising of the school-age. And even then we still need to get away from the conception of a necessary minimum. What we have to aim at is the maximum attainable by each scholar, not the minimum that will make him a tolerable member of a civilised community. If we aim at a minimum, that will be what most of the scholars also aim at. But how are we to make this change? The obvious method is a large system of exhibitions, maintenance grants, and the like, and we must welcome the proposals of the Consultative Committee presided over by Mr. Acland which were made public during July last. The proposals are better than the report, which, as was pointed out in the *Times* Educational Supplement, is too much under German influence. But here, again, we come to another false suggestion. Any system of scholarships and exhibitions is false in principle, because it inevitably suggests to the child that it is to pursue its studies for the sake of its own advancement; the whole system coheres with the ideal of the educational ladder, by means of which men and women may climb from one section of society to another. Now it is undoubtedly true that the State is bound to secure for its own interest that brain-capacity wherever found shall be fully developed, and that if a child of a dock labourer has capacities fitting him to be a great statesman or a great artist it is for the public interest that these capacities should be fully developed. But we have also to remember that when by education you lift a child from one section of society to another, you expose him to one of the most insidious of all temptations, the temptation to despise his own people. And if once his native sympathies are thus broken up, it is unlikely that he will grow any more. An educational system which depends upon the ladder is in a fair way to train a nation of self-seekers. Our demand—and here I know that I am speaking of the whole community of labour—must be for the educational highway. Our aim must be, not chiefly to lift gifted individuals to positions of eminence, but to carry the whole mass of the people forward, even though it be but a comparatively little way. We want the whole system to be all the while suggesting that the child's faculties are being trained, not for its own advancement, but for the benefit which the community is to receive. And the right way to suggest this, while also securing for the community the maximum benefit, is, as it seems to me, nothing less than a system of free education from the elemen-

tary school to the university, which, instead of offering exhibitions to enable those who are capable to proceed, will, on the contrary, exclude at certain wisely chosen stages those who are unable to benefit further by school education. At each of such stages there should be for those who are excluded from further advance some form of apprenticeship, and if the stage comes early this should be conducted as far as possible according to the principles of school life, with all its discipline as well as supervision.

But while I regard that as the ideal, of course I recognise that it cannot be achieved at once, and for the moment the line of advance must be that suggested by Mr. Acland's Committee, supplemented by the greatest possible development of the tutorial-class system, which owes its origin to the Workers' Educational Association, and for a full account of which I must refer to Mr. Mansbridge's book, "University Tutorial Classes." The great feature of the tutorial-class system is its freedom from the spirit of competition and worldly self-advancement. It is an effort on the part of working people, with the help which the universities have been nobly ready to supply, to equip themselves more perfectly to meet their responsibilities as citizens and as members of their own class. Within each tutorial class the element of competition is entirely absent, and any proposal which might have the indirect effect of introducing such a spirit is regarded by the whole movement with extreme anxiety and disfavour. By this system real university teaching is brought within the reach of the working people without their being drawn away from their own class. The universities have responded nobly to the appeal, as I have said. But they simply cannot from their own resources meet the need which really exists. Either the State or private generosity must come to the help of the movement. The Board of Education has already shown its approval, not only by a most valuable report which it has issued, but also by revising its code so as to enable it to give a higher grant to this work than was possible under the old regulations. But still more is needed. There must be munificent endowment of this work either by benefactors or by the State if the opportunity is to be genuinely taken.

The tutorial-class movement has made two important discoveries. The first is that there is a very great amount of literally first-class ability in the country going to waste for lack of opportunity. That many of us had formerly been convinced must be the case; it is now proved. The other discovery is this. A man who has had no secondary education at all can take up work of the university type when he is of full age if his mind has remained alert. I believe many continuation classes fail through ignorance or neglect of this fact. We always tend to restart the teaching process at the exact point which the student had reached when he left school. That is a mistake. The man or woman whose education ends at fourteen or thirteen, and who becomes desirous of more at twenty-one or later, has lost much in the way of knowledge; but if the mind has remained alert the development of faculty has gone on and the appropriate method of study is that of the university, not that of

the secondary school. This is of the utmost importance. We shall not for many years to come secure such a raising of the school-age or such a remodelling of our system as shall guarantee the full development of every child and adolescent. Thousands will continue to be dropped by our educational system at fifteen, if not sooner. Of course, a healthy-minded boy who leaves school at fifteen means to have done with his books. He promptly throws them away unless he is Scotch, and then he sells them. But six or more years later he may wake up to his need for more knowledge and intellectual training. Our tendency has been to give him school teaching; that is wrong; he is of the age to which university teaching is adapted, and only in that will he find what he is wanting.

I turn now to problems connected with subjects of study. Provided there has been established such a social life as I have described there will be less harm than otherwise resulting from some degree of specialisation in secondary schools. The students of different subjects will be mixing with one another, and will learn from one another a great deal of those subjects which they are not themselves definitely studying. Certainly one of the great advantages of the college system at the universities is that it gathers together in very intimate social intercourse students of different subjects. It would be impossible for me, for example, to express what I owe to my intercourse with students of natural science during my time at Balliol in Oxford. My own study of natural science lasted for one term, during which I turned the age of thirteen. We rubbed glass rods on fur mats and then held them over strange instruments in which gold leaves behaved in a manner which I now forget, and that was all; but I venture to think that I have acquired sufficient knowledge of how men of science interpret the world to be of real service to me, and this I owe almost entirely to being a member of a college which contained people who studied natural science while I was studying classical languages, ancient history, and philosophy. I believe that the influence in the other direction is still more important. At the present time there is a great denunciation of the prevalence of classical studies and a demand for education in natural science.

But I remember a candidate for a scholarship in natural science who presented himself for examination while I was a fellow of Queen's College, who had apparently not read a line of poetry, who knew absolutely no history at all, had never read a novel, nor even a magazine that was not scientific; he assured us with conscious pride that since he was thirteen he had read no printed matter except such as concerned natural science. An effort to engage him in conversation showed that his mind was very much what might be expected. He came from a day school, and had had very little intercourse with people engaged in the study of other pursuits. That is an extreme instance. But it is worth while just now to insist that specialisation in mathematics or natural science, if divorced entirely from the more human studies, or from intercourse with those who are pursuing such studies, may be educationally disastrous in the last

degree. Of course it is sometimes suggested, as I remarked earlier, that the study of natural science produces a scientific type of mind. But this is one form of the confusion to which I alluded at the outset which results from our speaking of natural science by the general name of "science." The study of languages and history can be, and ought to be, just as scientific as the study of physics.

We may state the question perhaps in this way. In order that a man may live his life and discharge his responsibilities as a citizen he needs knowledge. What is the most important sort of knowledge to have? None can be put on a level with the knowledge of human nature. Whatever a man is going to do he will have to deal with his fellow-men and find his own place among them. This knowledge cannot be adequately obtained from books alone, and, as I have said already, training through membership in a social life is the best means to it. But it may be also fostered in a very high degree by what are called the humane studies: the study of the best that men have thought in philosophy, the study of their highest aspirations and deepest woes in literature, the study of their attempts and their achievements in history. This is the most serviceable of all scientific studies that a man can undertake. But it is no doubt true that we have allowed two evil things to happen. In the first place we have not sufficiently recognised the value of natural science in education, and, still more disastrous, we have tended to identify the study of the humanities with the study of the classical languages.

The upholders of the classics, taken as a group, have no one but themselves to blame if the studies in which they believe are an object of very general attack, for they have been defiant in manner and retrograde in practice. And yet the attack upon the classics is unintelligent. It is very noticeable that the most elaborate study which has ever been compiled of the British Empire, and of the problems which it must face in the near future, should find it necessary to begin its survey with an account of the civilisation of ancient Greece and Rome. I am referring, of course, to "The Commonwealth of Nations," by Mr. Lionel Curtis. European history and civilisation are indeed only intelligible in the whole sense of the word by means of some knowledge of those two ancient nations. And there is this great advantage in the study of Greece and Rome, that we can trace there the complete rise and fall of a particular system of civilisation. The modern system is not complete, perhaps it never will be. For that very reason it is impossible to see the events in a perspective determined by an apprehension of the whole. But the history of ancient Greece is a complete thing, so is the history of ancient Rome, and it is possible to study their thought and achievements with a perspective and proportion due to the fact that the whole is known to us. I am not saying that this is always done, for much time is too often spent on studying events which lead to no appreciable result at all; but at least the thing is possible.

The study of ancient Greece has this further

advantage, that the ancient Greeks asked all the elementary questions of philosophy in the simplest form. All subsequent European thought is to some extent sophisticated, precisely because it takes up its problems where the Greek philosophers left them. It is undoubtedly best for the student to begin at the beginning, and the beginning of European thought is to be found in the pages of Æschylus, Sophocles, and Euripides, of Plato and Aristotle, of Herodotus and Thucydides. But the study of these great literatures with their attendant history is largely ruined by two facts. One is that far more boys are driven into this study than will ever seriously profit by it, and for this universities are on the whole to blame, though it is to be remembered that nearly all professional examinations make a fetish of elementary Latin, requiring not enough of it to be any kind of use, but quite enough to waste a great deal of the student's time. And the other ruinous fact is that we have continued a system appropriate to a time when there were few subjects to supply the place of mental gymnastics, and therefore use the history of two great peoples, and two noble literatures, for this menial office.

I should like to suggest that certain authors should be altogether excluded from the curriculum of schools. In the choice of authors for school reading it is always what a writer says, not how he says it, that should be considered. My list of condemned authors would certainly include Cicero and Demosthenes. Further, I would suggest that either some special part of the term, or some special author studied through the term, should be selected for close and grammatical study in classical forms, but that beyond this there should be a large amount of reading, for the preparation of which the use of a translation should not only be permitted, but obligatory. Perhaps Cicero and Demosthenes might come in under the former heading as museums of idioms and grammatical constructions. Moreover, and to this I attach the utmost importance, composition should be entirely given up except at the very elementary stage where "sentences" are necessary for the mastering of even elementary constructions; and again at the most advanced stage, where the pupils have reached a point at which it is clear that they can with advantage be carried forward some distance in pure scholarship. The amount of time that is wasted over Latin and Greek prose seems to me something entirely deplorable. To gain the whole of this time for reading or for history would be an incalculable boon. I know this is a heresy, and so I emphasise it. No doubt any mental grind brings some benefit. But I believe the time given to Latin and Greek prose is as near wasted as any time of tolerably hard work can be. The climax of horror is reached when boys are made to read a dull author because it will be good for their prose, or are not allowed to read a quite interesting author because it would be bad for their prose.

But, after all, the chief point that I wish to urge is that the classics are not the only available form of humane study. I should like to see an experiment conducted on the following lines. The staple of the

school curriculum to be European history and English literature. At the bottom of the school there should be elementary Latin, which undoubtedly provides good mental gymnastics, and, of course, elementary mathematics and natural science. Perhaps also French, though of this I am more doubtful. Those boys who showed real facility in Latin should, if they so desired, begin to study Greek at about the age of sixteen or sixteen and a half. They should then have one term in which they do very little except Greek. Experiments suggest that in forms consisting only of boys who have already shown some aptitude for a classical language, one term's concentrated study will bring them to the point reached by efforts of several years according to our present methods, and the devotion of a single term to this would not seriously interrupt the general course. There would not be a classical side and a modern side, for the staple study of the whole school would be history; but there would be, above the point indicated, divisions for Latin and Greek as there now are in classical schools for mathematics. These would have allotted to them all the hours on the time-table that were not required for the history and literature, for it is of no use, broadly speaking, to read classics after that time unless they are given almost the whole of the student's attention. The study of ancient civilisation, which is what the study of the classics ought to be, is itself something far too rich to come under any condemnation of specialism. Boys who do not take this classical course would take mathematics, science, and at least one modern language, the mathematics and the science being as far as possible combined; specialisation either in the linguistic or the scientific branch would be encouraged in the highest departments. There would also, of course, be opportunity for specialisation in history by means of divisions which would provide a course of study supplementary to that which formed the staple of the school curriculum.

Meanwhile there is one serious evil which could be remedied at once. It is the business of the universities to be the guardians and upholders of a true educational ideal against the natural utilitarianism of the man of affairs. By their scholarship system the universities exercise a far-reaching influence on secondary schools. They give far more scholarships for classics than there are deserving candidates; they do a good deal for natural science and mathematics; they do something, though absurdly little, for history; but they practically do nothing at all for modern languages. To this branch of study they give no encouragement such as might help the schools to treat it in a truly educational way. I want to see boys and girls who study modern languages reading the great literatures which constitute the value of those languages as boys at the top of a classical side read *Æschylus* and *Plato*. But we shall not reach that without help from the universities, and at present the universities refuse their help.

But, after all, important as are the subjects of study and the machinery for pursuing them, all of this is subordinate to the spirit which should direct and inspire the whole. I say the less about this because it

has been so admirably dealt with by Mr. Clutton-Brock in his recent little book, "The Ultimate Belief," which I could wish that all my hearers would read. Broadly, however, my contention, like his, would be that the aim of education is primarily spiritual, and that there are three, and only three, primary aims of the spiritual life. These are Goodness, Truth, and Beauty. It must always be insisted that these are ends in themselves. School discipline must be so conducted as to suggest constantly that goodness of character is not to be sought as a means to happiness or any form of success, but as an end in itself. So much is commonly admitted though seldom acted on, but the same principle must be impressed with regard to Truth and Beauty. With regard to Truth, probably most educators already believe it, but they are shy of appealing to it, and industry is recommended, not as a means to the fulfilment of the spirit's destiny, but as a means to success in life, or at best as a means to effective moral goodness. In the case of Beauty our education scarcely recognises at all that it is an end, with the result that those whose spiritual activity most naturally takes this form find themselves in rebellion against the upholders of Truth, and still more against the upholders of Goodness.

There is danger at the present time that we are about to be plunged into great efforts for educational development resting on purely utilitarian motives. Such efforts may succeed for a time, but in the long run they are doomed to failure because they take their stand upon a lie. Beauty, Truth, and Goodness cannot in the end of the day be sought for the sake of anything beyond themselves, though it is true that innumerable benefits follow even the partial attainment of them. But the search is doomed from the outset if it is not concentrated upon them as themselves being the prize of the soul.

Now this contention that Beauty, Truth, and Goodness are ends in themselves, which is the characteristic mark of a truly spiritual faith, really implies that these three are a unity, and there is no way of making that unity intelligible except by faith in God as at once perfect Power and perfect Love. This is my last point. We are all agreed in desiring scientific education, but the method which we have followed for many years precludes our ever reaching such a goal. For to all intents and purposes we have said: Let us leave the existence of God an open question, and then be scientific about the rest. The thing cannot be done. The existence of God is not a matter of private opinion which can be added to other views of life and the world without making any difference. It either governs the whole of our thinking or else it is not really accepted at all. Consequently the scientific ideal of education is simply unattainable as long as this question is treated as an open one. There are two possible educational systems, each of which would be scientific at least in its spirit. One is the religious, the other is the atheistic. It will very seriously affect the teaching of history, for example, whether or not we believe in a Divine Providence; if we do, it is absurd to teach history without reference to it. I am very likely to be told that this simply means that as

the Being of God is itself not something susceptible of proof we are condemned for ever to unscientific methods in this respect, and, realising that, must set out to be as scientific as we can. But that I desire to deny. I desire that any scheme of education should state clearly whether belief in God is its governing principle or not. If it is not, that system of education is in its effect atheist, even though it is conducted in a school that has a chapel and compulsory services.

But we can only have clear thinking, and it is for that I am now pleading, if we recognise that we must take our stand on one side or the other. The question cannot be left open because it is one which, if not answered in one way, answers itself in the other. If we teach history without reference to Providence, we also teach that Providence does not guide history. I am not exceedingly interested in the maintenance of religious instruction as something apart from the rest of education, as if religion could be one subject of study side by side with chemistry and mathematics. Of course it can be so studied, and that by an atheist as much as by a believer. The only religion worth having is one that colours and governs the whole of life and thought. If we wish to exclude this let us say so plainly and follow our principle scientifically. If, on the other hand, we believe that the religious view is right, then let us affirm that also, and teach every subject in the light of it. The only religious education which is going to stand the test of an alert criticism conducted by scientifically trained minds is not instruction given in certain isolated periods, but a presentation of the whole universe of being as filled with the Glory of God.

The only way to this goal is to secure that the training colleges are filled and inspired by living faith. The future teachers must learn the science of the spiritual world, which is called theology, in some degree at least—no outrageous demand if all citizens are to learn something of the science of the material world. They must be taught how to handle the documents at once appreciatively (which means reverently) and scientifically (which means critically). Above all, their whole study and training must be in the atmosphere of faith. The State training colleges virtually or entirely ignore all this side of things; I fear that partly owing to the crowding of the time-table and partly owing to rigidity of method the Church training colleges are in this matter far from efficient. I often marvel that the champions of religious education seem virtually to ignore training colleges. For it is clear that in them is the key to the whole position.

Beyond all questions, however, of method, or even of fundamental principle, there lies the supreme task of persuading the people of England, I will not say of Scotland, to believe in education, for it may be broadly said that the English people at present do not really believe in it at all. Of the three great aims of the spirit—Beauty, Goodness, and Truth—that with which education as organised by the State must mainly concern itself is Truth. It may, so to speak, make provision for the pursuit of the other two, but its main efforts must be concentrated, when once such provision is made, upon the training of the intellect, or, in other words, upon the pursuit of Truth. But the

English people as a whole do not care about Truth. When an Englishman speaks of telling the truth he usually means saying what is in his mind, quite irrespective of whether it is the truth or not. We are disposed to value knowledge only for results beyond itself, and for this reason, with the exception of a perhaps almost uniquely large number of distinguished individuals, we acquire as a nation singularly little knowledge either for the satisfaction of our intellects or for the practical work of the world. At the present time there is indeed a kind of flutter about education, but the discussions show that it has behind it very little enthusiasm for the Truth, and it will therefore fail even of its practical object, if indeed it does not, as may be expected, die down as quickly as it has sprung up.

The main purpose of education may be summed up in the great phrase of St. Paul: "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, if there be any virtue, and if there be any praise, think on these things." It should lift us up above the material world absorption in which is the occasion of all strife and enmity. For the material goods are at any given moment limited in amount, so that the more one has the less there is for others, and if all are aiming at these they are bound to be brought into conflict. Education should lift us to the pursuit of the spiritual goods—love, joy, peace, loyalty, beauty, knowledge; of which it is true to say that the more one has the more everyone else will have on that account. Such an education would save our nation from its divisions which weaken it far more than any deficiencies in technical skill, and would lift all the nations of the world that followed it to that plane of being where each would rejoice in bringing its contribution to the general weal, and none would seek an advantage that could only be won at a loss to humanity as a whole. That is a far-off goal; but it must be towards far-off goals and on lofty ideals that we set our aspiration, if out of the terrors of this time we are to win a result that shall be commensurate with the suffering through which we are passing.

Meanwhile there is in many quarters, and most conspicuously in the ranks of labour, a disinterested desire for knowledge as a real emancipation of the soul, which all who care for education should watch and help to the utmost of their power. It must be from the aspiration of the common people that the salvation of the people comes. Nothing that is really good can be imposed upon people by well-wishing superiors. In education, as in everything that concerns the spirit, freedom is the one condition of progress. It is for freedom that we are fighting in the war; it is for freedom that those who care for education are struggling at home; for there is nothing that so much hinders the effective freedom of our people as the fact that they are left without facilities for the whole development of their faculties. In the name of those who have died for the freedom of Europe let us go forward to claim for this land of ours that spread of true education which shall be the chief guarantee of freedom to our children for ever.

HUMANISTIC STUDIES AND THE REVISION OF NATIONAL EDUCATION.

THE following resolutions, drawn up by a conference representative of the five associations concerned, have received the approval of the councils of the Classical, English, Geographical, Historical, and Modern Language Associations. They are intended to form a basis for common action by the five associations, as well as, it is hoped, for co-operation with representatives of the mathematical and natural sciences and of other elements in education. It must, therefore, be understood that they do not represent the full views of the associations concerned, but rather a common measure of their views, which they all accept as a basis. In the same way the propositions laid down do not profess to cover the whole field of education, but are limited to the spheres with which the five associations directly deal. Some apology, moreover, seems needed for the use of such contrasted terms as "humanistic" and "scientific." They are simply employed for the sake of brevity, for all would agree that "humanistic" studies should be scientific, and "scientific" studies humane.

The resolutions are now published in the hope that in any coming reconstruction of our educational system this attempt to restate the "humanistic" position will mitigate the dangers incident to a violent breach of tradition and an excessive reaction against the past predominance of certain types of study.

It will be obvious that they are drawn up in no spirit of hostility or indifference to either scientific or technical studies. Their framers are anxious to co-operate in securing for these, as well as for the studies in which they are themselves more particularly interested, their due place in a national system of education.

Pending the formation of some central council, which could assume a larger responsibility and speak with a wider representative authority, the associations would welcome offers of co-operation or suggestions for the further practical development of the position taken in these resolutions.

Any communication may be addressed to the chairman of the Conference of the Five Associations, Prof. Tout, 1 Oak Drive, Fallowfield, Manchester.

The resolutions are as follows:—That in the opinion of the conference:—

(i) It is essential that any reorganisation of our educational system should make adequate provision for both humanistic and scientific studies.

(ii) Premature specialisation on any one particular group of studies, whether humanistic or scientific, to the exclusion of all others, is a serious danger, not only to education generally, but to the studies concerned.

(iii) Humanistic education implies the adequate study of language and literature, geography, and history, which in each case should, at the appropriate stage of education, go beyond the pupil's own language and country.

(iv) The representatives of humanistic studies would welcome from the representatives of the mathematical

and natural sciences a statement with regard to those studies similar to that contained in (iii).

(v) In all reform of education it must never be forgotten that the first object is the training of human beings in mind and character, as citizens of a free country, and that any technical preparation of boys and girls for a particular profession, occupation, or work must be consistent with this principle.

(vi) Subject to the above principles the associations concerned would welcome a comprehensive revision of national education from the point of view of present needs.

ITEMS OF INTEREST.

GENERAL.

SIR ERNEST SHACKLETON'S fourth attempt to reach Elephant Island has succeeded, and he has returned to Punta Arenas with all the members of the staff and crew of the *Endurance*. The ship used on this occasion was the *Yelcho*, provided and manned by the Chilean Government, and under the command of Com-mandante Pardo. Approaching Elephant Island from the north-west, the *Yelcho* met no pack, and steered between stranded bergs to the camp on the south-east, quickly embarked the party, and in an hour was home-ward bound. According to a cablegram in the *Daily Chronicle*, the stranded men had been unable to leave the beach where they had landed in April, but their ice cave proving untenable, they had made a shelter with their boats and with stones on a spit of land 250 yards long and 40 yards wide. They were continually menaced by heavy seas, and suffered great hardships on account of the bad weather. In May a blizzard swept some of their possessions into the sea, and the party narrowly escaped destruction. The food supply seems to have caused grave anxiety, as seals were unprocurable on account of the ice-foot preventing their landing. A few penguins were secured, and in August limpets and seaweed provided a change of diet. The heavy seas and ice prevented fishing. Sir Ernest Shackleton pays a high tribute to Mr. Frank Wild, who was in charge of the party, and to whose leadership their safety and well-being were due. There still remains to be undertaken the rescue of the party at McMurdo Sound, Victoria Land. For this purpose the *Aurora* is being refitted in New Zealand, and will sail in December in charge of Sir Ernest Shackleton.

It is just one hundred years since the foundation-stone was laid of the "Vic."—the Royal Victoria Hall, close to Waterloo Station. This theatre has had an interesting history and many vicissitudes. For its mid-Victorian decline it is now making ample amends, especially since to popular opera it has added popular Shakespeare. Our schools scarcely realise yet at what a very low price they can have thoroughly sound *matinée* performances of Shakespeare. The programme for the coming term includes "Henry VIII." (October 4th and 5th), "As You Like It" (October 11th and 12th, December 6th and 7th), "The Merchant of Venice" (October 18th and 19th, December 13th and 14th), "Julius Cæsar" (October 25th and 26th, November 1st and

2nd), "The Tempest" (November 8th, 9th, 15th, and 16th), and "Richard II." (November 22nd, 23rd, 29th, and 30th). On December 26th and 27th there will be *matinées* of "She Stoops to Conquer," and of the Epiphany play, "The Star of Bethlehem," on December 28th and January 3rd and 4th. Teachers need not be told how stimulating it is for their pupils to see a play performed that they have been reading in class; they will also realise how good it is for them to see plays of which they are not making a minute study at the time. Those who know the splendid work that has been done by the "Vic." company during the last two seasons are impressed above all things by the honesty and unpretentiousness of the performances; the scenery is adequate but not overpowering, the costumes are in good taste but not sumptuous, and the text is treated with respect. Especially now that Mr. Ben Greet is producing the plays—he was with the company at Stratford-on-Avon this summer—a visit to the "Vic." will be a delightful surprise for those not yet familiar with the very fine work that is being done there under the enthusiastic management of Miss Lillian Baylis, from whom (at the Royal Victoria Hall, Waterloo Road, S.E.) detailed programmes of the arrangements for the season can be obtained.

THE large number of agencies now at work in some form of war service has certainly rendered desirable a convenient conspectus of those that are genuine and worthy of support. This need has been met by the volume entitled "Pro Patria," recently issued under the editorship of Dr. Kelynack. The book is "a serious endeavour to provide an authoritative directory to the chief societies and associations, institutions, and other agencies now rendering service for the nation and giving assistance to the individual." Among the writers of short preliminary articles we note the names of Mr. Paton and Sir J. Yoxall. A short account follows of the public and personal war service performed in connection with the universities. Then comes a section devoted to brief descriptions, written by responsible officials, of some 125 associations and institutions rendering public and personal service. Subsequent sections comprise notices of books and journals, records and reports, and some interesting memoranda of a miscellaneous description; whilst an appendix supplies a number of useful lists.

THE total number of candidates entered for the Cambridge Local Examinations in July last was 8,778, exclusive of 729 who were examined at Colonial centres. In the Senior examination 1,333 boys and 2,062 girls passed, first-class honours being gained by 98 boys and 25 girls; the standard of merit necessary for exemption from one or both parts of the previous examination was reached by 697 boys and 492 girls. Of the Junior candidates, 1,567 boys and 1,086 girls satisfied the examiners, 147 boys and 12 girls being placed in the first class. In the Preliminary examination 262 boys and 222 girls passed.

A RECENT report from the Higher Education Sub-Committee of Lancashire deals with the secondary schools of the County Palatine. There are about 6,000 pupils in attendance at secondary schools maintained

or aided by the Lancashire Education Committee; in the aided schools the numbers in attendance were 4 per cent. higher this year than last year. This is satisfactory, since a considerably increased number of pupils had left the schools—e.g. in one school eighty-two pupils left in comparison with forty-three in the previous year. A more definite consequence of the war lies in the considerably higher proportion of women among the teachers in the schools; the ratio is almost 3 to 2. Owing to the bursar system the girls remain longer at school than the boys, yet the average secondary-school life of the girls is barely three years. As a rule the boys leave the secondary schools before they are sixteen years old. These facts do not indicate a very satisfactory state of affairs, since the average secondary-school life should, at least, reach four years, and the average leaving age should certainly exceed sixteen. It suggests that, in Lancashire, the pupils of secondary schools either leave, or proceed to the institutions for higher education, at too early an age.

IN his presidential address to the Engineering Section of the British Association, Mr. Gerald Stoney said that languages are of the greatest importance to an engineer; not dead languages, but live ones. These should be properly taught, so that the student should not only be able to read and write them, but also to speak and understand them. Many people can read a language without being able to write, speak, or understand it, and it is not uncommon to meet people who can speak and understand a language without being able to any large extent to read or write it. And it is only in live languages that a man is trained to speak and understand a language. Why is it, he asked, that we are so wedded to the dead languages? There is, of course, the tradition that such are necessary for a liberal education, and there is the argument that modern languages are not so good a training for the mind. Granted that they are not quite so good from the point of view of learning to read and write them, does not the fact that they can also be taught as a live language to be spoken and understood make them on the whole the best educationally for a man? This is entirely apart from the fact that modern languages are useful and ancient useless to the man in commercial work. At the same time no education is complete unless science is combined with languages and also literature, and here lies one great danger of modern technical education.

COUNTY minor scholarship examinations in the West Riding come under review in a recent report on the examinations for the past three years. In view of the prevalence of scholarship examinations as a link between elementary and secondary schools, this report is worthy of attention. In 1916, for example, more than 4,600 candidates were examined, so that the report is based upon considerable experience. The West Riding system involves a written examination in English and arithmetic, a subsequent oral examination, coupled with a report from the candidate's head-teacher stating whether the candidate had a reasonable chance of gaining the scholarship. Only seven out of 675 can-

didates who were reported upon by the head-teacher unfavourably were awarded scholarships, in comparison with 31 out of 1,118 doubtful cases, and 345 out of 2,582 favoured candidates. In the last three years about 100 unsuccessful candidates at the examination have, nevertheless, annually passed into a secondary school. An investigation into their records tends to show that their failure in arithmetic probably prevented them from obtaining a scholarship for which their subsequent school career has shown them to be fitted.

MEMBERS of the Huddersfield Chamber of Commerce received a deputation from the recent Education Conference at Oxford and discussed educational matters. It was urged that public elementary schools should be improved; that teachers should have better salaries and a higher status, and should be better trained; and that classes should be reduced in size. Continuation classes should be established at once for all adolescents, so that their education may be continued in daylight hours as part of the normal work of the week. A knowledge of natural science in some of its aspects is an essential part of the education of every man and woman, and a reconciliation of the humanities with the sciences in the curricula of the public schools and universities is feasible. More deliberate attention should be everywhere devoted to citizenship and social ethics, especially in regard to the development of corporate life and of self-government. Physical exercises should be required as part of every educational scheme, and the school medical service should be extended.

A SOUND article on "Commercial Schools of the Future" is included in the *Schoolmaster* for September 2nd. Commercial instruction is a form of technical training and should be based upon a general training; there is no need to invent new subjects, such as "commercial English," nor is it well to study a foreign language solely for commercial ends. The schools should not be regarded as places for acquiring the rudiments of a limited and unfruitful technique, but as places of study for the young clerk or office boy during certain half-days each week, so that he may acquire a sound knowledge of the theoretical aspects of commerce, and may receive a training towards intelligent efficiency. The part-time commercial school should lead to a senior commercial institute, and thence to a university which includes a faculty of commerce. Such a combination should yield men of first-class executive and organising ability. There are, however, two outstanding difficulties: the dearth of teachers and the lack of funds. The teaching difficulty may be eventually obviated by a judicious choice of trained teachers in association with competent men of business; there are trained teachers who fail with commercial subjects, just as there are business men who can teach excellently. The financial difficulty can only be solved by an intelligent community which believes in education.

A FIFTH article by Sir Harry H. Johnston on "The Truth about the War" is included in the *Review of Reviews* for August, and deals with "Our Faulty Education." Literary Latin should only be taught with a view to the help it gives in the learning and

comprehension of the six Romance languages. If Greek be taught at all, modern Greek should be taught as a modern language. A practicable and modern education should be given to children of all classes. Compulsory evening classes should be instituted all over the kingdom, at which education should be continued up to sixteen. The curricula at all middle-class schools should be brought into consonance with the needs of the present. We must adopt and teach everywhere the metric system. English will eventually have to be spelt in accordance with one universal phonetic system. A right education, in short, is the only panacea for the woes which the war has brought upon us, the only means by which we may maintain a leading position amongst other nations.

THE "reflections and suggestions" on educational reconstruction contributed by Sir Henry Craik, K.C.B., to the *Sunday Times* of September 10th raise many questions which educational reformers would do well to ponder. He insisted especially upon the importance of the personality of the teacher. He urged that "the real essential in the school—besides which buildings, equipment, elaborate schemes of education, the most developed scientific method, count as absolutely nothing—is the personality of the teacher. By some means or another—by generous expenditure, it may be—we must raise the standing of the teacher and attract into the profession the type of man that is wanted. We must impart a more vital and living force of character to what is otherwise an inert and mechanical workshop fashioned after a prescribed and formal model. The old Scottish parish schoolmaster had a scanty pittance. But he had a freehold tenure; he was a dignitary; his voice had a recognised authority; he was absolutely independent. The teacher of to-day is somewhat better, although still insufficiently, paid. But he is hedged about by the barbed wire of endless regulations. He is at the mercy of countless committees and boards. His life is burdened by the filling up of files of Returns and Statistics. And in a vain hope of achieving some independence he has further tied himself up in the trade-union bonds of Teachers' Institutes and is entangled in their meshes. The best educational revolution would be to make a clean sweep of three-fourths of his encumberments and to spend some of the money wasted in pretentious buildings in making his emoluments adequate to the just demands of a great profession."

MR. E. C. ABBOTT writes in the *Journal of Education* for September on "The Teaching of Everyday Science," and suggests a two-year course in the subject, to be illustrated largely by familiar examples from ordinary life, with a few simple experiments. Nature-study has been taught as leading to botany and zoology. Why should not a more natural preliminary course be made for chemistry and physics? The two years should be the last two of the elementary school or the first two of the secondary school. The teaching should be descriptive and the pupils should describe things which they have observed, e.g. fountains, house water supply, and springs could be described, and could lead to lessons on water pressure, which would introduce a comparison between swim-

ming and floating, between paddle-wheels and screws, and between Zeppelins and submarines. Such knowledge, Mr. Abbott contends, should be taught as facts, and should not be postponed until the child has made a series of uninteresting experiments in order to arrive at a habit of finding things out for himself. In some such way the facts and principles of science may be brought to bear on everyday life and work.

THE Director of Education of New South Wales delivered a stimulating address on education from the point of view of an Australian at the conference of the South Australian Public School Teachers' Union in July last at Adelaide. From the *Education Gazette* (Adelaide) of July 18th it appears that Mr. Board said that Australia to-day was not the Australia of 1914; if they were not rapidly becoming a new people, they ought to be. Had they not learned already that there were things which Australia lacked? One heard much to-day about "organisation" and "efficiency," but was there not a danger of their fondling such words without intending to work them into the fabric of the national life? The raw material for national efficiency was human, and in Australia they were doing little with it. The country ignored the boys and girls after they left the elementary schools; human material was standing before them in its most plastic condition, and they must take hold of that raw material and organise its capacity in every possible form, to work honestly, to lead, and to think. The education of those young people should not be the sort they had been receiving up to fourteen, and would require a totally different sort of teacher—a teacher who was able to say to his pupils, "Come and let us reason together."

A PAPER read by Mr. S. Ramaswamy Aiyar at the anniversary meeting of the H.G.S. Secondary School, Vaikom, on "The Value of Scientific Training for Indian Youths," is printed in the *Madras Educational Review* for July. In India as yet no organised attempts have been made to train youths in systematic scientific study; there are, consequently, no skilled men of science to train and guide captains of industry. India is allowed to remain without industries except, perhaps, that of cotton. Ordinary necessities, such as matches and paper, are imported; raw materials are exported in large quantities, and bought back as finished products at greatly enhanced prices. Dependent upon the export of raw materials, India is hard hit by the war; for example, India has now too much copra, which cannot be manufactured because there are no industries. Unless Indians look ahead at once the chance offered by the war conditions will be gone and the state of dependence will continue. Present educational methods in India are at fault. Provision should be made for research students who will regard research as a life-work. The people must awake to a sense of their duty, and no longer depend upon the Government to make such provision. The people will respond when they are made to know what is really wanted.

MANY of the addresses at the National Education Association meetings in New York in July last have

been printed in *School and Society*. Prof. G. Stanley Hall dealt with "The War and Some of its Relations to Education." Americans—the descendants of immigrants—should, he contended, maintain loyalty to their fatherland and conserve its traditions, subject only to a paramount loyalty to America. A high and ideal neutrality, based upon an agreement to differ, is alone possible in the United States. The true verdict of history about the war will be that of intelligent and matured American opinion. The war is bringing a remarkable revival in religion, and this fact suggests the only ray of hope that good may in the end come out of the awful holocaust—Mr. C. D. Pearse discussed "The Common School as an Instrument of Democracy," and pointed out the weakness of a proposal to cut down the years of life in the elementary school by two years, and to take the children into a high school for a six years' course at the age of twelve. He urged that the high-school system of specialised education, which puts pupils destined for commerce in one group and those going into industry in a second group, would be a powerful wedge which would cleave the people into classes. At the same time the elementary schools would lose immeasurably by the abstraction of the elder scholars. This mutilation of the common school would be a blow to democracy.

MR. J. R. KIRK described "The Place of the Normal School in a Democracy," and argued that the normal school should train teachers of all grades, and should be free from the domination of the leaders in higher education. The normal school is an entirely vocational institution; it covers four years of study, and its requirements for entrance and for the bachelor's degree should be equal to those of the best colleges. Its place will always be among the leaders of constructive and productive educational thought.—Mr. Samuel Gompers, president of the American Federation of Labour, dealing with "The American School and the Working Man," in the name of organised labour made this demand on educational ideals: Give to the masses of the people, those who perform mechanical work, which of its very nature is monotonous and may become stultifying, an imaginative understanding and such a wide comprehension of the wholeness of life that no vocation need be to them a rut. Enable each to see with a vivifying mental grasp that will interpret labour in values of human service and stimulate each to do the day's work with the joy of creative labour.

POSTURE as a condition of efficient brain activity is dealt with by Mr. W. H. Burnham in *School and Society* for August 19th. Recent studies have shown that the problems of posture are not simple, but complex; that posture is a significant condition affecting the efficiency of brain activity; and that good posture represents one of the habits of health of prime significance. For strictly intellectual work the erect posture is probably not the most favourable, and much liberty may be allowed to children during such work, provided a more rigorous insistence upon erect posture is maintained during other forms of school work. The boy trained to stand erect, to keep his body in the best

possible posture for efficiency in action, and who takes correct postures in the various forms of physical exercise, not merely keeps his viscera in normal position and avoids a number of serious physical disorders, but his posture aids in the development of courage, a proper attitude in facing obstacles, readiness to meet difficult situations, and a general sturdiness of character. These ideas receive confirmation from the results of military training, which are popularly supposed to have the effect of adding years to the life of a recruit whose previous occupation has been sedentary.

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SCOTTISH.

THE composition of the Government Committees on Modern Languages and Science has roused great indignation in Scotland. Not a single Scottish teacher, primary, secondary, or university, finds a place on these bodies. The predominant partner is again given the whole stage, and all the lip service to the excellence of Scottish education is proved to be mere froth when deeds are in question. It is satisfactory to find that the national members of Parliament are prepared to offer vigorous resistance to this neglect of Scottish interests. Mr. MacCallum Scott, Sir Henry Craik, and Mr. Hogge gave the Prime Minister and the Scottish Secretary a warm quarter of an hour over the terms of reference and the composition of the Reconstruction Committee on Education. Warned by the treatment of Scotland on the other committees, they demanded that a Special Committee should be set up to review the educational system in Scotland. This in its methods and scope, as well as in its historical development, was quite distinct from that of England, and no common solution was possible. Ultimately the Secretary for Scotland announced that, if necessary, a special Scottish inquiry would be held after the committee on the general educational situation had concluded its labours. The adjournment of the House prevented the matter being pursued further, but feeling in Scotland is steadily rising against the Government's contempt for Scottish interests, and lively times may be looked for by the Secretary for Scotland. It is certainly unfortunate that almost his first official act should bring him into sharp opposition with national feeling.

THE Council of the Educational Institute at its last meeting resolved upon a sudden and dramatic change of policy. Hitherto Scottish teachers have remained faithful to the *ad hoc* principle in administration, but now by an almost unanimous vote the Council has decided to recommend the annual meeting of the Institute to give its support to county council management of education. The reasons for this change of front are obvious. The war has enlarged the whole conception of education. Education is seen to be no longer mere schooling. It is concerned with the whole training of the youth of the nation from birth

to manhood. It is a single, continuous process, and unless there are to be waste and loss and overlapping it should be supervised by one and the same authority from start to finish. Further, Scottish teachers have been watching closely for some time the progress of educational affairs in England. No country in the world has made such rapid progress in education as England during the past fourteen years. On every side there is evidence that, notwithstanding many grave defects, county council and municipal management is a live thing, and has plenty of driving power behind it. The status and salary of teachers have steadily risen. The tenure difficulty has become less acute, and the pension provisions have been greatly improved, all the result, direct or indirect, of the Act of 1902. It has still to be seen whether the great body of the profession in Scotland will follow the new lead, but if the case is presented fairly and fully there should be little question of the result.

THE holiday courses at St. Andrews University in Spanish and Russian have proved a great success. There was in the first place a large enrolment of students of first-rate ability. Modern language teachers naturally predominated, but classics were also well represented, and it would almost seem as if the followers of the latter were preparing for themselves a bridge of retreat in view of the alleged precarious position of their own subject. Russian proved a formidable subject to all, the classical men declaring it to be more difficult than Greek. It would be interesting to have from the teacher of the class an expression of opinion as to the progress made by the modern language and the classical teachers respectively during the course.

THE continuation classes this session have made a successful start, notwithstanding the war conditions. The more advanced industrial classes are sadly depleted owing to the calls of the Army and Navy and other war services, but the junior classes show in many centres a considerable advance on past years. In Glasgow the opening of the session had to be postponed for a week, as it was found impossible to complete the arrangements for darkening the schools by the appointed day. In some instances school boards, on the plea of economy, have closed down their continuation classes for the period of the war, but happily this short-sighted policy has been adopted only in a few areas, and by boards already notorious for educational backsliding.

MR. H. J. TENNANT, Secretary for Scotland, during his visit to the West of Scotland received a deputation headed by Dr. Henry Dyer, chairman of the Glasgow School Board. Dr. Dyer emphasised the need for attention being given to real education—that was the development of mental powers and character as distinct from the mere imparting of information. One of the most pressing problems before them at present was the nature and scope of the education that should be given after leaving the day school. Dr. Dyer advocated compulsory continuation education from fourteen to eighteen years of age, and urged the provision of special vocational schools to meet the

needs of these adolescents. He also referred to the need for greater attention being given to modern languages and science in the secondary-school curriculum. Mr. Tennant, while not committing himself to any special plan of reform, agreed that the time was fully ripe for bringing the educational system into line with the social and industrial needs of the times.

IRISH.

THE results of the Intermediate examinations held in June were published towards the end of August, and are summarised as follows:—

		BOYS.			
Grade		Senior	Middle	Junior	Total
Number examined ...		888	1,716	4,040	6,644
Number passing—					
With Honours ...		158	302	481	941
Without Honours...		420	750	1,728	2,898
Total ...		578	1,052	2,209	3,839
Number failing ...		310	664	1,831	2,805
Proportion per cent.					
who passed ...		65.1	61.3	54.7	57.8
		GIRLS.			
Grade		Senior	Middle	Junior	Total
Number examined ...		532	1,069	2,931	4,532
Number passing—					
With Honours ...		123	193	322	638
Without Honours...		250	488	1,228	1,966
Total ...		373	681	1,550	2,604
Number failing ...		159	388	1,381	1,928
Proportion per cent.					
who passed ...		70.1	63.7	52.9	57.5

Seven boys were deprived of their examination altogether, and three were deprived of their examination in one subject, for having brought notes into the examination hall, and for having given, or received, assistance during the examination.

THE conditions of passing were altered this year, and were on paper easier, as in mathematics only arithmetic and algebra were essential, and geometry became optional for boys, but in the actual results the percentage of passes is smaller; that for boys was this year 57.8, and last year 61.1, and that for girls this year 57.5, and last year 64.1. More candidates, both boys and girls, were examined this year and fewer passed. Last year 6,392 boys were examined and 3,904 passed; this year 6,644 were examined and 3,839 passed; last year 4,088 girls were examined and 2,622 passed; this year 4,532 were examined and 2,604 passed. The totals thus were: last year, examined, 10,480; passed, 6,526; and this year, examined, 11,176; passed 6,443.

THE Intermediate Board has not yet replied to the protests made against its new rule instituting, for the first time since the Department introduced experimental science teaching into intermediate schools, an examination for pass students in that subject. The Dublin Corporation, which does not often interfere in intermediate education, has passed a unanimous resolution protesting against the change, and it is well

known that the Department itself is opposed to it. It is hard to see the object of the Board in proposing it.

THE Department of Agriculture and Technical Instruction announces that it will hold, in October and November each year, special examinations in black-board drawing for teachers' certificates in drawing and art. Only those candidates who have obtained all the other examination successes required for the certificate they desire to secure will be admitted to the examinations. If the number of applications is sufficient, arrangements will be made to hold these examinations in Dublin, Belfast, Cork, Londonderry, Limerick, Waterford, and Galway.

THE Department has published the summer number of its official journal, containing the Vice-President's address, delivered at the meeting of the Council of Agriculture in May. The volume is devoted almost entirely to agriculture and contains little, except a few official documents, dealing with education. The chief articles concern potato diseases, the administration of the Fisheries Acts, relating to mills and factories, the development of Irish minerals, and reports on crops.

WELSH.

THE National Eisteddfod at Aberystwyth has been a great success; many people had doubts as to both the propriety and the expediency of holding it in the present circumstances, especially with the possibility of a repeated financial loss. But it was decided to hold it in a somewhat curtailed form, and the wisdom of this course has been justified, alike by the telegram from Welsh soldiers at the front, who sent greetings and an expression of approval, and by the support accorded by those at home, which will result in the handing over of a surplus of more than £1,000 to various soldiers' and sailors' funds. The marquee, which was set up on the college recreation ground, provided seats for 6,000 people, but the concourse was so great that the sides had to be removed and several hundred seats added. No invitations were received for the Eisteddfod of 1918, and the consideration of the matter was adjourned for three months. However, Llanelly, Neath, and Porthcawl have decided to offer, and are vying with each other in holding out promises of, site, accommodation, and guaranteed support. The simplification and shortening of the programme will make it much easier for the smaller towns to undertake the responsibilities of the festival, and no doubt the financial success and the buoyant spirit of the Aberystwyth meeting will have their effect in banishing hesitation.

SPEAKING at the singing festival, Mr. Lloyd George alluded to the characteristic "hwy!" of Welsh orators—an exaltation of feeling expressed in melodic modulation of the voice—and compared it with the expression of feeling in the national airs. Directing attention to the words "Alaw Gymreig" (i.e. Welsh air) at the head of many of the tunes on the programme, he caused much amusement by telling how on one occasion John Curwen, the publisher, said, "I like

those tunes by Mr. Allo Jimrick!" Is it too unkind to quote from a South Wales paper of the same week the story of a minister who was noted for the fervour of his pulpit utterances? One of his hearers, being asked whether the sermon had been a success, replied, "Ay, mun, it was pouring off him!"

THE Llanover Manuscripts, consisting of 116 vols., of which seventy-five are in the handwriting of Iolo Morganwg and the rest old Welsh MSS. collected by Lady Llanover, have been presented to the National Library, which also receives the Dingestow MSS. recently sold in London. It was suggested by Mr. R. A. Roberts, at the Cymmrodorion meeting at Aberystwyth, that if Wales provided a properly constituted and properly staffed Record Office, the Record Office in London might possibly be induced to transfer to it such records as might reasonably be claimed to belong especially to Wales.

A VIGOROUS attempt is being made to put on a sure footing the building fund of the National Museum, which has suffered considerably since the war broke out. Alderman Illtyd Thomas has set himself the task of raising the sum of £50,000, which will warrant the claim by the Museum Council of an equal sum from the Treasury; he has already secured one promise of £5,000 to this end.

A WRITER in the *Western Mail* pleads for the extension of training and academic recognition to amateur students of music not resident at the University. He points out that the undoubted vocal and musical talents of large numbers of Welsh people are allowed to remain undeveloped and their activities frittered away in local choir and eisteddfod work, fettered by sol-fa, and confined to obsolete and mediocre compositions. Which reminds us that we once heard Welsh singing described as "making a joyful noise unto the Lord." A half-truth, of course, for Wales has not only melodious singers, but serious students of music and scholarly composers.

At a meeting of the Pontypridd County School Governors, it was announced that Mrs. Hopkin Morgan had presented a scholarship of sixty guineas, to be awarded to the first girl from Pontypridd to take up a medical course at the South Wales University College, Cardiff.

THE Glamorgan residence dispute is by no means settled. The head-teachers having been dismissed, the assistants resigned; the N.U.T. closely observed the local conditions, and the parents and scholars took up an attitude antagonistic to the temporary head who was appointed to one of the schools, and who left after working a fortnight out of the last month of the term. The schools remain closed after the holidays, as the County Education Committee has found it impossible to make satisfactory arrangements for staffing them.

THE British Association has accepted Cardiff's invitation to hold its annual meeting there in the year 1918. This will be the association's fourth visit to South Wales, the others having been to Swansea in 1848 and 1880, and to Cardiff in 1891.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

New Conversational Elementary French Grammar. By Henri Bué. 243 pp. (Hachette.) 1s. 3d.—This grammar is on what may now be called old-fashioned lines. It is called "new," yet the author refers to the "striking merits and practical value of this well-tryed and comprehensive manual," which suggests that it is an old book recast. It is called "conversational," but there are only a few dialogues to justify the epithet. Novel features claimed are certain changes in the grouping of verbs; verbs ending in *-oir* and *-re* are now put in one group, the "third conjugation"; and there are some changes in terminology, which, however, do not agree with the recommendations of the Report on Grammatical Terminology. To show that the book is quite up to date, we have a list of words bearing on the Boy Scout movement, on motoring, and on aviation—certainly a useful feature, but scarcely in place in a "grammar." There is also a short "chapter for the inquisitive," in which some grammatical peculiarities are explained from the point of view of historical grammar; it is a pity that a number of the explanations are inadequate or incorrect. No satisfactory answer is given to the question why certain nouns have *-x* in the plural, and why there is a *u* in "chevaux," etc.; the *t* in "aime-t-il" is said to have been "chosen because it is the sign of the third person," and "voi" in "voilà" is explained as the old imperative. The third part consists of "reading lessons," i.e. a rather odd assemblage of anecdotes, fables, epigrams, and even extracts from "Athalie" and "L'Avare." Finally, there is a "synopsis of the grammatical rules contained in the First French Book."

A French Note-book. Arranged by C. E. Hodges. vi+122 pp. (Dent.) 1s. 9d.—This book agrees in arrangement with M. Berthon's "Première Grammaire Française," so far as the grammatical material is concerned; it also contains space for the vocabulary, under such headings as "idiotismes," "proverbes," "phrases de classe," "familles de mots," "arbres," "personnages historiques." The general plan is good, and shows that the compiler is a skilful teacher. The book is well printed, and, in most cases, there is adequate room for the insertion of examples. Teachers on reform lines, and particularly those who use M. Berthon's grammar, will welcome this convenient note-book.

Colloquial French. I., French Fluency Exercises. By H. É. Palmer and C. Motte. vi+50 pp. (Heffer.) 1s. net.—Mr. Palmer has resuscitated the old Prendergast method and modernised it; for it now appears in phonetic transcription. Fifty "substitution tables" are given; their nature may be understood from an explanation of the first. Here the "model sentence" is "il est|possible de le|faire"; below "il est" we find "il était," "il sera," and five other variants; below "possible de le" we have "impossible de le," "nécessaire de le," and six others; below "faire" we have "prendre," "avoir," and nine others. We can thus make up a large number of sentences from each table, and by doing so, very rapidly, we acquire fluency. Of course, it is all rather dull and mechanical, and for school use we cannot adopt more than a limited quantity of this kind of thing. For the transcription, "C. Motte," a Parisian lady, is responsible. The speech represented is that of quick colloquial talk, with a minimum of "liaison" and the omission of *l* in "il," "possible," "semble," "agréable," "terrible," before consonants, and in "quelque temps," "quelque chose,"

and of *r* in "être," "notre," "votre," "autre" before consonants. Variant pronunciations are only given in the case of "joli" and "aout."

English.

Cranford, The Cage at Cranford, and Moorland Cottage. With introduction and notes. 368 pp. (Oxford University Press.) 2s. 6d.—"Cranford," said a youthful writer of an examination paper, "deals with women in early ages"; so far have we gone. But it is like "Our Village" and Miss Wilkins's work, bidding for immortality. Mr. Clement Shorter writes a short but interesting preface, and Miss (?) E. Limouzin adds a few notes. No notes are supplied to "The Cage," but from internal evidence the mere man-reviewer gains knowledge. "'It might do for a meat safe,' said she. 'Cover it o'er wi' canvas to keep the flies out.'" It was elegant and Parisian—and light. "Is this article a lady's petticoat or a bird's cage?" Apparently in Mrs. Gaskell's angelic and unsatiric mind it was both. "'It is a cage,' said Mr. Peter, 'but it is a cage for an angel instead of a bird.'" "The Cage" will be new, and possibly the "Moorland Cottage" will also be new to many readers. The "Oxford Dictionary," i.e. the Concise one, gives "Cage—a fixed or portable prison, of wire or barred, for birds or beasts."

English Prose. Compiled by H. A. Treble. 510 pp. *English Critical Essays.* Edited by E. D. Jones. (World's Classics.) (Oxford University Press.) 1s. 3d. each.—These additions to the "World's Classics" may well be used together. The prose begins with Malory and ends with R. L. S., and contains specimens from thirty writers. The space given to each is well divided, and Steele and Meredith and Swift are represented in as many pages as will allow a teacher to talk about them. If the book does not lead to wider reading in a good school library the use of it will be limited. And how many schools have really respectable libraries? In the "Critical Essays" Wordsworth begins and Lowell ends the list, and all the Maga work is omitted, but, unless we are mistaken, that has been done in another volume. One feature of the selection is that the writer of one essay is criticised in another. Mr. J. C. Smith, whose name is well known, has helped in the production of both these volumes.

A Mother's Son. By B. and C. B. Fry. 248 pp. (Methuen.) 7d.—This is a cheap reprint of a school and life story. The names of the writers are a guarantee for its manliness and good tone; the sequel to the early life is sad—but life is sad. Horseracing figures a great deal in it, but is mainly introduced to throw up the hero's character. As a study of character the book is a glorification of motherhood—and English motherhood. Five editions of the larger form have been called for.

History.

Abraham Lincoln. By Lord Charnwood. viii + 479 pp. (Constable.) 6s. net.—Lord Charnwood, brother of Sir F. R. Benson, has already won distinction in two walks of life. He began his career as a brilliant classical scholar at Winchester and Oxford, and a successful college tutor. From the academic world he passed to that of politics, represented Woodstock in Parliament, and did valuable secretarial and departmental work. Now he has turned to literature and has produced a life of Abraham Lincoln which will give him a high place among skilful and accomplished biographers. The volume is one of the series on "Makers of the Nineteenth Century," and, indisputably, Lincoln merited

a place in the series. No man did more to determine the policy and position of the United States during the crisis which reached its height in the great Civil War; few men have had a wider influence upon the world at large. The publication of this biography is peculiarly opportune at the present moment, for Lincoln had to face precisely those problems of compulsory military service and of reconstruction after a great conflict which now loom so large in British politics. The life of Lincoln is narrated in close co-ordination with the history of the eventful period in which he was so prominent an actor.

Medieval Civilisation. By R. L. Ashley. xxii + 376 pp. New York: The Macmillan Company.) 5s. net.—The writer of this book is an American historian who has already produced a work on "Ancient Civilisation," to which the present volume is a sequel. He aims at conveying, especially to the pupils of American secondary schools, some impressions of the social life of European people in the Middle Ages. He is concerned, he tells us, not with "the annals of courts or of conquerors," but with "human progress . . . great movements, important leaders, the civilisation of different periods." This work follows the usual chronological lines; but it omits the familiar narrative of political events, and concentrates attention upon the general characteristics of successive eras. Hence it forms a valuable supplement to the ordinary text-book of medieval history, a knowledge of which it assumes. It is well illustrated, both with pictures and maps; it provides at the end of each chapter lists of books for further reading, tables of topics for essay work, and a series of typical questions. Altogether it is a thorough and workmanlike volume.

Europe in the Nineteenth Century (1815-1878). By J. E. Morris. 278 pp. (Cambridge University Press.) 2s. 6d. net.—Dr. Morris, the able and successful teacher of history at Bedford Grammar School, has lately been prolific in the production of useful text-books. He knows what is wanted, he has a gift of lucid expression, and he is a master of his theme. The book before us provides just that outline sketch of the central period of the nineteenth century which the sixth-form boy at a public school, or an intelligent reader of newspapers and magazines, requires to have imprinted upon his understanding if he is to comprehend the movements of current politics. We have only two adverse criticisms to make. First, the sketch undoubtedly ought not to have stopped at 1878; it should have been continued to 1914, even if some of the detail of the period 1815-48 had had to be omitted. Secondly, its eight chapters could easily have been arranged and divided more judiciously. If one were to judge by the headings alone, it would appear that two chapters treat of Europe as a whole, two of the Balkan Peninsula, and the remaining four of France. If the contents of the chapters corresponded at all closely to the headings, it is clear that the book would most inadequately cover the ground marked out by its title. It would contain little or nothing concerning Germany, Italy, Belgium, Holland, Russia, Scandinavia, and Spain. A study of the book will show that these important countries have not been lost sight of. Nevertheless, two of them, viz. Germany and Italy, loom so large in the period, which saw both of them attain to national unity, that it would have been distinctly better to have brought the outlines of their history, scattered over several sections of the book, into connected narratives. The present arrangement of chapters does not emphasise the prominent features of the period in review, but rather tends to obscure them.

Heroes of All Time. (1) *The Buddha.* By Edith Holland. 191 pp. (2) *Warwick the King-maker.* By René Francis. 189 pp. (3) *Queen Elizabeth.* By Beatrice Marshall. 191 pp. (Harrap.) 1s. 3d. net each.—These three volumes are the latest additions to Messrs. Harrap's excellent series of short and popular biographies. Miss Holland's sketch of the Buddha will confirm the good impression made by her life of Mohammed in the same series. It is a remarkably vivid and interesting account of the great teacher. The absence of dates and the presence of much miraculous legend, however, compel one to classify the book as one of religious edification rather than of history. The other two volumes deal with prominent figures in our island story. They give succinct and workmanlike pictures of their subjects and of the respective periods in which they flourished. Every school library should contain all the volumes of this series.

The Story of the Indian Mutiny. By Henry Gilbert. 350 pp. (Harrap.) 5s. net.—As the title implies, this is not a scientific research into the origin and course of the Indian Mutiny, but a vivid narrative of its main incidents. The previous history of the British *raj* is dismissed in a few words; the causes of the outbreak are treated merely superficially, but from the point at which the rising took place the story becomes full and detailed. The account of the stirring and tragic episodes of the great revolt is well written and well arranged. It may be commended as a thoroughly interesting sketch to all who do not desire to make a profound study of the period. The print, paper, and binding are remarkably good, while fourteen illustrations add to the attractiveness of the book. It should make an excellent and popular prize for schoolboys.

The History Teacher's Magazine for April, May, June, 1916. (Philadelphia, U.S.A.: The McKinley Co.) 20 cents a copy.—The April issue of the *History Teacher's Magazine* contains three articles of general interest. In the first, on "Present Tendencies," Prof. A. B. Show celebrates the return of the textbook to American colleges, from which it was ejected with premature exultation a generation ago. In the second, on "Changing Conceptions in History," Prof. D. C. Munro proves that history is not merely past politics, and pleads for a spiritual view of its scope. In the third, on "The Civic View of the Teachings of History," Mr. G. W. Eddy urges that the lessons which that arid subject "Civics" has failed (through its hopeless dullness) to teach shall be imparted through the attractive and appropriate medium of history. In the May number Prof. I. C. Thallon discusses at length the relations between Archaeology and History, and Mr. W. P. Webb gives illustrations of the Problem Method of Presentation. The June number is mainly occupied by a symposium, to which nine authorities contribute, on the Definition of the Field of Secondary School History.

A Year Book of English History. 64 pp. (The Year Book Press.) 1s. net.—This little book is arranged in the form of a calendar and diary, eight days to a page. Under each date is given one important historic event with which the date is associated, e.g. January 1st, Union of Great Britain and Ireland, 1801. By the side of each entry, at the bottom of each page, and at the end of the book blank spaces are provided for additional entries of all sorts. The selection of notable events is interesting, though no two persons, of course, would make the same choice. Take the month of January as an example. The attempted arrest of the five members (1642) is made to do duty on the three days January 3rd-5th; we should have limited it to the last of these, and so should have

made room for two other events, one of which would have been the birth of Sir Isaac Newton on January 4th of the same year. On January 16th the ratification of the Union of England and Scotland, 1707, seems more important than the event given, viz. the death of Moore at Corunna, 1809. On January 21st the execution of Louis XVI. (wrongly printed XIV.) is not strictly English history. If, however, it be admitted, room should certainly be made for the proclamation of the German Empire in 1871 (January 18th), and for the proclamation of the independence of Greece in 1822 (January 27th). These, however, are mere matters of detail. The fact remains that in the hands of an intelligent parent or skilful teacher this year book can be made to serve a useful purpose.

Geography.

The Oxford Geographies. The World and its Discovery. By H. B. Wetherill. Part i., *Africa.* 119 pp. Part ii., *Asia.* 100 pp. Part iii., *America.* 132 pp. Part iv., *Australia.* 63 pp. (Clarendon Press.) 1s. each.—The purpose of these volumes is to tell the geographical story of the continents other than Europe in the words and chronological sequence of the discoverers of the continents. Experience has shown that the original complete work, which is now issued in four parts, achieved its aim and served as an excellent introduction to the history of the discovery of the known world. The present issue in parts should extend the sphere of usefulness of the work; there is a necessary amount of repetition, the summary chapter on the stages in the progress of world knowledge appears in all parts, but the division by continents has been well done.

America in Pictures. By H. Clive Barnard. 64 pp., which include 58 half-page illustrations, 30 in colour, and a full-page coloured map. (Black.) 1s. 6d.—This book contains an excellent set of pictures of American scenery, cities, and incidents in the life and work of the inhabitants. The coloured illustrations are of the familiar type one now associates with the name of the publishers. These illustrations occupy almost half the book; and are, on the whole, well selected. The text contains sufficient geography and history to form an interesting reader, and, used with an atlas to supplement the coloured map, will form a good introduction to the geography of America.

Bacon's Large-scale Map of the British Battle Front. Paper, 6d. net; cloth, 1s. net. Folded.—This handy map contains hundreds of place names, and includes the area between Ostend on the north, Maubeuge on the east, Montdidier on the south, and Hazebrouck on the west. Railways and canals are shown. Woods in green, rivers in blue, international boundaries in red and yellow, and the battle front on July 1st as a strong red line, give a pleasing appearance to a very real map. Red hatching shows the ground gained between July 1st and August 10th.

Mathematics.

Practical Mathematics for Technical Students. Part ii. By T. S. Usherwood and C. J. A. Trimble. x+565 pp. (Macmillan.) 7s. 6d.—In our notice of the first part of this book we remarked upon the happy results of a joint authorship in which academic and technical experience were combined, and they are equally apparent in the second part now before us. The greater part of the book is occupied with the calculus and its applications. In the proofs of mathematical facts and formulæ no attempt has been made to attain that degree of rigour in demonstration which is rightly demanded when one is concerned with the

purely theoretical aspects of the subjects, but the writers always warn the reader when the proofs they give are imperfect. In some cases, as, for example, in dealing with expansion in series, it would perhaps have been well to give some examples of the failure of the theorem with brief explanations why it is not valid. But, on the whole, bearing in mind that the aim of the authors is to teach technical students how to use the weapons of mathematical analysis rather than how to fashion them, little fault can be found with the way in which the theory is presented. In a book of this character the skill and judgment of the authors are chiefly exhibited in their selection of mathematical material and by the manner in which they illustrate it by its application to physical and technical problems. We are glad to see that great prominence is given to vector analysis. Want of a suitable notation, or, rather, failure to agree upon a notation, has to some extent delayed the introduction of this subject into the ordinary engineering curriculum. In this country it would seem that Heaviside's notation will probably be generally adopted, although its use of bolder type makes it unsuitable for script, where vectors have to be indicated by Greek letters or by underlining. As Greek letters have always been used in quaternions, it would be well to use them also in vector analysis.

The authors have covered a great deal of ground, and the engineering or technical student will find this a most useful companion to which he can turn for assistance when he finds progress in his work obstructed by mathematical difficulties.

Theory and Applications of Finite Groups. By G. A. Miller, H. F. Blichfeldt, and L. E. Dickson. xvii+390 pp. (Chapman and Hall.) 17s. net.—The theory of groups is a plant of such vigorous growth and its ramifications are so numerous that it is practically impossible for any one person to be thoroughly conversant with all its varied aspects. These considerations have doubtless led the three authors whose names appear upon the title-page to unite in the production of the present treatise, which deals with one of the main divisions of the subject. The first part, by Prof. Miller, is devoted to the development of the fundamental theorems of abstract finite group theory and the establishment of the connection between this theory and that of substitution groups. The first two chapters are preliminary to the whole work, and contain examples of groups, definitions, and some fundamental theorems, amongst which Sylow's naturally takes a prior place. The reader who is more interested in applications than in abstract theory will find that after perusal of these two chapters he is in a position to pass on to the remaining divisions of the work. Part ii., by Prof. Blichfeldt, deals with linear homogeneous transformations, and gives a comprehensive outline of the present state of the development of the subject. Part iii., by Prof. Dickson, has for its main topic Galois's theory of algebraic equations, but it also discusses a number of related geometrical questions, such as constructions with ruler and compasses, inflexion points of a cubic, bitangent to a quarter, and straight lines on a cubic surface. The extensive applications of groups to the theory of linear differential equations merely receive mention in a paragraph in the final chapter. It is inevitable that in a work of composite authorship there should be some overlapping and repetition, but this is more than counterbalanced by the advantages which accrue from studying a subject from as many different points of view as possible, and even when the viewpoints are the same, each writer brings something of his own to his interpretation of the matter, and illu-

minates the work of the others. In every respect this is a most valuable addition to the very limited number of text-books dealing with group theory.

Science and Technology.

Domestic Science. Part ii. By Charles W. Hale. x+300 pp. (Cambridge University Press.) 4s. net.—The teachers of science in girls' schools are faced with a difficult task when asked to give instruction which will provide a training in the scientific method and at the same time give the pupils an intelligent understanding of the reasons for modern household arrangements and kitchen practices. The attempts to do this have given rise to what are known as courses of "home" or "domestic" science. We know of no schedule of instruction which constitutes a completely successful solution of the problem. The character of the work done in various girls' schools reflects too definitely the training and preferences of the teachers; if these are primarily academic, the course of study is apt to slur the technical applications to be found in the home; while, if the teacher has learnt in a domestic training centre, the scientific side of the course is overshadowed by practical hints of the empiric order. There is, in fact, still room for much research and consultation among science mistresses. Meanwhile, the second part of Mr. Hale's treatise may be commended to them for its store of suggestive experiments and as a record of the experience of a successful teacher. The book, it must be said, would have been much easier to use had it been provided with judiciously selected cross- and side-headings. Throughout each part the scientific principles elucidated might have been more consistently illustrated by examples drawn from everyday life. Mr. Hale's selection of topics for study will not satisfy all teachers; he admits subjects which may be profitably touched upon and deals with some which most teachers think may well be postponed until the pupil has a wider knowledge of physical and chemical science.

Trade as a Science. By Ernest J. P. Benn, with Introductory Preface by the Rt. Hon. Lord Burnham. 184 pp. (Jarrold.) 2s. 6d. net.—Trade, only when thoroughly organised, is one of the greatest recuperative forces that are to determine the relative standing of nations after the war. The appearance of Mr. Benn's book is opportune. In it he describes the present organisation, or want of organisation, of trade in this country. Mr. Benn frankly recognises that this country is the money market of the world, that it has the mastery of the seas, and that it has also a world-wide reputation for fair dealing. But great as these advantages are, efficient organisation will overcome them unless the trade of this country is also organised. He shows clearly the chaotic state of affairs and the difficulties that remain to be overcome; of these difficulties one of the most serious which should be taken to heart by all teachers is the absurd attitude of the average Englishman towards trade. To this point attention was directed in an article in THE SCHOOL WORLD for May of this year.

The second section of the book contains a definite suggestion based on the principle that "it is the cost per unit that matters." This complete specification the traders and the teachers of the traders of the future should read for themselves.

Art.

The Principles of Drawing. By L. Bellin-Carter. 150 pp. (Edward Arnold.) 2s. 6d. net.—Apart from some minor defects—such as Fig 15, which is a poor example of grouping, and the inadequate space allotted

to natural forms in Section XII., which would have been improved by a larger variety of illustrations—this is a very useful and well-illustrated book, giving quite the best elementary course of drawing we remember to have seen. The directions for method given in "Some Practical Instructions," p. 15, and in Section III. scarcely go far enough; the unit of measurement given in paragraph 15 is of doubtful value, and too much stress is laid upon constructions in Section IX. For the rest we have nothing but praise.

Scissors Stories. By J. E. Tolson. 135 plates. 160 pp. (Pitman.) 2s. 6d. net.

Wood, Wire, and Cardboard. By J. G. Adams and C. A. Elliot. 40 models. 115 pp. (Pitman.) 2s. net.

Bookbinding. By J. H. Halliday. 54 figures. 73 pp. (Pitman.) 2s. net.

These three books are issued in "Pitman's Handwork Series." The first two contain some valuable suggestions for the teaching of quite small children. The last is quite a practical book dealing with a form of handwork suitable for children which has not hitherto received the attention it merits. A few more illustrations like the frontispiece would have enhanced its value. All three books are worth adding to the manual training school library.

EDUCATIONAL BOOKS PUBLISHED DURING AUGUST, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

"Un Petit Voyage à Paris." By Marguerite Ninet. With an introductory chapter, "Paris en temps de Guerre," by Angelo S. Rappoport. 176 pp., with 12 illustrations and vocabulary. (Blackie.) 1s. 6d.

Foltaire's "La Momie." Comédie en 2 Actes en Prose. With vocabulary of colloquial idioms in the text by H. Dubreuil. 47 pp. (Hachette.) 9d.

English: Grammar, Composition, Literature.

Carlyle: "The Hero: as Prophet, Man of Letters, King." 158 pp. (Blackie.) 1s.

Shakespeare: "Much Ado About Nothing." Edited by J. H. Lobban. ("The Granta Shakespeare.") xxii+156 pp. (Cambridge University Press.) 1s. net.

Charles Dickens: "The Personal History of David Copperfield." Edited by E. Kibblewhite. 1044 pp. (Clarendon Press.) 2s. 6d. net.

Matthew Arnold: "Sohrab and Rustum." Edited by W. J. Cunningham Pike. 48 pp. (Clarendon Press.) Paper covers, 1s.

History.

"Europe in the Nineteenth Century." By E. Lipson. iv+298 pp. (Black.) 4s. 6d. net.

"Black's History Pictures": "The Early Georges." Selected and edited by G. H. Reed. (Black.) 1s.

"The Divine Aspect of History." By J. R. Mozley. In 2 vols. Vol. i., xx+408 pp.; vol. ii., x+510 pp. (Cambridge University Press.) 36s. net.

"The Battle of Jutland Bank. The Dispatches of Admiral Sir John Jellicoe and Admiral Sir David Beatty." Edited by C. S. Terry. 95 pp. (Clarendon Press.) 6d. net.

"British Colonial Policy, 1723-1915." By C. H. Currey. 266 pp. (Oxford University Press.) 2s. 6d. net.

"The Successors of Drake." By Julian S. Corbett. 466+xiv pp. (Longmans.) 10s. 6d. net.

"Buddha." By Edith Holland. 192 pp. "Queen Elizabeth." By Beatrice Marshall. 192 pp. "Warwick the Kingmaker." By René Francis. 192 pp. ("Heroes of All Time Series.") (Harrap.) 1s. 3d. each.

"Readings in the Economic History of the U.S." By E. L. Bogart and C. M. Thompson. 862+xxviii pp. (Longmans.) 12s. 6d. net.

Geography.

"The World—Junior Regional Geography." By J. B. Reynolds. viii+279 pp. (Black.) 2s. 6d.

"The Panjab, North-West Frontier Province, and Kashmir." By Sir James Douie. ("Provincial Geographies of India.") xiv+374 pp. (Cambridge University Press.) 6s. net.

"Senior Geography of South America." By G. C. Fry. viii+34 pp. (Clive.) 1s.

Mathematics.

"The Algebraic Theory of Modular Systems." By F. S. Macaulay. ("Cambridge Tracts in Mathematics," No. 19.) xiv+112 pp. (Cambridge University Press.) 4s. 6d. net.

"Ruler and Compasses." By Hilda P. Hudson. ("Longmans' Modern Mathematical Series.") 144 pp. (Longmans.) 6s. net.

"Elements of Geometry." Parts v.-vi. By S. Barnard and J. M. Child. (Macmillan.) 2s.

"Practical Mathematics for Technical Students." Part ii. By T. S. Usherwood and C. J. A. Trimble. (Macmillan.) 7s. 6d.

Science and Technology.

"Chemistry for Rural Schools." By Ernest Jones and J. Jones Griffith. (Blackie.) 2s. 6d. net.

"Agricultural Geology." By R. H. Rastall. ("Cambridge Geological Series.") x+332 pp. (Cambridge University Press.) 10s. 6d. net.

"Domestic Science." Part ii. By Charles W. Hale. ("Cambridge Technical Series.") x+300 pp. (Cambridge University Press.) 4s. net.

"Architectural Building Construction: A Text-Book for the Architectural and Building Student." By W. R. Jaggard and F. E. Drury. xxii+304 pp. (Cambridge University Press.) 6s. net.

"The Emission of Electricity from Hot Bodies." By O. W. Richardson. ("Monographs on Physics.") 304+viii pp. (Longmans.) 9s. net.

"South African Botany." By F. W. Storey and K. M. Wright. 220+vi pp. (Longmans.) 4s. 6d.

"Notes on Laundry Work." By Mrs. Lawrie. 32 pp. (McDougall.) 2d. net.

"Notes on Housewifery." By Mrs. Lawrie. 32 pp. (McDougall.) 2d. net.

"Organic Agricultural Chemistry." By Joseph S. Chamberlain. (Macmillan.) 7s. net.

Miscellaneous.

"Cambridge Local Examinations, July, 1916." "Examination Papers (Preliminary, Junior, Senior)." xvi+316 pp. 2s. "Class Lists, Preliminary, Boys and Girls." 20 pp. 6d. "Class Lists, Junior and Senior, Boys." 84 pp. 6d. "Class Lists, Junior and Senior, Girls." 88 pp. 6d. (Cambridge University Press.)

"Song of the Dardanelles." By Henry Lawson. 144 pp. (Harrap.) 2s. 6d. net.

"The Girls' School Year Book, 1916." Part i., "Schools." Part ii., "Various Careers open to Women." Part iii., "Complete List of Public Secondary Schools for Girls." lii+654 pp. (The Year Book Press.) 5s. 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 Modern Languages Committee.

THE appointment of the new Modern Languages Committee to inquire into the position occupied by the study of modern languages in the educational system of Great Britain should mark a decided step forward in the more serious consideration of them as an important element in the school curriculum. Notwithstanding the great progress of the last few years, much still remains to be done. It can scarcely be said yet that, to quote the terms of reference of the committee, the learning of modern languages includes "an appreciation of the history, literature, and civilisation of other countries." In the congested state of the ordinary school programme of subjects, it may be urged that it is expecting far too much, and certainly as things are now it is.

The first remedy appears to lie in an intensive or concentrated teaching of French (or Spanish or Italian) when it is begun. The usual teaspoon of two or even three hours a week leads to small results, but with an intensive beginning for one year, more would be learnt and really mastered than ordinarily in two or three years, and there would be a firm foundation for a modest scheme of literature and historical teaching, with some relevant geography. A boy from the sixth form of Cheltenham, no dullard, asked me once whether Molière was French or German; he had never heard of him. So far as my experience goes of our newer secondary schools, the total reading of the girls and boys who present themselves to be examined for senior scholarships does not get beyond a very few works of fiction; perhaps one term it is "Sans Famille," and the next "Le Roi des Montagnes." Plan and coherence are not apparent. This could be improved, especially if the teachers know their subject as they should, and are required to formulate a progressive syllabus, covering in the last two years some knowledge of the great periods of French history and literature; but this must be led up to from the beginning. In Switzerland—where languages are well taught—one can come across boys, not unusually bright ones, of seventeen or eighteen who have some real knowledge of, and interest in, say, Cromwell, or Nelson, or Scott. In one of the largest public schools six, or five, hours a week are given for the first two years, and then four hours for the remaining years. From the third year on, systematic attention is paid to the literary and historical features of the seventeenth, eighteenth, and nineteenth centuries, portions at least of the great authors being read, and the tendencies of their age and country considered. This implies not merely a measure of cultivation in itself, but the possibility of a right outlook towards other nations, and the ability to see whatever is admirable in them.

Modern languages taught with this aim and in this spirit should replace satisfactorily Latin in those schools which for various good reasons are unable to undertake it for the bulk of their pupils. To arrive at a substantial, permanent result, everything seems to depend on a preliminary period of vigorous, intensive teaching, of spade-work. The soil is then ready for systematic planting. The Modern Languages Committee is to have regard to the requirements of a

liberal education, and to the interests of commerce and the public service. The two considerations are more closely allied than may appear at first sight. One rejoices that the whole question is now likely to be faced squarely.

H. A. CLAY.

Winchester.

A National School-Liturgy—An Invitation.

SOME, and I hope many, of your readers may be interested in a scheme of a school-liturgy at which a few of us are working in the conviction that it will help to solve some of the acutest educational problems, among others that of religious education.

It is almost too much to hope that our official boards and bodies will ever become so constructive as to undertake the elaboration of this scheme; if they do, they can command the unpaid and enthusiastic services of some of us. On the assumption that the task must be accomplished by private workers, I would venture to make a few suggestions.

(1) The liturgy should consist of poetry, noble prose, music (vocal or instrumental), symbolic ceremonial, and possibly in some cases dramatic dialogue (original or otherwise).

(2) Each "liturgical unit" (as I call it) should be grouped around a central idea, and the time length of it should range from a minimum of twenty minutes to a maximum of sixty. There should be possibilities of condensation and expansion.

(3) Among the types of "liturgical unit" may be mentioned: great men, great events, great ideas, nations, sects, movements, parties. The commonest formula would probably be: "Let us praise famous men!" or "Let us celebrate . . . !"

Such a liturgy would help to unify the nation by providing a stock of common and noble memories; would give schoolmasters, organisers of concerts, museum officials, lecturers, preachers, etc., a jumping-off ground for further educational work; and would largely supply the element of "atmosphere" desiderated in school.

I would in particular invite your readers to compose liturgical units "in praise of science," "in praise of beauty," and so forth. The work is at the very beginning, but no one can foresee the end.

For a penny stamp I will send further details to any reader of THE SCHOOL WORLD.

F. H. HAYWARD.

87, Benthall Road, Stoke Newington, N.

The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

SCIENCE AT THE BEGINNING AND AT THE END OF THE CURRICULUM.

By O. H. LATTER, M.A.
Charterhouse.

THE war has forcibly directed our attention to many of our national shortcomings, and amongst these to our neglect of science. It would be inappropriate in these columns to deal with any aspect of this "neglect" other than the educational, though much might deservedly be written from the commercial and the industrial points of view; and I wish on this occasion to confine myself entirely to the consideration of science teaching at preparatory schools, and in the top forms of public schools.

The preparatory schoolmaster is confronted with a dilemma—his main business, at any rate in the eyes of his *clientèle*, is to teach his boys in such a way and in such subjects as will secure their entrance into a public school at the age of 13 or 14 years; science is not demanded by the public schools in their entrance examination; hence it does not "pay" to spend time upon it, and the parent of a boy who has failed to pass into his desired public school might appear to have just cause for complaint if even but two or three hours per week had been expended upon a subject which is outside the limits of the public school's entrance examination. On the other hand, the master wishes not merely to teach, but to educate and train each side of the minds of his boys; he sees and welcomes in many the quick and often accurate observation of natural phenomena; perhaps he even shrinks with rather mixed feelings from the questions asked on the hundred and one things that boys see, and very properly wish to know something more of: he realises the appeal that Nature makes to the minds of many of his pupils, and would gladly avail himself of the opportunity thus afforded.

At the present time the public schools are giving even less encouragement to prepara-

tory-school science teaching than was the case a short time back. For some years there was in the common entrance examination a paper on Nature Study as an alternative to Latin verse. Few, if any, will contend that this paper achieved its professed object: it had but slight value in determining whether a boy passed or failed, and still less in fixing the form to which the successful candidate was assigned. This being so, it is small wonder that about a year or more ago the Nature Study paper was struck off the common entrance examination. From the very first, indeed, it was foredoomed to failure by the position which science occupies in the public schools: in classics and mathematics there are fairly well defined standards of attainment required for entry in the several forms; whereas in science there are no such standards agreed upon as yet. Hence it is not easy for the purposes of the common entrance examination to specify any branch of science or progress up to any given point for entry into the several forms in which new boys are placed. A further difficulty lies in the fact that masters who have had a definite training in science are very rare in preparatory schools, and not many "laymen" are ready to take charge of the teaching of a scientific subject, even in its most elementary form, in which they do not feel themselves "at home."

The problem, however, ought not to be, and, I believe, is not, insoluble. There is a very general consensus of opinion among the science masters of public schools regarding the kind of science which is appropriate to the preparatory schools. Briefly, this may be stated to be *Nature Study without any attempt at systematic courses of physical subjects, and still less of chemistry*. The ideas of a sub-committee appointed *ad hoc* by the Public School Science Masters' Association were published *in extenso* in *The Preparatory School Review* for March, 1905. The syllabus there presented comprises observational and easy

experimental work in botany, zoology, meteorology, and physical geography: and for the further guidance of teachers there are included a few specimen lessons showing the mode of treatment and indicating the lines upon which all such work should at this stage be conducted. The object of such work is, of course, to stimulate a living and active interest in the natural world, to train the boy to observe accurately, to devise experiments for the purpose of finding the answers to the questions that arise out of his observations, to reason regarding his discoveries, and to describe clearly in his own words what he has seen, done, and found out—a literary exercise of no slight value.

There is, however, a more formal and precise portion of what is usually included in the opening stages of the systematic science course at public schools that might, and certainly ought to, be done at preparatory schools. I refer to the mensuration work that figures in the introductory sections of the very numerous books dealing with practical physics. The measurement of length, of areas of regular and irregular figures, and of volumes of cubes, rectangular bodies, cylinders, right prisms, and so on, appertains more to mathematics than to natural science, and is not so difficult as to be beyond the reach of the higher forms in preparatory schools. Such "practical mathematics" involves very little expenditure on apparatus, and demands no special laboratory accommodation: it can be carried out in any ordinary classroom, and at the usual desks and tables. I believe I may claim to speak for the great majority, both of science and of mathematical masters at public schools, in stating that this elementary mensuration should be mastered at the preparatory school by all boys who hope to enter any but quite the lowest forms of the public school.

Taking it, then, for granted that at preparatory schools Nature Study, in some one at least of its many sections, is desirable from an educational point of view, and that "mensuration" is necessary, not only for the same reason, but also to enable the boy to proceed without delay to the set courses of elementary physics and chemistry on arrival at the public school, it is possible to suggest lines on which the work of the two grades of schools may be co-ordinated, and that done at the junior definitely considered and tested in candidates for admission to the senior. Already at several public schools the science of the lowest forms consists of Nature Study: the systematic courses of elementary physics and chemistry begin in the lower part of the middle school: so that it is important that boys whose general attainments entitle them to be placed in this latter part of the school should have acquired

a good grip on the "practical mathematics" above-mentioned.

But let us rid ourselves of the universal incubus of competition in at least one little area of the educational field: let the public schools demand that every candidate for admission shall show that he has done Nature Study for a reasonable length of time; not by a set of questions in an examination paper, but by insisting that the boy shall produce his notebook in which he has recorded his observations, described his experiments, drawn the materials on which he has been engaged, and deduced his conclusions. The notebook would, of course, be accompanied by a guarantee from the preparatory-school master that the work, excepting corrections made by the master, was done by the boy himself. These notebooks would not be pitted in competition one against the other; but if their production were insisted on we should secure that the right kind of science work was done throughout the preparatory schools. On the other hand, it is quite easy to set a satisfactory examination on the mensuration (practical mathematics); and here the results can be utilised in assigning the candidates to the forms and divisions of the public school. Hence, if in the common entrance examination a candidate produced only his Nature Study notebook he would be placed either in the lowest forms, or (if his other subjects were of the requisite standard) in the bottom (beginners') division of the middle school block, where the systematic courses of science hold sway: but if, in addition to the Nature Study notebook, he also offers himself for examination in practical mathematics, then he would be placed (*ceteris paribus*) at lowest in the middle school block, and his exact position therein would be determined by his achievement in the practical mathematics paper.

It is, however, desirable that Nature Study should be continued throughout the whole of the preparatory-school period, and that there should be no temptation to abandon this in the upper forms wherein are the candidates for the junior scholarships of the public schools. To this end I would suggest that there be included in the junior scholarship examinations a compulsory paper in Nature Study. It matters little what section of Nature Study is taken in hand at preparatory schools; that section will be best which can be taught *con amore* by some member—most probably a man without any special training in science—of the staff. The one object is to lead boys to keep their eyes open to the natural phenomena around them, and to desire to find out the causes of things. Thus, to meet the varied needs of the many schools affected, this com-

pulsory paper in Nature Study must needs offer a wide choice of questions to the candidates: a satisfactory arrangement would be to demand four or five answers out of some twenty questions, evenly distributed over the several subjects that are for the sake of brevity spoken of collectively as "Nature Study."

It has been objected that the "General Paper" that is set in many junior scholarship examinations already provides what is here suggested. It does not. General Papers do, it is true, offer a wide choice of questions to the candidates; but it is perfectly easy for a boy to select, say, half a dozen of these, and to secure high marks on the paper, without answering a single question that is in any way concerned with natural science. The point that is here urged is that a knowledge of some natural science should be insisted on in every candidate for a junior scholarship, and that merit in this subject should have due weight in the awards.

To turn to the other extreme of the school period—the fifth and sixth forms, and their science work. I am not now considering the courses prescribed for the specialists in science, but rather what kind of scientific work should be attempted with the older boys, some of whom are of fair, all-round ability, while others are sufficiently promising to be regarded as prospective candidates for scholarships in classics, mathematics, or history at the universities. Consciously or unconsciously many of us have had "in the back of our heads" the training and future requirements of the specialist in our catering for upper forms. At this stage, however, it ought not to be our aim merely to produce specialists, but rather to foster appreciation of, and sympathy with, scientific work in the minds of these boys, who will shortly go forth to begin their life's work in the world. It must be remembered that boys in this upper part of the school have passed through several forms below in which, I am assuming, they have worked through a considerable part of the physics and chemistry courses. They have therefore had some training in experimental work, and at least an introduction to scientific method, while in the middle part of the school: they now need to acquire as wide an outlook and as broad a sympathy with science as it is in our power to give.

I would therefore, for purposes of general education in this last stage of school life, abandon the laboratory, and devote the two or three periods allotted per week to science with these boys to lectures on a variety of scientific subjects. It should be part of the equipment of an educated man to know something of the history of scientific discovery, of the work of

great scientific men, of the theories held in the past and at the present day, of the practical applications of science in the arts and industries, of problems that await solution and are claiming the energy and attention of scientific men to-day: the list might be far prolonged, but the above will serve to indicate the meaning of my suggestion. The lectures could, of course, be supplemented by suitable books, and "stiffened" by, say, a fortnightly essay. Had some such method of instruction in scientific matters been applied to the upper forms of public schools during the past thirty years, which have witnessed so great a growth of the all-necessary laboratory teaching, I venture to think that the present agitation against "The Neglect of Science" would not have arisen.

EDUCATIONAL REFORM AND THE TEACHER.

By F. SMITH, B.A., B.Sc.

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EDUCATIONAL reform is a popular topic in these days of unrest and inquiry, and it is all to the good that so much public attention is being given to our obvious weaknesses and shortcomings. Already we have had official recognition of the inadequacy of teachers' salaries, of school equipment, of technical instruction, of facilities for scientific research, and of many other essential matters, and teachers at any rate will not complain if these weaknesses are removed at an early date.

But there is no small danger that reform, when it comes, will lay too much stress on external things alone. For in education, more than in all the other State services, the one thing that most matters is the hidden spirit, the contact of mind with mind, the enlarging of human interests and powers by the stimulus of personality. This spiritual influence is largely independent of outward factors: it may be fostered by them, and it may be hampered by them, but no concomitance of merely external reforms can ever guarantee it. It is upon us teachers alone that the obligation is laid to strive after this one thing that matters.

The purpose of this article is to urge that the main problem lies in the pupil's attitude to his work, his keenness and enthusiasm, his interest and application. When we fail to get that we fail in the very essentials. Nor must we judge his attitude by externals. A pupil can be disciplined into making a show of application where none really exists. We have evolved throughout our schools an elaborate system of stimuli: prizes and scholarships, detention and fines; and we can point to some pupils in every

class as examples of industry, who appear interested, attacking their difficulties, sometimes appearing even keen. But such pupils are always a minority, and it is obvious to those in their confidence that the interest is often but a cloak. If we could only see the pupil's mind laid bare, could only see how he really regards school and lessons and teachers in his heart of hearts, could only get the unfettered expression of his system of values, then, indeed, we should have to confess that his attitude is one from which we cannot expect great achievements! A modern schoolmaster has put the case more brutally: "In nine cases out of ten a schoolmaster's task is not to bring light to the path of an eager, groping disciple, but to drag a reluctant and refractory young animal up the slopes of Parnassus by the scruff of his neck." We may differ about the proportion of those pupils whom we can honestly describe as industrious in our terminal reports, but we shall all admit that it is too small. It is so painfully true that real, spontaneous, unforced enthusiasm for school work is rare.

In our classrooms we admit this daily, and we are overfond of blaming the pupil for it and putting the whole responsibility on him. We call him stupid, lazy, careless, silly, childish, inattentive, unheeding—our supply of adjectives is almost inexhaustible! We screw up our discipline, give extra tasks, demand better work—and after an interval the whole thing recurs with an insistence that ought to convince us that we have not diagnosed the case very carefully. But we are busy mortals, and fairly hopeful, and we go on with the endless treadmill, rarely asking ourselves what the utility of it all is. The stupidity is not all on one side!

We need to ask ourselves what it is that produces enthusiasm, energy, high resolve, the will to conquer difficulties. Expressed simply, it is the belief that the end in view is worth while. This present war is eloquent proof of what peoples will do when united by a firmly held purpose: by a conviction that the result will be worth the prodigious toil and the ghastly sacrifice. It is so in all human endeavour. It is so in our very human pupils, however much we have ignored the fact. If they could be convinced that lessons and tasks are worth while we should see the greater part of their slackness and indifference plucked out at the roots; until they are so convinced we shall be fighting with obsolete weapons.

It is in the light of this principle that we must face the problem of the curriculum. We need not accept the foolish doctrine that the curriculum must be determined by the pupil's interests alone, for a child, like an adult, loves

the line of least resistance. But we must adapt the curriculum to the pupil's viewpoint, link it up to the things he is keen about, convince him that it is worth while, and, above all, we must have freedom to scrap some of the things we are expected to teach, or at any rate defer them to a more convenient season. The real evil about the curriculum is not in itself: it is that we are not bold enough (or free enough) to choose and reject, to modify and extend, when we reach something that we find to be really profitable for the class we teach. Our greatest crime is that we have approached the curriculum and the time-table too mechanically and too abstractly: the wonder-world of mystery and beauty lies at our school doors, and we go on fingering every page of the text-books. We are continually driving back our pupils' eyes to the sacred page, but we cannot always drive back their thoughts and their dreams.

Whence will come the inward reform? Obviously not from a reformed curriculum. The heart of the solution is bound up with the education and training of teachers. There is nothing so vital to the whole future of education as an adequate supply of teachers with personality, initiative, enthusiasm, and outlook. They must be unfettered, free from petty requirements which cramp and limit them, free to develop along the lines most congenial and inspiring to themselves and their classes.

It is unfortunately true that our training colleges are hampered and restricted on all sides by official requirements which tend to produce a mechanical and formal attitude. Inspectors' visits are so frequent and examinations so exacting that college life becomes a heavy routine of lectures, criticism-lessons, and organised study. The bulk of the waking day is arranged for by a time-table which tends to become the rule of life, a sacred document to be obeyed at all costs. Teachers who are trained mechanically will teach mechanically; forced themselves to grind at prescribed and often uninviting studies, they will, in turn, force their pupils to memorise smaller doses of their own knowledge, without asking themselves the why of it all. It is a vicious circle of the worst kind.

There is nothing overdrawn in the picture. Even in the university training colleges there is the same tendency at work. A recent change has brought into existence in the majority of these colleges the four years' course, whereby the student devotes the first three years to academic studies and the fourth year to professional training. The Board of Education lays down its requirements for the fourth year: students must be instructed in the principles of education, in methods of teaching,

in hygiene, and must also acquire proficiency in teaching, drawing, elocution, singing, drill, and (in the case of women students) needlework. There are thirty weeks or so in the session, and a minimum of eight of these must be spent in school. The inevitable machine methods must result: a time-table of twenty-five or more hours per week is made out, and students trip from class to class without ceasing. There is no mental strain, but there is something worse—mental enervation. The passive student accepts the routine fairly easily and becomes more passive, but the alert mind is galled by this enforced acquirement of half a dozen arts in which he has often but little skill, and the majority of which he will never teach. Short as the time is, much of it is wasted. It seems strange that the training colleges should give so much attention to the psychology of the child, and so little to the psychology of the student!

It may seem that we have strayed from the main problem: the right attitude of the pupil to his tasks. But the attitude of the pupil largely depends upon the attitude of the teacher, and until we are turning out the proper supply of teachers who have keenness and vision and freshness and independence, so long will reform tarry. Education is an affair of teacher and pupil, a spiritual interchange, a mingling of personality. Is it wrong, then, to assert that those who train our teachers should have the highest gifts of personality, the richest natures? If they have that, and also freedom to work, freedom to modify, freedom to experiment, we may await with confidence a new generation of teachers. And to those teachers we must also grant more freedom, more scope for individual development, relying more upon personal contact than upon external rule.

Such an argument contains no attack on present-day teachers in the bulk. Their work, in spite of heavy handicaps, has of late received much well-deserved recognition. But there is a new future to face, a world to rebuild, and teachers will have a greater opportunity and a greater responsibility than ever. They must also have a more thorough preparation.

And to bring the argument down to more specific details, we may ask by what means can we expect to give this wider outlook to our student teachers, in addition to the greater freedom and richness of college life? The essential thing is that they shall be enabled to gain a wider experience of concrete life, its variety, its problems, its vastness. Travel, especially foreign travel, is not difficult to arrange.

Holidays are long enough to allow a month for France or some other country, and the cost is comparatively small, if the main routes are avoided and economy enforced. I was once

boarded and lodged at a French Ecole Supérieure for fifty francs a month, and though the food was poor I had an enjoyable and valuable experience. I have also spent three full weeks examining German schools at a total cost, including travel, of £10.

Lectures by modern men and women famous in art, in literature, in drama, in science, in politics, in order to stimulate thought and discussion and to open minds to new interests—these should be far more frequent than at present, and be given only by recognised authorities in the several subjects. Also the experiment already successfully tried in some colleges, that of going under canvas for a time in the heart of the country, though variety might be introduced here by alternating walking tours in rich historical districts, agricultural expeditions with *real* experience of farm work, and geographical surveys of a suitable region. But there is no end to the possibilities that suggest themselves.

On the other side there is urgent need that every college should have with it a school of the highest efficiency, equipped and staffed in the best way. Much has been done in the past decade to secure this, but there are still serious shortcomings at many places, where students gain their practice in teaching under conditions that are almost appalling. The school is the teacher's laboratory, and here is the place for experiments under test conditions and with recognised experts.

The final word must be that of cost. The State in recent years has generously provided three-fourths of the cost of many new training colleges, and the building has been on a lavish scale. If so much can be afforded for mere bricks and mortar, who will dare to say that we cannot afford more for the extension and enrichment of our greatest national asset, human life? The Government is committed to increased expenditure on education after the war is over; let us urge that some of it may be spent in this wisest of all ways.

"PRACTICAL" STUDIES.

By T. S. USHERWOOD, B.Sc.
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At different times I have had to act as carpenter, blacksmith, armourer, mason, doctor, midwife, gardener, shopkeeper, policeman, architect, planter, and surveyor; but fortunately never in the course of my work in Africa have I been called upon to make Greek verse or enunciate the Binomial Theorem.—Capt. C. H. Stigand, "Administration in Tropical Africa."

IN the hard school of war we are learning many things about our educational shortcomings, and in the immediate future, if the

signs are trustworthy, a far greater share of the time available in schools will be allotted to "science" and "practical work." If we are not to follow our traditional policy of drift, certain points should be decided as rapidly as possible. Since knowledge is essential to progress, and true knowledge can only be acquired through cultivation of the faculty of independent reflection, what is known as the *scientific method* should be followed in every branch of study. This method is not the peculiar property of physical science: it is the foundation of all good work in any subject. As was stated in a recent letter to the *Times*, what is needed is "the scientific method in all the branches of an education which will develop human faculty and the power of thinking clearly to the highest possible degree."

Revitalised by "direct" methods, supported by "realien" schemes and exhibits, and encouraged by the success attained in schools like Perse and Bradfield, the representatives of classical traditions look for a new lease of life, and have already started their propaganda for influencing public opinion. Consequently, those of us who are convinced of the overwhelming importance of promoting scientific research and "practical" work of all kinds must set our houses in order. If we desire to cultivate in our pupils an attitude of scientific scepticism, and if we believe that the "best preparation for the whole of life" necessitates the immediate limitation of purely literary work so that more time is available for the study of natural science, we must formulate definite plans. Once it is admitted that the indispensable subjects must receive most attention and that the crying need of the age is science and yet more science; once we have given the only possible answer to the question, "Are the classics indispensable?" the difficulty of the overcrowded curriculum vanishes. As Lord Rayleigh said recently, "The ignorance of natural science among all classes is deplorable." No man or woman has any right to be so entirely ignorant of natural science as are so many to-day, and—provided that we do not altogether ignore those elements in education which are vital to the formation and maintenance of national character—our aims and methods must so be reorganised that everyone has the opportunity of making a first-hand experimental acquaintance with the elementary facts of natural science.

The words "first-hand" and "experimental" are important. Mere reading and the following of lecture-table experiments are all but useless, particularly in the early stages. It is difficult to believe, but it is nevertheless true,

that in many schools mechanics are still taught in the mathematical classrooms to boys who have done no practical mechanics whatever. Even in schools where adequate provision for practical science is made, there is little or no correlation between the practical mechanics studied in the laboratory and the mechanics studied by upper forms in the mathematical school; while the system of promotion adopted leads to overlapping and unnecessary difficulty in the arrangement of the forms for science.

The goal of the worker in science is to disclose scientific truth; his purpose "to set forth scientific phenomena in causative array." In this sense our pupils can scarcely be true workers in science in their early days; but their natural curiosity, under due guidance and judicious suggestions, together with the imperative necessity for describing their work in unambiguous language, easily initiates and develops courses of work of the utmost educational value. It is obvious that we must apply what is called the "heuristic" method, if we are properly to correlate experimental inquiry with both inductive and deductive inquiry. Consequently, teachers must be practical men, somewhat intolerant of authority and tradition, and ready to experiment not only in matters, but in methods. They ought not to dogmatise; they should not be so much instructors as fellow-investigators with their pupils; further, in order that precious time may not be wasted, they must be really skilled in the subject for which they are responsible.

In the earliest stages nothing will be found so stimulating to the natural curiosity, nothing so rich in suggestions for possible and desirable fields of experiment, as manual work. At present the arbitrary development of mathematics in the classroom, and the rigid "courses" on the rusting of iron, on salt, on elementary physics, on the triangle of forces, etc., in the science laboratory, rob both mathematical and scientific study of much of their educational worth. The genesis is unnatural and the development is hurried in both subjects. It is extremely difficult, with large classes and examinations looming in the distance, for any teacher to do full justice to the scientific method. Teaching becomes stereotyped, "exercises" take the place of root ideas, and spirit is subordinated to form. The fundamental needs, then, are reduction of the size of the class and closer co-ordination between classroom and workshop.

Nowhere is the need for co-ordination more striking than in schools which have really good workshops, whether for science or for handicrafts. Satisfactory experimental work

may be done, but the time allotted is insufficient for the calculations and description in unambiguous language which are necessary. Hence we have that "copying out of rough notes" set for science preparation. The calculations are purely mathematical, the description and copying out purely literary work. It ought not to be impossible to devise some scheme by which the facts and figures discovered in the workshops can be used in the classroom. Such first-hand facts, based on direct observation, together with some discussion of the lines of argument which led to the setting up of a particular piece of apparatus, a description of the experiment, its object, the inferences made and suggestions for further work, should lead to the production of far better "essays" than the subjects usually chosen. The use of figures and symbols with a concrete significance and of personal interest to the pupil would make his mathematical work of far greater value than the usual "exercises." Much has undoubtedly been achieved in these directions, but much more should be possible. In a broad and general way, the child should recapitulate the history, the life-process of the race. Certain elements are indispensable, others are relatively unimportant, others, again, must be neutralised or prevented. But just as primitive man was forced to "think" in order to gain some "practical" end, so it is the utilitarian aspect of a study which most appeals to the child mind, arouses interest and kindles intelligence. Initiative, persistence, and industry are the necessary concomitants of all expressional work, while the power to discriminate between the relevant and the irrelevant is developed most readily by such "practical" work—which at the same time leads to a clear and vivid apprehension of underlying theory.

It is generally admitted that it is a waste of opportunity, if not actually illogical and uneducational, to make any advance until the pupil appreciates its importance and necessity, and that there is a very strong objection to conveying lessons by means of artificially contrived incidents. In other words, it is desirable that practically all the work of beginners—whether literary, scientific, or mathematical—should centre round some useful occupation, and that the school should closely assimilate its methods to those of everyday life. As Stanley Hall says ("Educational Problems," ch. xv.): "Training and culture can no longer be separated from utility . . . service is the supreme test of all culture values." In spite of such admissions, schools continue in their old grooves. The desirability of change may be admitted, but

custom and tradition are too strong. Also, one has to reckon with the jealousy existing between the various "sides" of a school. As things are, the intelligent boy is "spotted" as a scholarship winner at an early age by some specialist or other, and his whole training is directed towards the passing of some examination. Instead of the boy's tastes and interests being studied and his originality developed, he is forced into line and crammed for the scholarship which brings his tutor or the school most "kudos." That this power of selection is exercised in many schools is proved by the fact that the modern side is often the "sink" to which the dullards or the merely average boys are relegated; only those of more than average intelligence are retained on the "classical" side, and the success of such exceptional boys is offered as proof of the value of a sound classical education. Hellenic education, the ideal of the purely literary class, aimed at making the best possible citizens. At a national crisis Athens did not require skill, but pluck, energy, self-sacrifice, obedience, and loyalty. Now we must have skill first, particularly as the form of education which has been supposed to develop the other virtues has not, if we can believe our newspapers, made us thrifty and ascetic. Further, it is not at all certain that Sparta and Athens would have ignored technical and utilitarian subjects so wholly had they been educating the whole population instead of a privileged class; while there is evidence that, even in Greece, the term "wise men" was applied to those who were skilful in some particular handicraft. Socrates defined the educated man, in the first place, as one capable of dealing with the ordinary events of life by possessing a happy sense of fitness and a faculty of usually hitting upon the right course of action. What would he have thought of our habit of *trusting* to "muddle through"?

The mathematical specialist is not quite so conservative as his colleague. He has moved with the times, got rid of the old-fashioned "water-tight compartments," and placed much of his work on a "practical" basis. But he, too, carefully guards his preserves. This, that, or the other subject is mathematical and must be taught in the mathematical classroom. Full use is not made of the results of workshop experience, and the work of the upper forms is limited by the same scholarship craze; while keenness to "spot" and prepare a likely candidate for honours leads to a more formal treatment than the average boy can profitably stand. Consequently, it is still too true that the mathematics learnt at school is rapidly forgotten, and can seldom be applied

in after life. Had it been more rationally linked with other branches of school work, it would really have formed part of the boy's mental equipment: he might forget facts, but he would probably remember the fundamental principles, and the spirit in which he would approach new problems would be that likely to command success.

It should be easy, but unnecessary, to settle what precisely should be the character of the "practical" studies which boys and girls of different ages may usefully begin. They should vary with the locality and with the type of school in order that their utility should be obvious and make the strongest appeal to the immature intelligence. For in the sense of this article any "occupation"—not necessarily woodwork or formal manual training—is practical, and will, if judiciously treated, suggest—nay, demand—research or work on inquisitive lines in mathematics and natural science, while affording a certain amount of material for literary work. Science specialists, if men of practical experience, should be asked to outline what they consider to be the irreducible minimum of desirable knowledge in natural science; it will be found that the necessity for studying much more than this minimum arises naturally in connection with such practical work, so that for beginners all the school subjects centre about some occupation of real interest. The great difficulty is the question of correlation¹ and the abolition of privilege. Only where there is a strong and broad-minded headmaster can reasonable progress be expected, and the very nature of their own education makes such men rare. Some schools will remain impregnable behind the walls of tradition years after the majority have yielded to public opinion, unless the Government takes the matter in hand.

Another difficulty is the problem of increasing the supply of suitable teachers. This was considered in a paper read before the British Association for the Advancement of Science in 1913, with special reference to teachers of handicraft. But, as most of the statements made therein apply with equal justice and but slight modification to any form of "practical" work, a brief *résumé* may be apposite.

Two types of men are available. On one hand there is the student of the theory of motor education, who is convinced of its instrumental and educational power, but who

is not an *expert* in its practice; whose technical skill is amateurish and whose lack of experience makes him confine his lessons to the narrow groove in which he himself sought tuition. On the other hand we have the skilled mechanic who has become a teacher; efficient in practice, but shaky in theory and initially quite incapable of doing justice to the scientific method; seldom fitted by education and social standing to take that place on the staff which the importance of his work demands, and prone to indulge in loose and unscientific expressions and vague generalisations in order to cover what he realises to be gaps in his theoretical equipment.

In these days the skilled mechanic is unavailable, and the loss to our schools is incalculable. It is worth considering whether, in the circumstances, a pupil-teacher system might be initiated. If it were possible to induce a few practical engineers to forsake for a while their regular work for the thankless and unprofitable job of teaching; or, better, to insist on some experience in applied science from every candidate for the "practical" branches of the scholastic profession, so that increasing knowledge of child development were linked with and modified by the demands of real life, there would not be the prevailing confusion between educational improvement and the learning of a new subject or of an old study in a new way. "The art of education is of the nature of a practical art, like the art of medicine or of war" (Kerchensteiner, "The Schools and the Nation"). It must be remembered that educational problems make no appeal except to the person practically concerned in them, and, for the kind of teacher required, only one type of man is really qualified—a man endowed with the spirit of craftsmanship, with the adaptiveness and facility conferred by work under competitive conditions. The separation of school work from the realities of life is probably due to the hypothesis—now discredited—that a power once acquired will be operative in every sphere of influence and not simply in that in which it was trained. These pupil-teachers, with interests at once scholastic and technical, would see that the work undertaken was free from the reproach of artificiality. It is a common fallacy—particularly prevalent in the modern teaching of elementary mathematics—to imagine that a problem becomes concrete—*i.e.* "practical"—by merely clothing it in concrete terms.

In his "Psychology of Education" Prof. Welton writes: "The premature specialisation to which the great division of labour in all branches of learning is leading is little short of disastrous." Men must be trained for the

¹ Note that the correlation must be real and unforced. What is possibly an example of false correlation—apart from the questions of accuracy and scientific value—is illustrated by the following introduction to a "first course in combustion" taken from the "fair copy" notebooks of a class. "The word combustion is derived from two Latin words—*com*, together, and *uro*, I burn. The *b* is put in for euphony . . ." etc. It would be hard to imagine an introduction more opposed to the true spirit of scientific research than this.

profession of teachers, learn to co-ordinate their efforts, and combat the tendency to imagine their special subject the one essential influence. But since a real and wide knowledge of his special subject is desirable in the case of each specialist, the teacher of "practical" studies must be a practical man. His training as a teacher will have taught him to recognise that the real advance of the pupil is only measured by his power to work independently, and he will not confuse definitions with meaning. His practical experience will give his suggestions a reality which should go far to restore the lost link between schools and life, and to feed the natural appetite of his pupils for effective knowledge of cause in the only possible way.

SECONDARY EDUCATION IN AUSTRALIA.

By H. S. CARSLAW, Sc.D. (Camb.), D.Sc. (Glasgow).
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THE steps which were taken, about four years ago, by the Labour Government of New South Wales to bring higher education—both school and university—within reach of the people of the State have already been noticed in *THE SCHOOL WORLD*.¹ The past year was the fourth since the reorganisation of the high schools upon the basis of a four years' course, or, in all the circumstances, it would be more correct to say since the creation of a real high-school system. This system is now in full working order. The popular demand for secondary education is so great, the growth of the high schools is so remarkable, and the provision this State is prepared to make is so liberal, that it seems right that the story told about two years ago should be supplemented by a reference to the present conditions.

Until the year 1912 the position in New South Wales was much the same as that in the other chief Australian States: the Education Department concerned itself chiefly with primary education. A few high schools existed; but secondary education, to a very large extent, was left to the private schools. Of these some were good, others were the reverse. The way was open for a few of the best pupils in the primary schools to advance to the secondary schools, and for a still smaller number to proceed to the university with the help of bursaries; but the path for such was both narrow and difficult.

In 1910 there were five of these high schools in New South Wales, with a total

enrolment of about 1,100, the population of New South Wales being about 1,600,000. In 1911 the fees were abolished, three new schools were opened, and the number of pupils was doubled. In 1912 the figures of 1910 were nearly trebled, and a much larger number of bursaries was given than in previous years. These were awarded on the results of the qualifying examination, which marks the close of the primary course and is used as an entrance test for the high schools. Under the Bursary Endowment Act of the same year, a liberal provision of bursaries became a permanent feature of our educational system. About 300 school bursaries are awarded each year by the Bursary Endowment Board to pupils entering upon the secondary course. To bursars who have to live away from home in order to attend the school they have selected, the monetary grant is £30 for each of the first and second years, and £40 for each of the remaining two years. To bursars who can travel to and from school daily the grant is £10 for each of the first and second years, £15 for the third, and £20 for the fourth. In special circumstances grants are also given for a fifth year. About one-half of the bursars usually obtain the larger allowance, in accordance with the principle that a fair proportion shall be allotted to the scholars from country schools. In each case the bursary is awarded subject to the fulfilment of certain conditions as to the income of the parents. From the beginning of 1916 a number are reserved for the children of members of the Australian Imperial Expeditionary Force who have been incapacitated or have died on active service.

Along with the operations of the Bursary Endowment Act, the provisions of the University Amendment Act of 1912 have also to be borne in mind. For this Act has placed a university education within the grasp of the abler boys and girls of the secondary schools whatever the financial circumstances of their parents may be.

I have said that the growth of the high schools and the popular demand for secondary education have been remarkable. That this is so will be seen from the following table:—

PUPILS AT HIGH SCHOOLS, INTERMEDIATE HIGH SCHOOLS, AND DISTRICT SCHOOLS IN N.S.W.

Year	High Schools		Intermediate High Schools		District Schools	
	No.	Enrolment	No.	Enrolment	No.	Enrolment
1911	5	1,865	—	—	—	—
1912	12	2,573	—	—	—	—
1913	15	3,064	5	879	22	1,284
1914	16	3,542	5	907	22	1,362
1915	17	4,318	4	778	21	1,728
1916	18	4,689	3	622	21	2,149

¹ "Education in New South Wales," July, 1914.

These figures refer to the average weekly enrolment for the year, except in the case of 1916, where they give the position at the time of writing. The intermediate high schools are schools in which only the work of the earlier part of the secondary course is done. They have been found necessary in the present development of the system, but will probably be replaced by regular high schools in the future. The district schools refer to schools in the country towns, in which the number of pupils is not sufficient to allow for the establishment of a regular high school. In these cases a secondary department has been added to the primary school. Some of these are rapidly growing to the high-school stage.

So far the provision of secondary schools by the State has not appreciably affected the efficient private secondary schools already in existence. There are about sixty registered secondary schools with an enrolment of about 3,000. Successful candidates for bursaries may proceed to these schools, but the number who do so is comparatively small. Their pupils are also eligible for the intermediate and leaving certificates of the Education Department. These form a feature of the recent educational reorganisation. The development of this system gives further evidence of the success of the movement. The original scheme, framed to some extent upon the model of the Scotch leaving-certificate system, has been somewhat modified after consultations with the representatives of the University, the private schools, and the Education Department. The courses of study are now more elastic, and it is recognised that in many cases the pupils should devote five, instead of four, years to the course. In fact, the private schools without exception adopt the longer period. The close of the earlier stage is marked by the intermediate certificate examination. The number of candidates for this is now well over 2,000. The completion of the course is marked by the leaving-certificate examination. Until now there have been three examinations for this certificate. In 1913, 156 entered and 124 passed; in 1914, 340 entered and 274 passed; in 1915, 572 entered and 447 passed. At the close of this year the number will probably be over 600. And it has to be remembered that before the State took up secondary education seriously only about 150 pupils annually completed a course of this standard.

The Education Department wisely lays great stress upon the place of science in the school course. In all the high schools every pupil has to go through a four years' study of some science, or combine two such two-

year courses. In these schools adequate laboratories and equipment exist, and for them a supply of trained teachers with a science degree is forthcoming. The Education Department hopes that similar arrangements will be made in the private schools; and in future the conditions for registration will probably be more strict in this respect. In the meantime, it is satisfactory to notice that at the leaving-certificate examination held in December, 1915, of the 572 candidates who entered 173 took physics, 165 chemistry, 146 botany, and 70 geology.

In his last report the Director of Education refers, among other things, to the influence the university requirements for matriculation still have upon the work of the school:—

The award of university exhibitions on the result of the leaving-certificate examination has given to the university matriculation requirements an important bearing on secondary-school work. The university has not reached the point at which it is recognised that a well-balanced secondary-school course is an adequate training for the liberal education represented by the arts course of the university. The university is liberal in the options it offers to its students after it receives them; but through its adherence to a traditional requirement for matriculation it either excludes from its arts course many students who would be equal to those accepted in their fitness for university study, or it compels them to follow while at the secondary school a study which they do not intend to continue when once the university receives them. It remains a striking fact that a boy who from thirteen to eighteen years of age has made a thorough and systematic study of English, French, mathematics, history, and chemistry, and passes a final examination in these subjects with credit, is considered unfit to enter the university and take up the studies there that lead to an arts degree.

The question to which the Director of Education refers is a familiar one. Even in Australia every student who desires to enter the Faculty of Arts has to pass a fairly advanced examination in Latin or Greek before entrance. I am not without hope that, sooner or later, the state of affairs which he laments will have passed away.

In this article I have said little about the effect of the forward movement in secondary education in New South Wales on the University of Sydney, though its influence on that institution will be great. From all the universities of the Empire their strongest and best men have gone out to fight for their country; and in the Australian Expeditionary Force the universities are worthily represented. But most of the men of the first year are too young to share in this struggle. In these circumstances I shall refer only to the fact that in 1916 the schools have for the first

time provided the full statutory number (200) of exhibitors under the scheme embodied in the University Amendment Act. Under this Act 200 public exhibitions carrying free education at the University are available at entrance each year for holders of the leaving-certificate who have passed the leaving-certificate examination in the subjects and at the standards which the University demands for matriculation. And under the Bursary Endowment Act allowances up to £50 per annum are given to many of these exhibitors when their circumstances make such assistance necessary. In the last report of the Department of Education, covering the year 1914, the advances under the Bursary Act for bursaries at secondary schools and University amount to £14,750. With regard to the exhibitors of 1916, it should be added that quite a number have requested that the tenure of their exhibition be postponed so as to allow them to join the forces. It need scarcely be said that their request was granted.

In Victoria there have been equally interesting developments since the passing of the Education Act of 1910, when the principle of State secondary education was definitely adopted. There are now twenty-eight high schools and thirteen higher elementary schools, and the number of pupils attending them is between 5,000 and 6,000. Their work starts at a lower level than in the New South Wales system, and the high-school course is arranged to cover a period of six years. Some of this course is done in the other States in the superior public schools, and their pupils do not figure in the statistics of the high schools. Yet the advance in Victoria in State secondary education in these last years is a great achievement. Their high schools are not free as in New South Wales, but a liberal scholarship system exists both for the schools and the University, and many pupils of parts have the opportunity of receiving free education from the elementary school to the completion of a course at the technical schools or the University of Melbourne. However, in Victoria a very great proportion of the secondary-school work is done by the private schools, much greater than in any of the other States. In Melbourne and its neighbourhood they occupy a most prominent position, and have a deservedly high reputation. The number of pupils in the registered secondary schools of Victoria is estimated at over 10,000.

The scheme of inspection and examination of the Victorian secondary schools (high schools and private schools) differs from that

adopted in New South Wales. Three inspectors of secondary schools have been appointed by the Education Department to supervise the work of the State high schools. The University, through its Schools Board, has appointed them inspectors of such secondary schools as desire to avail themselves of the regulations recently adopted by the University whereby any secondary school in Victoria may apply to the Schools Board of the University for inspection. Upon a favourable report the Board may approve of courses of study in the school, and allow pupils, to some extent, to be exempted from the examinations for the intermediate and leaving certificates. The system has not yet got into working order, and it is too soon to pronounce upon its effect.

It is safe, however, to say that, before many years have passed, Victoria will do more than it is now doing in the cause of State secondary education. The people of that State and other States will, sooner or later, insist upon a broader highway of education and greater equality of opportunity. The privileges which have been won in New South Wales will be extended, so far as the resources of the different States permit, and when the people themselves realise what these privileges involve, right through the Commonwealth, where such extension is possible.

But, lest any reader of THE SCHOOL WORLD may carry away the impression that all young Australians have, or can expect to have, the means of education of which I have spoken at their door, I quote the following sentences from the last report of the Minister for Education in New South Wales:—

During the year statistics were collected to show the number of pupils attending school who would be exempt from the compulsory clauses, even if the statutory distance were raised from two miles to three miles. It was found that 2,584 pupils attending school walk a distance of between three and four miles, 563 boys and girls a distance of four to five miles, 121 a distance of five to six miles, and nine children walk to school six miles or over every day. Then again, 2,098 pupils ride, drive, or cycle between three and four miles to school daily, 1,826 from four to five miles, 858 from five to six miles, and 1,119 travel six miles or over every day. It will thus be seen that 9,258 boys and girls travel a distance of three miles and upwards to school every day, apart from children who are conveyed by train to the nearest school or by subsidised vehicles to a central school.

The task of the Education Departments in all the Australian States is no light one. It is well that it is being attacked with such zeal and vigour.

SCIENTIFIC METHOD IN EDUCATION.¹

By S. E. BROWN, M.A., B.Sc.

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THE popular misconception of science is well known to us—the opinion of the typical classical housemaster at a public school who, as the end of the summer term approaches, views with apprehension the possibility of his next house-captain being a “stinks” man—a misconception associated with explosions, test-tubes, stained fingers, tadpoles, and evil smells. I prefer to start with the definition that science is organised knowledge on a logical system, be it applied to the study of history, natural philosophy, or education; and I assume that all of us will assent to the axiom that education, to be efficient, must be founded on the basis of the definition I have given. Lord Hardinge’s Commission epigrammatically summed up the situation in the sister island by the statement that “Irishmen, no doubt, appreciate the maintenance of order, but appear to have an inveterate prejudice against the punishment of disorder.” Englishmen in their attitude towards educational reform no doubt value an organised system, but appear to have an inveterate prejudice against being themselves organised. A small boy in a northern school diagnosed the Englishman’s condition in three words. The teacher had given a lesson on the reforms which should necessarily follow this war, and the pupils had dutifully summarised his remarks, and had written a code of things we ought to do and of things we ought to leave undone; one of the boys, a deeper philosopher than the rest, closed his essay with this rhetorical question: “but will we?”

Is it too much to say that in considering the best method of preparing boys for business, immediate utility is emphasised and preparation for life is forgotten? The average parent is constantly on the look-out for short-cuts: he points to the careers of the few men of genius who have risen from poverty to wealth, and throws the bomb at you—“What is good enough for Sir George Midas must be good enough for my boy.” He forgets that genius will rise in spite of difficulties, and also that now, if ever, the régime of “thorough” has begun. There are no short-cuts for nations to-day; there will be none for individuals to-morrow. England’s enterprise, energy, originality, and impromptu brilliancy in method are now countered by the plodding and organised work and prevision of competing nations,

especially of Germany. The history of competition between modern nations is analogous to the history of scientific discovery; at first, progress depended largely on empirical methods, but later, success could only be attained by highly systematised training. Business and industrial leaders in England are beginning to recognise the conditions; but in addition the middle-class ratepayer and the working man must be taught to appreciate that our training must be systematic, not haphazard and uncontrolled as hitherto, and that the needful thoroughness will entail an expenditure of time and money.

Our commercial supremacy, at one time largely due to our geographical position, is reduced by improved means of communication: we must, therefore, train our youths to fill positions, not of insular, but of imperial importance; and while inculcating “love of home,” we must overcome the prejudice of home-loving British mothers who wish to keep their boys for ever near them, and we must create an independence in the boys themselves which will give them the enterprise and ambition to develop our trade abroad. Even now the effects of the war are evident in our schools; our boys are fired with a new spirit of adventure and with the prospect of some day going abroad; many in our larger day-schools have already voluntarily undertaken the study of Russian or of Spanish in their leisure time. This spirit must be fostered: schools and colleges must be helped to experiment and to specialise in meeting the requirements of certain trades, districts, or colonies, and endowed sufficiently to appoint staffs who know by actual contact and experience the conditions and factors.

Freed from the anxiety of invasion and the necessity of universal military service, British democracy has changed its love of freedom into an impatience at restraint which often menaces the common weal. There must be a continuation of the discipline we now endure—of the control of manufacture, the limiting and appropriation of profits, the direction of banking and finance, and the working of industries essential to the public safety (including the control of the liquor traffic, already begun in the Carlisle district).

Although we may dislike the admission, nevertheless it seems evident that we are to-day driven a further step on the road to socialism quite as definitely as when we adopted compulsory free education; and in education we must submit to further control if the nation is to be preserved and survive—a socialism that, while giving to all men equal opportunity, exacts from all the utmost of their abilities.

¹ A paper read before the Secondary Schools Association at Caxton Hall, Westminster, July, 1916.

To work on a scientific method is the only safe course. The people must be made to realise the danger of neglect and lack of foresight in our education. How shall we arrest the attention of the mass of our people? Something bigger, more vitalising than the suggested Royal Commission is necessary. A Royal Commission is excellent for enabling opinion already formed to express itself in action, but it very rarely forms opinion, still less enthusiasm, except in narrow circles of experts. I ask: "Is there any gospel in a Blue Book?" No! a movement of the entire people is necessary; but how is this wave of enthusiasm for knowledge to be set in motion? A nation may be too proud to fight, but it is never too proud to take a leaf out of its enemy's book. The Press and the platform are to be harnessed to the work. Unless, however, some definite body of men, some public department, is responsible for carrying out the campaign, our efforts will remain spasmodic, and will lack design and foresight. The number of public departments is already legion, and a further increase will lead only to overlapping. It therefore seems necessary to add to the duties of one already existing, and this, by natural selection, is the Board of Education. A small body of young men, tactful and energetic, will carry the matter through, provided that they know the conditions and are given a free hand. So I venture to suggest that the new duties of the enlarged Board should be, first, to popularise the educational movement; secondly, to discover and train the talent of the nation; and, finally, to place this talent where it is required.

Let us consider these problems in order: first, to popularise the educational movement, to display our wares and advertise them as it were by a publicity department. To begin with, a vigorous Press campaign should be started to rouse the public to its needs. This should be followed by an effort to secure people with conviction, chosen from the universities and public bodies, to work among the people, give addresses at school functions or under the auspices of the town councils, much in the same way as the recent economy campaign was conducted. The history of educational movements, especially those following wars, and the value of education in France and Germany might be explained. The general public must learn the necessity of altering the school age, and assume the obligation of one generation to face the expense of equipping the next. To overcome the unwillingness of the town councillor and the ratepayer to face these problems, and to convince the parent that he must forgo the earnings of his child and submit to laws which will secure ultimate

advantage to the nation, are surely tasks which require the attention of a permanent Government Department working on a scientific method.

Our opportunities are sadly neglected. Can anything exceed the dullness of the primary-school prize-giving? We must redeem the time, but also be prepared for sacrifices. Our local politician must restrain his oratory; and those who constantly remind us that it is better to be good than to be clever must keep their platitudes for another place. I leave a Gilbert to invent a punishment appropriate for the inevitable person who tells the children how blessed are the dull, for they shall succeed in after life.

The second problem, how to discover and train the talent of the nation, is too great to discuss fully here. We are at once confronted with difficulties which the new department might help to remove. The school-leaving age, the age of transference from primary to secondary school, and the establishment of continuation schools are so interdependent that a special inquiry is necessary before legislation can be suggested. Preliminary experiment must be encouraged, and I suggest that it should be the duty of the Board to arrange further delegation to local authorities of powers to experiment in accordance with local needs. It might be necessary to raise the local rate for higher education above the present limit to meet the expenses of experiment.

The primary-school headmasters in industrial centres tell us that only a few of their clever boys are helped by the free place system. To make room for these clever boys it will be necessary to increase the accommodation, not in the secondary schools, but in the trades preparatory schools, as the latter will be more useful when the problem of the continuation school is handled. To these schools clever boys might be sent when twelve years old on a system of nomination by the primary-school headmasters. Having accommodated these clever boys, it would next be necessary, by agreement between the education authority and the employers, to fix the number of boys to be liberated from the factories, according to the accommodation in the continuation school. The hours of attendance and the length of the courses would be at first subject to experiment, but the plan settled on would necessarily be compulsory for the whole district. Even to the secondary-school boy enlightened employers might be encouraged to give a lead by stipulating, as a condition of employment, that the members of their staff under a certain age be required to devote one or two mornings in the week, when the mind is fresh, to the study

of modern languages or science in a continuation school. At the outset there would be the inevitable outcry that trade efficiency would suffer. Lord Shaftesbury had to face a similar opposition in his efforts to abolish child-labour.

Industrial districts would furnish the best fields for experiment, but agricultural districts should receive a generous grant for the same purpose. Why should scientific agriculture be so neglected that our fields yield on an average barely £4 per acre? Belgium, on the other hand, has raised its yield to a rate of £20 per acre. Forestry, too, should claim our attention, for experts tell us that in Scotland alone 2,000,000 acres may be added to our forest land, and that employment would be found for an additional 20,000 men.

In staffing the continuation schools there is one point to be borne in mind. The age of adolescence (fourteen to sixteen) is admittedly the most critical time of youth. Ninety per cent. of our boys and girls, suddenly withdrawn from the influence of school, are sent out in ignorance of certain physiological facts. During this impressionable age, when attendance at the continuation school has become compulsory, who are likely to be the best friends and advisers of the adolescent? Undoubtedly, I think, those who have trained him or her from childhood; and, therefore, I suggest that the continuation school shall be connected with the primary school by having teachers common to both schools. A few teachers would be sufficient, and it would be easy to modify their hours of duty so that the work was not excessive.

One of the chief difficulties opposing the right selection and training of our elder boys seems to be a lack of sympathy almost amounting to jealousy in certain cases between the primary and the secondary schools. When we remember that many of our secondary schools contain more than 90 per cent. of ex-primary-school boys, it is imperative that there should be not only an understanding, but even goodwill between the two types of school. As the process of training teachers by the bursar system and a university course becomes general the line of cleavage will tend to disappear. Many of the primary-school teachers are as well trained as their secondary-school colleagues or even better, and if the social status and the pay of teachers are raised, as assuredly they will be, the interchange of teachers between secondary and primary schools will increase; reforms will be more possible when the teachers know each other better; and, already, professors of education are trying to promote a mutual sympathy.

The problems of the age of transference of pupils to the secondary schools will soon be solved when this happy state of affairs comes about, and thus the chaos of the lower forms of secondary schools will be removed.

Time will be saved by unifying and standardising a few of the essential teaching processes throughout all the schools. To particularise, the following may be mentioned: spelling to be taught by syllables; analysis of sentences on a uniform method; similarly multiplication and division, certain details in mental calculation, decimals and the decimal system.

May I venture to mention a reform which, for all English-speaking children, would, I believe, save many months of anguish? The adoption of a rational mode of spelling would liberate time and labour for more congenial and necessary work. Personally, it is my conviction that if we could overcome prejudice we should be nearer finding the universal language than at any time since Volapük and Esperanto were invented; and, therefore, I contend it is our patriotic duty to sink prejudice and jettison Dr. Johnson.

The free place and scholarship systems require revision. It is a question whether any maintenance grant should be given, except for necessitous pupils, before the compulsory age limit is reached. At that time I suggest a re-examination, when fewer awards might be made, but a more liberal maintenance grant attached.

Time does not permit a discussion on the placing of the abler, but poorer, secondary-school pupils in specialised schools. In some cases the entire removal of the intellectual boy from his home surroundings may be necessary. Why should not the experiment be tried of conducting a boarding-school or a hostel for our poorer geniuses? Occasionally, perhaps, an enlightened public school would be willing to give a scholarship to an exceptional boy.

The third problem—the placing of trained talent where it is most needed—is the counterpart of the second.

Liverpool, I believe, originated the idea of conducting a juvenile employment bureau in connection with its Education Office. Why should not the plan be extended to cover imperial needs? The new department could arrange appointments bureaux to be media between industries, localities, and colonies on one hand, and the various educational institutions on the other. In the mother country this duty is at present in some districts divided between the education authority and the Labour Exchange, and it is desirable to devise a more practical co-ordination.

In addition, it would naturally control the

Civil Service, military, and other public examinations. To devise and supervise a system of preparation for the Diplomatic Corps and Consular Service is a vital necessity which should be taken in hand by the authorities. Our eyes have been opened by the recently revealed muddle and the ignorance displayed in our Embassy at Constantinople. In future our interests in foreign ports should be entrusted to consuls selected exclusively from our own race.

There is a widespread feeling that more democratic methods of entry into these services have now become an imperial necessity, in view of the part that the colonies are playing in the war, and are destined to play hereafter in the affairs of the Empire—at least, if it is not to become disrupted.

Having briefly dealt with the discovery and training of our native talent, I leave to the economists the problem of rewarding it adequately.

Organised physical training, especially in our town schools, demands attention. The Swiss have taught us that godliness with bodily health is great gain. Why should we not adjourn on Sundays from church to the parks, as they do, to see our schools compete in drill and exercise? We should fill our churches if previous attendance at a place of worship was made a qualification to compete.

Intimately connected with the subject of physical training are the Boy Scouts and the Cadet Corps. As a schoolmaster, I suggest that, in all State-aided schools, to join in one of these movements be made compulsory. Such a regulation is necessary in our day-schools to develop a sense of comradeship and public spirit.

The questions I have raised, the problems I have outlined, concern, not expediencies, but necessities. By our success in dealing with them we must stand or fall. Arrogantly to ignore our enemies, as some suggest—to neglect the study of their literature and history—would only deprive us of a knowledge of the paths by which they have made such remarkable progress in State management, science, industry, and commerce. To disregard any legitimate means which God and Nature have put into our hands to attain success would be pusillanimous folly. And, further, no tariff, however ingenious, however elaborate, will protect the commerce of a nation in the competition with organised intelligence. The educated nation is the invulnerable nation. The industry that is best educated is invincible, and will command the markets of the world. Our surest and safest method of retaliation upon our rivals is a new army of

workers—alive, alert, with the knowledge, the skill, and the resource that only a sound intellectual training, coupled with a determined resolution, can give. We must not let the opportunity slip—the opportunity that is ours to-day. "There is no lost property office for golden moments."¹

THE MAPPING OF THE EARTH.²

LITTLE by little civilised man, by his daring, his love of adventure, and the necessities of events and circumstances, has penetrated into the unexplored parts of the earth and pushed back the clouds and mists that so long shrouded them from his knowledge, until at the present time the regions that are entirely unmapped are very few indeed, and do not amount to more than about one-seventh of the whole land-surface of the globe, including the unexplored areas of the Polar regions, which may be either land or water. Not content with a mere vague acquaintance, he has striven for greater accuracy, and has turned to various branches of science and called them to his aid, in order that he may obtain more correct knowledge and a better comprehension of the earth's features. To enable him to fix with definiteness the position of places upon its surface, map out the various land-forms, and obtain their accurate measurements, he has consulted the astronomer and mathematician. Commencing with the rudest instruments and measuring apparatus, these, as greater accuracy was required, have gradually been improved, until the present-day appliances and equipment of a surveyor are a wonder of refinement and delicacy.

In order that we may obtain a general idea of what parts of the world have been mapped and what have not, as well as ascertain something of the value of the survey basis for maps of the various parts of the world at the present time, I have recently drawn a map. It is merely an outline, and diagrammatic in character. By way of comparison I have drawn another map showing what was surveyed at all accurately, mapped from rough surveys, and entirely unsurveyed and unmapped in 1860—that is, nearly sixty years ago.

For the sake of comparison of relative areas, the maps are all drawn on an equal area projection—that is to say, a certain area on the map, such as a square inch, everywhere represents the same area on the earth's surface.

¹ Sir Alfred Dale, Vice-Chancellor of Liverpool University.

² From the presidential address to the Geographical Section of the British Association at Newcastle-upon-Tyne, September 6th, 1916 by Mr. Edward A. Reeves, F.R.A.S., F.R.G.S.

The idea kept in view in drawing the maps is that the shade deepens as the accuracy of the surveys increases. (1) The parts that are topographically mapped from triangulation or rigorous traverses are shown by the darkest tint; (2) those that are less accurately mapped from surveys chiefly non-topographical, and of which in many places the basis consists to a great extent of disconnected land-office and property plans, are shown by the tint next in density; and then the next lightest tint (3) represents the parts of the world that are only mapped from route surveys or rough traverses of explorers. Although these traverses vary greatly in degree of accuracy, they cannot be considered so trustworthy as the surveys shown by either of the other two shades, and in many cases the mapping consists of the roughest sketches. (4) The regions that are entirely un-surveyed and unmapped are indicated by the lightest tint of all, almost white.

Referring to the state of surveys in the Eastern Hemisphere in 1860 (Fig. 1), it will be seen at once that outside the continent of Europe, where a considerable extent of accurate surveying had been carried out, the only country where any mapping, based upon triangulation, had been done was India. These areas are shown in the darkest shading. In Europe, France, British Isles, Germany, Austria, Italy, Russia, Switzerland, Denmark, the Netherlands, and Scandinavia had already made a good commencement with their Government maps based upon trigonometrical surveys; but these were in several cases by no means complete, and it is interesting to note that even of Scotland there existed at that time no Ordnance Survey for the northern part. The southern part had been surveyed and mapped on the one-inch scale



FIG. 1 (a)

Mapped from accurate topographical surveys ...
 Mapped from less trustworthy surveys (chiefly non-topographical) ...

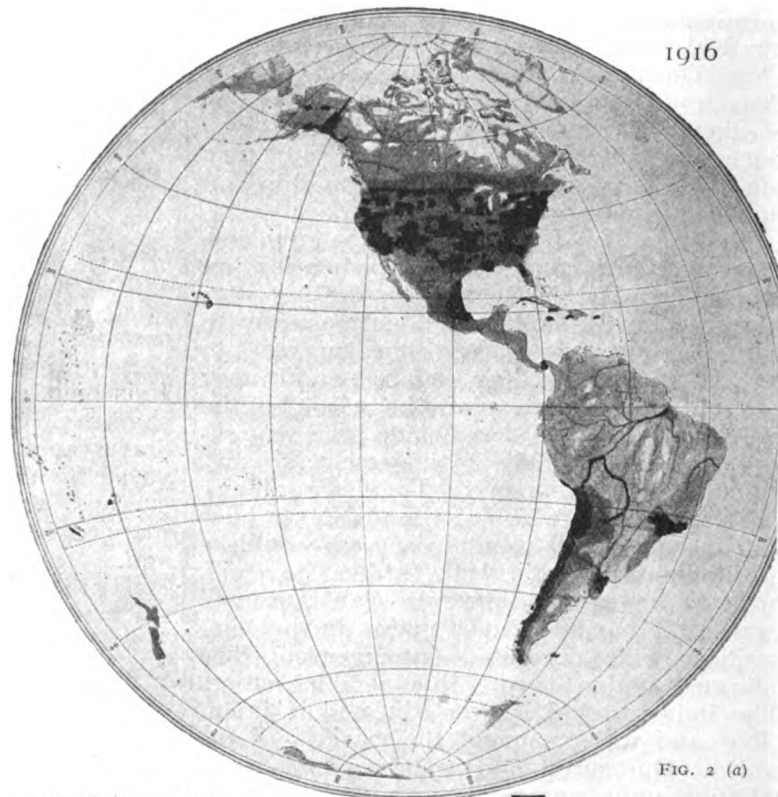


FIG. 2 (a)

Mapped from accurate topographical surveys ...
 Mapped from less trustworthy surveys (chiefly non-topographical) ...

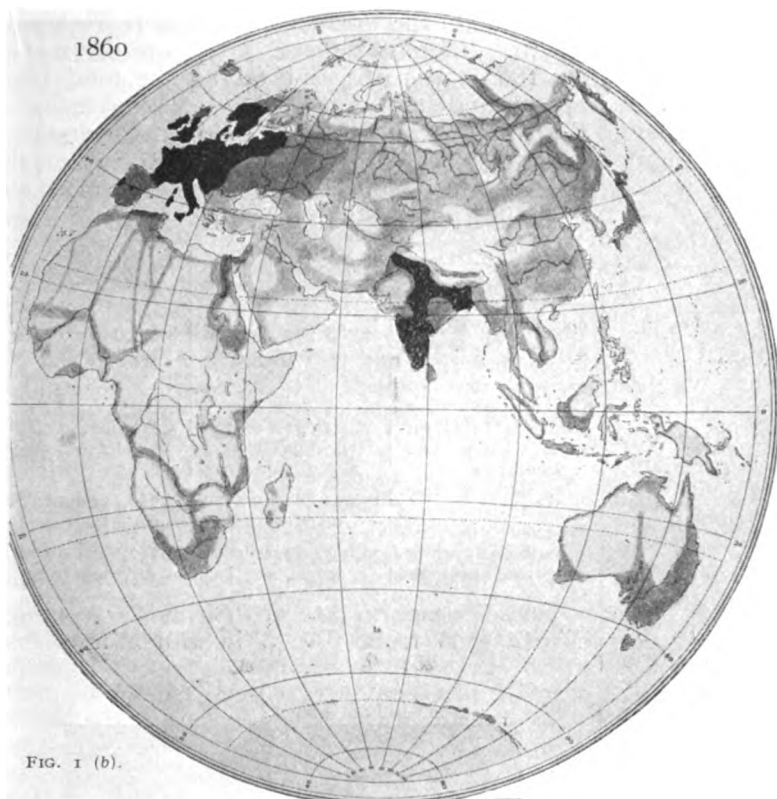




FIG. 1 (b).

Mapped from route traverses and sketches ... 
 Entirely unmapped 

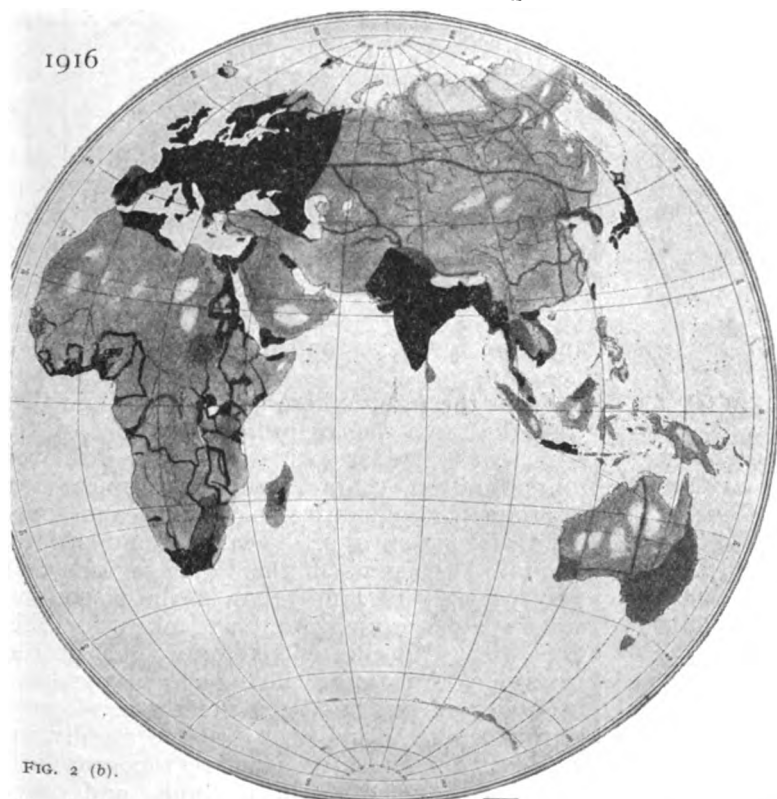




FIG. 2 (b).

Mapped from route traverses and sketches ... 
 Entirely unmapped 

long before this, but the survey was afterwards carried on in England, and, later on, on the six-inch scale in Ireland, so that the northern part of Scotland was not done in 1860. India has been noted for the excellence of its surveys ever since the days of Major Lambton, who started the work in 1804, and Colonel Everest, who succeeded him as head of the surveys after Lambton's death in 1823. As will be seen, in 1860 a considerable extent of India had been mapped from trigonometrical surveys. Even before Lambton's time India had been well ahead of any other country outside Europe with its surveys, which was entirely due to the energy and skill of Major James Rennell, who, as Surveyor-General of Bengal, surveyed the Ganges and Lower Bramaputra rivers, as well as the districts of Bengal, with Behar, between 1763 and 1782.

In the parts of the Eastern Hemisphere that were surveyed and mapped in the second degree of accuracy according to our system—that is, those shown by the next tint—may be included most of the remaining parts of Europe, Egypt, and parts of Algeria near the coast. For the rest such mapping as was done was based upon rough route-sketches, shown by the third tint. In this must be included practically all that was known of the African continent, such as the explorations of Mungo Park, Beke, Livingstone, Speke and Grant, and others, as well as the early exploratory surveys in Central Asia and Australia. The regions that were entirely unsurveyed and unmapped at this time were, as you see, enormous in their extent, and included not only the Polar regions, but vast areas of Central Africa, Asia, and Australia.

Turning to the Western Hemisphere, we find that at this date no triangulation of any

extent had been carried out. The U.S. Coast and Geodetic Survey had made a good start, but their work had been confined to the coast-line or districts near the coast. There had been La Condamine's attempt at measuring an arc of the meridian near Quito, in South America, in 1736, the measurement of the Mason and Dixon line, and their survey of the boundary between Pennsylvania and Maryland, in the latter part of the same century; but none of these resulted in any serious topographical mapping. Such surveys as existed of the interior parts of the United States in 1860, although they varied as regards their merits and degree of dependence, could not be considered as anything but approximate. Some parts of the eastern States are, as you see, shaded with a tint of the second density, but, with this exception, such mapping as had been done either in North or South America cannot be considered of a higher order than route-traversing and sketching, and is tinted accordingly.

Vast areas of Central Asia, and a still larger portion of the interior of Africa, were entirely unmapped in 1860, as was also the case with South America away from the courses of the great rivers, North America, and the Arctic regions. Attempts had been made to penetrate and traverse the desert-like interior of Australia, but to a great extent this region was still entirely unmapped. Several important expeditions had commenced the exploration and mapping of the coast-line of the Antarctic continent, such as that of Captain James Ross, who had penetrated a considerable distance south in the neighbourhood of South Victoria Land, Captain Wilkes, and others, who had sighted land to the west of this region. But, after all, little had been done in the way of surveying and mapping in the Antarctic regions.

Referring now to the 1916 map (Fig. 2), on which the same shades of tints have the same meaning as on the previous map, you will see at once that the parts that are accurately surveyed from a topographical point of view, based upon triangulation or rigorous traverses, have greatly increased in extent, and these now represent, according to a rough estimate I have made, about one-seventh of the total area of the land-surface of the earth, instead of only one-thirtieth, as was the case in 1860. Remarkable progress has also been made with regard to both of the less accurate kinds of surveying and mapping, while the parts that are now entirely unsurveyed and unmapped only amount to about one-seventh instead of a little over one-half, which was roughly the amount in 1860.

I have attempted to form an estimate of the

condition of the world's surveys as represented by the differently tinted areas on the maps for 1860 and 1916; and, taking the total area of the land-surface of the earth, together with the unknown parts of the Arctic and Antarctic regions, which may be either land or water, to be 60,000,000 square miles, I have obtained the following results:—

	1860 Sq. stat. miles	Proportion to whole	1916 Sq. stat. miles	Proportion to whole
1. Mapped from accurate topographical surveys based on triangulation or rigorous traverses	1,957,755	$= 0.0326$ or roughly $\frac{1}{30}$	8,897,238	$= 0.1482$ or roughly $\frac{1}{7}$
2. Mapped from less trustworthy surveys, chiefly non-topographical	2,017,641	$= 0.0336$ or roughly $\frac{1}{30}$	5,178,008	$= 0.0866$ or just over $\frac{1}{12}$
3. Mapped from route traverses and sketches	25,024,360	$= 0.4170$ or roughly $\frac{2}{5}$	37,550,552	$= 0.6258$ or little less than $\frac{2}{3}$
4. Entirely unsurveyed and unmapped	30,997,054	$= 0.5166$ or just over $\frac{1}{2}$	8,350,794	$= 0.1391$ or little less than $\frac{1}{7}$

These proportions can perhaps be more clearly seen from Fig. 3, in which numbers

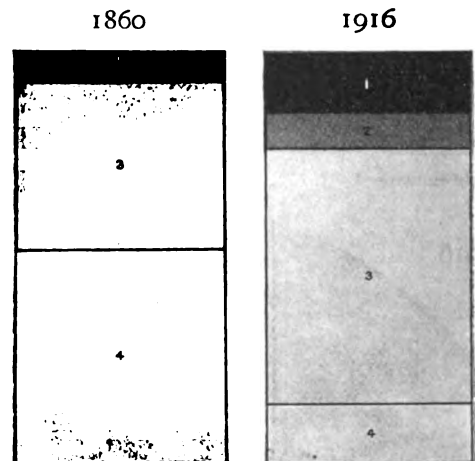


FIG. 3.

and tintings have the same significance as in the maps and table.

From the figures here given it is plain that with the same rate of progress as that of the past sixty years or so it would take just over four hundred years more to complete the accurate trigonometrical surveying and topographical mapping of the earth's land-surface, including the parts of the Polar regions that may possibly be land—that is, the 60,000,000 square miles which we have taken for this total area; but this will certainly not be the case, since the rate at which such surveys have been carried out has been greatly accelerated during recent years, owing to the rapidly increasing demands for accurate topographical maps, improvements in methods, and other causes, so that it will possibly not be half

this time before all the parts of the earth's surface that are likely to be of any use to man as settlements, or capable of his development, are properly surveyed and mapped. There are, of course, regions, such as those near the Poles and in the arid deserts, that are never likely to be accurately triangulated and mapped to any extent, and it would be mere waste of time and money to attempt anything of the kind.

As might be expected, the parts of the earth's land-surface that are accurately surveyed, about one-seventh of the whole, are those inhabited by the most civilised nations and their dominions. The areas so mapped include the European countries (with the exception of some parts of the Balkan States), India, Japan, Algeria, Tunis, Egypt, and other parts of Africa under the dominion of European nations, United States, parts of Canada and Mexico, the international boundaries between some of the South American countries, and very restricted areas of Australasia. These have all regular Government topographical surveys based on accurate triangulation, and are therefore shown in the darkest shade on the map. The parts that are still unsurveyed and unmapped in any sense are, as will be seen, certain remote unexplored regions near the Poles, a few small patches in Central Asia, much of the interior of Arabia, parts of the Sahara and certain other comparatively small areas in Central Africa, a considerable amount of the interior of South America, specially those parts between the great rivers, and certain areas of the interior of Australia. These are shown by the lightest shade on the map, and at the present day represent slightly less than the area that is accurately mapped. Between these two extremes the surveying and mapping varies in merit and degree of trustworthiness from that of a fairly accurate nature, such as land-office plans (which, as a rule, make no pretence at showing topographical features) and the more accurate plane-tabling and compass-traversing, which altogether may be taken as covering about one-twelfth of the earth's land area, to that enormously extensive area only roughly mapped from route traverses of explorers and others, which now constitutes about two-thirds of the whole of the earth's land-surface.

Bacon's War Maps. Europe. (Bacon.) 6d.—This is a very useful political map of the whole of the war areas of Europe. On a scale of sixty-four miles to an inch, and folded within a cover to the size of a small notebook ($7\frac{1}{2}$ in. \times $4\frac{1}{2}$ in.), it is handy for the pocket. Despite the number of political names, the map is clear.

BOOKS IN THE PRIMARY SCHOOL.¹

By J. A. GREEN, M.A.

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IT is a commonplace amongst the many criticisms of the primary school that it is too booky in its atmosphere and methods. In a certain sense this is true; but if a stranger, having heard the charge, were to visit a typical primary school, he might well inquire where those books were which he understood to be so characteristic a feature. In point of fact there is nothing so striking about our schools as their relative booklessness. It is not the surplus of books which the advocate of handwork in the schools complains of when he describes the schools as "booky." He has in mind the unrealities which the school-books stand for. Alongside the doing and the thinking which doing stimulates, he demands a larger place and a new use for books. He wants books to play just such a part in the life of the school as they do in the life of the intelligent citizen for whom they are necessary working tools. He wants the pupils to be taught to read, not as a dissipation, but as an aid to achievement.

Think for a moment of the varied service which books render to us. They answer our questions, they make us "full men," they provide us with intellectual refreshment or they satisfy our æsthetic needs, as the case may be. Of course, it is not all books that do all these things for all of us. The book is for the man and not the man for the book, and the man is the measure of its value for himself. In thinking of books for the school, we tend to forget this twofold value which books have—a value for mankind in general and a value for the individual, two values which need not coincide. "It may be true," says one man, "that Milton's 'Paradise Lost' is a precious literary treasure, but, to be quite frank, it bores me." "This book on 'Rock Gardens,'" says another, "may have no place in what you call literature, but it is the book which has directly and indirectly done more for me than any other I've looked into." Thus it is with books in real life, and the reading of most men who are not prigs is guided by their own needs and tastes, though when the only use for books is to pass the time men are apt to put their literary consciences into the hands of the young men and maidens who hand out books from the libraries. This use of books for mental dissipation has little concern for us here. We shall not (or ought not to) encourage that sort of thing in school.

But is it possible to think of the books of

¹ Paper read before the Educational Science Section of the British Association at Newcastle upon-Tyne, September 6th, 1916.

the primary school as adjuncts of life in the more rational sense? Can we so organise the use of books as to make them minister to needs which the children feel and satisfy those desires, æsthetic and moral, which, as Mr. Clutton-Brock has recently reminded us, are inherent in all men?

Consider the schools as they are. There you will find lesson books and sometimes library books. The former include unhappily not merely text-books and so-called "readers" which were written for school use and are perhaps indispensable, but other books, both prose and poetry, which were not written for school purposes. They have in themselves nothing of the school atmosphere about them. They were not designed for lessons, but for appreciation. Yet they lie alongside the primers of arithmetic and geography, to be used in their turn in much the same spirit and manner as the latter.

Here we are up against the first difficulty in the problem of the place of books in the elementary school. What are we to do for literature in the literary sense if, as I seem to suggest, the poetry book is to be removed from its place among the lesson books? Of course I do not mean that poetry is to be banished from the schools, but I am clear that the first reform we need to make in the use of books is one which depends upon the absolute distinction that should be made between the text-book and the book which was written for appreciation rather than for instruction. Here, perhaps, I might pay a warm tribute to the work of some schoolmasters who have caught the spirit of this distinction and are making an abiding impression upon their fortunate pupils by their treatment of literature. But, having done that, I should like to offer some evidence of the lamentable failure which school literature has been for the most part.

Two or three years ago I made, through the teachers in a number of evening schools in the North of England, an inquiry as to the amount of time spent in reading by their pupils and the sort of thing they read. Replies came from over two hundred boys and girls from fifteen to nineteen years of age. Two things stand out very clearly in their replies, viz. the large amount of time given to reading and the utter frivolity and complete want of purpose which most of it showed; out of 143 boys, only nine read nothing at all or confined their reading to the newspapers; 108 read newspapers, weekly papers of the "Fun and Frolic" type, and stories; the remaining twenty-seven showed some sign of purpose in their reading. An example or two will tell the story more clearly than arithmetical summaries.

(a) "I read two or three papers a week. I

read all the tales in *Chips*. I spent three hours last Friday night to finish reading *Comic Cuts*, *Chips*, *Favourite*. On Monday night I read the *Jester*, and spent an hour on it. I read *Fun and Fiction* on Tuesdays and spend half-an-hour. On Saturday I spend half-an-hour on the *Express*; on Sunday half-an-hour on the *Sunday Chronicle*."

(b) "I read *Gem Library*, *Magnet Library*, *Horner's Weekly*, *Sunday Circle*, *Evening News*, *Tit-Bits*, *Sunday Companion*. I spend about thirty hours [sic] a week in reading the above."

(c) "I am fond of reading the *Star* and *Lotinga's Weekly*. There are many interesting bits in *Horner's*, such as 'How a man kept a wife and family on 15s. a week.'"

(d) "I am fond of reading adventures, a few love tales, and any kind of sport news. I have only two and a half hours a day spare time for reading, only on Saturday, then I spend the time in football in the afternoon and go to the dance at night. Sunday is courting day when I'm not at work."

(e) "My hobby is painting and playing the cornet. Reading is a nice hobby to pass the time away."

Typical of the purposeful reader is this one.

(f) "Newspaper, *Fur and Feather*, books of adventure. I read the newspaper because I like to hear how the Houses of Parliament are going on. I also like to know how George Gray is going on with his marvellous billiard playing. The reason why I read the *Fur and Feather* is because I have a rabbit and some bantam hens. I get a *Fur and Feather* every week; it tells me how to feed them and keep them in good condition."

Another reads the daily papers, of which the *Daily Mirror* is chief, because it tells him the news of the South of England and more about the Royal Family than any other paper he can get.

The returns from the girls tell a similar story to those of the boys who find "the best paper is *Chips*, and like to look at *Weary Willie* and *Tired Tim*," and to read the exciting stories in the *Jester*, such as "Harold Hood" or the "Convict Earl."

If testimony as to the failure of the schools' effort to cultivate a love of literature were wanted, I know none better than the results of this inquiry amongst what were probably the pick of the elementary-school products in the districts concerned. Have we not failed in this matter because we have steeped our literary efforts in the atmosphere of coercive instruction? In a short paper it is not possible to go into any constructive detail, but I may be allowed to make one or two practical suggestions for reform in this connection.

The fact is that the so-called literature lesson should be replaced by reading aloud. Poetry especially should not be read by children, but read to them, over and over again when they are sympathetic to it—and they will be if we choose well and read well—until they are familiar enough with its sound, its pictures, its message to make it a pleasure to them to read it for themselves. The story is less insistent upon the voice for its effects; but can we not leave the story to the out-of-school hours, if we stimulate, suggest, and introduce the right things? There are few boys and girls who do not read some stories, and of course we want to make them critical enough to select the good from the harmful or merely silly stuff which the penny novel offers them. A critical examination of some of these stories would perhaps help the development of selective power. If boys and girls read these things we may as well recognise it and try to show how ridiculously futile most of them are. We might, indeed, use them for exercises in literary criticism. They may thus serve as a useful foil to show off the solid good sense of the better stuff we want them to read.

Reading aloud or reciting is the traditional method of teaching literature to the young, but we have almost lost it in the elementary schools. To recover it should be in my view a leading feature in the reform programme. It has the triple merit of being ancient, effective, and inexpensive. Literature will then occupy that leisure part of school life which you will remember Herbert Spencer assigned it. To put it into such a place is not to lower its dignity or diminish its importance. On the contrary, it is in his periods of leisure that man pays public homage to his gods—usually at once the most important and most dignified of his public and private acts.

But to go back to the general considerations from which we started, there are many books which play a great part in the life of man which are not literature in the æsthetic sense—books of use, informing and directing us when we are in difficulties or when the spirit of inquiry is awakened in us. What sort of introduction to this aspect of the world of books do we give in the primary schools? Except for atlases and dictionaries we may say almost none. Yet it is here that an even more promising field of good work amongst schoolboys offers than in the sphere of literature itself, simply because the book may be brought into immediate contact with life—the business of life shall we call it?—an aspect which the schoolboy understands better than he understands leisure.

How far have we tried to supply schools with books which will attach themselves to the

general environmental interests of the children? How far have we thought of books as throwing light upon and stimulating their purposeful activities? When we have based school life upon doing things, boys and girls will be alive with problems and difficulties and questions which the teacher with an adequate book equipment will use as an introduction to purposeful reading. Of course, this has reference in the main to the time when mechanical difficulties are overcome, though nothing is more helpful to the acquisition of the reading art than the feeling that certain books have something useful to tell, if only we could read them. A boy who is keen to make a model yacht will read with scrupulous care a book describing various yacht forms. Hard words will not stop him. A class which is roughing out on a playground scale the form of a medieval castle will read with avidity a book on typical English castles, and incidentally learn much of the social life of the age of chivalry. Bird-nesting boys will find the literature of the subject helpful, and so discover that some books at any rate have sense in them. Boys who are using their quiet reading time in pursuit of some inquiry which has arisen in their own experience are surely being trained to use the tools current in the form of books.

How to make children go to books with questions: how to make them feel by actual experience the power which the use of books as tools gives to them: how to make them realise, though only dimly, the extent and variety of the world of books and how to teach them its accessibility—these are problems which still await solution in most schools, where reading means sets of readers in greater or less variety chosen without reference to the development of purpose in reading, but at best as offering a way of escape from the realities of the present—a sort of literary kinema show which passes the time pleasantly, unless the teacher forces dictionaries upon the class and turns the reading hour into a hunt for words and meanings with the pious intention of increasing the vocabulary of his class—a pure prostitution of what might be valuable reading time.

The schoolmaster whose great aim is to make his pupils as self-reliant and independent as possible will plan his courses of instruction chiefly with reference to this, and on every hand books will play a great part. He will concern himself largely with raising problems for the pupils themselves to think about and investigate—a course which is as applicable to other school subjects as it is to science.

But to do this sort of thing adequately requires equipment. When one realises the importance of a friendly introduction to the

world of books to the future citizens of this great Empire, is it not surprising that our education authorities should seek to economise in this particular direction? Is it not a sad commentary on our educational system that in spite of the cheapness of books so many homes should be absolutely without them? And since we are for ever extolling the magnitude of the responsibilities which are borne by the citizens of the British Commonwealth, should we spare the small expenditure which will at least help the teacher to put boys and girls into the way of learning for themselves something of the great world they live in and the part their country plays in it? It may be true that the children we are talking about are very young, but in a home well furnished with books ten-year-old children are taking books from the shelves, browsing in some, reading more lengthily in others, and getting an "atmosphere" which never leaves them. Surely every elementary school should be able in time to build up a library of suitable books big enough to fill the walls of at least one of its classrooms, in which children may get straight at books without the intervention of counter, catalogue, and librarian, and so breathe something of that atmosphere of cultivation which a small minority at present get in their homes.

PERSONAL PARAGRAPHS.

MR. G. TOWNSEND WARNER, one of the senior masters of Harrow School, who died on October 23rd, was educated at Harrow and Jesus College, Cambridge. He was senior in the Historical Tripos, Lightfoot scholar in 1888, first Whewell scholar in International Law in 1889, and historical fellow of Jesus College in 1890. In 1891 he became a master at Harrow and master of the Modern School in 1903; in 1904 he obtained a small, and in 1905 a large house. A correspondent writes to the *Times*:—"Mr. Warner wrote, with an eye to the needs of schools, books on history, economics, military and industrial history, deserving the popularity they have won. He published also 'The Writing of English,' a book that, made with delight, best conveys the charm and stimulus of his teaching. . . . But it is as a teacher that most of his friends will remember him, and as a master that his scholars will chiefly regret him. What he touched he illuminated, not, as commonly, with aimless quips and instances, for he taught with a certain exigence, demanding and getting thought and industry; but by his own tireless interest in his work. 'He was the only master,' said one of his pupils,

'for whom I worked with pleasure.' Theories, he had many, but they were embodied in his practice, for he was a doer, not a sayer of the word. The secret of his teaching was the happy mixing in him of such virtues, patience, exactitude, and thoroughness, as are won through the long discipline of the specialist, with that adorable versatility which is the crown of youth."

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THE Rev. E. D. Stone, who died at Radley on September 17th, entered Eton in 1845 as King's Scholar, won the Newcastle prize, and became captain of the school in 1852. He won a scholarship to King's College, Cambridge, and returned to Eton as a master in 1857, where he remained until 1884. He left Eton to start a private school at Stone House, on the North-Foreland. Mr. Stone worked there for eleven years and retired in 1895. As a school-master Mr. Stone exercised wide influence. He had great personal powers as a teacher; outside school work he mixed freely with the boys, was fond of organising amateur theatricals, and produced on one occasion a most entertaining burlesque written by himself when he was a master at Eton.

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MR. J. W. BRADLEY, librarian of the William Salt Archæological Society, Stafford, died on September 21st, aged eighty-six. Mr. Bradley was formerly classical master at Huddersfield College and Richmond School, Yorkshire, where Mr. Asquith was one of his pupils.

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CAPT. E. J. SMITH, Duke of Wellington's Regiment, was killed while leading a bombing party on September 28th, at the age of twenty-five. He was educated at Sexey's School, Blackford, and Durham University, where he graduated in science. He was science master at Nantwich Grammar School, Cheshire, and after a short time returned to Sexey's as senior science master. On the outbreak of the war he joined the Forces and was gazetted second-lieutenant in the West Riding Regiment.

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CAPT. J. G. REID, Worcester Regiment, was killed on September 8th. He obtained a scholarship at Cheltenham College, where he became head of his house, and a member of the football team as well as of the cricket eleven. He also obtained a scholarship at Brasenose College, Oxford. After being a master at Sedbergh for a year, he was appointed to a mastership at Cheltenham College in 1914.

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CAPT. B. S. EVERS, West Yorkshire Regiment, was killed on September 14th, aged

twenty-four. He was educated at Newbury Grammar School and Jesus College, Cambridge, and became a master at the Priory School, Malvern.

* * *

ANOTHER Eton master has been killed. Capt. E. F. Prior, Rifle Brigade, was educated at the late Mr. Mason's school at Rottingdean and at Eton, which he left as captain of the school in 1907. He won a classical scholarship at University College, Oxford. In 1912 he became a master at Eton, and his work in that capacity showed great promise.

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LIEUT. E. H. L. SOUTHWELL, Rifle Brigade, was killed on September 15th. He was educated at Eton and Magdalen College, Oxford. After leaving Oxford, he held a classical mastership at Shrewsbury School, where he endeared himself in a remarkable manner to both masters and boys. At the outbreak of the war he joined the Forces, and had served abroad almost continually since September, 1915.

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CAPT. M. FLETCHER, Royal Munster Fusiliers, was killed on September 9th, aged thirty-one. From St. Edmund's School, Canterbury, he obtained a scholarship at Selwyn College, Cambridge. At the outbreak of the war he was a master at Wakefield Grammar School, but gave up his work in order to join the Public Schools' Battalion of the Royal Fusiliers. In December, 1914, he obtained a commission, and was promoted captain in October, 1915.

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SECOND-LIEUT. A. E. BATHO, Middlesex Regiment, fell on September 17th. He was wounded in some of the fiercest fighting in the earlier stages of the war and invalided home. He was given a commission in the Middlesex Regiment and returned to the Front in January of this year. Mr. Batho was educated at Bancroft's School, Woodford, Essex, and at the outbreak of the war was a master at St. Cuthbert's School, Malvern.

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SECOND-LIEUT. A. G. HODGES, Bedford Regiment, was killed on September 15th. He was educated at Marlborough and St. John's College, Oxford. From 1910 to 1914 he was master at Wanganui Collegiate School, New Zealand. He received a commission in January, 1915, was wounded at Loos, and after six months returned to his regiment. A fellow-officer writes:—"He was loved and admired

by all those with whom he came in contact, officers and men."

* * *

SECOND-LIEUT. R. ROGERS, Rifle Brigade, was killed in action on September 15th. He was educated at Old Ride, Bournemouth, and Malvern College, where he was in the house of the Rev. Henry Foster, the father of the famous cricketers. He took his degree in 1906, and became a schoolmaster, finally settling at Kent House, Eastbourne, in partnership with Mr. Ernest Smith.

* * *

CAPT. J. W. HEDLEY, Lancashire Fusiliers, died on September 12th of wounds received in action five days before. He was educated at Clitheroe School, Merchant Taylors' School, Crosby, and at Brasenose College, Oxford. For some years he was a master at Sandringham School, Southport, and afterwards at Mr. Rendall's, Copthorne, Sussex.

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SECOND-LIEUT. A. J. M. HALL, London Regiment, was killed on September 15th, aged twenty-four. He was educated at Colet House, Rhyl, at King's College School, and at St. John's College, Oxford. He was for a time science master at Emsworth House, and obtained his commission from the Inns of Court O.T.C.

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REV. G. S. ARNOLD-WALLINGER, lance-corporal in the Inns of Court O.T.C., died at the Military Hospital at Aylesbury. Before joining the O.T.C. he was a master at St. George's School, Harpenden.

* * *

CANON SAWYER, headmaster of St. Bees School, has been appointed headmaster of Shrewsbury School; he succeeds the Rev. C. A. Alington, who is going to Eton in succession to Dr. Lyttelton. Mr. Sawyer was educated at Magdalen College School and Queen's College, Oxford. After holding a curacy at Lewisham he became a master at St. Dunstan's College, Catford; on leaving there he went to Highgate School, where he became a housemaster. In 1903 he went to St. Bees as headmaster, and has met with considerable success.

* * *

MR. A. A. SOMERVILLE, whose work for teachers in connection with pensions and the register is too well known to require comment, is giving up his house at Eton; he has been a housemaster for twenty-five years. He is to retain his mastership, and will remain head of the Army class.

ONLOOKER.

THE IMPROVEMENT OF ELEMENTARY EDUCATION.¹

AN almost contemptuous indifference to all connected with education has been a marked defect of modern English civilisation. Our attitude towards education has been apathy on the part of the poor and suspicion on the part of the rich. The rude shocks of war, the blow of discovering our impotence in certain forms of industrial production, have demonstrated that educational development has kept pace neither with commercial nor with political needs. In public and private discussion, in Press and in Parliament, are signs of the recognition of the fact that a renaissance of education is the most vital of our Empire's needs. We welcome the appointment by the Government of committees of inquiry as a preliminary to educational reorganisation. We welcome the presence of representatives of the teaching profession on those committees. We deeply regret, however, the failure to utilise the opportunity, afforded by the appointment of a new President of the Board of Education, to impress upon somewhat sluggish public opinion the importance of that position, by a mere stop-gap appointment.

We have had confused and unsystematised educational institutions, largely without connection or logical sequence, arranged, if at all, rather in accordance with class prejudice and caste exclusiveness than for national utility. Our primary schools are almost entirely attended by the children of the workers; foundation and grammar schools, and even the municipal secondary schools, have been developed upon such lines as to be almost the exclusive preserve of the middle classes; the great public schools and the older universities, with their rich endowments and priceless traditions and associations, have been skilfully reserved for the relatives of the aristocrat and the plutocrat. Such an arrangement can no longer be tolerated.

The system must be coherent. The work of the secondary and technical schools should be the natural outgrowth of the training afforded by the primary schools; this to be logically continued and extended in the universities and higher technological institutions. There should be no such snobbish anomalies as the kindergarten classes and preparatory departments in our present secondary schools. The only passport from stage to stage should be the proved intellectual capacity of the students, not the social position or purse potentiality of the parent. Dullards and sluggards from any class should no longer be tolerated. Fees of all kinds and for every stage of national education must be abolished. Where the only bar to further education is poverty, adequate maintenance grants should be given, not as charity, but as the most profitable form of Imperial investment. We must rid ourselves for ever of the idea that popular education means the conferring a favour upon someone else's child. It is the wise development of our national estate. The Empire must realise that the strength of a nation is in exact proportion to the mental and spiritual wealth of its citizens. "That country is the richest which

nourishes the greatest number of noble and happy human beings," says Ruskin.

"Huxley's ladder" from the primary school to the university must no longer be the limit of the nation's ideals. There must be instead a broad highway with open side-paths to highly efficient specialised training for industry and commerce. Parental poverty should be no brake to progress along these national educational paths. Enlightened democracy asks not for equality of possessions, but insistently demands equality of opportunity, a fair chance for the son of the worker "to break his birth's invidious bar."

The wants of the Empire will demand, in constantly increasing numbers, citizens physically sound, mentally alert, with fully developed intellectual capacities. No single class or group of classes can supply its needs. All must be allowed to contribute to the full. Only by utilising to the utmost that largely unrecognised, and almost entirely undeveloped, vein of natural ability and capacity for handling great things which undoubtedly exists among the so-called lower classes will the Empire steer clear of disaster in the storm and struggle which lie before us. The true patriot, from the heretofore privileged, will cry with Whitman:—

“Unscrew the locks from the doors!

Unscrew the doors themselves from the jambs!

By God! I will accept nothing which all cannot have their counterpart of on the same terms.”

There are not wanting signs that in new schemes of reform the claims of the primary schools may be overlooked. A well-known member of the House of Peers gives it as his opinion that "in England, during past years, primary education has been overdone, while secondary education has been under-done." Certainly, if "by their fruits ye shall know them," the oft-maligned primary schools have no need to be ashamed of their product. No class in the community has stood the fiery test of war better. In altruistic self-sacrifice, in morals, in initiative, in capacity, in adaptability, in courage, they have demonstrated to the full that the nation has received interest at usurer's rates for the money it has grudgingly spent upon its elementary schools. But a little more of the financial lubricant to grease the machinery will enable them to show that that which they have done is but the earnest of the things that they shall do. Primary education is the foundation upon which all higher education must rest. To spend money and thought on the superstructure and neglect the foundation is the height of architectural folly. Primary schools are the universities of the workers; for many years to come they will supply the only educational training of the great masses of the people. They deal with child-life at its most plastic and impressionable period. For these reasons primary education should be the first object of reforming zeal. The State cannot afford to allow the great mass of its potential citizens while in its care to have anything but the best environment that money can purchase or the wit of man devise.

The class teachers of the country, brought daily into the closest personal contact with the future citizens of the Empire, faced hourly with the defects of the existing conditions, are of all people best qualified to indicate the measures of reform likely to produce the

¹ From the president's address to the National Federation of Class Teachers, delivered by Mr. F. Barraclough at Stoke-on-Trent on September 23rd, 1916.

greatest immediate effect. Without hesitation we declare that the essential reform, the change upon which all progress really hinges, is a radical reduction in the size of the class. Present regulations allow of a maximum number of sixty children being entrusted to an individual teacher, and the officials of the local administrative education authorities have for years been almost entirely engaged in shifts and contrivances whereby the maximum should in practice become the almost universal average. Every experienced class teacher will declare with deepest conviction that there never has existed, there never will exist, the genius who can really educate the individual members of a class of anything approaching that size. To attempt it is but to emulate the labours of Sisyphus. Endowed with the patience of Job, the wisdom of Solomon, one would inevitably fail. It is relatively easy, for one accustomed to the task, to gang drive such a class, to lay down a certain amount of empirical knowledge in intellectual cold storage to be mechanically reproduced when desired, but to train and develop the intellectual faculties of its individual components is an absolute impossibility.

The smaller class will involve the provision of many new buildings, and we know of no more fitting method of utilising that temporary surplussage of labour which the quidnuncs prophesy after the war than in their erection. May we plead that in their creation the evil traditions of school architects may be abandoned and that they may be built in accordance with hygienic principles and common sense? There never has existed any real reason why schools should adjoin a busy thoroughfare, where land is scarce and costly, and where noise and dust make adoption of the cult of the open window impossible. We should like to demand that they should be built "by verdant glades and meadows pied with daisies," but if that is too much, may we at least ask that they should overlook a park, recreation ground, or public open space, and that such attention should be paid to ventilation that they should possess many of the virtues of the open-air school? Then we should avoid the Gilbertian position of the teacher expatiating on the virtues of fresh air in an atmosphere like aerial sewage. Though simple in detail, they should be artistic, both internally and externally, and capable of being maintained models of cleanliness, that lessons on that subject need no longer be given in rooms where neither floors, walls, nor apparatus can be touched without palpable signs of their grimy condition.

Smaller classes also involve more teachers. How are these to be obtained, when already the demand largely exceeds the supply? Year by year the number of entrants to the profession has fallen, not gradually, but with an alarming slump. In order to avoid any appearance of taking advantage of abnormal circumstances, we will confine ourselves to pre-war figures. In 1909 the Board of Education, it is authoritatively stated, estimated that the number of entrants who should come from the country as bursars and pupil-teachers was 14,000. According to the Blue-book the number in the year 1913-14 was 5,313, or 38 per cent. of those required. In 1908-9 the number of bursars and pupil-teachers was 8,704. The applications for

bursarships under the Leeds Education Committee in 1907 was 277. In 1914 they had fallen to 49, and of those only 44 were found suitable for appointment. In the same period the number of entrants for the Preliminary Certificate Examination has dropped from 21,223 to 2,724 in Part I., and from 15,207 to 2,610 in Part II. Meanwhile the percentage of failures in the Final Certificate Examination has risen from 37.5 to 70.4. The Board of Education Report for 1910-11 says:—"The increase in the percentage of failures in each year has been due partly to a gradual raising of the standard of the examination, and partly to the deterioration in the average quality of the candidates entering for the profession."

The country is face to face with an alarming prospective dearth of teachers. The sole reason is that teaching is financially unattractive. It is being widely recognised that "teaching is the noblest of professions, but the sorriest of trades." Returns issued in 1913 state that the average salaries of certificated class teachers were:—In England, men, £128 5s., women, £93 6s.; in Wales, men, £115 8s., women, £87 4s. Class teaching is all that 90 per cent. of the male and the great majority of the female entrants can ever attain. The parent who realises this is reluctant to undertake the lengthy and somewhat expensive preparation, with the prospect of so scanty a reward. Bribes, blandishments, and bursaries have proved futile; the portals have been gilded in vain. As a prominent education secretary pertinently states:—"The only way to ensure an adequate and permanent supply of candidates is to improve the prospects of the profession. The attractions of business life and the opportunities of higher pay in a commercial career compete against the profession of teaching."

The profession has no attraction for men. At the present time throughout England and Wales there are not more than 1,450 boys in training. City boys seem to shun the profession of teaching like the plague. In the whole of the London County Education Committee's area only twenty-five boys were recruited last year; in Leeds only fourteen males applied for appointment as bursars. The contrast with only a decade ago is alarming, especially considering the conditions arising from the war. Within a couple of decades the male class teacher seems likely to become as extinct as the dodo. No greater misfortune could threaten the rising manhood of the nation. Adaptable as woman has shown herself in our emergencies, versatile as are her powers, it is impossible for a woman to train a boy to become a man. To express a merely personal opinion, co-education above the age of nine has proved a lamentable failure. Above that age boys must, for the full development of their powers, be taught by men, and girls should also similarly be trained by women.

During the war period the position of the teacher has become worse, both absolutely and relatively. Since the commencement of hostilities the cost of the essentials of life has increased with alarming rapidity. It has been authoritatively stated that the purchasing power of the sovereign has fallen to 11s. 2d. The real wages of all classes of teachers have been thus correspondingly reduced. The average of the men class

teachers of £128, for example, is now only worth about £72. In the lower grades of the service salaries are insufficient to maintain mere physical efficiency. The lowering of the income-tax limit has caused its exactions to fall with cruel severity upon the slender purses of even the better-paid members of the class-teacher grade.

Increased rates of pay, we would repeat even to the verge of wearisome reiteration, is the way, the only way, to fill up the depleted ranks of the qualified teaching profession. We have been content to ask in the provinces for a maximum salary of £200 for men and £160 for women class teachers, in both cases to be reached only after more than a dozen years of satisfactory service. No provincial authority has, up to the present, seen the wisdom of acceding to our very moderate request.

The position of the Board of Education on this question is utterly untenable. Speaking in the House of Commons on June 6th, 1912, the Right Hon. J. A. Pease, then Minister for Education, defined that position in these words:—"Obviously an increase of salaries is the best way of attracting more teachers into the profession. That, however, does not rest with the Board of Education, so long as the schools are efficiently carried on, because the payment of the salaries and the arrangement of the salaries rest entirely with the local education authority." The Board should no longer be allowed to wash its hands of its responsibilities in this weak and pusillanimous fashion. The Board is nationally responsible for the efficiency of education. Efficiency is impossible without a full complement of able, well-qualified, and reasonably contented teachers. If the local authorities have failed to secure this, it is the manifest duty of the Board to bring pressure to bear upon them and force them to apply the only remedy with any possible chance of success, or to take the payment of teachers out of their hands. The latter course would have many advantages. It would do something to alleviate the present anomalous incidence of educational rating. It would remove the salaries of teachers from the influence of the Englishman who, as Lord Crewe puts it, pays his taxes with sorrow, but his rates in anger. Primary education rests eventually upon the personality of the teacher, and unless the Board secures an adequate supply of fit and proper persons all schemes of improvement can only end in unutterable failure.

If the full interest from educational expenditure is to be reaped, the present low age at which pupils leave the primary schools must be considerably raised. Primary education can aim at little more than developing the intellectual faculties and placing the keys of knowledge in the hands of the rising generation. The faculties atrophy and the keys rust in disuse. Much of the nation's past expenditure on education has been wasted because it has made no real and effective arrangements for the further education of the adolescent. We are strongly tempted to urge the raising of the school age to sixteen, but the impossibility of providing either the necessary buildings or effective staff forbids that as an immediate measure.

As a practical immediate step can we not begin by being honest with ourselves? The statutory leaving

age is fourteen. Cunningly devised exemptions allow many, probably the majority, of our children to leave before that age. More than 80 per cent. of the children of the city from which I come leave at the age of thirteen, which is regarded by the parents as the normal leaving age. The secretary states that last year 78 per cent. did not continue their studies at a secondary, day preparatory, or technical evening school. The declaration of peace should synchronise with the establishment of a universal leaving age of fourteen, to which there should be no exceptions. At intervals of not more than a year or two the minimum legal labour age should be raised to fifteen and then to sixteen. The conditions for children above thirteen should approximate to those already demanded for secondary schools. Classes should not exceed thirty, and they should have specially qualified teachers. Much time must be devoted to practical work, in which preliminary training may be given for research, by individual experiment, observation, and inference. For two years beyond school age employers should be compelled to allow attendance in working hours for not fewer than three half-days per week at trade continuation schools. For these there must be a separate teaching staff. The force of tired teachers attempting to train worn-out students must cease. Though these schools may have a special bias, the humanities and pure science, and even economics, must not be neglected. There is more than a little danger that after the war our education may become too materialistic, too much concerned with livelihood and not with living. The warning of Ruskin is timely:—"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." Continuation schools must strive after culture; certainly not of the German type. England has nothing to learn in education from the Hun, except what to avoid. The culture to be sought must be that defined by the apostle of English culture:—"The love of our neighbours, the impulse towards action, help, and beneficence, the desire for removing human error, clearing human confusion, and diminishing human misery, the noble aspiration to leave the world better and happier than we found it."

In education lies the hope of the future. To-day an urgent need imposes itself on society—the reconstruction of methods in education and instruction, and he who fights for this cause fights for human regeneration. An eruption of unprecedented violence has sapped the foundations of our social system. Our boasted civilisation lies in ruins. A retrospect of the immediate past gives rise to feelings almost of despair. The child alone brings hope and forward-looking thoughts. In our plans for the construction of a better, saner world, "Wisdom doth live with children round her knees." The child is the mainspring of our thoughts, the inspiration of our faith.

"The child is, was, and still shall be
The world's deliverer; in his heart the springs
Of our salvation ever rise, and we
Mount upon his innocency as on wings."

ITEMS OF INTEREST.

GENERAL.

It was announced by the President of the Board of Education in the House of Commons on July 18th last (THE SCHOOL WORLD, August, p. 303) that in addition to three committees of experts to investigate different educational questions, a fourth committee was to be appointed which would be a Reviewing Committee. Mr. Bonar Law stated in the House on October 10th that the Reviewing Committee, which will be a sub-committee of the Prime Minister's Reconstruction Committee, has for its terms of reference:—"To consider the system of education as a whole; to review and formulate from that point of view proposals for developing it, particularly in directions indicated as desirable or necessary by experience gained during the war, and with special reference to:—(a) Proposals prepared before the war for the development of the national system of education; (b) the memoranda already submitted by the Education Departments for the consideration of the Reconstruction Committee; (c) any proposals submitted hereafter from the departments, or from special committees, or from other responsible organisations; and to recommend from time to time such action, whether by way of legislation or otherwise, as may be practicable."

THE annual meeting of the Headmasters' Conference will be held at Rugby School on Thursday and Friday, December 21st and 22nd.

MR. H. G. NAGEL and Mr. A. D. Hall, F.R.S., have been appointed members of the Government committee which is considering the teaching of science in secondary schools and universities, and Miss M. A. Gilliland a member of the committee considering the question of the teaching of modern languages.

It may well be counted unto the German military authorities for righteousness that they have not prevented the formation of the Ruhleben Camp School, of which a prospectus of the work for the present term has reached us. The school is managed by a general committee, and there are three permanent sub-committees. The prospectus states that in most subjects the tuition provided by the school ranges from that required by absolute beginners to that required by advanced university students. Prisoners may study the following languages—English, German, Celtic, French, Spanish, Russian, Dutch, Danish, Portuguese, and Italian. As indicative of the teaching strength of the camp we may say there are thirty-nine teachers of French, twelve of Italian, fifteen of engineering, nineteen of nautical subjects, and seventeen of commercial subjects. We are impressed by the provision made, too, for the study of science; not only are lectures arranged, but laboratories have been equipped for practical work in biology, physics, and chemistry. Students may carry their study of mathematics so far as the infinitesimal calculus and differential equations. We observe also that sufficient students are as easily forthcoming as teachers; there were last term 284 taking French, 106 studying nautical subjects, and 149 taking up commercial studies. Altogether the school is very much alive, and we rejoice that the

prisoners are sufficiently full of hope for the future to take this method of relieving the tedium and discomfort of prison camp life.

THE newly formed Committee for the Management of the British Prisoners of War Book Scheme, a war charity hitherto carried on by Mr. A. T. Davies at the offices of the Board of Education, but now registered under the War Charities Act, 1916, has elected the following officers:—Chairman, Mr. A. T. Davies (Board of Education); treasurer, Rear-Admiral J. F. Parry, C.B., hydrographer to the Navy. The appointment of a secretary has been held over. A gratifying report has been received from the principal examiner to the Board of Trade (Marine Department) on the result of the recent examinations held at the camp at Groningen, in Holland. Nineteen candidates presented themselves for examination for the second mate and other certificates, and all passed in a highly creditable manner a searching examination, a fact which, the principal examiner states, bore eloquent testimony to the value of the opportunities for self-improvement afforded at the camp. As a result, further classes are now being formed at Groningen for candidates for certificates of competency in the Mercantile Marine. Evidence is also coming to hand from camps so far distant as Asia Minor of considerable development in the organisation of educational work among the men interned there. From these camps a continuous stream of applications for books for serious study has been reported to the committee, who express the hope that the public will continue, by offers of suitable books (new or second-hand), to support a war charity the need for which is daily becoming more and more evident, and the machinery of which is being increasingly taken advantage of by the friends and relatives of prisoners in all parts of the British Empire. Further particulars respecting this war charity and its work can be obtained on application to Mr. A. T. Davies, at the Board of Education, Whitehall, London, S.W. All communications should have the words, "Prisoners of War," written in the left-hand corner of the envelope.

THE trustees of the Gilchrist Educational Trust announce that in February next they will proceed to the election of a candidate for the studentship in geography (£80), founded for the Improvement of the Teaching of Geography, by giving an opportunity of further geographical study to the teacher who seems likely to make the best use of such opportunity. All applications must be made before January 25th, 1917, to Prof. Lyde, at the University of London, University College, Gower Street, London, W.C.

LORD HALDANE on October 10th gave the first of a series of lectures dealing with after-war problems arranged by the Joint Committee of the University of Birmingham and the Workers' Educational Association. He took as his subject "National Educational Policy." If the British people are keen, he said, we can make ourselves the most tremendous nation in the world, because we have natural aptitude. What we want is training, and it is the mental training of the future generation that is going to count. When peace comes we shall hear no more in Germany about 16-in. guns, but a great deal about continuation schools.

The Germans are training up a generation of skilled workmen with whom we cannot compete. We must take care to train the children of our working classes in at least as good a way as the Germans have been able to train theirs. The German system is a class system. If you are born a worker there you remain a worker. If you are born a Junker you remain a Junker. It is a bad system and has led to this war. We will have nothing to do with it. We want the barriers of class broken down. If we care enough, Lord Haldane insisted, educational developments and reforms can be forced through. The State will find the money, for unless it is spent the nation will drop out in the race.

WE are glad that the address delivered at the end of last term by Mr. Cary Gilson, headmaster of King Edward's School, Birmingham, to the assembled pupils, parents, and visitors has found its way into print. Besides being in a general way a model of what such an address should be, it was in its details singularly well timed. The power of education for good or ill has, as he says, been demonstrated in the case of Germany, for "this world-wide disaster and the piteous, heartrending tragedies of Belgium and Serbia, of Armenia and Poland, were conceived in the universities and schools of Germany." He would have us learn from the Germans their admirable power of patient, hard work, "but from Germanising our educational methods or ideals, Heaven defend us!" He admits our weakness, notwithstanding recent progress, in the teaching of modern languages, and in our treatment of our own incomparable language and literature. Most of our other deficiencies are, he thinks, connected with the thorny question of specialisation. He points out that most of the talk about "disestablishing the classics" is out of date, and fits only the curriculum of Eton and Winchester half a century ago. It is, as he says, "absurd to suppose, what many writers to the newspapers apparently do suppose, that the masters in a school like King Edward's spend most of their time in driving unwilling little boys to profound but useless studies, and devoting to the neglect of science the little time that can be spared from the acquisition of Latin and Greek."

WHEN Capt. Oates, with hands and feet grievously frost-bitten, left Capt. Scott and his comrades and walked deliberately away from the tent to be engulfed in the blizzard, he added one more to the immortal deeds of heroism which are the world's heritage from the past. Fittingly enough, the story of this deed, told as a part of the great tragedy of the Scott expedition, is being used to encourage and embolden our men in France. Mr. H. G. Ponting has lent a set of his films of the expedition to be shown regularly to the Army "somewhere in France," and the massed audience of soldiers is subdued as Oates's story is unfolded. Mr. Ponting has, consequently, revived his exhibitions of the films in order that he may do his duty to his great leader and his loyal comrades by keeping green the memory of their heroic courage. Many new films and old favourites are being shown twice daily at the Philharmonic Hall in London. Educationally these films represent the best of which

the kinematographic camera is capable. Nine hours' patient endeavour yielded a picture of the skua gull hatching out its egg; equally painstaking efforts have obtained other important results, such as the demonstration that the skua gull steals penguin eggs, or that the seal uses his teeth to carve for himself a channel by which he may, the more easily, heave his cumbersome carcass on to the ice.

IN our last issue we printed a memorandum, including a number of resolutions, issued by a conference representing the Classical, English, Geographical, Historical, and Modern Language Associations, in which the representatives of the mathematical and natural sciences were invited to make a statement with regard to those studies. The committee of the Association of Public School Science Masters, in reply, has expressed the view that natural science in education should not displace the "humanistic" studies, but should be complementary to them. In this capacity natural science meets two needs in particular:—(1) *Search for Truth.*—Imaginative power indicates new fields in which further knowledge of truth may be revealed; its subsequent establishment depends on accurate observation, with constant recourse to Nature for confirmation. The one aim of natural science is, in fact, the search for truth based on evidence rather than on authority. Hence the study of the subject implies accurate observation and description, and fosters a love of truth. The special value of natural science in the training of mind and character lies in the fact that the history of the subject is a plain record of the search for truth for its own sake. (2) *Utility.*—There are certain facts and ideas in the world of natural science with which it is essential that every educated man should be familiar. A knowledge of these facts assists men (a) to understand how the forces of Nature may be employed for the benefit of mankind; (b) to appreciate the sequence of cause and effect in governing their own lives; and (c) to see things as they really are and not to distort them into what they may wish them to be. It is the business of natural science in education to bring this knowledge within the range of all.

DR. M. E. SADLER contributes to the *School Guardian* for September the first of a series of articles on "The Government and Education." Three questions of capital importance—national service, education, and the housing of the poor, which lie at the foundations of our civic life—need such a measure of reconstruction that they cannot be dealt with adequately by the methods of party politics. Each of the three fundamental questions demands a double sacrifice, a sacrifice both of immediate material interests and of ingrained habits of thought and life. The three problems are not disconnected; without healthy bodies education cannot do its perfect work. The experience of the war has demonstrated the sureness of the moral instinct of the English people, as well as what may be called its intellectual incuria. Edison, after a visit to Europe, decided that the English is the highest standard of integrity in the world. In England our obtuseness to intellectual difficulties has been a protection against the insidious attacks of the moral

scepticism which has arisen as a disease on the continent of Europe. The intellectual achievement of Germany within recent years has set a new fashion; and the war imposes a paramount duty upon England to quicken the intellectual interests of our middle and upper-middle classes. We need a new intellectual alertness, disciplined by systematic training and self-training.

THE twentieth annual conference of the Parents' National Educational Union is partially reported in the October issue of the *Parents' Review*. Bishop Boyd Carpenter referred to the importance of character in "The Making of To-morrow"; a span of forty years is frequently referred to in the Bible, and all the references seem to imply that it takes a generation to modify the conditions on which the destinies of a nation depend. From 1870 to 1916 is little more than forty years, and while the German race has deteriorated because it secured material benefits from its early triumph, the French race has grown great with a strong moral force which is going to win the war. The value of any educational changes which may arise will, therefore, depend on their effect upon the character of our race. M. Emile Cammaerts gave many instances which went to show that before the war Frenchmen did not know England, we did not know France, and neither French nor English knew Germany. "If we had known Germany as we ought to have known her, there would have been 500,000 in Belgium and 1,000,000 in England ready; we should have been prepared, and the war might not have taken place at all." Hence the necessity for an international education not only for children, but for adults; such an education is difficult, but it is vital.

VOCATIONAL training was advocated as a remedy for the decline in apprenticeship in the tailoring trades by Mr. F. A. Stacey in a paper read before the twenty-eighth annual general meeting of the National Federation of Merchant Tailors, held at Liverpool on September 14th. The paper is printed in the *Sartorial Gazette* for October. In the tailoring trades apprenticeship is almost impossible on account of the organisation of team work in the workshops, since boys can soon become wage-earners on sections of garment making. Evening classes have been condemned, and vocational training in day trade schools provides the only solution for securing a sufficient supply of skilled labour. Local education authorities already have the power to establish day trade schools, and to apply local rates to maintain such schools and provide scholarships with maintenance grants for the students. It therefore depends upon the trade concerned to take the initiative and to prepare a scheme on partially self-supporting lines. A successful day school of the desired type has been established under the auspices of the Worshipful Company of Leather-sellers, in co-operation with the London County Council and the Borough Polytechnic Institute. Nearly all the national customs and ideals are now in the melting-pot, and it is for each trade and industry to consider earnestly the new situation and to endeavour to secure that a policy is formulated which will ensure its

stability and promote its well-being, and contribute to the prosperity of the nation in the days which are to come.

At the meeting of the British Association held at Newcastle-upon-Tyne in September last, a committee of the Section of Educational Science was appointed to consider and report upon the method and substance of science teaching in secondary schools, with particular reference to its essential place in a general education. The committee, of which the secretary is Dr. E. H. Tripp, Bedford Modern School, consists almost entirely of men and women engaged in teaching, and therefore familiar with existing conditions and practical possibilities of scientific instruction, both as regards laboratory work and descriptive lessons. Believing that examinations and prescribed syllabuses have a deadening influence upon science teaching, the committee adopted the following resolution at a meeting held on October 18th:—"That in order to secure freedom of action for teachers of science in schools, and to prevent the instruction from becoming stereotyped, it is undesirable for any external authority to prescribe a detailed syllabus in science for use in schools, whether intended as the basis of examinations or otherwise."

RECENTLY comment was made in these columns upon the apparent failure of the direct method of teaching foreign languages as applied in schools in India. The *Educational Review* (Madras) for August contains an analysis of the results of university entrance and intermediate examinations in Madras during recent years. The data are averaged in quinquennia, and the last quinquennium (1911-15) is the period during which the direct method, as well as other changes in teaching method, has been on trial. Compared with preceding periods, it is clear that failures in English at the examinations previously specified have proportionately increased, although the proportion of failures in the examination as a whole has remained roughly constant.

"THE Development of the American Arithmetic" is the title of a study contributed by Mr. D. E. Smith, of the Teachers' College, Columbia University, to the *New York Educational Review* for September. Arithmetic in America has progressed by three stages: the first stage, up to A.D. 1775, was a period of mechanism; the teacher had a book, and the pupil solved the problem as directed and copied the solution into an exercise book, and there were no method, no discipline, no class instruction. The second stage lasted for a century or more, and was characterised by the idea that the child should think. The books became disciplinary treatises, and attempted to compel the child to reason numerically; the subject-matter of the problem was largely a matter of little moment, although agricultural data began to appear side by side with those relating to commerce. The third stage is the child-study stage; experiment is made to discover what the child of a given age can do, what he wishes to do, and, finally, what he needs to do. As a result some teachers see nothing in education but standardised tests, others nothing but play, and others only

immediate utility. From the progress which has been achieved it seems clear that logic shall give place to psychology, that formal definitions shall be minimised, that rules shall play a minor part, that the puzzle shall disappear, and that the subject-matter shall fall within the child's mental grasp.

THE president of Gerard College, Philadelphia, read a paper last July to the National Education Association of America on the subject, "What High-School Studies are of Most Worth?" and it is published in *School and Society* for August 26th. The highest ideal for American education is that schools should train men to enter effectively into the purposes and discharge the responsibilities which the present age presents. Education not only prepares for life; it is life. High schools should train for an intelligent, economic, and social citizenship. The schools should teach every person to believe in his calling, to regard it as a worthy occupation, and to be happy in it. High-school studies of most worth to the future business man and man of affairs are the studies which liberalise, dignify, and exalt the occupation he is to follow. Industrial and commercial education should establish what may be called a professional attitude on the part of those who are engaged in these callings. Education should demonstrate that all necessary work is honourable. Modern economic life calls for a highly skilled vocational education, but there remains the necessity for training in the wise and safe use of leisure. A regrettable condition in our present education is the belief that a certain amount of knowledge of a peculiar sort makes a man learned; there is too much quantity in education; we have forgotten the older and more correct notion that education is power.

THE same thought is expressed somewhat differently in the *Times Educational Supplement* for October 12th in an article headed "Business and Education." The London trader gets not the best, the second-best, or the third-best of the secondary-school pupils of London, for the reason that education makes it possible for a man or a woman to get something out of life in spite of the most laborious, monotonous, and generally uninteresting occupation. What business men ought to be demanding is not that children should be taught exactly the things which they want done in their offices, shops, and warehouses, but that they should be taught as much as possible of what will enable them to find their work tolerable, because they know that they have souls of their own. If the business men want the best of the youth of the country they must ask themselves seriously why they have not got it now, and what they must do to get it. They will certainly not get it merely by demanding that more commercial subjects should be taught in the schools. The plain fact is that they do not attract into their service those whom they ought to attract, and no amount of tinkering with a commercial curriculum will enable them to do it.

AN article, "The Junior College and the Universities," in *School and Society* for September 2nd last, foreshadows the establishment of a new type of educational institution in the United States. The pupil who

has just terminated his secondary- or high-school career has not had a complete and satisfactory preparation for the increasingly complex activities of modern life, nor has he attained a point where he can wisely choose a professional career. Experience shows that a definite stage, marked by the fulfilment of these necessities, is reached by the undergraduate at the university before he has completed his university course. The junior college is designed to take the place of these early formative years at the university, to reach a higher proportion of students by giving a finish to the secondary education at a less cost than four years spent at the university. Experiments have been made during the past thirty-five years to give effect to the idea just described, and the article summarises the opinions of those who have made the experiments. Unanimous approval is bestowed upon the principle underlying the junior college, which will enable the universities to raise the standard of their work by freeing them from a large number of immature students for which the junior college would provide an adequate education. Junior colleges would solve the difficulty in Welsh education, for example, of the comparative inaccessibility of Cardiff, Bangor, and Aberystwyth.

SCOTTISH.

PRINCIPAL SIR GEORGE ADAM SMITH, speaking at a public meeting in Kirkwall, Orkney, on the subject of education, said that the two facts in his schooldays that stood out most prominently in his recollection were the discipline of his home and the personality of his teachers. At the present moment the nation is laying on the teacher a burden heavier than he can bear by imputing to him defects of discipline and training which are in reality the results of the home training, or want of training. The foundation of the discipline of the school must be laid in the home, or it will never be well laid, and when people complain of the school, the teachers, and the educational system, they are often merely passing censure on their own training of their children. In regard to the teacher, the learned principal said that next to his parents he owed most to his teachers. The personality of the teacher is the true pivot of education, and if that be sound it matters little what is the character of the system which rests on it. Yet in Scotland the financial position of the teacher is a scandal to the whole nation, and a grave peril to the highest interests of the rising generation.

LORD SHAW, who took such an active interest in education when he was Lord Advocate for Scotland, delivered an address to the Educational Institute in Aberdeen on "Future Educational Problems." In the course of his remarks he said that education had abundantly justified itself during the war. Military experts had declared that an educated man would make as much progress from the military point of view in three months as an illiterate in nine months. A great authority had told him that the product of the public schools had done magnificently as regards both intelligence and spirit. Referring to the question of industrial and scientific research, Lord Shaw said that Sir William McCormick's report on this subject was

an epoch-making document in education. In this connection, Lord Shaw paid a high compliment to the great work done by the Royal Technical College, Glasgow. Had the things done there been done in Germany they would have been lauded to the skies by every educationist in England, but, being a Scottish affair, it passed quite unnoticed by their friends in the South.

WHEN the war began in 1914 the various associations of teachers, with scarcely a dissentient voice, passed self-denying ordinances binding themselves not to press for special increases of salary during the war. Circumstances have now compelled them to revise this decision. The great increase in the cost of living is the chief determining factor, but this teachers would have been prepared to endure to the end had it not been for the failure of the Government to take any effective steps to restrict the cost of foodstuffs. Further, the Government, by its actions, has seemed to say, "It is impossible to restrict prices. The proper course is to give corresponding increase of wages." And so it has granted a war bonus of 4s. per week to all its Civil Servants earning less than £150 a year. The Government Committee on the Cost of Food also seems to have given up the task of checking the rise in prices, and winds up its report by a strong appeal to employers to raise the wages of their lower-paid employees, especially women. With these examples before them, it is idle to expect teachers to stand by with folded hands making no effort to improve their now hard lot.

A CIRCULAR has just been issued by the Scotch Education Department regulating the payment of grants for the medical treatment of necessitous school children for the year ending December, 1917. The basis of payment will be the approved expenditure of the local authority during the year. The proposed scheme of treatment, together with a detailed estimate of the cost, should be in the hands of the Department by November 1st, 1916. Where a local authority proposes to provide special premises for the purpose of medical treatment the Department will be prepared to approve such expenditure, provided it can be shown that the number of pupils likely to be affected justify the action of the local authority.

THE annual Congress of the Educational Institute was noteworthy this year because it discarded the policy of an *ad hoc* authority, and boldly declared for a county council body as in England. Scottish teachers have been driven to this change of front through the sheer logic of events. The English Act of 1902, notwithstanding all its faults, has been the main factor in the tremendous advance that has been made in education in England during the past fourteen years. Of course, it had great leeway to make up, but it is safe to say that no other country in the world has made during the same time such remarkable progress. Scotland for a long time has been living on its traditions, and is in a fair way, too, of dying of them. Tradition is good as a stimulant, but bad as a food, and so Scotland has found. The present school board system as a whole has hopelessly failed to realise the changed

needs of the new industrial position. The boards originate nothing, but look for everything to Providence, which, in their case, is the Education Department. They have served education to the best of their ability, and the highest service they could now render would be to hand over their trust to others.

At a meeting of the School Board of Glasgow the Rev. David McQueen moved that a special committee be appointed to advise the board what action should be taken, either on its own responsibility or in conjunction with other educational authorities, to ensure that Scottish educational interests and ideals should not be overlooked in the pending review of the educational system of the nation. Mr. McQueen said that in the Government committees already announced there was only one Scotsman, and in the interim report of one of the committees there was not a single reference to the educational system of Scotland, or a single indication that such a nation as Scotland existed. The motion was passed unanimously.

THE School Board of Glasgow paid a gracious and well-merited compliment to Mrs. Burgwin, formerly superintendent of the special schools under the London County Council, by inviting her to open its new school for defectives in Burnside, Rutherglen. Mrs. Burgwin was the pioneer in this country in the cause of the physically and mentally defective, and the School Board of Glasgow had found her most helpful in framing its scheme for dealing with this class of pupils. It is rare, indeed, that school authorities go to the teaching profession to find someone worthy of opening their new schools. The compliment in this instance is therefore all the greater and is thoroughly applauded by all who have knowledge of Mrs. Burgwin's services.

At a meeting of the governors of Robert Gordon's Technical College, Aberdeen, the chairman, ex-Lord Provost Wilson, reported that the enrolments in the current session were 689, as against 634 last year. The income of the college for the past session showed a decrease of £273, but the deficit would have been much heavier had not the Department come to its help with increased grants.

IRISH.

THE exhibition and prize lists of the Intermediate Board awarded on the results of the examinations held in June were published last month. The lists may be summarised as follows:—

Boys.

Senior Grade.

	£30 Exh.	£20 Exh.	£3 Prize	£2 Prize	£1 Prize	Total
A (Classical) ...	4	6	4	3	1	18
B (Modern Literary) ...	5	7	6	7	8	33
C (Mathematical) ...	2	4	1	—	1	8
D (Scientific) ...	5	7	5	5	5	27

Middle Grade.

	£20 Exh.	£15 Exh.	£3 Prize	£2 Prize	£1 Prize	Total
A (Classical) ...	6	8	14	2	2	32
B (Modern Literary) ...	6	9	14	15	14	58
C (Mathematical) ...	6	8	14	5	2	35
D (Scientific) ...	6	8	14	12	12	52

Junior Grade.

	£15 Exh.	£10 Exh.	£3 Prize	£2 Prize	£1 Prize	Total
A (Classical) ...	10	15	8	4	2	39
B (Modern Literary)	10	16	28	24	23	101
C (Mathematical) ...	10	15	23	17	13	78
D (Scientific) ...	10	15	25	23	16	89
Total ...	80	118	156	117	99	570

GIRLS.

Senior Grade.

	£30 Exn.	£20 Exh.	£3 Prize	£2 Prize	£1 Prize	Total
A (Classical) ...	—	—	—	—	—	—
B (Modern Literary)	7	13	7	5	8	40
C (Mathematical) ...	—	2	—	1	—	3
D (Scientific) ...	1	1	3	3	2	10

Middle Grade.

	£20 Exh.	£15 Exh.	£3 Prize	£2 Prize	£1 Prize	Total
A (Classical) ...	1	—	—	—	—	1
B (Modern Literary)	9	14	9	8	13	53
C (Mathematical) ...	5	7	1	1	1	15
D (Scientific) ...	1	3	4	1	2	11

Junior Grade.

	£15 Exh.	£10 Exh.	£3 Prize	£2 Prize	£1 Prize	Total
A (Classical) ...	—	—	—	—	—	—
B (Modern Literary)	16	12	16	16	23	83
C (Mathematical) ...	4	10	5	4	2	25
D (Scientific) ...	4	10	7	6	4	31
Total ...	48	72	52	45	55	272

THE Commissioners adopted a new plan in publishing the lists this year with only the examination numbers and without the names of the successful candidates. The persons most aggrieved by this seem to have been the newspaper editors, who tried privately, but apparently with little success, to obtain from the schools the data on which to draw up, as in former years, tables of merit showing how the schools had fared in the examinations. It is stated, however, that it was not for any reason of this kind that the Board published no names of candidates or schools, although the deductions drawn by the newspapers were often fallacious enough. The Board, it is declared, has adopted its present mode of publication in order, if possible, to put a stop to a kind of traffic in successful pupils whereby schools kidnapped, as it were, promising candidates in order to reap distinctions in a coming year. Such a practice was well known and widely spread, and nefarious as it was, it is hoped that the steps taken by the Board may put an end to it. It was little to the credit of Irish secondary education, and showed a lack of proper professional spirit.

THE Irish Intermediate Registration Council has at last set to work in real earnest, and has more speedily than might have been expected arrived at a generally agreed outline of a scheme for presentation to the Lord Lieutenant. The outline has yet to be filled in, but the council seems likely to finish this part of its work before the end of the year, and to lay a successful foundation for a genuine profession of secondary-school teachers. It will be remembered that the Lord Lieutenant originally appointed a council

of fifteen members, which met thrice last winter, but as it was generally understood that, on account of dissatisfaction in some quarters at their lack of representation, additions would be made to their number, the council adjourned until its number was revised and completed. It is now formed of nineteen members, as follows:—Five representatives from the Board of Intermediate Education, and one each from the following bodies: Catholic Headmasters' Association, Schoolmasters' Association, Education Committee of the Christian Brothers, Association of Secondary-School Teachers (Men's Branch), Association of Secondary-School Teachers (Women's Branch), Central Association of Irish Schoolmistresses, Department of Agriculture and Technical Instruction, Trinity College, the National University, the Queen's University of Belfast, Incorporated Society of Assistant-masters, Governing Body of St. Patrick's College, Maynooth, Managers of the Roman Catholic Convent Intermediate Schools, and the Managers of the Roman Catholic Diocesan Colleges.

WELSH.

CAPT. JAMES WALKER JONES, of the Indian Medical Service, has been awarded the D.S.O. for conspicuous gallantry. He is one of the four sons, on active service, of Sir Henry Jones, the distinguished Welshman, who is professor of moral philosophy at Glasgow University.

THE question of teachers' residence within a stated distance of their schools, which has caused serious trouble in Glamorgan, has been settled as the outcome of a conference held at the Glamorgan County Hall, Cardiff, on September 26th, between the County Elementary Education Committee and the representatives of the National Union of Teachers. The proceedings were held in private, but it was announced that the committee had agreed to withdraw the regulation to which the teachers objected, and the teachers to withdraw their resignations. This decision, while it is satisfactory enough from the teachers' point of view with regard to the particular instance, leaves untouched the legal situation; still, it is likely to govern future practice to a considerable extent.

WELSH art and literature have sustained a serious loss in the death of Mr. T. Matthews, an assistant-master in Pengam County School. He was the editor of two volumes published by the boys of his school, of which one, "Dail y Gwanwyn," was recently noticed in this column. He was a native of Llandebie, and did valuable research work on Welsh history in the University Library in Paris, and afterwards in the Vatican Library, to which he obtained access through an introduction given by Bishop Hedley, of Newport. He was an ardent nationalist and a competent art critic; indeed, his articles in *Cymru* have been described as the only attempt at art criticism in the Welsh language. He was a great fighter, and at the same time of a singularly amiable nature. Many of those who were privileged to be associated with him recall his fondness for doing kindly actions, and he is sadly missed by his friends.

THE sub-committee of the Central Board, which met at Neath on the last day of September, considered the replies which had been received from Welsh educational authorities to the points raised in "To-day and To-morrow." The replies so far received were unanimously in favour of the establishment of a Welsh National Education Council by the expansion of the Central Board into a council of the kind.

THE competition of South Wales towns for the National Eisteddfod continues. Barry and Neath vie with each other in offering accommodation and guarantees for 1918, and Llanelly has already decided to make an offer for 1920.

THE Welsh University Commission held its first meeting for taking evidence at the Board of Education, Whitehall, on October 4th. Lord Haldane presided, and evidence was given bearing on his suggestions for the co-ordination of the work of the university and the colleges, made before the vacation. Among those heard were Principal Griffiths, Mr. H. M. Thompson (the treasurer), Mr. D. J. A. Brown (the registrar), Miss E. P. Hughes (of Barry), and Mr. H. M. Ingleden (the secretary of the new School of Mines at Treforest). On the following day representations were made on behalf of the South Wales and Monmouthshire College by Profs. Thompson, Sibly, Norwood, and Bacon, and Colonel Hepburn.

THE meeting of the University Court held at Shrewsbury in September decided to strive for complete independence in financial and administrative matters of any control by the Board of Education. The question which most deeply divided the meeting was whether Cardiff should have a separate university or the federal system should be perpetuated.

THE GROWTH OF THE GREEK HOUSE.

The Greek House: its History and Development from the Neolithic Period to the Hellenistic Age. By B. C. Rider. Thesis approved for the degree of Doctor of Literature in the University of London. viii + 272 pp. (Cambridge University Press.) 10s. 6d. net.

MORE than half this book is taken up with an examination of the houses found on the mainland, in Crete and other islands by recent excavation. There is a great monotony about the common houses, and it does not very much matter whether the round preceded the square; we think all this part, except the palaces, might have been much compressed. In one passage rectangular seems to be distinguished from oblong, as if it meant square (p. 36). There are also some irrelevant passages, historical or other; for example, a discussion of Dörpfeld's Ithacan theory. The palaces are far more important. We have plans of most of them, and the explorers' descriptions are summarised. Miss Rider is not very critical; she regards a part of the Cnossian palace as women's apartments without any evidence, although she very truly says that there is no authority for the assumed *γυναικῶν* in the traditional Homeric house. She also accepts all that is usually said about "mysterious signs" on the walls, by which she means the Axe, forgetting that there were a dozen other signs, all different, which no one has ever claimed as mysterious,

and that all the signs were covered up with stucco when the house was whole. They are obviously masons' marks, and the axe is found in numbers of places, including Edinburgh.

Miss Rider regards the Homeric house as being on the same lines as the palaces of Tiryns and Mycenæ. The resemblance is not close, but there are points in common—e.g. a closed megaron and a central hearth. She takes the Homeric names one by one, and elucidates them by quotations and criticism. If she does not solve every point, she has done a useful piece of work. But we do not understand one passage (p. 206) where she speaks of a raised door in the wall of the megaron on a level with the top of the threshold. As for *ῥώγες*, perhaps they were branching passages, as *ἀπορροαίς* is the branch of a river. The *θολοί* in the courtyard may very well be the oven, which is built of that shape still in Rhodes and elsewhere.

Coming to the fifth century, the author discusses the literary evidence for details in the house, and gives plans of two, a house in the Peiræus and a large building at Palatitza (which, however, seems to be later). She decides against the theory of two courtyards, but sees that the women had their own apartments. The evidence is really quite clear on these points. An imaginary plan is given on p. 237. The general scheme is a courtyard with entry porch, on either side chambers, and behind it a *prodomos* and megaron. The houses at Priene show the same elements, in many variations; plans of several are given, together with others from Delos and one from Girgenti. On the whole, the connection of classical architecture with the Mycenaean type is made out. Pompeian houses, which seem at first to resemble the conventional Greek plan, are really a combination of the Greek and the Italian. Finally, Vitruvius's account is illustrated by the discoveries of excavation.

This book is a convenient summary of a large number of books and articles; it does not pretend to be much more, but it is likely to be very useful as a trustworthy book of reference.

TRAINING FOR COMMERCE.

(1) *Business Employments.* By F. J. Allen, Investigator of Occupations for the Vocational Bureau of Boston. xi + 218 pp. (Ginn.) 4s. 6d. net.

(2) *Occupations.* By E. B. Gowin, assistant professor of commerce, New York University, and W. A. Wheatley, superintendent of schools, Middletown, Connecticut. xii + 357 pp. (Ginn.) 4s. 6d. net.

(3) *Book-keeping and Commercial Practice.* By H. H. Smith, lecturer in commerce at Dewsbury and Brighouse Technical Schools. v + 148 pp. (Pitman.) 1s. 6d.

(1) THIS book can be confidently recommended to all teachers interested in the workaday world. In the first place, it is written by an official and copyrighted by his department; but it is published in the ordinary way, well printed and bound, and made as attractive as a book should be, in marked contrast to English official publications. In the second place, the writer, for the purpose of assisting parents in the determination of their children's careers, describes the organisation of a manufacturing business, both on the commercial and industrial sides. What makes the book especially valuable to teachers is that it gives a complete picture of a business organisation such as is seldom available in English publications of a corresponding type. Commercial teachers, who have had opportunities of reading *ad nauseam* about commercial letter-writing and the practical details of the office

arts, can here discover that commercial education is really the study of mankind engaged in the exchange of goods. Statistics of American trade, attractively set out, and good descriptions of a department store and of a typical banking house, are included. In spite of the undercurrent of American materialism, from which the book is not free, its critical perusal is recommended to teachers, and especially to those engaged in "commercial" education.

(2) Described by the authors as affording information on, and guidance to a choice of, occupations, this book is intended for use in high schools. There are chapters on agriculture, commercial occupations, transportation, State service, manufacturing, building, machine and related trades, the engineering professions, the learned professions, and miscellaneous and new openings. Information is given, in general terms, on how to effect an entry, the nature of the work, the rate of remuneration, and the prospects of promotion. Interspersed with much good advice, authoritative opinion, and biographical illustration are lists of books (not text-books), official reports, and periodical literature. There are also numerous questions in which the pupils are required to seek for information in their own neighbourhood with the view of making a well-considered selection. If we suggest that some of the answers would demand a longer and wider experience and a maturer judgment than are likely to be found in boys of sixteen or eighteen years of age, it is with no desire to belittle a method which, followed judiciously, must encourage initiative and seriousness of purpose. The book is an attempt to introduce into the American high school that information and guidance which in this country are provided, for those who care to make use of them, by the Juvenile Labour Bureaux and Employment Committees; and it is well worth reading by all who have to deal with boys at the outset of their careers.

(3) The author has made a successful attempt to include in one book a treatment of such commercial practice as can be taught outside the office, together with a treatment, elementary, but complete, of double-entry book-keeping. He seems to think it is still necessary to give letterpress and illustrations concerning copying processes and the use of the telephone, both of which gentle arts are more rapidly acquired, under urgent sanction, in one week of practice. But he is not unsuccessful in his attempt to correlate with the book-keeping information as to commercial practice, and some elementary but important points of theory. To relate his account of the machinery of payment to the principles of the cheque system is an intelligent thing to do, and gives us some hope of intellectualising our commercial teachers. The treatment of book-keeping is simple and thorough, and the examples are not too difficult, though they might have been more numerous. The alphabetical appendix of business terms is dangerous except as a mere list for reference. It is interesting to note that "Bot" stands for "Bought" or for "Bottle," but the astounding fact was almost too much for the sobriety even of the reviewer. The book should be useful, especially for junior students in evening continuation schools.

Black's History Pictures. Part v., *The Early Georges, A.D. 1715-1815.* By G. H. Reed. (Black.) 1s.—The portfolio before us contains seventy-nine illustrations relating to the century 1715-1815. Among them are portraits of the leading men and women of the period, specimens of costumes, maps and plans, pictures of famous buildings, reproductions of well-known works of art, etc. The whole forms an excellent and inexpensive companion to the historical text-book.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Buch deutscher Dichtung von Luther bis Liliencron. Von H. G. Fiedler. lxiv+394 pp. (Oxford University Press.) 3s. net.—Not long ago we were able to thank Prof. Fiedler for his "Oxford Book of German Verse"; the school teacher will be perhaps even more grateful for the present volume. The number of poems has indeed been reduced from 536 to 256, but what remains is a fine anthology; and about a dozen poems are included which did not appear in the larger book, including Rückert's "Chidher," Heine's "Meergruss," Heibel's "Sag an, o lieber Vogel mein," Keller's "Schlafwandel," Liliencron's "Der Kampf um die Wasserstelle," and Uhland's magnificent ballad, "Taillefer," the omission of which from the "Oxford Book of German Verse" was difficult to understand. The editorial work is excellent, and it is fortunately all in lucid, straightforward German. An admirable account of the development of German lyric verse from Luther to Liliencron is followed by a clever summary of the main features of German prosody. This is, on the whole, on orthodox lines; whether a real picture of verse can be obtained by distinguishing merely stressed and unstressed syllables, and without discriminating between primary and secondary stress, is another question. The notes at the end of the book are excellent, being both scholarly and concise. At a time when the study of German is somewhat under a cloud in this country, the publication of such a book is a real service, for it reminds us that from Germany has come much that is noble and beautiful, which even the war cannot exterminate.

Passages in Prose and Verse from German Literature of the Nineteenth Century, 1800 to 1870. Selected by M. E. Weber. xix+211 pp. (Cambridge University Press.) 3s. net.—This interesting and useful selection has been compiled by Miss Weber with the view of introducing students to some of the less well-known writers of Germany. It is supplied with a chart showing the writers of the Romantic period and of the War of Liberation, and a list of the chief works of each, with dates. Some thirty writers of prose and verse are represented by one or more extracts, and the whole will undoubtedly be a helpful reading book for schools; but the extracts are necessarily inadequate, in many cases, to convey an impression of the individual writer's importance. Thus, of Mörike we only have an extract from "Mozart auf der Reise nach Prag"—not one of his splendid lyrics; on the other hand, there are only lyrics in the case of Heine. The book is handsomely and carefully printed.

Classics.

(1) *Novum Testamentum.* Curante F. H. A. Scrivener. Ed. quarta ab E. B. Nestle correctata. xvi+598 pp. (Bell.) 2s. 6d. net.

(2) *The Acts of the Apostles in Greek.* Edited, with introduction and notes for schools, by W. F. Burnside. xlviii+276 pp. (Cambridge University Press.) 4s. net.

(1) Scrivener's Greek Testament, with critical notes and marginal references, is a very useful book—a standard book, in fact. It is ten years since Nestle's revision came out, and this is a cheap reprint. It ought to be mentioned that thick type is used to mark words in the text which have variants; a good idea. The print is clear, but the page is overcrowded with the notes and references. However, it is a wonderful book for the money.

(2) Mr. Burnside's "Acts" naturally challenges the

school edition of Mr. T. E. Page; and we may say at once, this will not displace the other. Mr. Page's tact and good sense mark out his "Acts" amongst all school editions of the New Testament, and we wish other editors would follow his example. However, Mr. Burnside has his advantages. One is a facsimile of a vexed passage from "Codex Bezae," which suggests that more of this sort might well be given in similar books now that reproduction is so easy. There are capital pictures of Corinth, the theatre at Ephesus, the Areopagus, and St. Paul's Bay at Malta.

The introduction, which is excellent, seems to be addressed rather to the university man than the school-boy. It discusses critical and historical questions. Mr. Burnside puts the date of the Acts as early as 62, which implies, as he says, that Luke and Mark come earlier still. In all his comments he is cautious, and this is sometimes disappointing to the inquirer, as in the note on the Gift of Tongues. It is time someone made a careful inquiry into similar things which are reported in modern times, and the same may be said for diabolical possession, which seems to be known in China. The notes give practically everything that could be desired, very fully; but there is no reference to Paul's probable visit to Spain (p. 265), and how *gregalia* can be derived from *εὐρακάλων* is hard to see. The most important omission is a discussion of the dialect of the N.T. as illustrated by papyri, which have thrown a new light on the whole question.

Tacitus, The Germania. With introduction and notes by D. R. Stuart. xxiv+140 pp. (New York: The Macmillan Co.) 3s. net.—The proportion of notes to text (pp. 122:24) in this volume is excessive, unless the pupil is dependent on books for his teaching; it is not suited to schools for that reason. But for the university student it is satisfactory in most respects. The editor has some unfortunate peculiarities of style, but it is given to few to be simple; yet other ways can be found than to say that the "Germania" has a "subjective colouring," or that an epoch "bodies forth its penchant in pastoral poetry."

Mr. Stuart is cautious in discussing the aim of Tacitus. He comes to the conclusion that although a moral purpose is not absent, and there may be a little of the political in it, too, this work is mainly a compilation intended to satisfy curiosity. He sees no convincing evidence that Tacitus had direct knowledge of Germany.

The notes, as usual, are of all types, from elementary translation to ethnology, criticism, and comparative philology. Surely it ought not to be necessary to translate *Germania omnis* "Germany as a whole," or *denuntiant* "proclaim"; but when translations are given they are usually good turns of expression. The explanations and illustrations of the subject-matter are full of instruction, and it is clear that Mr. Stuart has studied this very thoroughly.

English.

How the French Boy Learns to Write. By R. W. Brown. 260 pp. (Humphrey Milford.) 5s. 6d. net.—There have been several notable attempts to explain French methods of teaching the mother-tongue. Mr. Brown's book entitles him to be named with Mr. P. G. Hartog and Mr. Hardress O'Grady in this connection, and that is praise indeed. We could hope that every teacher of English in the country would thoroughly study it, for we know nothing more stimulating than the opportunity here given of seeing how admittedly brilliant results are obtained. Mr. Brown covers the whole field—courses of study, composition, grammar, reading and literature, foreign languages, and the personality and status of the teacher. And we scarcely

know which topic he has made most interesting, for he is a very wideawake critic. It would seem that the French found all their teaching of self-expression upon literature, and therefore insist from the earliest stages that the children shall read nothing but the very best. But they have devised a rational mechanism of reading, dictation, grammar, and discussion which helps young people to reflection and to self-expression. Nothing is left to chance. Clear enunciation in reading, the definite study of vocabulary, the careful preparation of dictation—some teachers think these too elementary drudgery for men of taste and scholarship. Not so the French, for they know that careful training in these and other such elementals is the only possible basis for lucid expression—and what it connotes, lucid thought. It is with altogether exceptional emphasis that we recommend Mr. Brown's excellent book to all who are engaged in teaching English.

Marlowe's Faustus and Part 1 of Faust. With introduction and notes. 291 pp. (Oxford University Press.) 2s. 6d.—It is customary to print Marlowe and Goethe side by side, but they have little in common. More illuminating would it be to print with Dr. Faustus a number of the curious bits of folklore that were published in 1587 at Frankfort under the title of "Historia von D. Johann Fausten." This has been reprinted by W. Braune, with a learned introduction. For Faustus is not Faust, nor is the medieval compact with the devil ours; and, indeed, even Goethe begins to be antiquated. The present little volume has an excellent introduction by the learned editor of the "Cambridge History of English Literature," and Mr. C. B. Wheeler has added a few notes. The translation is Anster's, which, as the editor allows, is not the best; but it is forceful and rapid.

History.

An Introduction to the History of England. By E. L. Hasluck. viii+277 pp. (Black.) 2s. 6d.—The distinctive feature of this summary of English history is the abandonment of the continuous chronological order in favour of an arrangement according to topics. The fourteen chapters into which the book is divided deal with such general subjects as "Feudalism," "The Medieval Church," "Modern Democracy." Last year Mr. Hasluck successfully applied this topical method to a handbook of nineteenth-century European history intended for advanced students. It is more suited to a short period and to grown-up readers than to a lengthy survey meant to be introductory. It is essential that young students should keep their chronology straight. Hence we consider that this very capable survey of English history should be used for purposes of revision rather than introduction.

The State and Social Welfare. By J. W. Peck. 160 pp. (Nelson.) 1s. 6d.—This little volume, which is described as "an elementary handbook for young citizens," is one that might well be placed in the hands of all who wish to treat seriously their obligations to the community. It discusses in a simple manner the relation of the individual to society, describes the machinery of the State, and then shows in detail how during recent years Government has extended its control over home, school, and workshop, and how it has sought to safeguard and assist the sick, the aged, and the poor. It does not deal with crime and its punishment, for the curious reason that "these are fortunately not parts of ordinary life." Unfortunately they are.

The Story of London. Vols. ii. and iii. By R. McWilliam. xiii+188 pp. and xvi+182 pp. (Pitman.) 1s. 3d. net each.—We have already (July, 1916) noticed vols. i. and iv. of Mr. McWilliam's

"Story of London." The volumes before us complete the set of four. One deals with the City, the other with South London from Putney to Greenwich. They are exceedingly attractive little books, full of interesting information, adorned by well-chosen illustrations, enlivened by incident and anecdote. Their aim is to excite civic pride by showing to the young folk of Greater London that they are citizens of no mean city, and that they inherit a splendid tradition. They are well calculated to fulfil their purpose. Every school library within the London area should possess them, and the older scholars should be encouraged to visit the more accessible of the notable spots described in Mr. McWilliam's pages or depicted in his illustrations.

The Plain Story of American History. By John S. Bassett. xii+545 pp. (The Macmillan Co.) 4s. 6d. net.—The American historical text-book is becoming standardised, and that, too, at a level incomparably higher than that reached in any country twenty years ago. The characteristics of the type are:—(1) Good paper, clear printing, strong and attractive binding; (2) careful arrangement, short chapters, numerous headings, lists of topics and questions; (3) copious illustrations and many maps. The volume before us is an excellent representative of this new and delightful class of text-books. It tells in a lucid narrative, which is limited to an outline of the main events, the story of America from the days of the first European settlements. The stories of the War of Independence and the War of 1812, as told by Dr. Bassett, show that at last it is possible to treat these subjects of ancient controversy in an impartial spirit, and indicate that the old sources of bitterness between the two branches of the Anglo-Saxon race are being sweetened by time and mutual intercourse. The history is brought down to 1915.

Geography.

Highways and Byways in Galloway and Carrick. By C. H. Dick. Many illustrations by Hugh Thomson. 536+xxx pp. (Macmillan.) 6s. net.—Galloway and Carrick, the south-western corner of Scotland, has waited long for an adequate description, yet this is a land which inspired Burns to write "Scots wha ha'e," which provided Scott with material for "The Heart of Midlothian" and other novels, and has been made notable more recently by S. R. Crockett. To compensate for the delay Mr. Dick takes the reader thoroughly and slowly over the country; he delights to tread the byways and to direct attention to interesting relics, both in stone and in words, of earlier times. Mr. Thomson has enriched the volume with numerous sketches which are a source of delight. This is a book to have on the shelf to dip into; there is too much in it to be read through steadily. Naturally the people and their doings form the main theme, yet the book is neither archaeological nor historical, neither a catalogue of ancient monuments nor a chronicle of local events. Geographically it explains the people of the twentieth century in terms of their land and their past; for example, woven into the story of the Solway coast there is a broad thread which fits the general pattern, and shows how the coming of the railway changed radically the life in the coast towns and villages, and made busy ports into silent harbours with well-built but disused piers.

New Excelsior Political School Wall-Map of Australia. (Bacon.) 15s.—This map is distinctly pleasing and useful. The copy before us folds into a flat package 10 in. by 7 in., and is thus readily stored—an item of prime importance for schools. The towns, rivers, lakes, and political boundaries are excellently marked, and there is an inset of England on the

same scale as the main map. British New Guinea, as well as the territory which was lately German, is also inset. There are, however, too many names—e.g. no child need know the names of the lakes of Western Australia. The overland telegraph route is, curiously enough, omitted, although the projected railway from Adelaide to Perth is indicated.

Mathematics.

A Treatise on the Circle and the Sphere. By J. L. Coolidge. 602 pp. (Clarendon Press.) 21s.—Mathematicians all the world over will experience a feeling of lively gratitude to the author of this beautiful treatise for having undertaken a work which cannot fail to lighten the labour of any research which they may undertake in the domain of geometry. The investigation of the properties of the circle and the sphere dates from the dawn of science, and the wealth of results which have been obtained is so great and the literature of the subject so enormous that it is practically impossible for anyone who discovers a new theorem to be certain that some predecessor has not already covered the same ground. The publication of this book will for the future prevent the unhappy loss of time in this way. The aim of the writer has been to present a consistent and systematic account of the various lines of investigation which have been pursued. The methods of Euclidean geometry, which were so fruitful in the hands of the ancient Greeks, have in modern times secured a new lease of life, and led to the discovery of many theorems with which the names of Steiner, Feuerbach, Chasles, Lemoine, Casey, and Neuberg are associated. An account of these results is given in the first and third chapters. The fact that the first chapter alone contains 222 theorems gives some indication of the breadth of the survey of this limited field. At the close of this chapter, as also in the subsequent, the writer points out the directions which seem to be most promising for further advance. Other chapters deal with applications of Cartesian geometry to the circle and sphere; the relations between circle geometry and projective geometry; transformations of the sphere; algebraic systems of circles in space; the differential geometry of circle systems, and other cognate matters. The author shows what a rich harvest has been reaped, and he displays the gleanings in such an attractive manner that readers will feel almost compelled to attempt to win something for themselves.

Goursat's Mathematical Analysis. Vol. ii., part i., *Functions of a Complex Variable.* Translated by E. R. Hedrick and D. Dunkel. x+259 pp. (Ginn.) 11s. 6d.—We have pleasure in directing attention to this translation of Goursat's well-known treatise on "Mathematical Analysis." The translation of vol. i. was based upon the first (French) edition, but this part is based upon the second edition, and therefore contains the radical changes which were then made. French mathematical works are usually written in such a lucid manner that even the reader who does not profess to any extensive acquaintance with the language has no difficulty in understanding them. However, there may be some, students especially, who do not care to have to surmount simultaneously the difficulties presented by the language and the subject-matter, and to such a translation will appeal. We need only add that the present version is entirely trustworthy, and is presented in a style worthy of the original.

Miscellaneous.

The Growth of Music. Part iii., *Ideals of the Nineteenth Century.* By H. C. Colles. (Oxford University Press.) 3s. 6d.—This book meets a want felt by both teacher and pupil. The latter will

find the many-sided expansion of the art of music characteristic of the nineteenth century presented to him in clear and interesting fashion; the former will find all he needs in the way of suggestion for method and material. Written primarily for schools and fulfilling that purpose admirably, where sufficient time can be devoted to the subject, it should attract a wider public and can be unhesitatingly recommended to all who would know how to listen to music with full appreciation. Whoever reads the book carefully, following the cross-references, working through the valuable lists of illustrative music appended to the chapters, and is induced thereby—as he will be, so fascinating is the treatment—to follow up his study by wider reading along the lines suggested, will have attained to a real understanding of the meaning and significance of the music of this crowded century. And more: for the author, while particularising in music, gives glimpses into the development of art in general and shows how the practice and understanding of an art require concentration of the highest faculties, intellectual as well as æsthetic. The book whets the appetite for the music itself. It rarely does the reverse. An unfortunate instance of a damping touch occurs where the studies of Cramer are classed with Czerny for prosiness. Rather would it have been better to advise the young student of the great upward step from one to the other and to set him seeking for the interesting musical content and the poetry of many of Cramer's studies. The local touches arising out of the war were surely better omitted, for the book promises to last more than a decade.

A Girl's School Outfit. By Hilda M. Skinner. 81 pp. (Truslove and Hanson.) 2s. net.—It is often alleged against needlework as a school subject that it is mechanical and uneducative, and too frankly utilitarian in its outlook. This may be true of the work as it is directed by some teachers, but that needlework, when handled properly and sympathetically, may develop intelligence, arouse interest, and engender self-respect is shown in this little volume. Miss Skinner has produced a book which provides help enough to enable an intelligent girl to work on her own initiative and, with very occasional assistance, to supply herself with an attractive and serviceable outfit. At the same time she will have learnt manipulative dexterity and formed habits of order and neatness.

Pitman's Commercial Self-Educator is being re-issued in twenty fortnightly parts at 8d. net each. Opportunity has been taken to add several new features, notably courses in the Russian and Italian languages, in private secretarial work, as well as a series of articles on women in business. This publication, like others from the same firm, is notable for one important feature, the continuous stimulus of the reader to make progress and become a better man of business.

EDUCATIONAL BOOKS PUBLISHED DURING SEPTEMBER, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

"Lectures Françaises, Géographie et Histoire." By W. Mansfield Poole and Michel Becker. 138 pp. (Blackie.) 1s. 6d.

"Pocket Edition of Bellows's French Dictionary (French-English, English-French)." By John Bellows. Revised by Alexander Beljame. With Metric and other Tables, Maps, etc. 101st thousand. (Longmans.)

Roan binding, gilt edges, 9s. net; morocco, 11s. net; Oxford India paper edition, morocco, 13s. net.

"Dictionary of the French and English Languages: being an Enlarged Edition of the Original 'Dictionnaire de Poche.'" Compiled by John Bellows. Revised and extended by William Bellows, assisted by A. Marrot and Gustave Friteau. 17th thousand. (Longmans.) Cloth, 5s. net; skiver, 7s. 6d. net.

"Dictionary of German and English, English and German." By Max Bellows. Proofs revised by C. Sherwood and W. J. Eggers. Altered in price. (Longmans.) 6s. net; leather, 8s. 6d. net; special issue printed on Oxford India paper, morocco, 12s. net.

Classics.

Euripides: "Rhesus." With introduction and notes. Edited by W. H. Porter. lii+98 pp. (Cambridge University Press.) 3s.

"A Classical Dictionary of Greek and Roman Antiquities, Biography, Geography, and Mythology." Edited by H. B. Walters. x+1104 pp., with 580 illustrations. (Cambridge University Press.) 21s. net.

"Versiculi: an Easy Latin Elegiac Verse Book." By the Rev. J. H. Raven. Advanced in price. (Longmans.) 2s. 6d.

"Deigma: a First Greek Book." By C. Flamstead Walters and Dr. R. S. Conway, with the co-operation of Constance I. Daniel. xxiii+408 pp., with a coloured map and four illustrations. (Murray.) 3s. 6d.

English: Grammar, Composition, Literature.

"English Prose Extracts for Repetition." Selected and edited by E. H. Blakeney. 54 pp. (Blackie.) 8d.

"A New English Grammar." By E. A. Sonnenschein. In three parts. Part i., 88 pp. 1s. Part ii., 148 pp. 1s. 6d. Part iii., 190 pp. 2s. Also in one volume, 426 pp. 3s. 6d. (Clarendon Press.)

"Carlyle's Frederick the Great." Abridged and edited by A. M. D. Hughes. 408 pp. (Clarendon Press.) 3s. net.

"Selected Poems of Tennyson: 'The Lotos-Eaters,' 'Coming of Arthur,' 'Passing of Arthur,' 'Ulysses,' and 'Ode on the Death of the Duke of Wellington.'" Edited by C. B. Wheeler and F. A. Cavenagh. 78 pp. (Clarendon Press.) 2s. 6d.

"A Quiet Corner in a Library." By W. H. Hudson. 256 pp. (Harrap.) 3s. 6d. net.

Eliot: "Scenes of Clerical Life." With introduction by W. Warde Fowler and notes by E. Limouzin. 483 pp. (Oxford University Press.) 2s. net.

"How to Summarise, Expand, or Recast Extracts in Prose and Verse." By J. C. Nesfield. (Macmillan.) 2s.; key, 2s. 6d. net.

"Realms of Melody: An Anthology." Edited by Geoffrey Callender. (Macmillan.) 3s. 6d. net.

History.

"An Introduction to the History of England." By Eugène L. Hasluck. viii+277 pp. (Black.) 2s. 6d.

"Greek History for Schools." By C. D. Edmonds. Second impression. xviii+330 pp. (Cambridge University Press.) 6s. net.

"The Political History of France, 1789-1910." By M. O. Davis. 152 pp. (Clarendon Press.) 2s. 6d. net.

"History's Background." No. 1, "Eurasia, including the Mediterranean Region." By Townsend and Franklin. (Historical Geography Readers for Upper Standards.) 152 pp. and 18 maps. (Johnston.) 1s. 6d. net.

"A Class-Book History of England, designed for the Use of Students preparing for the University Local Examinations or for the London University Matriculation, and for the Higher Classes of Elementary Schools." By the Rev. D. Morris. Re-issue in two

parts. Part i., 20-1603. Part ii., 1603-1902. (Longmans.) 2s. 6d. each part.

"History through Illustrations." I. By J. Higginbottom. 200 pp. (Pitman.) 3s. net.

Geography.

"Russia." Edited by Hugh Lawrence. (The Rambler Travel Books.) 80 pp. (Blackie.) 9d.

"Asia." Edited by Lewis Marsh and William J. Dudman. (The Rambler Travel Books.) 80 pp. (Blackie.) 9d.

"Handwork and Geography." I. By G. Pickering and J. R. Robinson. 102 pp. (Pitman.) 2s. 6d. net.

"Songs and Games of Babylonia Abroad." By L. Jesse. 100 pp. (Pitman.) 2s. 6d. net.

Mathematics.

"The Elements of Non-Euclidean Plane Geometry and Trigonometry." By Prof. H. S. Carslaw. (Longmans.) 5s. net.

"Mathematical Papers for Admission into the Royal Military Academy and the Royal Military College, February-June, 1916." Edited by R. M. Milne. (Macmillan.) Sewed, 1s. net.

"Book-keeping and Commercial Practice." By H. H. Smith. 152 pp. (Pitman.) 1s. 6d.

"Arithmetic and Book-keeping." Part i. By Thos. Brown and V. E. Collinge. 124 pp. (Pitman.) 1s. 3d.

Science and Technology.

"Principles of Electrical Engineering and their Application." Vol. i. By Dr. G. Kapp. 308 pp. (Edward Arnold.) 15s. net.

"An Introduction to Mine Surveying." By T. Bryson and G. M. Chambers. 290 pp. (Edward Arnold.) 5s. net.

"Diseases of Children." By Dr. A. Dingwall Fordyce. xxiv+483 pp. (Black.) 10s. 6d. net.

"Electrical Laboratory Course for Junior Students." By Prof. Magnus Maclean. 129 pp. (Blackie.) 2s. net.

"The Development of English Building Construction." By C. F. Innocent. (Cambridge Technical Series.) xiv+294 pp. (Cambridge University Press.) 10s. 6d. net.

"Alternating Currents in Theory and Practice." By W. H. N. James. (Cambridge Technical Series.) viii+354 pp. (Cambridge University Press.) 10s. 6d. net.

"The Essentials of Chemical Physiology." By Prof. W. D. Halliburton. Ninth edition, revised, and with additions; with coloured plate and 71 other illustrations. (Longmans.) 6s. net.

"Cellulose: an Outline of the Chemistry of the Structural Elements of Plants, with Reference to their Natural History and Industrial Uses." By C. F. Cross, E. J. Bevan, and C. Beadle. New edition, with 14 plates. (Longmans.) 14s. net.

Pedagogy.

"The Psychology of the Organised Group Game, with Special Reference to its Place in the Play System and its Educational Value." By Dr. Mabel Jane Reaney. (*British Journal of Psychology*, Monograph Supplements, iv.) viii+76 pp. (Cambridge University Press.) 5s. net.

"The Student's Handbook to the University and Colleges of Cambridge." Fifteenth edition, revised to June 30th, 1916. 16+704 pp. (Cambridge University Press.) 3s. net.

Art.

"Model Drawing, Geometrical and Perspective; with Architectural Examples." By C. Octavius Wright and W. Arthur Rudd. xx+246 pp. (Cambridge University Press.) 6s. net.

Miscellaneous.

"Medals of Our Fighting Men." By Dr. Stanley C. Johnson. viii+120 pp. (Black.) 3s. 6d. net.

"Visual Scripture—The New Testament." By Agnes Nightingale. 48 pp. (Black.) 8d.

"The First Epistle to the Corinthians." Greek text, with introduction and notes. Edited by K. St. John Parry. (Cambridge Greek Testament for Schools and Colleges.) lxxviii+284 pp. (Cambridge University Press.) 4s. 6d. net.

"The Acts of the Apostles." Greek text, with introduction and notes. Edited by W. F. Burnside. xlvi+276 pp. (Cambridge University Press.) 4s. net.

"Principles of Health Control." By Francis M. Walters. 480 pp. (Heath.) 4s. 6d. net.

"Hans Andersen's Fairy Tales." Sixteen plates in colour, 24 full-page drawings. Illustrated by Harry Clark. 320 pp. (Harrap.) 20s. net.

Dickens: "A Christmas Carol." 112 pp. (Harrap.) 10s. 6d. net.

"Stories about Bears." By Lilian Gask. 160 pp. (Harrap.) 2s. 6d. net.

"Lessons on the Life of Jesus Christ as it is Recorded in the Gospel of Mark." Arranged for schools and classes. By the Rev. James Robbie. (Longmans.) 2s. net.

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The Teaching of Languages: A Queer Experience.

I HAVE recently had an experience so remarkable that I have thought it my duty to make it known to my fellow-men. Indeed, I think it was sent me for that purpose. It happened in this way. Among the many interests of my leisure one of the chief has been the study of occult phenomena, and, in particular, I have devoted a considerable degree of attention to crystal-gazing. It was while I was pursuing my re-

searches in this direction that the experience which I am about to relate occurred to me.

One night I had fallen into the peculiar state of trance which crystal-gazing induces, when it seemed to me that all the barriers of three-dimensional space fell away from me, and, together with them, the corresponding limitations of time; I saw that space and time were alike curved and returned upon themselves, and that in reality there was no absolute before or after, but that direction in time was just as easily reversible as in space. But though I was thus freed entirely from their trammels, this did not prevent me from contemplating, with a strange combination of interest and detachment, the proceedings of other persons who were still labouring under the dimensional constraints from which I had just escaped.

I remember buying an evening paper at a news-vendor's and noticing that the date at the head of it was in October, 1966. I do not know what made me look at this detail, but I recollect that the date of the year did not cause me any surprise, for it was certainly what I expected to see.

Then I went into a building where what was evidently an important meeting was being held. Glancing at a printed agenda form which I picked up from my chair before seating myself, I saw that I was at a gathering of heads of educational institutions convened by their Defence Association. The subject put down for discussion was "The Collapse of Modern Linguistic Methods, and a Remedy." The meeting was to be addressed by an assistant-master from one of the leading secondary schools in the neighbourhood. It had long been the practice for meetings of associations of assistant-masters to be addressed almost exclusively by heads of schools; but as no good ever seemed to come of it, it was thought that a reversal of the arrangement might have more beneficial results. My neighbour on my right confided to me, however, that it had not been easy to get a speaker directly engaged in teaching, because the system of boys teaching themselves had been very highly developed in modern schools, and the members of the staff spent most of their time in filling up forms for the Board of Education.

I knew, of course, the deplorable state of ineffectiveness into which the study of languages had fallen, and was also aware of the efforts of a small but enthusiastic band of reformers to introduce drastic changes of method in the face of much opposition from the contented and inert majority.

This was really the first occasion on which the reformers had been able to secure a hearing.

When I got into the room the preliminaries were already over, and the master who had been invited to put his views before the meeting was just beginning to speak.

He referred briefly to the failure of the Esperanto movement and the attempt to solve the problem of how to teach modern languages by making them all ancient; and then turned to the present universal use of the direct method, and the effort to solve the problem of teaching ancient languages by making them all modern. The triumph of the last-named theory had reduced all language teaching, ancient and modern, to one pattern, and his task of criticism was to that extent simplified.

The method of teaching French and German, and also Latin and Greek, in all but the most antiquated schools, admitted into the classroom no language but that which happened to be the subject of the lesson. This method, in his opinion, had several deplorable results. It was found by teachers that where a class was studying any book the subject-matter of which

went beyond simple narrative, and required mental effort to follow the argument, the reading often became mechanical, and while the words were followed the meaning was not grasped: a danger serious enough when boys or girls were reading their own language, and greatly accentuated when the language was foreign and of which their knowledge was imperfect.

In the study of an English book the difficulty was removed by questions on the subject-matter of the work read or prepared, which were asked and answered by master and pupil in a tongue in which both were fluent. A similar check could not often be applied effectively to the foreign language, even as regarded the subject-matter, and very seldom in testing a boy's grasp of the precise significance and shade of meaning of a phrase or idiom.

The results of this failure showed themselves in a remarkable manner in compositions written by boys in ancient or foreign languages. They frequently either avoided or misused the more idiomatic expressions, and an examination of the essays written in, say, three modern languages showed a tendency to reduce all to a sort of common denominator, from which the peculiar idioms of each were eliminated. Whatever the qualifications of the teacher, it was found that his pupils evolved a kind of emasculated dialect comparable to the colloquial Greek of Alexandria in the late Hellenistic period, as evidenced by vast numbers of papyri unwound from mummy wrappings—cerements that to a grammarian of the great library must have been a veritable shirt of Nessus.

A single instance of the working of this principle would suffice. The Latin sentence was more dramatic than the English. The *dramatis personae* were both brought on to the stage before the action began—that is, the verb usually came last. In English the action began when only one actor was on the stage—that is, the verb came between the subject and the object. That difference involved two distinct mental attitudes, and the tendency was, when two spoken languages were in the mouth of the same people, that one or other of two conflicting idioms was lost.

The exclusion of all English from the classroom where a foreign language was taught was supposed to obviate this danger and to ensure the purity of the idiom learnt there. But, in fact, the English element was not excluded, and while the peculiarities of the foreign idiom were often missed for lack of contrasting them constantly with the English, the boy carried into the classroom the mentality of his mother-tongue, which worked like leaven, unchecked because unsuspected, on his conceptions of the foreign language he was studying.

The speaker then went on to suggest what he described as a novel method of securing precision and fixity in the teaching of idiomatic constructions. His proposal would, he knew, be denounced as an educational heresy. He had to risk that; the situation called for heroic remedies.

He had said that his proposal was novel. It would be so to his hearers; but they might be surprised to learn that it was a familiar method among teachers of two generations back at the dawn of the twentieth century, in days where the writers on the history of pedagogy were beginning to place the close of the golden age of educational efficiency. He had unearthed the method from old volumes of examination papers set in the first decades of the century. They would find there that a very large part of every language test consisted of the turning of passages from the foreign language into English, and, conversely, of selected English passages into the foreign tongue, and

a study of the notes of edited texts of the period would show that the method formed also a very large part of class teaching.

Of course, that must seem to them, at first mention of it, an absurdly artificial proceeding, and a very slow and laborious way of treating an author. How, for instance, would they appreciate a story of Rudyard Kipling's if they had painfully to transfer each sentence from one language to another before they were permitted to go on to the next? The action, surely, would become so slow as to lose most of its interest, and the task might be compared to a very thirsty man sucking a glass of lemonade through a clogged straw.

But he thought there was another side to the question. This old-fashioned method, which its users generally knew by the now unfamiliar name of "translation," was admittedly slow; but it was not much slower than the time required to grasp the precise meaning of the text; it compelled the pupil to grapple with every detail of the idiom, and it did not allow him to mistake an appreciation of the general sense of a passage for an exact understanding of its constructions. Translation stood in about the same relation in practice to our present reading method that the dissection of a flower and examination of its sepals, petals, stamens, and pistil did to a superficial observation of its external form. The latter alone would never make a botanist, and in like manner he contended that the direct method would never, save in exceptional cases, produce a scholar. A particular teacher and a particular boy might make it succeed in spite of its defects, but as a system it was doomed to failure.

The end of both methods was to read books and understand them in the language in which they were written. But let it be clear that this was the *end*, not the best *means* towards it, of which he knew no better than a return to the forgotten art of translation.

At this point a sudden numbness came over my mind; but it was only temporary. For a few minutes I had the sensation of one plunged from an overturned boat into deep water, and struggling up with difficulty to the air; then with a start I came to myself and heard the bump of the crystal which I had let fall on the floor. F. S. S.

Prisoners' War Camp Reflections.

As one who is now in daily contact with German prisoners of war, and who has been a master in German and English schools, possibly I may be allowed an inch or two of space to give my views on German educational efficiency.

Germans are efficient; never mind, for the present, to what end. German private soldiers are at the present moment to my certain knowledge studying all branches of physics, logarithms, Tennyson in English, etc. (What English privates study Goethe in the original?) This is certainly not to the detriment of carpentering work, as much is superior to that of our own men.

German scholastic journals are not filled with complaints regarding lack of salary and position.

German schoolmasters are by no means better off in worldly goods, and they make their position as only the man himself can ever do. Germans write neatly, not for fear of punishment, and work for its own sake and for their country, as I know by personal experience. But, above all, Germans talk shop and not far-fetched politics, which concern most men scarcely at all. By this means they become experts in the trade to which they belong, and eventually may automatically dictate policy. We need more effort for its own sake. Money is merely the value of labour.

2ND LIEUT. INTERPRETER.

Lord Kitchener National Memorial Fund.

I SHALL be glad if you will kindly grant me the hospitality of your columns to acquaint the teaching profession that my council specially hopes that many teachers will decide to make their annual school concert an effort in aid of the Lord Kitchener National Memorial Fund. The council is willing to co-operate with teachers in making such concerts the greatest possible success, and if teachers will acquaint me with the likely date on which they will hold a concert on behalf of the Kitchener Fund the council will present to them a special book containing all the music, recitations, playlets, etc., required for the holding of a general or patriotic concert for old or young children.

HEDLEY F. LE BAS.

Joint Hon. Secretary.

Oswaldestre House, 34-35 Norfolk Street,
London, W.C.

"A Forgotten Chapter."

SURELY the subjects I dealt with in the pamphlet, "A Forgotten Chapter in the History of Education," which you kindly noticed last August, have, especially in the concluding pages, wider, much wider horizons than those assigned. It is as though you had carefully paid me the shillings and the pence in the account I presented, and had overlooked the sovereigns! What I protest against in the pamphlet is the monopoly, and consequent want of freedom, economy, and real efficiency, in all our county-council-made—i.e. German-made—education. Instead of organisation minus freedom, I ask for organisation plus freedom. Perfect as organisation may be in Germany, it is as perfect in the countries on its northern borders, with some features and principles quietly added, that make powerfully for ideals of freedom. These ideals are as really English as Scandinavian, or, at any rate, were so until Matthew Arnold and Lord Haldane urged us to conform to German models. All this I have set forth in the pamphlet in words against whose clearness no complaint can be lodged, as witness Lord Bryce's words—words which he permits me to quote: "The example of the northern countries is instructive, and not without significance for us now when there is a general rush to place everything under the State, and to suppose, like Matthew Arnold, that this means efficiency. We are almost as likely to be damaged by German examples as by German arms." That, I maintain, is the point of my pamphlet.

J. S. THORNTON.

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SIXPENCE.

LEFT-HANDEDNESS.

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

THE problem of the left-handed pupil is one which the teacher has constantly to face. In the days gone by it was solved quite simply. It was assumed that left-handedness was a habit—a bad habit—acquired in the same way, and to be treated in the same way, as other bad habits. The victim of the habit was urged, and even constrained, to imitate his classmates in the use of his hands—to become, in fact, right-handed. It is true that the treatment often failed, and that even when it seemed to succeed the success was only partial; for although the pupil could be induced to write and draw with his right hand, in all other manual activities involving skill, especially if freed from the surveillance of school and home, his natural left-handedness would assert itself. He would still bat and bowl, and drive in a nail, with his left hand. But this failure to change completely a left-handed boy into a right-handed boy was regarded as due to a lack of thoroughness in the training rather than as an attempt to achieve the impossible.

The truth, however, is that unidexterity (whether right-handedness or left-handedness) is not the result of habit at all, but is an innate characteristic inherited from a long line of ancestors. On no other assumption can we account for certain well-known facts: that, for instance, left-handedness tends to run in families, and that the proportion of left-handed people (about 3 per cent.) remains fairly constant among all races and during all periods of which we have any record. Neither to any social custom nor to any personal habit can so steady a degree of prevalence be assigned. Then, again, there is the curious fact that left-handedness is twice as common among men as among women—a fact paralleled by the inheritance of colour-blindness. It is doubtful whether there has ever been a genuine case of colour-blindness among women. At any

rate, it is very rare. Yet it has been demonstrated that this characteristic follows the Mendelian laws of heredity. Women transmit the trait without themselves exhibiting it. A similar though less complete latency of left-handedness in women is at least presumptive evidence of its inherited nature.

This view receives strong support from brain physiology. The reader is probably familiar with the general scheme of nerve and muscle by which the body is moved and guided. Generally speaking, the right cerebral hemisphere controls the left side of the body, and the left hemisphere the right; but the mechanism of speech is anatomically connected with both hemispheres, although it seems to be functionally connected with one only. Before any training of either hand is possible, as far back even as birth, there is a distinct difference in the appearance of the two cerebral hemispheres, and it is unreasonable to suppose that this difference of structure means no difference of function, that initially the two hands have equal chances of acquiring dexterity.

As the child grows older the disparity between the two sides of the brain increases. Highly specialised speech centres are formed in one of the hemispheres only—the one that controls the more skilful hand. This is recognised as an established physiological fact. One half of the brain is organised for more highly skilled work than the other half; it controls the speech-organs, and it controls the more skilful hand and arm. Now the question arises, does the use of the skilled hand educate the related cerebral hemisphere so that it is better able than the other hemisphere to undertake the difficult task of regulating speech; or do both functions (handiness and speech) arise from the same root fact, that one side of the brain is intrinsically superior to the other? The latter alternative may unhesitatingly be accepted—one of the two hemispheres is predominant from the very beginning; but the

other alternative need not be rejected, for it is probably also true that the initial predominance of one is fostered and enhanced by the training afforded by the preferential use of the hand connected with it.

What is the bearing of these physiological facts upon the training of the left-handed child? Let it be said at once that definitely they determine nothing; they merely suggest theories—even diametrically opposed theories—which have to be established on other lines. To some people the facts point to non-interference with Nature's promptings; to others they point to the cultivation of ambidexterity. Altogether there are three possible ways of treating the left-handed child: (1) leave him left-handed; (2) make him right-handed; (3) make him ambidextrous.

Let us consider the last possibility first. The advocates of ambidexterity assert that we ought to bring both sides of the body to the same degree of dexterity, for by so doing we should bring both sides of the brain to the same level of efficiency. And this recommendation applies to right-handed people as well as left-handed. In fact, this distinction should disappear; everybody should become ambidextrous. They claim that great advantages would arise from the cultivation of ambidexterity. Our intelligence and general usefulness would be greatly increased thereby. Some, indeed, go so far as to assert that we should no longer be subject to the limitation of being able to attend to one thing only at a time: we should be able to work simultaneously at two different tasks with the right hand and the left as though we were two different persons. These extravagant assertions are, of course, mere inferences drawn from facts of brain physiology which are capable of other interpretations; they are not supported by the evidence of experience. Certain isolated instances are cited of people who have cultivated ambidexterity, but no evidence is given that they were any better for the change. Systematic experiments in ambidextral training at school have rarely been attempted, but where they have been made the verdict has been unfavourable.

One need not, however, carry out an experiment on a large scale to see the effect of such training: we constantly see it in our schools in those individual cases where left-handed children, after having acquired the art of writing with the left hand, have been forced to re-learn it with the right hand. And what is the result? The cases are so few in any one school that it is not easy for the schoolmaster to draw trustworthy conclusions. A wide survey is necessary. Among a large number of school children, how do these cases compare with normal cases? About five years ago I

made four separate investigations into the matter, three in London schools and one in Glamorgan schools. Altogether about 1,500 left-handed children were examined, and the results, which in each investigation were the same, may be summarised as follows:—

(1) The left-handed children compared favourably in intelligence and scholastic attainments with the right-handed children.

(2) The left-handed children who had been made to write with the right hand (the pseudo-right-handed) were inferior in general school work to those who were frankly left-handed.

(3) Pseudo-right-handed children showed in many instances a marked tendency to stammer (stammering was, at the lowest estimate, four times as prevalent as among either the purely left-handed or the right-handed).

(4) In the few cases where it was possible to make the experiment the stammering of the pseudo-right-handed was either reduced or cured by allowing them to revert completely to their natural left-handedness.

These results have since been confirmed by Mr. Toyne at Brighton, and by Dr. Wallin in America.

The importance of this kind of evidence cannot be over-estimated. It is on quite a different plane from that of speculation as to what happens in the brain. Our knowledge of brain-processes is vague and obscure. Such as it is, it is based just as much on psychology as on anatomy, and to draw inferences therefrom, without subjecting those inferences to the test of practical experience, is unsafe in the extreme.

We can, in fact, interpret the known brain facts in quite a different way from that adopted by the advocates of ambidexterity. If the brain-centres that control the hands and those that control the organs of speech are in some way connected (as they seem to be), it is quite conceivable that an attempt to interfere with the natural development of these centres may lead to a disturbance in the function of speech. It is not improbable that speech-centres are necessarily unilateral, and that an attempt to establish a duplicate set of centres on the other side of the brain would lead, not to co-operation, but to competition and conflict. This, however, is again mere speculation. The pertinent and important fact is that attempts to cultivate either ambidexterity or a change of dextrality have been demonstrated to be unproductive of good and probably productive of harm.

In calling one hand the skilled hand I have implied that the other is unskilled. But this terminology does not fit the facts; for each hand is skilled in its own way. A violinist, for instance, would find it very awkward to finger

the strings with his right hand. The essential fact is that when any fine muscular adjustment is necessary we always use one particular hand. This is true of writing, drawing, sewing, knitting, shooting, and all other occupations and games of skill. The other hand plays its own special part, but it is a subordinate part. There seems to be no objection at all to making both hands equally adroit, provided each be kept to its own work and provided the manual activity specially connected with speech (I mean, of course, writing) be carried on exclusively by the naturally dextrous hand. This is not ambidexterity; for ambidexterity demands interchangeableness of function; it demands that a person should write and draw equally well and equally often with the left hand as with the right. It is this unnecessary, and perhaps harmful, duplication of work that is open to objection.

Let us try to estimate fairly the disadvantages of left-handedness. They seem to be specially exaggerated by parents, who are, as a rule, more anxious than teachers to change the left-handedness of their children. They regard it as a grave defect, to remedy which the most drastic measures are justifiable. But the drawbacks of left-handedness are not of serious import; they are only such as arise from the fact that it is exceptional and looks awkward. It must be admitted, however, that in the act of writing the awkwardness is not only apparent, but real. The slope of the letters and the movement across the paper from left to right are specially adapted to the muscular mechanism of the right hand. The dragging of the pen with the right hand is much easier than the pushing movement with the left. This disadvantage would be lessened by the spread of the tendency noticeable in many schools to make writing more closely approximate printing. In other skilled activities, such as drawing, sewing, knitting, and so forth, one hand has no advantage of construction or position over the other.

We are now in possession of data which should guide us in deciding how to treat any particular case of left-handedness. In view of the popular prejudice against left-handedness it would be well, before taking up a definite line of action, to consult the parents and put before them the pros and cons. Generally speaking, the argument for a *laissez-faire* policy is that for securing intellectual and lingual development it is the safer plan, as it follows Nature's lead; and the argument for changing left-handedness is that a social stigma (slight, but real) is escaped, and a general appearance of *gaucherie* is avoided. It is well to bear in mind that the strength of the natural tendency

towards unidexterity varies with the individual. In some cases it is so inveterate, either towards right-handedness or left-handedness, that any attempt to change it is foredoomed to failure. There may be cases—although this is very doubtful—where the child is congenitally ambidextrous, having no innate predisposition towards the preferential use of either hand; and there certainly are cases where the preference for using the left hand is but slight. It is probable that in these latter cases the advantages of training the right hand would outweigh the disadvantages.

The teacher has to deal with two very different types of left-handed pupils: one where the child has not learnt to write at all, the other where he has learnt to write and has acquired fixed manual habits. The two types evidently call for different treatment. In the first case the teacher has to discover whether the preference for the use of the left hand is due to accident (such, for instance, as the temporary disablement of the right hand at a critical period) or to an innate predisposition. This can be done by seeing how much discouragement is necessary to stop him from using his left hand. If the tendency is found to be strong it is probably inborn, and the child should be allowed to follow the promptings of Nature.

The more difficult case is that in which the child enters the school with manual habits already formed. There are three possibilities: he may appear to be entirely right-handed, entirely left-handed, or partly one and partly the other. The case where a left-handed child has schooled himself into behaving in every way like a right-handed child is so rare as to be negligible. Moreover, it would stand but a small chance of being detected. The other two types call for more careful consideration. If the child writes, draws, works, and plays with his left hand and cannot do so with his right, he has probably trained his left hand in the teeth of opposition and discouragement, and the teacher would be ill-advised to interfere with so strong a natural tendency. When the child writes with his right hand, but does everything else with his left, we have again a clear case of congenital left-handedness, and it would be well to note whether he has a tendency to stammer, and to ascertain whether he has had any speech troubles in the past. If there is no trace of lingual defect, probably the best plan would be to let him continue to write with his right hand, especially if he has never acquired the art with his left. Even if the teacher wished to effect a change he would, as I know from experience, meet with strong parental opposition. If, on the other hand, the pupil stammers there is reason to think that

a reversion to complete left-handedness would benefit, and perhaps cure, him. Here the parent, regarding stammering as a greater defect than left-handedness, would be more inclined to co-operate with the teacher. If the pupil has already acquired the art of writing with his left hand he will probably be only too glad to follow once more his natural bent.

It will thus be seen that no hard-and-fast line can be laid down for the treatment of left-handed children. The teacher must in each instance use his discretion, and he can do so wisely only when he can diagnose the case, and bring to bear upon it such knowledge as modern research is able to furnish.

CLEARING THE GROUND FOR EDUCATIONAL REFORM.

By BETA DASH.

IN the vast mental upheaval created by the war not a few cherished opinions will suffer change, many idols of the past few years will be utterly cast down, and there are already indications that among other aspects of national life education will come under the hand of the reformer. Amid the whirl and stress of reconstruction men will think more seriously of the education they desire for their sons, and will endeavour to crystallise a philosophy of life out of the structureless fluid of their imaginations. No sane person needs to be told that in the confusion which results from the destruction of old, and the growth of new, ideals lies abundant opportunity for indecision and error.

Broadly speaking, the most violent controversy rages between the so-called idealist and the materialist. Neither seems to realise that what is one man's meat is another man's poison; that all men are not cast in the same mould; and that variety rather than uniformity constitutes a nation. The one repudiates intellectual culture as an exotic growth, having little or no claim to encouragement; the other seems to forget that the physiological structure of man renders it necessary for the leisure for intellectual pleasures to be earned—by someone—before they can be enjoyed. It follows from the variety of mind and temperament that some men must provide the means of bodily sustenance and others must browse in the pastures of intellect. But the highest intelligence is not always associated with the greatest moral worth, nor is it always exercised in an atmosphere of happiness and contentment: there are men who can find virtue in a primitive life, poetry in rural simplicity, spirituality in the dark recesses of the mine, an epic in the glare and hiss and clamour of the forge.

To say that in our complex life some men investigate and make *things*, while others investigate and create *ideas*, is not to admit that there is a class distinction, still less that there is, or ought to be, any antagonism between them. The original statement is only true when low-grade manual labour is compared with high intellectual pursuits. It is utterly false when applied to men of equal intellectual ability engaged in different services. From the first hesitating steps when man drew away from his brute companions, acquired a knowledge of, and power over, natural forces, and busied himself with the organisation of social groups, there has been a tendency towards division of labour and function. But just in so far as a man lengthens his vision or deepens his understanding does he increase his dependence upon others. He contributes a penny, and may share, if he so wishes, in the proceeds of a pound. For specialisation involves co-operation, because it creates mutual obligations. Divided counsels spell disaster, and the only alternative to co-operation is disintegration and decay.

Yet how often is the penalty of intellectual eminence a narrowness of outlook which chills feeling, which recognises the value of only one branch of knowledge, one means of preparation, one field of service. Men have a great affection for subjects and methods by which they have gained distinction—and love is blind. It is also not infrequently selfish. When a man is immersed in a certain field of interest it becomes a religion to him. According to temperament, he often becomes a recluse or a missionary. Others who cannot share his enthusiasms or his delusions, as the case may be, are heathens to be pitied and ignored or converted to the true and only faith. Smarting under the bludgeon of his logic or the rapier-thrusts of his dialectic, they retaliate, and the dust begins to fly. Already the atmosphere is so thick over the field of battle that important landmarks are obscured, while others of secondary value have been brought into prominence. Thus, from the controversy over classics and science one would imagine that the salvation of the country and the Empire depended upon the examinations for certain posts in the Civil Service. It makes a mere outsider feel somewhat as Carlyle must have felt when he wrote:—

The Maker of this universe was wise.
He made all systems, planets, particles,
And the plan He rules His whirling Æons by
Is—Heavens!—is thy small Nine-and-thirty Articles!

The blunt fact at the back of all the present controversy is the cost of the war. If the struggle lasts for three years there will be an

addition to the National Debt of not less than £2,500,000,000, and we shall have to grope for the broken threads of our trade. We are impressed with the magnitude of the financial burden, and we are conscious of defects in our economic organisation which have hitherto lain hidden beneath the still waters of a peaceful existence. We have been accustomed for so long to regard the spiritual effect of our education as of more importance than material results that it came as a rude shock to us to discover that men of character, armed only with such antiquated weapons as rifles and bayonets, were rather useless against rogues with machine-guns. We are going to win this war by increasing our artillery without losing our characters, and we want to improve the weapons which secure material prosperity without any greater sacrifice. We may as well be quite frank about the subject. A nation of soulless users of engineering and chemistry might have won the war, but a nation of gentle scholars would most assuredly have been wiped out.

But because the financial cost of the war is so stupendous, and the economic future so uncertain, there is a tendency to take a one-sided view of the case. Schools and universities are being condemned because they have not provided the nation with a sufficient number of organic chemists to retain the dye industry and the manufacture of drugs and fine chemicals in this country, regardless of the fact that such men could not have found remunerative employment. Surely this is only an element in a much heavier indictment; for if the schools had turned out employers who understood the tendencies of the age they would not have refused to engage the amount of scientific advice and assistance that modern industry demands. If there is any force in the contention that our industrial organisation and equipment are inadequate, and if the schools and universities take any responsibility for the national intelligence, it is not scientific experts that are wanting so much as enlightenment among the general public. What shall be said of a system which results not only in the manufacturer being unable to see in which direction industrial prosperity lies, but also in a profound national indifference to education?

This lack of interest in education was almost a byword before the war, but it represents an attitude which appears to have been taken for granted, when it would have repaid analysis. A great many parents are interested in the education of their own children, and willingly make heavy sacrifices on their behalf. Their interest, however, is individual and personal, and there is no crystallised sense of the importance of education to the nation. They

think, for example, that State-aided schools exist in order that bright children, whose education, and therefore whose material prospects, would in some obscure way be damaged, may have their opportunity. An education authority is to them like a Board of Guardians administering relief in the form of schooling. The idea that the material prosperity of the country requires the highest standard of knowledge and the soundest training that can be provided for all men, and that special ability must be sought in all grades of society, sounds to them, as the writer has proved by experience, like a new and pernicious heresy. The conceptions of dependence, of mutual obligation, of common benefit, have never entered their minds. What a travesty of citizenship! Rights without responsibilities!

The attitude can be both excused and explained. The excuse lies in the very human desire of the parent to hand down to his offspring the privileges which he has himself enjoyed. There is an instinct to preserve the social order. The couplet:

God bless the Squire and his relations,
And keep us in our proper stations,

expresses this, and is in direct opposition to the instinct which is at the back of ambition and enterprise. In its highest form it means that family affection is stronger than patriotism; that the family comes before the State. And so long as families were isolated and communities were small, while wealth depended upon relatively unskilled and unorganised labour, the principle was not seriously challenged. But the enormous development of transport and communication and the applications of science have brought with them a corresponding division of labour and function. When the nation ceased to be independent in an economic sense, organisation on a national scale became necessary in times of peace as well as in times of military necessity. Obsessed with false ideas of liberty, the individual has been slow to perceive this. The material changes proceeded so rapidly that men have not had time to adjust their ideas. As an ethical or political principle the individualism of the nineteenth century survived long after its use or validity had disappeared into the limbo of buried heresies. Throughout the century, and overlapping the legislation by which Free Trade (not necessarily at the time a bad policy) was established, a series of Acts was passed—Factory, Public Health, Education—in which the State deliberately saddled the individual with responsibilities which he would not, or could not, assume until they were made legally imperative. In a score of ways the State said:

"You are not independent. The railway and the steamship and the telegraph have bound together more closely men at opposite ends of the kingdom than a hundred years ago men in the same family were bound." And so we get the eternal conflict between self-interest and self-denial—a conflict which is only dissolved in the common agony of war.

Now in reply to all this the schoolmaster will ask whether he is to be saddled with the whole responsibility for the defects of social and political conscience. He will say that he has endeavoured to train the boys committed to his care in honour and obedience; and he may even add that he has tried to teach them citizenship. If they are not interested in the law and custom of the Constitution, the administration of justice, and the organisation of the police force—at, say, fourteen years of age—it is not his fault. The classical schoolmaster will explain that his sixth-form boys, at any rate, have learnt through Latin and Greek ethical truths and political wisdom that have stood the test of more than two thousand years—before the steam-engine and the telegraph came to disturb the social equilibrium. If you tell these men that Labour is truculent and unreasonable, that many employers are harsh and grasping, that their pupils will ultimately be called upon to effect social readjustment, they will ask whether you desire them to teach politics; and they will point out to you that the attempt, as they understand politics and under present conditions, would be disastrous. For the average Englishman imagines that politics can only be learnt from a halfpenny newspaper or over a drink in a political club. Anyway, he does not trust the schoolmaster to deal with practical affairs.

All these arguments are somewhat wide of the mark. We have become fairly well convinced that our industrial organisation is imperfect; we have traced the imperfections to a general inability to understand the tendencies of the age; and we ask the schoolmaster whether it is possible to prepare more adequately for the practical purposes of life. Since the affairs of an industrial State are becoming more and more dependent upon scientific knowledge, it has been assumed that the inclusion of science in all curricula and an extension of the time given to it will meet the case. The scientific man is no less a Pharisee than his literary opponent. Each of them is apt to say: "If only all people knew some of what I know, things would go more smoothly." Moreover, the literary man is in possession, and possession is "nine points of the law." He is also rather exclusive. He fears a thing which he does not understand, and he imputes—unconsciously perhaps—

motives which do not exist. When even a moderate scientific man asks for a lodging, the literary man regards the application as an ejection order. So we have public meetings and solemn resolutions, violent letters to the papers, and all the paraphernalia of a political controversy.

The extremists on each side take up what is practically the same attitude. They contend that a man who has been "educated," in their sense of the term, can do anything; that education is a sort of mental training which produces universal adaptability and infinite resource; that this universal quality enables its possessor to rise superior to his own ignorance and to triumph over the specific knowledge of others; and that the subjects therefore are of less importance than the methods of study. However true this may have been when life was simpler and the destiny of an individual or a nation was more wholly under the influence of unseen and indeterminate forces, it is not true to-day. We have no desire to cast doubt on the disciplinary value of Greek and Latin, nor to close the door on the intellectual stores of bygone years. But the world is growing older. The heritage of the past is increasing in volume. The life of to-day is appalling in its many-sidedness and complexity. And in spite of improved methods, more highly trained teachers, and other advantages, it is impossible to keep pace either by lengthening the duration of school life, or by enlarging, eugenically or otherwise, the capacity of the average boy. That there must be selection of material and periodical readjustment is patent to all who believe that education should have a close relation to concurrent interests and experience. Just as each national system exhibits certain national characteristics at any one period, so also must the education of a single nation change with the changing outlook of the passing years.

Now the object of reform is to counteract the disintegrating influences of excessive division of labour and function, and to secure co-operation towards national ends through a general sense of social and national welfare. Surely there is some field of interest and experience, some group of ideas, common to all boys of the same generation, whatever their future occupation or class. Is it not possible, in youth or early manhood, to give some instruction bearing on the social, political, and economic world which the embryo citizen will shortly enter? The elementary school must be excluded from discussion here because so little can be done with the immature minds of boys under fifteen years of age. But the secondary-school boy, if he stays long enough, is better material. He leaves school at sixteen,

seventeen, or eighteen years of age with a general knowledge of his country's history up to, say, the Crimean or the Franco-German war, and with a knowledge of elementary chemistry and physics which is less, rather than more, extensive. Within ten years he finds himself in the whirlpool of central or local politics, bewildered by their complexity, having little leisure for serious reading and study, and with great gaps in his knowledge in which the threads connecting past, present, and future are wholly lost. In this, for him, uncharted sea he is driven by the currents of ignorance, and perhaps prejudice, into the shallows of this or that party, where waves of sentiment and feeling waste their feeble efforts on the shifting sands of time. Of the deeper influences which, for more than a hundred years, have been shaping the history of nations and directing the destiny of the human race, he knows nothing, unless happy chance forces them upon his attention.

In times of rapid economic development, when material progress is altering the relation of man to man and nation to nation, does it not seem essential that every man capable of learning at all should be taught, in its main outlines, the industrial and economic history of the last two centuries? How otherwise can he enter sympathetically into the life and spirit of his own times? How otherwise can he co-operate intelligently with those who share with him the burden of empire? Are the struggles of the people to adapt themselves to new material conditions matters of interest to the industrialist alone? Are they not equally important to the classical schoolboy? Or, alternatively, is it not as important that classical schoolboys should be in touch with the material conditions of their own well-being? Is there something particularly vulgar or poisonous about the present and the practical that young and sensitive minds should be shielded from them as from a pestilence? Is there something politically or socially or morally dangerous that they should be left to men of mature minds or subdued passions? Or is there some special virtue in detachment and remoteness that outweighs all other considerations?

The solution of the problem lies almost entirely in the hands of the schoolmaster, who has his own difficulties. He is shut off by the division of labour and function from much of the real world. He moves in a vicious circle—from school to university and back again to school. At the university he became a specialist, and learned how to study a subject rather than to become a man of affairs. He learned valuable lessons in co-operation and discipline in the school or university society, but the ex-

perience was almost invariably in one thin social layer, and not in the seething mass of humanity which characterises the world outside school. He is suffering from the same disease—possibly in an aggravated form—which in others he is called upon to cure. He is a victim of the very circumstances from which it is demanded he shall rescue them. He is tied hand and foot by the university, which, having taught him that the exhaustive study of a subject is the highest aim of human intelligence, follows him up by prescribing syllabuses which are admirable steps towards that end. The boys tend to become, in effect, embryo classicists, historians, mathematicians, or scientists. But just so nearly as they approach that academic ideal they diverge from the actualities of their human and material environment, with its cry for understanding, sympathy, and co-operation.

A boy may study ever so deeply a period of history covering, say, a hundred years or less, between the landing of Julius Cæsar and the death of Queen Victoria; but it is pretty certain to be political history and foreign policy, and it is doubtful whether he will realise that whereas two hundred years ago statesmen were leading the nation, for the last hundred years they have been vainly endeavouring to overtake the social changes produced by the rapid progress of discovery, invention, transport, and communication. A clear comprehension of these changes would involve some idea of the technical changes which produced them. Does school science, concerned so largely with the establishment of scientific laws, help towards this? Have we escaped from the soul-killing grammar of language only to be choked by the grammar of science? Are we sinking to the dead word or rising to the living thought? Is there any romance, any broad, human, as distinct from a narrow, selfish, intellectual, interest in school science? Has not the pendulum swung too far in the direction of academic study, and therefore out of the range of both interest and utility? No sane man wishes to destroy the intellectual discipline of school studies, or imagines that complete comprehension of the industrial and political world is within the range of schoolboys; but the question may be asked seriously whether attention should not be directed more fully to the way in which this civilisation of ours has arisen, to the great social movements and material triumphs of recent years, and to the immediate problems which will require special knowledge, fine temper, and trained judgment for their solution.

We concentrate our efforts far too much on high academic distinction for the few, and we neglect the average man. Yet it is the vote

of this numerous but obscure type that puts Governments in office and turns them out again; and it is the capacity of the average man to comprehend the deeper movements of his time that limits the range and utility of all Government action. Not a few men lose patience with narrow learning that lives in its own little world and preaches philosophy to those who bear the heat and burden of the day. The future of this country is not in their hands, but in the hands of the great mass of men who spend nine or ten hours out of the twenty-four in the production and distribution of material things. If they, in their scanty leisure, are to exercise sound judgment, so that the land may be well governed and the more fortunate or the more highly endowed may enjoy the rich fruits of their civilisation, they must be trained to the measure of their responsibilities. A few experts cannot, in these days, do all the thinking for forty-six millions of people—the forty-six millions will not let them. Knowledge and experience of the rapidly changing world cannot be picked up at street-corners. Men must be specially educated to meet the new conditions. And there ought to be in this education of men of all grades some common element which produces similarity of outlook and breeds unity of effort.

A THIRTEENTH-CENTURY FRAGMENT OF EUCLID'S ELEMENTS.

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INTRODUCTION.

IN Worcester Cathedral Library there is among the MSS. a volume (Q. 89) in which, on five pages at the beginning of the book, originally left blank, are written the definitions, postulates, axioms, and the first twenty propositions of the first book of Euclid's Elements. The handwriting is different from that of the rest of the book, and authorities like Mr. Madan and Dr. M. R. James agree in assigning it to the second half of the thirteenth century.

I gave a slight account of this MS., and of a still earlier fragment of non-Euclidean geometry, with facsimiles, in papers read before the Worcestershire Archaeological Society (published in their report for 1909), and before the Mathematical Association in London in January, 1911 (published in the *Mathematical Gazette* for March, 1911).

In June, 1916, however, I had the opportunity of comparing, in the Bodleian Library, this MS. with a MS. version (3359) from the Arabic. The full title of this work is *Euclidis*

philosophi Socratici incipit liber elementorum artis Geometricæ translatus ab Arabico in Latinum per Adelardum Goth'um bathoniensem sub commento magistri Campani Novariensis quindecim continens distinciones. I have also compared our Worcester MS. with early printed versions, both from the Arabic and the Greek.

This comparison showed that our fragment, while very nearly identical with other ancient versions in the Definitions, Postulates, Axioms, and Enunciations, differs widely from all other versions and editions, ancient and modern,

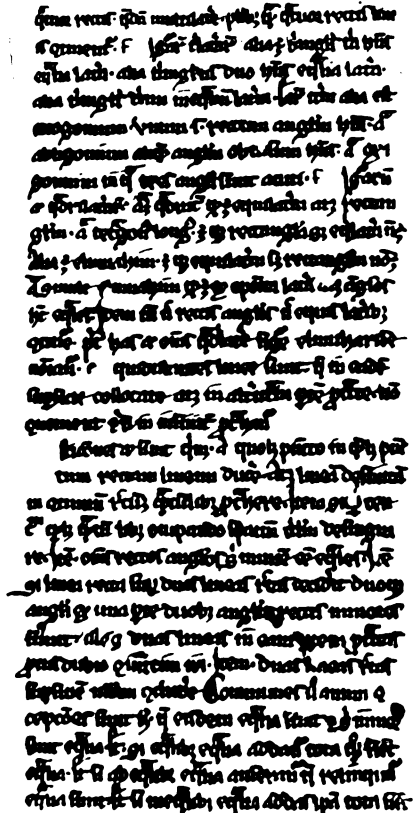


FIG. 1.—Reproduction of a photograph of p. 2 of the Worcester Fragment of a translation of Euclid's Elements from Arabic into Latin.

that I am acquainted with, in the way in which it presents the demonstrations. I have therefore transcribed the whole, as it seems a duty to make this interesting and suggestive peculiarity of our Worcester MS. accessible to students of early methods of geometrical teaching.

The peculiarity is this. In all other versions, so far as I know, there are figures carefully drawn and lettered, and the demonstrations are fully worked out, every point, line, angle, triangle, etc., being defined by letters, in the text and in the figures, as in our English Euclids and other geometries. But in the Worcester MS. there are no figures (though

there is room for them in the margin), and in the text there are no letters used, or references made to figures which might be subsequently supplied. There are only full directions as to construction, and slight hints as to the line of proof. The proof is, moreover, developed on the basis of an argument with an "*adversarius*."

Take, for example, the proof of the well-known 4th Proposition. "Prove it by superposition, that is, by the last but one of the axioms. If your opponent obstinately holds out convince him by indirect reasoning based on the 5th postulate." The proof of the 7th Proposition is very brief. "From the 5th by indirect reasoning." That of the 14th is: "From the second part of the first postulate and the preceding proposition convince him by indirect reasoning."

A few further words of introduction may be desirable in order to indicate other points of historical interest in our fragment.

Euclides the mathematician, the greatness of whose genius is more and more highly estimated as every century passes, lived about 300 years B.C. His native country is unknown, but his home was probably in Egypt, in the time of Ptolemy Lagos. He was the author of several still-existing mathematical works, besides those "*Elements*" which we familiarly call Euclid. He is the leading figure in that wonderful School of Greek Geometers of which the next best-known name is that of Archimedes.

Boethius, who is sometimes described as the last of the Romans, is said to have translated Euclid into Latin in the fifth century A.D.; but his geometry, as it has survived, is by no means a translation. Through him, however, some imperfect knowledge of Euclidean geometry survived in Christendom into and through the Dark Ages. Sir T. L. Heath, in his excellent edition of the thirteen books of Euclid's *Elements* (Cambridge Press, 3 vols.), gives an interesting proof that something of Euclid was known in England in the tenth century. He quotes some old English verses from Halliwell's *Rara Mathematica*.

The clerke Euclide on this wyse hit fonde
This craft of gemetry in Egypte londe.
In Egypte he tawghte hyt ful wyde,
In divers londe on every syde.
Mony erys afterwarde y understonde
Yer that the craft com ynto this londe;
Thys craft com into England as y now say
In tyme of good Kyng Adelstone's day.

That is, from 925-940 A.D.

Euclid, as it reached medieval Christendom, through Latin channels, was, however, very fragmentary. It was preserved through another channel by translations from the original Greek into Arabic. Some account of

these Arabic versions may be seen in Harles, *Bibliotheca Græca*, Hamburg, 1785, vol. xiv., or in Sir Thomas Heath's work mentioned above. The earliest is known by the name of Anaritius, and was made about 900 A.D. The MS. is, or was until lately, in the library of the University of Cracow. Others are in Paris and Turin. These translations were known in Christendom to exist; but Christians were excluded from Moorish universities.

It was not until early in the twelfth century, about 1120 A.D., that Euclid's *Elements* began to become known in the Christian schools and monasteries of the West. A monk of Bath, Adelhard or Æthelhard by name, a man evidently of extraordinary thirst for knowledge, combined with great daring and resource, learnt Arabic, and professing to be a Mahometan, was allowed to study at the Moorish Universities of Cordova, Granada, and Seville. He appears to have studied at Tours and Laon, and to have lectured at the latter school. He travelled in Greece, Asia Minor, Egypt, and North Africa, as well as in Spain. He brought back from Spain his own translation into Latin of the text-book he had studied there in Arabic, the full title of which I have given above.

It is with this translation that our fragment has close affinities. They are not precisely identical, and there are different slight accidental errors in the two MSS. It would require experience in the collation of MSS., which I do not possess, to pronounce on the relation between them. But that both are derived from the Arabic is clear from the following extract from the definitions, which I quote in full from the Worcester fragment, giving in round brackets readings of the Bodleian MS., and in square brackets those of the first printed Latin version from the Arabic (Venice, 1482).

Alia est elmuahim (elmuahim) [helmuaym] estque equilaterum [a] sed rectangulum [a] non est. Alia simile [est similis] elmuahim (elmuahim) [helmuaym] que est ex oposita (proposita) latera atque angulos habet equales [que opposita latera habet equalia atque oppositos angulos equales]. Idem tamen (eadem) nec rectis angulis nec equis lateribus continetur. Preter has autem omnes (alie) quadrilatera figure elmuharife (elmuharifa) [helmuariphe] nominantur.

This passage will be seen in the reproduction of p. 2 of the MS. shown in Fig. 1, lines 10 to 15.

The obvious reason why these Arabic words occur for what we call rhombus, rhomboid, and trapezium is that there existed no words in Latin for these figures, and that their Greek names were unknown to the translators.

In the definitions our MS. agrees closely with other early versions from the Arabic; but these definitions are less correct than those taken from existing Greek MSS. Compare, for example, the definition of a plane angle in our MS. with that in a version from the Greek—*Planus angulus est duabus lineis in plano se tangentibus nec in eadem recta positis alterius lineæ ad alteram inclinatio* (κλίσις).

It also agrees closely on another point which is of special interest to mathematicians. Our English editions have represented Euclid as making 3 postulates, and assuming 12 axioms. But in our MS., as in other versions from the Arabic, there are 5 *petitiones*, and 8 *communes conceptiones*. The 3 postulates in English text-books of Euclid are:

1. That a straight line may be drawn from any one point to any other point.
2. That a straight line may be produced to any length in a straight line.
3. That a circle may be described from any centre at any distance from that centre.

In the Arabic versions, including our own, the first two of these are combined, and form the first *petitio*; the third of them forms the second *petitio*; the third is that all right angles are equal; the fourth is the well-known axiom on parallels; and the fifth is that two straight lines cannot enclose a space.

Then follow the *communes conceptiones*. But there is a note in the Bodleian MS. of Adelhard's version also occurring in the 1482 printed edition. "*Sciendum est autem quod preter has animi conceptiones sive communes scias multas alias que numero sunt incomprehensibiles pretermisit Euclides.*" It is possible here may be sought the explanation of certain references in our MS. which I do not understand, e.g. the last words in the demonstrations of the 2nd and 3rd Propositions—"the rule which says 'Every line, etc.'"

It is now known that the Arabic versions represent the original Greek of Euclid. Our English text-books all follow the *Editio princeps* of Euclid's Elements, by David Gregory (Basle, 1533), who transferred the last three of the original postulates to what Euclid had called common conceptions, and Gregory taught us to call axioms.

This is, of course, a very meagre outline of a large and interesting subject. All who wish to see this outline filled up should consult Sir T. L. Heath's work, and *Euclidis Opera Omnia*, Ediderunt I. L. Heiberg et H. Menge, Leipsic, 1883, Teubner, 6 vols.

I do not attempt to touch on the mathematical questions involved. The axiom or postulate about parallel lines has been dis-

cussed since the time of Proclus, and endless attempts have been made to prove it as a theorem; or to get rid of it by adopting some other definition of parallels. The literature of the subject in modern times is enormous.

To recur to our Worcester MS. What its precise origin may be, or the reason for its unique peculiarity in the presentation of the demonstrations, I do not know. It may have been the original form in which the Greek text was presented, or it may be an abridgment of the complete original text; and if the latter, it may have been made, as I am inclined to suspect, for educational purposes. From this point of view it seems to me to possess great interest and value. The use of such a text-book of geometry, which defines the logical sequence of the propositions, and suggests, but does not give in detail, their proofs, is a challenge to the intelligence of the beginner, and excites his interest by making appeal to his reasoning power and originality. It entirely does away with all mechanical learning of proofs by heart. If I had once more to teach geometry to a class of beginners I should first take them through an easy course of practical geometry, and then take the Worcester MS. as my model, and I heartily commend it to the consideration of teachers.

Finally, it may be remarked that the existence of this MS. in our Library proves that in the thirteenth century the Priory of Worcester did not discourage secular studies. The study of mathematics in the monasteries was in general disapproved of. "*Mabillon—I quote from Harles—in consilio de studiorum monasticorum ratione suadet monacho fugere artes quæ totum animum rapiant, et a spiritalibus arceant, quales sunt mathematicæ.*"

Pico de la Mirandola says: "*Nihil majus nocivum theologo quam frequens et assidue in mathematicis Euclidis exercitatio.*" (Harles, vol. xiv., p. 76.) Kepler, however, is strenuous in holding the opposite opinion: "*Vera quidem theologia nullam mathematicam demonstrationem extimescit quæ vel convellatur vel everti queat, itaque nec theologis nocerebit Euclidi adsuevisse. . . Si theologum ab Euclidis diligenti tractatione removere volumus ne acutius cernat quid Deus jusserit, quid hominum vel inscilia vel incuria introduxerit ratumque habuerit, valeat Mirandulanus cum conclusione sua, aut solis theologis fateamur rationem, Dei munus, excolere non licere.*"

TRANSCRIPTION.¹

[P]unctus est cui pars non est.

Linea est longitudo sine latitudine, cuius extremitates quidem sunt duo puncta.

¹ The MS. is continuous, and not, as in the transcription, arranged in paragraphs. Letters placed in square brackets are blank in the original, being left so for subsequent illuminated capitals.

Linea recta est ab uno puncto ad alium extensio in extremitates suas utrumque eorum recipiens.

Superficies est que longitudinem et latitudinem tantum habet, cuius termini quidem lineae.

Superficies plana est ab una linea ad aliam extensio in extremitates suas eas recipiens.

Angulus planus est duarum linearum alternus contactus quarum expansio supra superficiem applicatioque non directa.

Quando que angulum continent due lineae recte fuerint rectilineus angulus nominatur.

Quum recta linea supra rectam lineam steterit, duoque anguli utrobique fuerint aequales eorum uterque rectus erit, lineaque lineae superstant ei cui superstat perpendicularis vocatur.

Angulus qui recto maior est obtusus dicitur.

Angulus vero qui recto minor est acutus appellatur.

Terminus vero est quod cuiusque est finis.

Figura est que termino vel terminis continetur.

Circulus est figura plana una quidem linea contenta que circumferentia nominatur in cuius medio punctus a quo omnes lineae ad circumferentiam exeuntes sibi invicem sunt aequales. Et hic quidem punctus circuli centrum dicitur.

Diametros circuli recta est linea que super centrum eius transiens que extremitates suas circumferentiae applicans circulum in duo media dividit.

Semicirculus est figura diametro circuli et medietate circumferentiae contenta.

Portio circuli est figura recta linea et parte circumferentiae contenta semicirculo quidem aut maior aut minor.

Rectilineae figurae sunt que rectis continentur lineis, quarum quaedam trilaterae tribus rectis lineis, quaedam quadrilaterae quatuor rectis, quaedam multilaterae pluribus quam quatuor rectis lineis continentur.

Figurarum trilaterarum alia est triangulus tria habens aequalia latera, alia triangulus duo habens aequalia latera, alia triangulus trium inequalium laterum. Earum trium alia est orthogonium, unum scilicet rectum angulum habens, alia obliquonium aliquem angulum obtusum habens, alia oxigonium in qua tres anguli sunt acuti.

Figurarum autem quadrilaterarum alia est quadratum quod est equilaterum atque rectangulum, alia tetragonus longus est, que rectangula sed equilatera non est. Alia est elmuahim est que equilaterum sed rectangulum non est. Alia simile elmuahim que est ex opposita latera atque angulos habet aequales. Idem tamen nec rectis angulis nec equis lateribus continetur. Praeter has autem omnes quadrilaterae figurae elmuaharife nominantur.

Equidistantes lineae sunt que in eadem superficie collocatae, atque in alterutram partem protractae non convenient etiamsi in infinitum protrahantur.

[P]etitiones autem sunt quinque.

A quolibet puncto in quolibet punctum rectam lineam ducere, atque lineam definitam in continuum rectumque quantumlibet protrahere.

Item super centrum quodlibet quantumlibet occupando spatium circulum designare.

Item omnes rectos angulos sibi invicem esse aequales.

Item si linea recta super duas lineas rectas ceciderit duoque anguli ex una parte duobus angulis rectis minores fuerint, illas duas lineas in eam partem protractas procul dubio coniunctim iri.

Item duas lineas rectas superficiem nullam concludere.

Communes vero animi conceptiones sunt haec.

Que eisdem aequalia sunt et sibi invicem sunt aequalia.

Et si equalibus aequalia addantur tota quoque fient aequalia.

Et si ab equalibus aequalia auferantur que relinquuntur aequalia sunt.

Et si inequalibus aequalia addas ipsa tota fient inequalia.

Si fuerint due res quarum utraque unius eiusdemque erit dimidium utraque erit alteri aequalis.

Si fuerint due res uni aequales utraque erit equalis alteri.

Si aliqua res alicui applicetur nec excedat altera alteram ille sibi invicem erunt aequales.

Omne totum maius est sua parte.

I. [S]uper datam rectam lineam triangulum equilaterum collocare.

A duobus terminis date lineae ipsam lineam occupando cum circino duos circulos sese invicem secantes describere. Et ab ipsa communi sectione circulorum ad duos terminos lineae propositae duas lineas rectas dirigere. Deinde ex circuli descriptione argumentum elice.

II. [A] dato puncto cuilibet lineae recte propositae equam rectam lineam ducere.

A dato puncto ad terminum propositae lineae lineam rectam dirigere. Super eam triangulum statuere: a termino autem date lineae circulum triangulum concludentem describere: et rursus ab eodem termino latus trianguli equilateri ad circumferentiam directe protrahere, rursusque a vertice equilateri occupando ubi incidit latus eius ad punctum in circumferentiam alium maiorem circulum describere. Deinde ex circuli descriptione atque ex tertia et prima communi conceptione argumentum elice. Hec propositio capit fidem ex prima propositione et ex illis regulis que dicunt omnis linea et cetera.

III. [P]ropositis duabus lineis inequalibus de longiore earum equalem breviori abscindere.

A termino longioris equam breviori lineam rectam sicuti premissa proponebat ducere. Et ab eodem secundum spatium brevioris circulum describere. Deinde ex circuli descriptione argumentum elicere. Hec propositio capit fidem ex illa regula omnis linea et cetera.

IV. [O]mnium duorum triangulorum quorum duo latera unius duobus lateribus alterius fuerint aequalia, duoque anguli eorum illis equis lateribus contenti aequales alter alteri, latera quoque erunt illorum reliqua sese respicientia aequalia, reliqui vero anguli unius reliquos angulis alterius aequales.

Ex superpositione, scilicet ex penultima communium conceptionum. Et si protervius perseverat adversarius ex quinta petitione indirecta ratiocinatione eum argue.

V. [O]mnis trianguli duorum equalium laterum angulos qui supra basim sunt aequales esse necesse est,

atque si eius duo equalia latera directe protrahantur fient quoque sub basi duo anguli invicem equales.

De duobus equis lateribus propositi trianguli directe adiectis equas portiones reseca. Itaque ab eisdem sectionibus ad duos angulos qui sunt sub basi duas rectas lineas se invicem secantes dirige. deinde ex premissa et tertia communi conceptione argumentum elice.

VI. [S]i duo anguli trianguli alicuius equales fuerint duo quoque latera angulos illos respiciencia erunt equalia.

Hanc propositionem ex quarta argues indirecta ratiocinacione. Illud duorum laterum quod adversarius longius esse metietur ad mensuram brevioris resecando. ab uno duorum equalium angulorum ad illud latus rectam lineam inducendo. Est autem impossibile ad quod adversarii partem perduces totalem angulum partiali esse equalem, quod ultime conceptioni patet esse contrarium.

VII. [S]i a duobus punctis aliquam lineam terminantibus due linee ad punctum unum concurrentes exierint ab eisdem punctis alias duas lineas singulas suis conterminalibus equales que ad alium punctum concurrunt in eandem partem impossibile est.

Ex quinta indirecta ratiocinacione.

VIII. [O]mnium duorum triangulorum quorum duo latera unius duobus lateribus alterius fuerint equalia, et basis unius basi alterius equalis duos angulos equis lateribus contentos equales esse necesse est.

Ex superpositione hec octava propositio arguetur. quodsi nondum adquiescat indirecta ratiocinacione arguetur.

IX. [D]atum angulum per equalia secare.

De duabus lineis datum angulum contingentibus equas porciones reseca eundem angulum continentes, anguloque dato basim subtende duobus punctis sectionum terminatam, atque super eandem basim ex altera parte triangulum equilaterum statue, et habebis quadrilaterum. In hoc itaque quadrilatero a dato angulo ad angulum oppositum lineam rectam ducito: hanc igitur rectam communem faciendo ex predicta ipotesi que est absctas porciones suas equales esse et ex premissa argumentum elicito.

X. [P]roposita linea recta eam per equalia dividere.

Super lineam propositam triangulum equilaterum statue, atque ab angulo superiori eum per equalia dividendo ad lineam datam rectam lineam dirige. Deinde ex quarta argumentum elice.

XI. [D]ata linea recta a puncto in ea asingnato perpendiculararem extrahere duobus quidem angulis equalibus ac rectis utrinque subnixsam.

Super eandem lineam duo puncta asingnato hinc unum inde alterum a dato puncto equaliter remota, et super lineam quam terminant triangulum equilaterum statue, atque a dato puncto ad supremum angulum rectam perpendiculararem dirige. deinde ergo duabus basis partibus ipsam rectam communem faciens ex octava propositione et perpendicularis descriptione eandem erectam convinces esse perpendiculararem.

XII. [A] puncto extra asingnato ad datam lineam indefinite quantitatis perpendiculararem ducere.

A dato puncto circulum describe qui datam lineam secet: illam vero partem linee date quam circulus jam descriptus continet per medium seca, et a medio puncto ad datum punctum lineam rectam dirige, et a dato puncto ad terminos linei in circulo incluse duas rectas lineas ducito, et sicut in premissa argumentum elice.

XIII. [O]mnis recte linee super rectam lineam stantis duo utrobique anguli aut recti sunt aut duobus rectis equales.

Si duo anguli sunt equales sunt recti per descriptionem: si non sunt equales extrahatur perpendicularis, inde sic anguli quos facit perpendicularis sunt recti. set anguli quos facit alia linea equivalent illis, ergo et cetera.

XIV. [S]i due linee a puncto unius linee in diversas exierint partes que duos circum se angulos duobus rectis equales fecerint ille due linee sibi invicem coniuncte sunt linea una.

Ex secunda parte prime petitionis et premissa eum indirecta ratiocinacione argue.

XV. [O]mnium duarum linearum inter se secantium omnes anguli contra se positi sunt equales.

Hoc probatur per decimam tertiam propositionem.

XVI. [S]i quodlibet laterum trianguli directe protrahatur faciet angulum extrinsecum utroque angulo trianguli sibi opposito maiorem.

Ab angulo recta fronte ex adverso constituto sibi oppositum latus per equalia secantem, et ab eodem versa vice per equalia sectam rectam lineam ducito atque ab huius termini exteriori ad angulum extrinsecum lineam rectam dirigito. Age ergo ex quarta et premissa propositione argumentum elicito.

XVII. [O]mnis trianguli duo quilibet anguli duobus rectis angulis sunt minores.

Ex premissa et tertiadecima argue.

XVIII. [O]mnis trianguli longius latus maiori angulo oppositum est.

De longiore equam breviori reseca, et ab adverso angulo ad punctum sectionis lineam rectam erige. deinde ex v et xvi argumentum elice.

XIX. [O]mnis trianguli maior angulus longiori lateri oppositus est.

Quod enim equali non oponatur per v. eque non breviori per premissam argues.

XX. [O]mnis trianguli duo quelibet latera simul iuncta relicto sunt longiora.

A communi eorum termino protrahens equalem breviori in longum adde brevissimo. hisque duobus equis lateribus basim subtende. Age ergo ex v^{ta} et xviii^{ma} argumentum elice. Manifestum quod si duo latera equa fuerint ambobus pariter acceptis reliquum latus equum non esse (words erased here) eis triangulis esni p^ol³ (illegible) sed nec si maius ambobus esset.

THE DIFFICULTY OF ORAL WORK.

By E. CREAGH KITSON, B.A., B.-ès-L.

WHEN the direct method first came into vogue great stress was laid on the fact that it was a *natural* method. Naturalness, however, was taken to be the same thing as *easiness*. It was pointed out that a child might learn a foreign language in the same way in which it learns its own in the home and the nursery; and, as nobody seemed to realise that a child only learns its own language after much effort extending over many years, or that the learning of a language at school can never be quite the same thing as learning one's own language at home, the notion spread that the direct method was one devoid of difficulties, a method by which the foreign language was, so to speak, absorbed by the pupil without any expenditure of effort. This view was further confirmed by the fact that the reformers made a severe attack on the strenuous teaching of unscientific grammar, which had been regarded as the chief "discipline" of the old method. There is plenty of proof that this misconception is still widely prevalent, and it is therefore in every way desirable that some attempt should be made to make clear the nature and the degree of effort required in learning a foreign tongue.

The teaching of foreign languages in this country has heretofore not been satisfactory. There is some hope that it will be taken more seriously in the future. The suggestion has even been made that Russian shall be added to the list of languages to be learnt, and this suggestion has in some quarters been acted upon. It is not, however, an easy language, and if we teach Russian in the future no better than we have taught German in the past, we might just as well leave it alone. There is no more certain way of failing in an enterprise than by under-estimating its difficulties; the first thing necessary for success is to see clearly what the difficulties are and the means by which they are to be overcome.

In comparing the direct method with the old "grammatical" method, it is at once clear that the former *undertakes to do more*; it sets out with a bigger programme, for it aims at teaching not only to read and write that foreign language, but also to pronounce it purely and speak it fluently.

Here, indeed, it seems idle to speak of two methods, for a system of teaching a living language which leaves out of account pronunciation and fluency of speech can scarcely be called a method of teaching it at all. And even if it is objected that a teacher can impart a pure pronunciation without adhering to the principles of the direct method, we still have

to be convinced that boys can learn to speak a foreign language in class by speaking English! If we use all the time at our disposal in class for the practice of the foreign tongue, our pupils, if they are diligent, will arrive at some measure of fluency; but if one lesson a week, or ten minutes at the end of each lesson, be allotted to "conversation," the result, so far as any real mastery of the foreign language is concerned, will be so slight as to be negligible. The only question is: Are we to aim at purity of pronunciation and fluency of speech, or not?

If pronunciation is admitted, as it evidently must be admitted, to be a matter of primary importance—I need not here insist on the reasons why—then the first task for anybody who wants to learn a foreign language is to study and practise its speech-sounds. To master the system of pronunciation of any foreign language is a matter of extreme difficulty. It cannot be done by imitation; the exact nature of each sound in the foreign language must be understood—the sounds being represented by the alphabet of the International Phonetic Association; then must follow a severe training in "vocal gymnastics" in the pronouncing of words and sentences, attention being paid not only to the quality of each sound, but also to length of vowel, stress, and intonation. The difficulty of this side of modern language teaching can be regarded as slight only by those who are not accustomed to do their work thoroughly; and it must be done thoroughly if the oral work to be founded on it is to have any value, otherwise the different vowels, *e.g.*, of the words *bu*, *boue*, *bœufs*, *bœuf*, will not be sharply distinguished from each other. It is only after considerable physical effort and much determination on the part of the pupil that his lips and his tongue can be trained to the utterance of unwonted sounds, or his ear accustomed to distinguish them. He should finally be able to write readily from dictation in the phonetic characters.

But if this work is hard, it should be remarked that it is, on the other hand, not only full of interest—the enthusiasm that grows up in a class for phonetics is extraordinary—but also of great educational value as a training for the ear and the vocal organs. Training of this kind stands to a youth all his life, giving him greater linguistic power generally, and putting him in a position to tackle other languages later in a more businesslike manner—a necessity that frequently occurs for those who serve the Empire, whose duties call them into the uttermost parts of the earth. When, some years ago, a pupil of my own—who had passed into the Indian Police—wrote home that he had come out first in his

examination in Urdu, I could not help thinking that the thorough phonetic training he had received at school must have been a considerable factor in his success.

Pronunciation and fluency are not, of course, separated from each other in practice, for carelessness of pronunciation has always to be corrected, although this becomes decreasingly necessary as a boy rises in the school, until in the highest forms it occurs no oftener than in the corresponding English lesson, when attention may be concentrated exclusively on other matters. It will be convenient here, however, to deal with the question of fluency by itself. The main effort that the pupil has to make in his attempt to attain to fluency in a foreign language is *an effort of the will*. This exertion of the will is directed to suppressing the native idiom and substituting for it that of the language that is being learnt. I believe this effort to be very considerable, and it is certain that it must be continuous during the lesson if the work done is to be of good quality. It is the kind of effort that most people have to make on sitting down to write a letter to a foreign friend, or during the first few moments of conversation in a language which they do not habitually use; but whereas for the person who "knows" a foreign language this effort is only slight, for the learner it is very great. Nobody knows a foreign language until he can "think in it," to use the popular phrase. And in the attempt to attain to this it is quite clear that the more his own native idiom intervenes the greater the difficulty.

Thinking in a foreign language means expressing our thoughts in it. An idea presents itself to the mind in the first place as a complete whole. This idea has to be analysed by the mind to be expressed in language. In acquiring another language we have to learn to perform this operation in terms of that language rather than in terms of our own. Those who try to teach a foreign language by means of translation and dictionary act on the assumption that the linguistic process represents a *synthesis*. But the arguments advanced in Wundt's "Sprache" against this theory appear to me to be unanswerable. In accordance with his view Wundt defines a sentence as follows: *Der Satz ist die Zerlegung eines im Bewusstsein vorhandenen Ganzen in seine Teile*.

No doubt young children may at the beginning absorb a good deal of a foreign language without, so to speak, being aware of it; but so soon as they begin to grapple with any kind of serious composition, oral or written, the difficulty to which I have referred presents itself. It is very necessary that the

teacher should recognise this difficulty; and in my experience it is helpful at the right stage to explain to the pupil—it can easily be done in simple language—the kind of effort he is called upon to make.

To conduct dialogue in the foreign language; to reproduce orally a piece of narrative that has been read; to summarise the arguments of a piece of reasoning that has been dealt with—these are the exercises through which an orally taught class is usually put; and they constitute very excellent linguistic training, teaching, as they do, readiness, the formation and arrangement of sentences, the proper ordering of ideas, and a due sense of style; but, as they involve nothing essentially different from what the pupil does in his English lessons, they do not require to be specially dealt with here.

There are many other aspects of his work which present familiar problems to the modern language teacher, such as the mastering of orthography, the widening of vocabulary, or the development of literary taste; but I am here mainly concerned to show that while learning a living language without learning to talk it is only a pretence, *the effort required for learning to talk it is far greater than most people suppose*. To master the phonetic system of a foreign tongue involves a good deal of hard muscular exertion; to achieve fluency the pupil needs to make a volitional effort which has to be considerable and persistent, and of which hitherto sufficient account has not been taken.

It is of the greatest importance that the difficulty of learning languages should be insisted upon. Living languages have been neglected in the past, and now that we have to some extent become sensible of their importance the air is full of all sorts of suggestions that we should learn Russian and Hindustani and I know not what else. The headmaster of one of our largest schools has recently published suggestions "for a new system of education after the war"; the pupils on his "classical or literary side" are to learn in addition to Latin and Greek "two or more modern languages, including a sound training in English." As this curriculum is also to include mathematics, science, art, and manual training, one would like to see the time-table according to which the "two or more modern languages" are to be taught! I am as anxious as anybody that as a nation we should become better linguists, but through experience I have arrived at very clear notions as to what is possible and what is not possible, and I am convinced that by attempting to carry out impossible programmes we shall arrive at nothing but disappointment, confusion, and bad education.

AN ENGINEER'S VIEWS ON EDUCATION.¹

IT is difficult to imagine that any engineer, unless he has been at work in a neutral country far from the seat of war, can fail to have been impressed with the appalling ignorance of technical and scientific matters among those on whom the responsibilities for running this war have fallen. As one well-known engineer wrote to the papers: "They say this is an engineers' war—I sometimes think an engineer should run it!" Never in the history of engineering has the ignorance of science by the politicians, the military, and the other authorities been so openly displayed as in the early stages of the war, and never has it proved so costly in time, in life, and in substance.

The protagonists of the methods of the old schoolmen still plead for one hour a day for classics, but it cannot be too clearly understood that this one hour in class may involve about double that amount of time in preparation, to the prejudice of work more important for any professional career dependent on sound training in science.

So long as our educational system is mainly in the hands of men with B.A. and M.A. degrees, brought up themselves on the classic lines of "Tom Brown's Schooldays," supplemented by the training of our Senior Universities, so long may the slavish exercise of turning up words in dictionaries be expected to occupy from 25 to 40 per cent. of the time of preparation of school work. The views of these teachers are devoid of that perspective which would enable them to realise that for the majority of their pupils the dead languages are useless except as a discipline or gymnastic which can be provided as efficiently in the course of work which is really useful to them. It is this narrow view which fixes school curricula and causes many schoolboys to avoid entering the modern side where such exists.

When labour-saving in education comes into its own, a statue should be set up to Dr. Giles, an obelisk to the unknown discoverer of the method of tracing maps on the window pane (now superseded by the use of petrol when procurable), scholarships should be founded to encourage others in the path of the obscure devisers of the pricking-off system for facilitating freehand drawing, and medals should be awarded to those of our number who have been the proud inventors of multiple pens which have actually served as time-saving appliances in the writing of lines. For after all the crib, formerly considered a dishonest means for doing translation, was an excellent

labour-saving device in its way, and many of the modern methods of teaching languages are its direct derivatives. Overlaid tracings of details are now generally used for determining the *loci* of points and the clearances of moving parts of machinery. Templates and jigs are large and important modifications of the pricking-off system, and the multiple pen finds its counterpart in multiple spindle drills and in similar appliances. I hold that the boy who adopted those methods which Tom Brown's friend, Arthur, thought immoral (I believe he only knew of the crib) merely evidenced the struggle for emancipation from that tedious drudgery with which our schooldays were fraught.

It should be abhorrent to the engineer to produce effects by slow or obsolete methods when better are available; no sane man would now think of apprenticing his son to a works in which neither miller nor grinder exists, and where all plane surfaces are still obtained by hammer, chisel, and file, though in the early decades of last century such shops produced the most *débrouillard* type of mechanic.

The pretension that the waste of time in handling the lexicons of the dead languages has any educational value is now held in less favour. It is, perhaps, at last being realised that the ability to find a word rapidly in "Smith's Latin Dictionary" does not help materially in the more useful "Larousse," nor does facility in "Liddell and Scott" help with "Alexandrow," notwithstanding the apparent similarity to Greek form of some of the Cyrillic characters.

The same exercise for the fingers can be obtained in handling the "Telephone Directory"; and the working out of a cross-country route in "Bradshaw" is a form of mental exercise certainly as good as hunting for some part of an irregular verb which any regard for time or labour saving would put into its proper alphabetical place, but which the compiler, a purist, omitted because its form ought to have been learnt in the grammar. A knowledge of the classics is undoubtedly of value to men of the clerical, legal, literary, and even of the medical professions, but how much greater would have been the value, in the present war, of that small section which deals with politics had it been as well grounded in the sciences as in the dead languages? How many millions and how many lives would the country have been saved if as much study in time and thought had been expended on science as on classics by the whole of our law-makers and law-givers?

If general knowledge is to be improved by generalising the system of education, it is of the highest importance that the technical teaching class, which forms so high a percent-

¹ From the presidential address to the Institution of Automobile Engineers, delivered by Mr. L. A. Legros, October 11th, 1916.

age of the total of professional men, should itself be reformed by a broader education in which science is given its proper part. But the earliest education of all is not in the hands of professional teachers, and, generally, elementary education requires attention in still earlier years.

It is instinctive in a child to be inquisitive: "Curiosity, thy name is engineer!" is a modernisation of an old saying for which we can thank Colonel Crompton, for it is the child with highly developed curiosity that will best acquire that general knowledge which is essential in the engineering profession. It is of the greatest importance that in the early days of childhood correct conceptions should be formed of the laws of nature, and that those questions which arise in the child's mind should be correctly answered. At this period the child's instructors are frequently only the nurse, sometimes also the mother; and it is common for wrong conceptions to be formed and misinformation acquired through absence of elementary scientific knowledge on the part of these instructors.

To secure proper elementary education for the child we require elementary education of the women with whom he is associated in his tender years. For the sake of these women, and hence ultimately for the children, we require lectures which give an account of the why and wherefore of events in the world we live in, and that sweep through the fields of natural history, physics, mechanics, and chemistry, describing their commonplaces and explaining their wonders in simple language. We have had many such lecturers, but few have attained the high standard set, for example, by the late R. A. Proctor in astronomy, by Prof. Boys in "Soap Bubbles," and by Prof. Perry in "Spinning-Tops." Children require to know why a locomotive is run on rails, what makes a bicycle keep up, an explanation of how a ship or ice yacht can sail faster than the wind, and a sufficient appreciation of the laws of transformation of energy to enable them to understand how it is that petrol drives an automobile. Excellent work of this kind was done years ago in *Knowledge*, and more recently in the "Children's Cyclopædia." I have found general knowledge greatly developed in those children who followed this latter work through its periodic issues; but we require still further instruction of the child's early tutors by more of these popular lectures given by men of the highest attainments. The American child is encouraged to ask questions; the child of British or Allied parents should at least be given an equal chance of access to trustworthy information, and some part of the services of our

greatest professional men could not be given a better object than the popularising of science in a manner both interesting and convincing.

Passing from general knowledge to the particular knowledge required in the professions, we come to the examination test, and here I suggest that our systems of examination are greatly at fault, and that the fault is due to the prevalence of the classical ideal. For college degrees, for membership of institutions, for entry to the Civil Service, to the Army, or to the Navy one or more examinations are in each case necessary, and all of these individual examinations comprise several subjects. At present failure in any one subject generally means failure in the examination as a whole, and re-examination in all the subjects after six months or a year. Now there should be an extension of the system of separating what I may term *urgency passes* from the competition for scholarships, prizes, and honours. Each subject passed should stand as a *unit pass* by itself (this has been done already in the case of the compulsory subjects for Whitworth Scholarships), and to obtain an urgency pass it should only be necessary to take up afresh the particular subject or subjects of failure. The University of London includes among the languages which are optional Sanskrit, Turkish, Malay, and Chinese; but Urdu or Hindustani, the vernacular recognised as official speech in our great dependency, India, though included in matriculation subjects, does not figure in the Intermediate, Final (pass), or Honours B.A. subjects given in the 1915-16 regulations. Chunder Mukerjee, Failed B.A., calling by telegraph from your lonely distant station "Tiger on platform, please arrange," you have my sympathy!

A possible solution—and I can see no practical drawback to it—is to establish standard examinations of several different grades, call them first, second, third, or A, B, C, as you will, of increasing difficulty, and let so many subjects be required to be passed in grade 1 or A, 2 or B, etc., selected from groups as at present, but with this difference: that a pass in any unit subject once obtained holds good, and that a degree or qualification can be obtained by the accumulation of the necessary unit passes in different grades, not necessarily obtained in the same year or years. From these it should be possible to build up the passes for a degree or qualification, in just the same way that T. Cook and Son build up a foreign travel ticket from various coupons.

A preliminary *vivâ voce* examination at an early age should give a child the right to choose the route (classic or science), and subsequent examinations should pass one from capital to frontier, and *vice versa*, through the

various countries, to the far-off destination; and if the sea in this simile represents the dead languages, we should remember that we now fly our aeroplanes across the Channel to deliver them, and that many of us may yet live to see *le tunnel sous-marin* an accomplished fact.

Another matter that requires reform is the teaching of drawing. In my own case, at one of the best schools in London, drawing was taught only on half-holiday afternoons. Mechanical drawing was considered to be essential for my education, and though I loved machinery, I hated that dull copying of chromolithographs of obsolete machinery, elaborately shaded and blacked up with shadows of parts projected across exteriors and interiors at an expenditure of time proportional to their uselessness—drawings innocent of dimensions which were never properly explained, if indeed understood, by the master, who was an architect!

Mechanical (with geometrical) drawing is now one of the optional subjects for the London Matriculation; Latin has been optional since 1902, but elementary mathematics is now compulsory. Latin is also now optional at the entrance examinations to Woolwich and Sandhurst. This compulsory elementary mathematics appears to me to be as unfair to those who have poor facility in calculation as was compulsory Latin to the science student, unless several attempts are permitted. If a subject is to be compulsory, let it be general elementary knowledge, outside the range of selective subjects.

But if the mechanical drawing of my school-days was then thirty years behind the times, that which is evidenced in the London Matriculation papers of this year is also at least as far behind. In one I find a stopcock of which the internal thread is dimensioned below standard, while in the other there is a plumber-block for the welfare of which the pious McAndrew would not have had the nerve to pray.² It was not until after I left school and came under Prof. (now Sir Alexander) Kennedy that I learnt more in a single day than in all those wasted half-holidays of what engineers' drawings are like and what they are for.

By a further rule of the school mechanical drawing was supposed to depend on freehand drawing, and the afternoons of the other half-holidays were also to be sacrificed; fortunately, I had a father who was an authority above schoolmasters on the teaching of art, and these afternoons were rescued by him from the total loss which I have to write against the others. A boy who has not free half-holidays cannot

join the cricket eleven or the football fifteen, and is made into an almost hopeless outsider. This state of affairs, as has been suggested by Mr. Hounsfeld to our Council, could and ought to be remedied without delay by making a grade of proficiency in some sports and in certain exercises obligatory for a certain number of the unit passes suggested for qualifications or degrees, as well as for competitive examinations or scholarships; many of these tests of physical fitness can be reduced to minima in L, M, and T or their derivatives.

Furthermore, the *vivâ voce* examination is not sufficiently used at the present time.

There is also the tendency of examiners to fall into antiquated methods, which could be remedied or removed altogether by appointing active members of high standing in the engineering, chemical, and other professions allied to industry to act as advisers in the drawing up of curricula and in the setting of the examination papers.

THE FUTURE OF HELLENIC STUDIES.

ON November 17th a meeting was held of the Hellenic Society to consider "The Future of Hellenic Studies," but although the subject is of the first importance, the attendance was small and the discussion inconclusive. For Hellenic studies can be regarded from two distinct and almost wholly disconnected points of view. The one is that of those who have a special interest in art, in archæology, or in literature; the other that of those who chiefly value the study of Greek as a general instrument of higher education. The former have, and need have, no fears. The interest in Hellenic studies taken by a small minority of cultivated people was never greater than it is to-day, and in this respect Dr. Leaf was fully justified in describing himself as "frankly optimistic," and in saying that there was no reason to "compel" where there was so much to allure. But from the point of view of general education Mr. T. E. Page was, perhaps, no less justified in declaring himself a pessimist, and in pointing out that, except for the fact that our older universities still made it "compulsory," the study of Greek in our schools would soon absolutely cease.

For what are the plain facts? Preparatory schools, for reasons which at bottom are purely commercial, have wholly got rid of Greek; while in the public schools so-called modern sides become unceasingly larger, and in them not only is Greek forbidden, but the Latin taught is of the scantiest, and modern languages are studied far less as literature than as a means

² "The Ballad of the *Bolivar*," Kipling.

to some profitable employment, so that not merely Greek, but "humane letters" in general seem to be in grave peril.

But every speaker ignored these plain facts, which are known to every practical school-master. Prof. Conway, for instance, spoke with eloquence of the interest taken in Latin at Manchester University, and Prof. Percy Gardner of the enthusiasm which could be aroused by a lecture on Greek art, as though the fact that an inspiring teacher could still find an audience among the older and more intelligent had any bearing on the position or prospects of Greek study in our schools. The one speaker, indeed, scarcely mentioned Greek at all, and Prof. Gardner pointed out that for the study of Greek art and culture a knowledge of the Greek language was by no means necessary, while Sir Clifford Allbutt scarcely afforded any greater encouragement or help to those who still value what was once called "scholarship." He would have nothing to do with "compulsory Greek," or, it seemed, with anything compulsory, "for all artificial aids and props should," he said, "be withdrawn"; though he omitted to state how the work of teaching—which is, after all, a process of building—can be properly carried on unless some parts of the contemplated structure which may need propping up are allowed even "artificial props." But the word "compulsory" scares some people out of their wits, and yet not only is compulsion everywhere with us, whether we will or no—*ducunt volentem Fata, nolentem trahunt*—but a boy is "compelled" to go to school; he is "compelled" to do some work there, and his work does not become injurious because it is compulsory, but only if it is useless, and the advocates of Greek maintain that the study of Greek is in the best sense eminently useful. But Sir Clifford's speech did not, in fact, deal at all closely with the immediate issue. Rather it was a summary of the general views on education which he has since stated fully in the *Times*, and which involve a complete and radical change in the whole method of language-teaching as hitherto pursued. For, basing his argument upon the theory that "in young creatures the brain-web and kinæsthetic centres are built up, not by reflecting, but by doing," he would assign the highest importance in education to all practical activities. He would, we imagine, object to Euclid, and prefer to demonstrate the forty-seventh Proposition with scissors and some bits of paper; while as regards languages, he insists that they should be taught as "living"—that is, as spoken—languages, and that any attempt to "analyse" them should be ventured on only at a late period, "let us say in the sixth form."

But whatever may be the scientific value of this somewhat strange theory, if the future of Hellenic studies is to depend upon its adoption, then the outlook for them is assuredly of the gloomiest. For, to say nothing of the fact that to many of those who support the study of Greek its value seems largely to lie in its power to stimulate and develop those reflective faculties which Sir Clifford Allbutt holds so cheap, it is clearly a much easier task to teach a boy to read Greek intelligently—to be able, that is, with some reasonable help or effort, to enjoy nearly all the best Greek authors—than it is to teach him to write Greek well, while to teach him to speak it, except after a trivial and worthless fashion, may well seem a task beyond attainment. But since Sir Clifford, while eager to get rid of "compulsory Greek," thinks that the adoption of the "oral method" of teaching it would afford the study of Greek sufficient security, perhaps he will weigh what the author of that method has to say upon the subject, and study a letter of Dr. Rouse's in the *Spectator* (November 18th), which opens with the words: "If the study of Greek ceases to be compulsory for admission to Oxford and Cambridge, in a few years it will disappear from English education."

But to discuss further a discussion which itself wandered far afield could hardly lead to any clear result, and it may, perhaps, be enough to make two remarks. One is that Mr. A. Livingstone seems to have been clearly right when he stated that Hellenic studies are now engaged in a "struggle for existence," and that if "compulsory Greek" is done away with "some other security" must be devised in order to prevent the study of Greek from being utterly overwhelmed by the constant and increasing pressure of those studies which seem to be more profitable because they have a value that can be estimated in the marketplace. And the second remark is that throughout the meeting, which, by a happy accident, was held in the rooms of the Royal Society, not a word was said to which any advocate of science could justly take exception. For, indeed, how could it be otherwise? How could anyone who had any quick sympathy with the great thinkers and inquirers of Greece fail to feel that the great masters of science, whose portraits hung round him upon the walls, were men of the same spirit and the same lineage? And, indeed, the study of science and the study of literature are not things alien and distinct, but inseparable parts of a single whole. Knowledge, if it is to be complete, must take equal account of literature, in which are treasured up all the secrets of human thought and of science, which can alone lay bare

to us the mysteries of the material universe; nor can any form of education which either sets these two studies in opposition, or seeks to exalt the one at the expense of the other, be anything but an education that is maimed, stunted, and unnatural. X.

PERSONAL PARAGRAPHS.

THE death is announced of Dr. Andrew E. Scougal, formerly H.M. Chief Inspector of Schools in Scotland. Dr. Scougal was educated at Cheltenham, Edinburgh Academy, and the Edinburgh Institute under the late Dr. Ferguson, and at the University of Edinburgh, where he took his degree at the age of nineteen. After a short interval, spent mainly in travel and a course at Aberdeen, he assisted in his father's work as inspector until his retirement in 1869. Dr. Scougal was then appointed first as acting inspector, and later H.M. Inspector of Schools. His gifts of character, intellect, and temperament, coupled with a singularly cool judgment and a perfect temper, stood him in good stead in life. He was trusted alike by teachers, school managers, and his own department. Dr. Scougal was seldom heard at education meetings in London. He took part, however, in the conference on education to which Imperial representatives were called a few years ago. His utterances throughout were marked by a breadth of view and a keenness of insight that must have made it a pleasure to work in schools under his department.

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MR. J. E. BARTON, headmaster of Wakefield Grammar School, has been appointed headmaster of Bristol Grammar School in succession to Dr. Norwood, now master of Marlborough. Mr. Barton was formerly a master at the Bradford Grammar School, and headmaster of Crypt Grammar School, Gloucester. He is a member of both the Headmasters' Conference and the Headmasters' Association.

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MR. S. P. B. MAIS, who was a master at Sherborne School, is contributing "Letters of a Schoolmaster in Khaki" to the *Evening News*. Mr. Mais has for some time been writing on educational subjects for the A.M.A.

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THE Governors of the Sudbury Grammar School, Suffolk, have appointed Mr. R. H. Gillingham headmaster of the school in succession to Mr. Smylie, who fell in action in France. Mr. Gillingham has been a master at the school for some years, and has been acting as headmaster during the absence of Mr. Smylie on active service.

AFTER eleven months' service in France as a chaplain, the Rev. R. D. Kittermaster has returned to his work as master at Harrow. Harrow has also welcomed as a master Major F. E. Whitton, who took part in the battle of the Aisne and the operations in the north-east of France and Belgium. Major Whitton was severely wounded in the first battle of Ypres, and was captured by the Germans. He, with another officer, contrived to escape, and after hiding all night in a cottage they made their way back to the British outposts. After a year in hospital Major Whitton was placed on temporary half-pay on account of ill-health in April this year.

* * *

MR. C. F. REA, for twenty years headmaster of King Edward VI. Grammar School, Totnes, Devon, is the Mayor of Totnes for the ensuing year. Among the boroughs that have formerly had schoolmasters as mayors are Winchester and Hammersmith.

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MR. J. S. O. TOMBS, formerly headmaster of Haverfordwest Grammar School and the Cathedral School, Durham, died suddenly early in November at the age of fifty-nine.

* * *

THE death is announced of Mr. John E. Williams at the age of seventy-one. Mr. Williams was connected with education in Harrow for more than thirty years, and was for twenty years headmaster of the lower school of John Lyon.

* * *

WITH the coming of winter and the increased public interest in education, the educational associations have again become active. Perhaps the most notable feature is that their work is being carried on by the men who have been to the fore for a number of years. The Council of the College of Preceptors has been roused to action by that energetic veteran, Mr. J. S. Thornton. Mr. Thornton has a first-hand knowledge, unsurpassed in this country, of the educational organisations of the countries of northern Europe. He is a strong advocate of freedom, and of the inclusion of private schools in the State system.

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THE Education Reform Council has Dr. Garnett as its chairman. To obtain agreement in so large a body upon a sound scheme of thorough reform will prove an arduous task, from attempting which many a younger man would shrink.

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MR. ARTHUR ACLAND is acting rector of the School of Technology in place of Sir Alfred Keogh, who is Director-General of the Army

Medical Service. It was Mr. Acland who had the happy inspiration of applying the whisky money to the purpose of education.

* * *

LORD HALDANE is again devoting his attention to education. His speeches breathe the same missionary spirit that characterised those he delivered on this subject before he attained Cabinet rank. His appreciation of education is Scottish. When talking of the age at which it was advisable for boys to leave school to go to the university, he once said that he left school at the age of sixteen. The retort pleased him: "Yes, my lord, but you are a Scot, and the university was a Scottish one."

* * *

LORD RAYLEIGH, speaking of the general ignorance of science a few years ago, said that he was once asked for information about argon. Wishing to make his explanation very simple, and to base it on a sure foundation, he began: "The atmosphere, you know, contains oxygen and—" "Oh, yes," the inquirer interrupted, "and *hydrogen*." "A very temporary arrangement." Lord Rayleigh is not only a man of science. There is a story that when he returned to Cambridge after the vacation preceding the Tripos examination, his tutor, expecting him to have done a lot of reading for the examination, inquired what he had read. He replied that he had been reading a great deal, but had not done any examination work. He had been reading John Stuart Mill.

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MISS M. A. ASH, for thirty-one years headmistress of the Leeds Grammar School, has died at Ilkley at the age of seventy-seven.

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MISS L. M. COOMBE is retiring through ill-health from Liverpool Institute, of which she has been headmistress for many years.

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AMONG the schoolmasters who have been killed at the front are Capt. H. E. Adamson, who was a master at Aldenham School; 2nd Lieut. F. L. Henley, senior mathematical master at Kilburn Grammar School; 2nd Lieut. A. G. J. Alderson, formerly a master at Glenalmond, Bradfield, and Sherborne Schools; 2nd Lieut. G. E. Elliott, formerly a master at the preparatory schools of Glencoe, Alverstoke, and Wadham House, Hale; and 2nd Lieut. E. A. Fulton, an assistant in the department of history at University College, London.

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MR. C. S. JACKSON, for twenty-five years instructor in mathematics in the Royal Military Academy, Woolwich, has died at the early age of forty-eight. Mr. Jackson was educated at

Bedford and Trinity College, Cambridge. He was called to the Bar and became instructor at the Military Academy in 1891. His interest in teaching and mathematics was shown also in the active part he took in the London branch of the Mathematical Association.

* * *

THE death has taken place of the Rev. D. Edwardes, who was for twenty-five years headmaster of Denstone. From 1865 to 1873 he was mathematical master at Hurstpierpoint, and formed one of the original teaching staff of Denstone, succeeding to the headmastership in 1879. Under his energetic care the members of the school increased until they reached 300 in 1902. He succeeded by his unflinching keenness and optimism and by the example he set to masters and boys alike of unsparing devotion to his work.

ONLOOKER.

THE TRAINING OF THE NATION.¹

My Lords, I only venture to ask your Lordships to look upon one small corner of the vast and interesting field which has been opened out by this discussion. But though the corner is small, it contains, I believe, the real centre of this great problem. It is the corner which is inhabited by the 1,200,000 boys and girls between the ages of fourteen and eighteen who are engaged in manufacture and other industrial occupations. I think it was the Bishop of Winchester who, at an earlier stage of this discussion, reminded your Lordships that it is here that we have the greatest educational wastage and also the greatest educational opportunity. Certainly the leakage in these years cannot be exaggerated. It is the period in the industrial life of these boys and girls in which at present they very largely lose all the knowledge and all the admirable discipline they gained in our excellent system of elementary schools, and a period in which, speaking broadly, they gain almost nothing by way of compensation to fit them either for their industrial or for their civic life. I wish this afternoon, and only very shortly, to speak of the working boys.

At the present time—so I gather from the census of 1911—there are 221,000 boys of fourteen or fifteen engaged in manufactures or in the mines. I do not forget the boys who are engaged in agriculture, representing a very special problem of their own, but compared with the industrial boys they are comparatively few—not much more than one-quarter, 58,300. Nor do I forget—how can anybody forget who has attempted at all practically to deal with this problem?—the vast number of boys engaged as messengers and in the various transport services, numbering, between the ages of fourteen and fifteen, 108,000; but it is fair to remember that most of those are afterwards absorbed into other forms of industry. Of occupied boys of fourteen, 16 per cent. are messengers, whereas of boys of eighteen the figure is only 2 per cent. I there-

¹ Speech by the Lord Archbishop of York in the House of Lords on July 19th, 1916.

fore think that in confining our attention for a few minutes to the industrial boys we are really touching the heart of this problem, for these boys of fourteen and fifteen at present engaged in our workshops and our mines are the skilled workmen and the citizens of the future.

Consider the position of these boys. At the age of fourteen, the time at which I suppose most of us were only beginning to respond to the first blessings of education, these boys are suddenly withdrawn from any kind of helpful supervision or discipline. Is it to be wondered at, therefore, that when they reach the age of eighteen and are entering upon manhood, both in the works and in civic life, they often, with some noble exceptions, lose all that we have tried to give them in our elementary schools, and gain nothing either in the way of strength of body, width of mind, or power of character? And yet at this present time the Battle of the Somme is reminding us what splendid material these boys would be if they received for a short time an adequate training. If only we could take these boys, at present so distressing a problem—the industrial boys between fourteen and eighteen—and give them adequate training, they might prove in industry and in citizenship to have the stuff which they are proving they possess in the service of their country. It is therefore a question of absorbing interest, narrow as the sphere may be, how we are to give the best possible training to the mind, body, and character to the industrial boys of the country.

I am the last to say one word to deprecate the influence of the homes of our working people. But noble as so many of these homes are, necessarily the influence of the home is comparatively lost upon a boy who is thrust into great independence and obliged to make his own way in a very rough manner. There are continuation schools sedulously advertised, but they present no attractions to a boy of fourteen or fifteen, and they draw comparatively only a fringe of them. The real difficulty is that the boy is too physically tired to avail himself, under present conditions, of the opportunities so bountifully offered. How can a boy who has worked for sixty hours a week have the necessary freedom and physical power of addressing himself to the curriculum of the technical school, and so on? I know that much is done for these boys in the way of those organisations which have elicited applause whenever they have been mentioned in this discussion—the Scouts, the Boys' Brigades, the working boys' clubs, and the like—but the difficulty of them is that they reach only the best and the most easily accessible and the most docile of these boys; and there is the further difficulty that you can only keep just the boys who need most discipline at the cost of the discipline of the brigade, or the corps, or the club itself. It is they who are most troublesome, and if you exercise any pressure of discipline it is just the boys who need it most who immediately escape from it. There are social agencies of an admirable kind, of which the noble and learned Viscount who introduced this subject knows—the after-care committees, and the like. But we have to recognise that the human boy of fourteen and fifteen is an extraordinarily elusive creature, and I am afraid that the great mass of our ordinary indus-

trial boys at present escape all the means with which, with all our resources of imagination and desire, we try to surround them.

And I fear it must be admitted that the difficulty is becoming not less, but greater. There seems important evidence that while our men are receiving, as never before, admirable training in body, mind, and character in the Army, their sons are suffering greatly from the absence of discipline at home, from the high wages which they can procure, and from the restlessness of the times. I am told that in many of our works at the present time it is quite usual that from 60 to 70 per cent. of the boys leave their work within the year. Could anything be worse just at the time when we have 5,000,000 of our citizens undergoing a special and most remarkable form of training, with all the hopes of the future which the Archbishop of Canterbury held out to us earlier in the evening, that their own boys between fourteen and eighteen in our works here at home should be suffering from causes which are undermining discipline, stunting the body, and enfeebling the mind?

I think the most hopeful solution lies in the direction which was indicated in one sentence in the speech of the noble lord who preceded me, Lord Sydenham—namely, that so far as possible we should make the workshop itself the training ground of our industrial boys. It is in the workshop that the influences can be brought to bear on them which are most likely to help. What we should aim at—the noble and learned Viscount will forgive me if, in comparison with some of his more ambitious schemes, this seems a meagre point, but it is one of real importance—what we should aim at is to make the workshop for the boy between the ages of fourteen and eighteen what the school has been to him when he was between seven and fourteen. In other words, the workshop, the natural centre of the boy's life, should be the centre of his mental, physical, and moral training. I am sure that continuation and secondary schools and the like will never really be a power in educating and training the nation until our employers, in co-operation with the local education authorities, fit these schools into the actual life of the boys and the real needs of their industries. Nobody knows better than the noble and learned Viscount that there are a large number of firms in this country at the present time doing admirable work in providing schools within their works and in giving facilities to the boys to avail themselves of educational opportunities. But what I think is desirable is that the educational impulse should come from a spirit created within the works themselves.

With regard to the training of the boy's character, which, it is a commonplace, is at this stage quite as important as, if not more important than, the training of his mind, what we seem to need in our workshops, if they are to be, as they ought to be, places of immense importance in the training of the nation, is more of the human element which has been largely lost in these great works. What we desire is that in the large workshops, where anything from 50 to 150 boys are employed, there should be somebody whose business it is to be the boy's friend in the works, a man with special training and qualifications, who will be-

there to see the boy when he enters, to speak to him about his opportunities for schooling, to keep him up to the mark, to help him through the troubles incidental to a boy at that time of life, to visit his home, to enlist the interest of his parents in his training, and to be his friend at the time when his first apprenticeship is over. I know that between 200 and 300 firms at the present time have these supervisors for boys and girls—most of them are for girls; only about fifty of our large firms have similar helpers for the boys. But I press upon your Lordships that there is a great field of opportunity if our employers would create, as it were, a new class of trainers of the lads, besides the teachers in our secondary and elementary schools—men who will move about among these industrial boys and do what is so important, enlist their own independent minds on the side of their own training and uplifting. We may provide every sort of opportunity for these boys; we may lecture them to our heart's content; but unless the boy himself wants to be trained, most of our efforts will be in vain.

I am sure that, whatever way we are to deal with it, it is in the years from fourteen to eighteen that we have the crux of the problem. I think it could be largely solved if employers would confer steadily and constantly with one another and with their own leading workpeople, and if the local education authorities would never allow themselves to get out of touch either with the local employers or with the best of the working men. Above all, I believe it could be admirably handled if our education authorities would take more and more into their councils a body of workmen who are gradually being educated in a most admirable manner by the agencies to which Lord Curzon, in his eloquent speech, referred a short time ago—I mean the Workers' Educational Association, the members of which attend the tutorial classes of which he spoke. I believe it is there that we shall make more advance than by discussing merely expert ideas and opinions. I hope that in any scheme of educational reconstruction which may be submitted, and in any committees that may be formed, expert educationists alone will not be consulted, but also the employers and the workpeople themselves, who are in daily contact with the life of these boys. I apologise to your Lordships for having kept to this corner of the subject, but, after all, in these boys and girls of from fourteen to eighteen there is the raw material out of which the future citizenship of the country is largely to be made, and all depends upon whether that raw material is marred or moulded aright.

Some British Painters. By J. Baikie. 46 pp., quarto. (Black.) 2s. 6d. net.—This charming book contains brief sketches, specially adapted for the young, of four British painters of George III.'s time, viz. Reynolds, Gainsborough, Romney, and Raeburn. The great feature of the book, however, is a series of eight coloured plates representing typical works of the great artists. They are delightful achievements of the printer's skill, and the temptation to buy a second copy of the book in order to extract the illustrations and have them framed is almost irresistible.

REMINISCENCES OF A REALGYMNASIUM.

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

M. LAST has given, in the *Grande Revue*, an interesting article on the German Realgymnasium. His impressions go back rather a long way, but he has taken the precaution to verify them and bring them up to date by consulting recent publications on the subject. He considers the reputation of the German schools in general as much exaggerated. The very numbers who frequent them prevent a high standard being reached, and this has already been insisted on in this country by Mr. Siepmann. The ideal of the professor is, as Dr. Sadler has pointed out, the creation of a phalanx of fairly equipped pupils rather than of a few brilliant leaders, as has been in the past too often the case with us. Mathematics are not a strong point, and the programmes are badly drawn up. Natural history is treated as a "pariah." On the other hand, a certain amount of attention is given to mineralogy—a safe subject, and certainly one difficult to extract revolutionary theories from.

The author is, I think, a little unfair in his estimate of the teaching of the mother-tongue. The Latin and Greek which were once the demi-gods of the gymnasium have less time allotted to them than in his day. He considers the modern language teaching more or less satisfactory, and indicates the esteem in which a knowledge of modern languages is held by the fact that, among the lower orders, the possession of a modern language is reckoned an additional attraction in a prospective *fiancée*. It is in the teaching of history, however, that the author finds most to blame. Its bias is strongly imperialist and Prussian, the idea being to produce docile supporters of the throne and altar. Pupils are restricted to the use of little manuals. They are spoon-fed by the professor on isolated facts and dates, and thereby a great "inertia of thought" is encouraged. Dangerous topics, like the French Revolution, are treated in a quarter of an hour, while the professor will possibly give several lessons on so remote a subject as the Aryan migrations.

The author notes the curious fact that for many years, even in such a neutral subject as science, the German school has always been to a certain extent Chauvinist. Thus, in his day, such world-geniuses as Descartes, Laplace, or Berthelot were never mentioned by the professors. This tendency, according to M. Boutroux, had, shortly before the war, invaded even the highest scientific circles, which deliberately boycotted in their publications any discoveries made in France and elsewhere. In keeping with the general policy to make the professor the *fons et origo* of all knowledge is the practice to set, as a rule, for home study only the simplest and easiest types of work that do not demand any independence of thought or invention from the pupil. The idea of allowing him to struggle by himself over a text-book is unthinkable. Not the effort made, but the result is what principally counts. The author hints at a certain amount of copying taking place, which, one learns on good authority, has assumed immense proportions of recent years. The professors either do not see it, or

shut their eyes. Parents in some cases even encourage and abet their children in these nefarious practices. The famous examination for exemption from military service must be passed, *coûte que coûte*.

Perhaps someone may say, if the teaching, then, from certain points of view is far from good, how is it that the Germans have done what they have? The answer is, the German school is the school where Germans learn to do what they are told. The result is the creation of the most formidable machine that the world has ever known, the success or failure of which largely depends on the imagination and insight of the men in control of it, whether in commerce or industry, administration or war. Germans are, in fact, taught not so much to learn as to be teachable. The author cites very appositely the cynical words of Haugwitz, the organiser of Prussian education :—

"We teach what is useful to us; whether it be true or false is of small account. We wish the German to believe what we think it necessary he should believe in order to attain the end that we are pursuing."

JUVENILE EDUCATION AND EMPLOYMENT AFTER THE WAR.

THE Departmental Committee on Juvenile Education in relation to Employment after the War, of which Mr. J. H. Lewis, M.P., is chairman, have issued an interim report, which is here reprinted.

The terms of reference to the committee were :—

To consider what steps should be taken to make provision for the education and instruction of children and young persons after the war, regard being had particularly to the interests of those—

- (i) Who have been abnormally employed during the war;
- (ii) Who cannot immediately find advantageous employment;
- (iii) Who require special training for employment.

INTERIM REPORT.

(1) In accordance with the terms of their reference the committee have considered many aspects of the problem of juvenile education in relation to employment, and, amongst other matters, the question of utilising in the educational interests of boys and girls up to the age of seventeen the public agencies which have been established for the purpose of guiding them in the choice of employment has engaged their attention. Upon many grounds the committee consider that in the present circumstances the need for providing such facilities as are available through the Education (Choice of Employment) Act and the Labour Exchanges Act is urgent; and they have, therefore, decided to make an interim report for the purpose of recommending the Board of Education to take steps at the earliest opportunity, in co-operation with the Board of Trade, to strengthen and extend the system of juvenile employment bureaux and local committees in connection therewith.

(2) The functions performed by such bureaux and committees are of such a nature that they cannot fail to be of great service in the period immediately after the war. The advantages secured by their means to

children about to enter employment, to young persons displaced from employment, to employers, and to public authorities responsible for the provision of education, have been demonstrated by the experience of several years in a large number of the most important industrial centres, including London, Birmingham, Manchester, Salford, Liverpool, Birkenhead, Bristol, Leeds, Leicester, Nottingham, Stockport, Bradford, etc., as well as in towns less industrial in character, such as Brighton, Cambridge, York, etc.

(3) These organisations, in which the local education authorities co-operate with the Labour Exchanges in establishing juvenile employment bureaux, are able, at small cost, to safeguard the educational interests of children and young persons, whilst at the same time placing within the reach of their parents special facilities for obtaining expert advice and information as to the conditions and prospects of employments, and as to the actual vacancies available at the moment. A much wider choice of employment is thus offered to young persons, whilst, on the other hand, employers are able to obtain a better selection of suitable applicants. Through their relations with the teachers, with large numbers of young people, and with large numbers of employers in a variety of industries, the officers of the bureaux and the public committees by which in each case they are controlled acquire information and experience upon questions affecting the industrial and educational interests of young persons, the value of which increases year by year. In connection with several of the existing committees there is also the further great advantage that after-care committees have been established for the purpose of keeping in touch with young people after they have obtained employment, advising them as to their further education, helping them in times of difficulty, and in general doing everything possible to further the development of the good citizen. The Departmental Committee are of opinion that the value of such work cannot be over-estimated.

(4) Had no such system been in existence the committee would certainly have recommended the setting up in each area of a local committee for the purpose of discharging similar functions to meet the needs of the situation which must arise after the war. The committee, therefore, deem it imperative that the fullest use be made of such existing agencies, and that, in those areas in which hitherto no such facilities have been provided, steps should be taken at once to induce local education authorities to exercise their powers under the Education (Choice of Employment) Act, or, if they are not prepared to take such action, to enter into arrangements with the Board of Trade for the establishment of a local Juvenile Advisory Committee.

Although local committees have been established in some sixty county boroughs and some forty smaller towns, the committee direct attention to the fact that such provision is still required in twenty county boroughs (some of them large towns with a population above 200,000), and in some 130 smaller towns and large urban districts.

(5) In recommending that action be taken without delay, the committee have in mind that during the

war large numbers of children have been placed in employments which cannot be permanent, that others have been placed in unsuitable employments, and that some dislocation, and probably a very extensive dislocation, of industry will take place, affecting the conditions of juvenile employment. In view of the fact that in normal times the number of children entering into employment for the first time amounts to more than 500,000 each year, the need for more than ordinary care in the guidance of young persons in such circumstances as are likely to prevail is apparent. The committee consider, therefore, that it would be a grave dereliction of public duty if, whilst the means are at hand to offer valuable assistance, large numbers of young persons were turned upon the labour market without that guidance which even in normal circumstances has been recognised as necessary.

(6) Moreover, wherever the labour market is even temporarily disturbed, it will be of the greatest advantage to have the assistance of responsible public bodies in devising such expedients as may be practicable for dealing with young people seeking employment. Many of the existing Juvenile Employment Committees and Juvenile Advisory Committees are already collecting information as to local conditions and prospects, and it is evident that new committees will be able to render assistance more effectively if they are able to make provision beforehand. Wherever, also, the work of existing bureaux has been interfered with by the withdrawal of officers for other service, it is desirable that preparation should be made for restoring such bureaux to their fullest efficiency to meet the period of demobilisation.

EDUCATION AFTER THE WAR.

THE following series of resolutions, drawn up by a special committee appointed by the council of the Headmasters' Association, was adopted by the council at a meeting held on October 4th, 1916. The committee responsible for the drafting of these resolutions was chosen to represent as many as possible of the various types of secondary schools included in the association. The committee was instructed to consider "Education after the War." It is not pretended that the resolutions which follow cover more than a small part of the field, even of secondary education; they embody certain observations and practical suggestions belonging in particular to the conditions which affect the efficiency of secondary schools, and, in consequence, the efficiency of higher education generally; and the subjects dealt with are those upon which this particular committee felt itself to be best qualified to pronounce an opinion and most likely to be unanimous. Those resolutions which deal with education other than secondary are limited to such aspects of it as are either matters of universal concern or bound up with the organisation of the work of secondary-school teachers.

A—GENERAL.—(i) The most serious defect of English education at the present time is that the moral, physical, and intellectual education of so many boys ceases entirely at the age of fourteen. For these some

compulsory scheme for continued education up to the age of sixteen is urgently needed. Evening classes for full-time wage-earners do not meet the need.

(ii) The efficiency of education depends primarily on the teacher, and no manipulation of subjects or improvement of buildings will be of any use without such an improvement of the position and prospects of the teaching profession as shall make it equally attractive with other careers.

It is in particular a matter of national importance that much more money should be found for salaries and pensions of teaching staffs.

B—COUNTY COUNCIL SCHOLARSHIPS AND FREE PLACES.—(iii) Every elementary school should be required to furnish a list of boys of not more than eleven years of age who are of more than average ability and fitted to pursue a secondary education; and all these boys should be submitted for examination.

(iiia) This examination should be conducted in such a way that the headmasters of secondary schools shall have a voice in the selection of the successful candidates.

(iv) Free places should not be awarded on a written examination only, but considerable weight should be given to an oral test.

(v) Boys should not as a rule be transferred from the elementary to the secondary school after the age of eleven.

C—CURRICULUM OF SECONDARY SCHOOLS.—(vi) No boy should be allowed to specialise in any subject until he has passed a definite standard of general education.

(vii) This standard should be that which a boy of ordinary ability may be expected to reach at the age of sixteen.

(viii) The subjects of a general education should include English, history, geography, Scripture, mathematics, science, and ordinarily two languages other than the pupil's own; in most cases French and Latin.

(viii a) It is assumed that suitable provision is made for physical training, music, drawing, and some form of manual instruction.

D—PUBLIC SCHOOL AND UNIVERSITY SCHOLARSHIPS.—(ix) The examinations for entrance scholarships to public schools should be brought into harmony with the non-specialised curriculum recommended by the committee as above.

(x) In awarding scholarships tenable at universities it is important to limit the scope of the special subject and at the same time to broaden the basis of the examination by encouraging a combination of subjects: e.g. (i) classics and a modern language, or a branch of science; (ii) modern languages and history; (iii) mathematics and a modern language.

Further, it is essential that pressure should not be put upon the scholar to take his degree in the subject or subjects in which he has gained his scholarship.

E—FREEDOM OF THE TEACHER.—(xi) It is essential that the headmaster, with his colleagues, should have complete liberty in regard to the internal organisation and control of the school. The efficiency of schools inspected by the Board of Education is adequately safeguarded by the Board's inspection.

In schools, therefore, maintained or aided by a local

education authority the function of that authority should be limited to the exercise of administrative financial powers and a broad general control of the type of education provided; the administration of the individual schools should be entrusted to separate governing bodies.

THE LOST LAND OF ATLANTIS.

CONCERNING the fact that the great continent of Atlantis may once have existed, M. Pierre Termier, of the French Academy of Sciences, remarks in a recently published reprint from the Smithsonian annual report for 1915:—

"No affirmation is yet permissible, but it seems more and more evident that a vast region, continental or made up of great islands, has collapsed west of the Pillars of Hercules, otherwise called the Strait of Gibraltar, and that its collapse occurred in the not far distant past. In any event, the question of Atlantis is placed anew before men of science."

To many minds Atlantis has been a fabled country, a part of the interesting mythology of the Eastern world, and an inexhaustible subject for poets from the days of Plato on, but now M. Termier says:—

"It may be, indeed, that the poets were once more right. After a long period of disdainful indifference, observe how in the last few years science is returning to the study of Atlantis. How many naturalists, geologists, zoologists, or botanists are asking one another to-day whether Plato has not transmitted to us, with slight amplification, a page from the actual history of mankind?"

From the Smithsonian pamphlet, in which M. Termier quotes a part of Plato's dialogue from "Timæus," "Concerning Nature," the following facts, as stated by an old Egyptian priest, are derived:—

"Athens was destroyed by a singularly powerful army which came from an island larger than Libya, and even Asia, lying in the Atlantic Ocean beyond the strait called the Pillars of Hercules. From this island one could easily pass to other islands, and from them to the entire continent which surrounds the interior sea. In the Island of Atlantis reigned kings of amazing power, having under their domain several other islands also, and some parts of the continent, as well as Libya as far east as Egypt, and Europe as far as the Tyrrhenian Sea. All this power was once united to subjugate Athens, but the Athenians stopped the invasion and restored all the nations living on that side [east] of the Pillars of Hercules to independence. Later, with great earthquakes and inundations, in a single day and one fatal night, all who had been warriors against Athens were swallowed up, and the Island of Atlantis disappeared beneath the sea."

The author says that the above narrative has not at all the colouring of a fable, but an exactness almost scientific. It may be thought that the dimensions of the Island of Atlantis are slightly exaggerated here, but we must remember that the Egyptian priest did not know the immensity of Asia.

In another dialogue, "Concerning Atlantis," Plato describes the famous island:—

"According to the Egyptian tradition, a common war arose 9000 years ago between the nations on this side of the Pillars of Hercules and the nations coming

from beyond. On one side it was Athens; on the other the kings of Atlantis. We have already said that this island was larger than Asia and Africa, but that it became submerged following an earthquake and that its place is no longer met with except as a sand-bar which stops navigators and renders the sea impassable."

Plato also develops the Egyptian tradition of the fabulous origin of Atlantis, fallen to the share of Neptune, and on which this god placed his ten mortal children. He describes the cradle of the Atlantic race as a fertile plain located near the sea and opening into the central part of the island. About it a circle of mountains protects the plain from the icy blasts of the north; in these superb mountains there are numerous villages, rich and populous. In the plain there is a magnificent city, the palaces and temples of which are constructed from stones of three colours drawn from the very bosom of the island; here and there are mines yielding all the metals useful to man, and finally the shores of the island rise perpendicularly and commandingly above the tumultuous sea. We may smile in reading, but the geographic description of the island is not of the sort which one jokes about and forgets. This description tallies well with what we would imagine to-day of a great land submerged in the region of the Azores and enjoying the eternal springtime, which is the endowment of these islands; a land formed from a basement of ancient rocks bearing, with some fragments of whitish calcareous terrains, extinct volcanic mountains, and lava flows, black or red, long since grown cold.

Such is the story of the Atlantis of Plato, a history fabulous in its origins, like the majority of histories, yet extremely exact and highly probable in its details and tragic termination. This is all that antiquity teaches us, for the accounts of Theopompus and Marcellus, much vaguer than that of Plato, are interesting only from the impression that they leave us of the wide circulation of the legend among the peoples along the Mediterranean shores. Down to very nearly our own era there was a general belief, all about the Mediterranean, in the ancient Atlantiad invasion, which was checked by the very sudden submergence of the country from which the invaders came.

According to M. Termier, the study of the physical geography of the Atlantic Ocean tends to show us what might well have been the base of this great oceanic continent, the loftiest spires of which form the Azores. He looks forward to the day when the charts of the Atlantic will be exact and detailed, affording a closer study with this point in view. Geology also indicates the possibility of there once having been a great table-land surmounted with volcanoes in the eastern Atlantic where now Gough Island, St. Helena, Ascension, Cape Verde Islands, the Canaries, Madeira, the Azores, and a few others, all of which are either integrally or in the greater part formed of lava, and many of which bear volcanoes, appear above the surface of the sea. Volcanoes are held to be the results of convulsions or the breaking away of some portion of the earth's crust. Therefore, these islands seem indicative of a great upheaval, and the depths which surround them are

the resting-place of earlier mountains, volcanic lava from some of which has been dredged up. The entire eastern zone of the Atlantic bottom, continues the author, is in movement, forming an unstable zone on the planet, and in such a zone great cataclysms have occurred and may again occur at any moment.

Not only oceanography and geology teach us the possibility, even probability, of there once having been an Atlantis, but zoology shows a certain continental origin of the present fauna, or animal life, of the Atlantic islands which still remains, as well as the strange relationship and reappearance of certain marine animals and shells found only on these islands, and indicating that they must once have been closely connected. M. Termier believes that Atlantis existed, that zoology and geology prove that a cataclysm, not unlike that mentioned by Plato, occurred, and that it now remains for ethnography, anthropology, and oceanography to solve the problem as to whether men lived at this time who could withstand the great reaction and transmit the memory of it. Nowadays even the most modern sciences permit our belief in Plato's legend.

ITEMS OF INTEREST.

GENERAL.

By invitation of the college authorities, the next annual meeting of the Association of Public School Science Masters will be held at Eton on Wednesday and Thursday, January 3rd and 4th, 1917, under the presidency of Prof. H. H. Turner. After the president's address the main subjects of discussion and their openers will be as follows:—Science for the rank and file, Prof. R. A. Gregory; Technical bias in science teaching in schools, Mr. E. R. Thomas; The place of the text-book in science teaching, Mr. G. N. Pingriff. There will be the usual exhibition of apparatus, but it will consist chiefly of exhibits by members of the association.

THE annual meetings of the Incorporated Association of Assistant-masters in Secondary Schools will be held on Wednesday and Thursday, January 3rd and 4th, 1917, at University College, Gower Street, London, W.C. The meeting will be addressed on January 3rd by the Right Rev. Bishop Welldon, Dean of Manchester.

INSTRUCTION in the Russian language has long been given in the evening institutes within the county of London. The County Council has recently decided that Russian may be added to the curriculum of the secondary schools, provided that certain conditions are fulfilled. The teacher must be qualified; the pupils must, in all reasonable probability, have the opportunity to make use of Russian in their after careers. The consent of the parents of the pupils must be obtained in writing, and sufficient time must be given to the language to make substantial progress possible.

THE fifth annual Conference of Educational Associations will be held at the University of London on January 1st-6th, 1917. Meetings have been arranged by twenty-three associations. The inaugural

meeting will be held on Monday, January 1st, at 3 p.m., when the Master of Balliol will give an address and Sir Henry Miers will take the chair. The meetings this year will be of special interest, as many of them deal with proposed educational reforms.

THE Ministry of Munitions has issued a useful memorandum for the guidance of the "boy supervisors" who are engaged in the onerous task of helping the boy who has just left school to settle into his place in the factory. An attempt should be made to continue the best elements of guidance, supervision, and control which are exerted at school. The supervisor is expected to know the boys individually, to look after their creature comfort, to be readily accessible, and to take up that general responsibility for the boy's health, industry, and character which was a feature of the employer's attitude towards his apprentices in earlier days. From one point of view he will continue the work of the "after-care" committees, and from another he will initiate or supplement the social work which is undertaken in the lads' club or in the Boy Scout troupe. In the main the supervisor has to change the boy's innate loyalty to his school into an equally intense loyalty to "the works." He will help the boy, who has just reached the independence of the wage-earner, so to adjust his outlook on the world as to become a useful citizen.

SIR OLIVER LODGE, speaking at the Leamington Girls' High School prize distribution, touched upon two points of educational interest which are well worth noting, the subjects with which they deal not figuring too prominently on school timetables. He laid special emphasis on the desirability of memorising poetry and prose, and of the usefulness of reading aloud. To know great poetry, he said, and learn it when young, so that it stayed with one and did not evaporate, was a great solace in after-life. It was a genuine part of education to know the great things that had been written, the great thoughts that had been thought by those who were the standards and high peaks of the human race. Concerning reading aloud, he pleaded for dramatic reading, and urged the reading of plays, not only Shakespeare's, but domestic plays—anything, in order to get some of the training of actors. "If you cannot read aloud properly," he said, "you cannot read to yourselves properly." Touching on the conflict of ideas on educational subjects, Sir Oliver said some people were arguing whether science or arts and literature ought to be more attended to. Personally he disliked any conflict between these things, because he felt that an educated person ought to know something of all.

ONE of the most pressing of educational reforms is the increase of the freedom allowed to the person who actually teaches the child. In many areas the local regulations have tended to strangle initiative and to discountenance individuality. The Education Committee of the London County Council has given expression to this need for reform by sanctioning salutary changes in the internal examinations of their elementary schools. The changes were approved by a conference of inspectors, teachers, and administrative officials. The changes are twofold in intention. First,

the number of obligatory formal examinations by the head-teacher annually of each child is reduced from two to one, and the head-teacher is otherwise permitted to test the attainments of the pupils as he thinks fit. Secondly, the head-teacher is no longer expected to use the formal examination as a means of testing the ability of the staff, and he is further enjoined to confer with the staff and to make full use of the knowledge and ability of the individual teachers. Regulations and suggestions for the conduct of the formal examinations are to be issued shortly.

THE history and growth of after-care work was recently the subject of an explanatory memorandum to the Education Committee of the London County Council. Such work was originally done in an amateurish way by the teaching staffs of the schools, and a definite system came into operation in 1909. In present circumstances a periodical conference is held at each school, where the care committee passes under review all the children who are about to leave school. This conference decides the kind of employment for which the child is best fitted, the type of evening institute he should be urged to attend, and the person who should be asked to keep in touch with him after he is placed and until he reaches the age of seventeen. During a school-life of about ten years the total expenditure on each child by the education authority amounts to about £90. This after-care work has become of increasing importance on account of the present conditions of the labour market, which are exerting a demoralising influence upon both girls and boys. Enormously high wages are being paid, and it is easy both to get work and to change from one employment to another. In view of these facts, it is proposed to increase the clerical staff of the after-care department from eight to twenty-eight as a temporary measure for the duration of the war.

IN the prefatory note to the volume of Regulations and Syllabuses for Examinations in Science and Technology, 1915, the Board of Education signified its intention to discontinue the examinations at a date to be announced later, and in August, 1915, it gave notice that after 1916 it would no longer hold lower general examinations in any subjects of science and technology, but that the higher general examinations would for the present be continued. Accordingly no lower general examinations will be held in 1917, but the Board hopes to be able to hold the higher general examinations in that year, and they would be conducted in accordance with the Regulations and Syllabuses which governed the conduct of those examinations in 1915 and 1916. Should it, however, prove necessary at a later date to suspend the examinations, the Board will endeavour to give as long notice of the change as possible. After 1917 no higher general examinations will be held in pure mathematics, theoretical mechanics (solids), theoretical mechanics (fluids), heat, magnetism and electricity, organic chemistry, coal-mining and metallurgy.

DURING the last decade education in Western Australia has made considerable progress. Expenditure on salaries has been practically doubled, while the total enrolment of Government and private schools

has grown from 35,000 to 55,000. The scholarship system has been extended from seven to one hundred secondary-school scholarships, and from twenty-five to thirty-three bursaries. There are two secondary schools, one at Perth, with 344 pupils, and the other at Kalgoorlie—the Goldfields High School, opened in 1914—with an enrolment of 120. There are eight technical schools with more than 2,000 pupils, and fifteen continuation class centres with an average attendance of more than 4,000. At the technical schools the students are almost equally divided among the three age groups, under eighteen, eighteen to twenty-one, and above twenty-one. Forty manual training centres are attended by more than 3,000 boys, and twelve household management centres provide instruction for more than 1,600 girls. The University of Western Australia, founded in 1911, contains a staff of eight professors, four independent lecturers, and six assistant lecturers and demonstrators; there were in 1914 more than 180 students in attendance. Approximately 200 students attended the School of Mines during 1914; this number is an increase by one-third on the attendance five years earlier.

THE Acting Director of Education reports that the total enrolment of European children in all the public and aided schools in Southern Rhodesia during the quarter ended June 30th, 1916, was 3,614, as compared with 3,476 during the preceding quarter, and 3,184 during the corresponding quarter in 1915. The increase of 138 pupils in the period under review, following the substantial increase of 245 in the previous quarter, is regarded as eminently satisfactory.

COMMENTING on the solution of the religious difficulty in Russian schools, Miss Kate Downing, who was for four years English mistress in a Höhere Töchter Schule at Libau (Courland), points out that in Russia the law enacts that every child must have religious instruction from a church dignitary or teacher of his or her own confession, and in schools which, in the Baltic provinces, include children belonging to the Greek Church, Roman Catholics, Lutherans, Dissenters, and Jewesses, the law is strictly carried out. For instance, in the Nicolai Stadt Töchter Schule of Riga, which numbers more than 300 children, the Greek religion is taught by two Russian priests, one being for the higher and the other for the lower classes. Each class has two lessons a week. At the same time the Lutherans are taught in the three highest classes by two Lutheran pastors, the lower classes being taught by mistresses. All Dissenters—Calvinists, Baptists, and Anglicans—are taught with the Lutherans, unless the parents wish their children to have religious instruction at home, in which case the school authorities must see to it that they get it. In schools where there are many Jewesses the rabbi attends. At morning prayers the children of the Greek Church are in one hall, the Lutherans in another, and the Roman Catholics in a third. (In some schools the Jewesses have to be present at prayers, which consist of a hymn, a passage from the Gospels, a Collect, and the Lord's Prayer.) In smaller Töchter Schule, such as those of Libau and other towns, religious instruction is (or was, but with the Germans now in possession it would be difficult to say what is

happening) on exactly similar lines to those which prevail in Riga. Greek priest, Roman Catholic pastor, and rabbi, each looks after his own wee lambs so long as they go to school, and outside there is no wrangling over provided and non-provided schools.

THE October number of *Science Progress* contains a variety of information, for the most part written in a vigorous and critical manner. Sir Edward Thorpe, in dealing with the molecular volumes of liquids, criticises favourably the recent work of Le Bas, and points to the subject as a fruitful field for fresh investigation. In an article on "Evolution and Mendelism" Dr. Broom comes to the conclusion that evolution in the animal, and most probably also in the vegetable, kingdom has been due to responses in the organism to changes in stimulation. Those types which have failed sufficiently to respond have been eliminated by natural selection. He considers this theory as more credible than the Mendelian hypothesis of characters present as factors in the Protistan germ from which all have descended.

"SOME Experiences of a Pioneer School" is the title of a paper by Miss Ambler read to the Parents' National Education Union Conference at Bedford College, London, and printed in the *Parents' Review* for November. Miss Ambler adapted the P.N.E.U. scheme of education to a department of 200 girls who may be half-timers at twelve and leave school at thirteen. The adaptation began with forty-five children in Standard I. The teacher read, a little at a time, the books prescribed by Miss Mason, and only those children who were eager were, at first, asked to narrate what was read. Gradually it became necessary to choose the narrators in turn from the class. The cost of books specially for the course varied from £1 or 30s. for the first two years to £12 for the third class, where children require a book each. Visitors to Miss Ambler's school at Drighlington commented, at the conference, upon the attitude of the children: everybody seemed eager to know and to speak, and equally eager to be correct and accurate. By this scheme good English literature can be made the vehicle of education for children from six years of age in all classes. Children are put into touch with books in such a way as to be independent of their teachers.

REFERENCE has recently been made in these columns to the experiments made in New York with the Gary system, which obtains near Lake Michigan and aims at making the school buildings a community centre. Our notes were based upon information from American sources, and the *Times Educational Supplement* for November 2nd contains an article which not only gives a brief survey of this scheme, but adds some reflections on the ways in which such a scheme would influence education in this country. These "work-play-study" schools aim at the continuous and thorough use of the school buildings and equipment, and, therefore, tend to a decrease in the cost per school place of new schools. This ideal of a school always in session is apparently horrific to the eye of the teacher, but increased school days or hours do not necessarily mean an increase in the number of teaching hours for the

staff. The most that such a change would mean would be a change in the distribution of teaching periods. There would arise increased facilities for alternative times at which particular lessons are given, and such an opportunity would probably help towards the organisation of courses of instruction for part-time scholars from workshops and factories.

THE Leicester County Council Education Committee reports that 742 girls and men have been successfully trained in munitions at the Loughborough Technical Institute and placed in munition factories. The new agricultural buildings, together with the principal's house and adjoining cottages and buildings, have been taken over by the War Office as a camp for German officer prisoners. Dr. Lloyds Starr-Best, headmaster of the County Grammar School of King Edward VII., Coalville, has been granted a term's leave of absence for the purpose of visiting Russia and studying Russian.

THE issue of the *Journal of Education* for November takes up a strong attitude upon the question of salaries and war bonuses for secondary-school teachers. The writer refers to the action of education authorities which exclude teachers from any participation in a scheme of war bonuses, although the average assistant-master is clearly poorer on account of the war by something like £40 a year. In Birmingham it was originally proposed that all non-manual employees, except teachers, should have a bonus; eventually the teachers and others earning less than £250 a year were given a bonus, and this includes all the masters in the secondary schools of the city of Birmingham, since the scale of salaries in that city ranges from £100 to £200 per annum. Such a rate of wage is roundly stigmatised. In 1914 the Assistant-masters' Association published a memorandum upon the salaries of assistant-masters in secondary schools, and demonstrated that £200 annually was the maximum which an assistant-master might usually expect; the writer quotes this, and urges the professional teachers' associations to take up the question of the supply of teachers and its inevitable corollary, the question of teachers' salaries.

It will be remembered that Mr. C. A. Buckmaster recently made a report upon the secondary and technical education of the Borough of Plymouth (*THE SCHOOL WORLD*, April, 1916, p. 144). The Higher Education Sub-Committee has already taken action to carry out Mr. Buckmaster's recommendations. Inquiry has been made regarding the efficient private schools of the town; the senior scholarship scheme has been revised; a commercial day-school has been established for girls and women, and the evening-school system has been reorganised. There still remains lack of provision for the higher education of girls, and the sub-committee has been authorised to confer with the governors of the Plymouth High School for Girls in order to discover whether adequate provision for a first-grade secondary school for girls in direct relation with the education authority can be made.

If British and American teachers have anything to learn from one another, it should obviously be with

reference to the teaching of English—a branch of school work which, in some of its aspects, Americans began to take seriously before we did. Teachers of English on this side of the Atlantic would do well, we think, not to neglect the *English Journal*, the official organ of the National Council of Teachers of English, published by the Chicago University Press. The June number starts with a breezy and vigorous article by Mr. A. F. Lange, of the University of California, on "Literature as Educational Means." He points out the fundamental difference between a teacher of literature—typified by the university specialist—and a teacher by or through literature—typified by the school teacher who knows his business, which is to use the literature lesson with the view of helping his pupils to live. Literary masterpieces must, of course, be employed, "the books that represent the highlands and peaks of human experience," but they must be selected with reference to the powers of the pupils, for "the vicarious experience gained through literature is life-giving and growth-promoting in a high degree only if it springs from, and is related to, actual experience." Again, "the voices of the present are listened to eagerly," and since they "carry helpful messages, messages through which youth is enabled to interpret the signs of the times," our pupils should have "specific preparation for self-guidance" among the writers of the day.

"INTER Arma Veritas" is the title of an article in the current *Columbia University Quarterly* which reflects the effect of the war upon American public opinion. This title embodies the duty and the opportunity which fall to the lot of the American citizen, a duty and an opportunity which present real difficulties. The fighting peoples, even the most detached individuals amongst them, are partisan; to the American remains the quest for truth amid the clash of arms. His duty is to the truth—truth to the past, in the present, and for the future. To him is entrusted the memory of what nations have done for each other and for humanity in the past. His duty is to pursue truth in the present, both because of the power of the public opinion of the neutral nations, and because such a pursuit is necessary to the development of the American character itself. He must acquire information, resist prejudice, and sift and weigh statements. He needs all his mental and moral energy for this task. And for the future he must think clearly, honestly, wisely, not only to heal the intellectual wounds of the warring peoples, but also to help his own people, who stand at a critical point in their history and at the parting of the ways in matters of fundamental importance. The question of race has become acute, and the Americans, compounded of almost all the races of the world, must think out the racial problem for themselves, and substitute something more abiding for the absurdity of racial jealousy.

REGULATIONS for the award of war bursaries are contained in the issue of the *Education Gazette* for New South Wales for August 1st. They are available for the children of soldiers who

have been incapacitated or have died through active military service. The holder is to receive assistance during his school career at any school—primary, secondary, or technical. He may be helped to continue his education at a technical or agricultural college or through a course at the university. If he is an apprentice and his wages are insufficient to support him, he will be assisted. The regulations are framed by the Bursary Endowment Board, and will be administered on the same principles as those in force under the Bursary Endowment Act. The scheme is comprehensive, and is a specimen of wise Government action. At home we have to rely upon private generosity to assist in the education of Britons who are incapacitated by the war; for example, the sons of fallen schoolmasters are assisted by the charity of schoolmasters left at home, and, in some cases, their school fees are remitted by the governing bodies of their father's old school.

IN the *School Review* (Chicago) for October Mr. F. M. Giles presents an outline scheme for the teaching of commercial geography which has much to recommend it. The usual commercial geography relates the facts of the world's commercial products in particular regard to place; Mr. Giles refers them to man. After an introductory course he passes to foods, industries, clothing, shelter, mining, power needs, social needs, mental and æsthetic needs, the professions, the arts of war, competition of nation with nation, free trade versus tariff. Each of these twelve departments is sub-divided; for example, under shelter he treats of house construction, house furnishing, heating and lighting. Again there occurs sub-division; for instance, under lighting oil, gas, electricity, and matches are the subjects for treatment. Under the main head of mental and æsthetic needs comes the discussion of books, writing materials, and art, and the study of books involves the questions of paper, printing, binding, etc. On the whole the scheme completely covers the ground of human industry, and in the hands of a careful teacher the various repetitions which appear in the outline scheme would be eliminated. Chisholm's "Handbook of Commercial Geography" is mentioned as a storehouse of the main facts for such a scheme of treatment.

SCOTTISH.

THE annual meeting of the Secondary Education Association of Scotland was held this year in Edinburgh. Mr. J. W. Butters, Ardrossan Academy, presided over a large and representative gathering. The new Principal of the University, Sir James A. Ewing, extended a cordial welcome to the association. Everyone at the present moment, he said, was aware of the necessity for reform in the educational system, and everyone was anxious to co-operate in securing it. The main lesson which the war had taught him was the importance of training in character. They had seen the enormous influence that wrong ideals might have on the life of a nation, and it was for them to see that the young people committed to their care were brought up in an atmosphere of right thinking, right feeling, and right action. The older he grew the

more he was convinced that the things that really counted were the things of the spirit. Their main business as teachers was to cultivate the activities of the spirit in their three aspects—the intellectual activity that made for truth, the æsthetic that made for beauty and the appreciation of beauty, and the moral that made for goodness. The president, Mr. Butters, thereafter delivered a thoughtful and stimulating address on "Education after the War." Mr. John Strong, rector of the High School, Edinburgh, was elected president for the ensuing year. At the afternoon sederunt the proposals for union with the other educational associations came up for consideration, and with certain minor alterations were unanimously approved. The long-looked-for amalgamation should therefore be consummated in September, 1917. The question of salaries gave rise to a heated discussion, which showed how deep-seated is the discontent with the present financial position of the profession. School authorities should take warning in time and come forward with reasonable proposals. Otherwise ugly things are likely to happen.

THE annual meeting of the Historical Association of Scotland was held this year in Edinburgh University. The president, Prof. D. J. Medley, in moving the adoption of the report of the year's progress, said that it would be a crime against the State to interfere with the study of history. The present position of the nations proved that it was more history that was needed and not less. The reports of the secretary and treasurer showed that notwithstanding the difficulty of carrying on the work of the association under existing conditions, the membership had been well maintained, and there was a balance of £39 to the credit of the association. Prof. Medley, who was re-elected president, moved a resolution expressing the opinion that at the earliest possible moment provision should be made in all the Scottish universities for the study and teaching of Colonial and Imperial history. The resolution was unanimously adopted. At the afternoon session Prof. Lodge gave an address on "Some Political Terms."

A DEPUTATION from the Scottish Education Reform Committee has had an interview with the Secretary for Scotland at Dover House on various subjects affecting the future of education in Scotland. First place was given to the plea for a special committee to investigate the Scottish educational system from the primary school to the university. It was pointed out that if the needs of Scotland were considered alongside those of England, past experience proved that the predominant partner received all the attention. The history, traditions, and methods of Scottish education differed widely from those of England, and they could not be dealt with on a uniform plan. On many questions public opinion in Scotland was ripe for advances that would not be regarded as practical politics in England. The raising of the school age to fifteen had received the approval of nearly all educational bodies, both professional and administrative, and was heartily supported by all the leaders of labour. The deputation also took up a strong position on the salary question,

and asked that salaries should be made a State charge, according to approved national scales. Other questions raised were the institution of a National Council of Education, and compulsory attendance at continuation part-time day classes from fifteen to eighteen years of age. The Secretary for Scotland was sympathetic in his reply, but made it quite evident that there was no intention to make any radical reforms at this time. The anticipations of an educational renaissance are already fading into the light of common day. "Where is the money to come from?" asks the Secretary hopelessly and helplessly. Yet money is being found for carrying on the present life-and-death struggle, and money must be found for the still fiercer, because more lasting, struggle that will be waged at the end of the war for the possession of the markets of the world.

THE Secretary for Scotland has had a busy time with educational affairs. A week after meeting with the teachers a deputation from the School Boards' Association waited on him at Dover House to present their view of the situation. Naturally the members made the teachers' attack on the *ad hoc* principle the chief theme of discussion. They painted in glowing colours their own virtues as administrators, and almost shed tears over the prospect of a Scotland without school boards. The Secretary for Scotland, while not finally committing the Government, indicated his personal sympathy for the *ad hoc* body. He has not, unfortunately, been long enough in office to have learned the inherent weaknesses of school boards. The deputation further urged upon Mr. Tennant the need for a Treasury grant to provide in whole or part a war bonus for teachers. The members admitted the justice of the teachers' claim for consideration at this time, but they were not prepared to meet it. They did not seem to realise that such action was in itself an admission of the failure of the *ad hoc* body. Instead of fulfilling the duty imposed upon them by statute they came appealing to the Government to perform it for them. The Secretary for Scotland told them plainly where their duty lay. Let them table their proposals for an increase to teachers, and then he would see if the Treasury could grant any relief.

SIR JAMES A. EWING, K.C.B., the Principal of Edinburgh University, took the chair for the first time at the half-yearly meeting of the University Council. Mr. J. B. Clark, convener of the Business Committee, on behalf of the council, congratulated Sir James Ewing on his appointment, and expressed the wish that his period of office would be one of great prosperity and progress for the University. It was reported by the Business Committee that 5,000 members of the University were serving with the forces of the King. Of these, 250 had already fallen. The number of men in attendance had fallen from 2,734 in session 1913-14 to 1,330 this session. By far the larger portion of these were in the medical faculty.

It is officially notified that the next written examination for leaving and intermediate certificates will begin on Tuesday, March 27th, 1917, and terminate on Wednesday, April 4th.

IRISH.

THE discussion as to whether pass students in experimental science should be tested by examination or passed by inspection alone reached its climax in the House of Commons on November 2nd, when Mr. Boland raised the question on the adjournment. He objected to the action of the Intermediate Board in changing the system in force up to the present by the introduction of an examination for the pass students as well as for the honours students. He brought forward a new argument by alleging that the action of the Intermediate Board was in opposition to the needs of the times, which would require, especially at the end of the war, a steady stream of boys grounded in science flowing into the workshops, and its action would destroy the possibility of this. He also alleged that the Board was going back to a system which was abandoned fifteen years ago. Mr. Duke had no difficulty in disposing of these statements, while on the main point he directed attention to the real facts. They are these. An Act of Parliament made a test of proficiency a preliminary to the paying of a grant by the Intermediate Board. For a long time certificates were accepted from the Department of Agriculture, but it had been discovered that these certificates were given almost uniformly on the report of a Departmental inspector on the condition of the school, and for some time pass candidates have been certified without any individual test. The Board therefore felt itself compelled by the Act of Parliament to introduce a written examination in order to fulfil the conditions by which alone the Board was entitled to distribute grants.

THE Schoolmasters' Association, at its annual meeting this autumn, passed the following resolutions, to be forwarded to the Lord Lieutenant:—(1) That as suggestions have been made during the past year for purposes of war economy to reduce the amount of money spent on education, the association would deprecate any proposal to diminish the already inadequate grants to intermediate schools; (2) that the rules for the distribution this year of the £40,000 grant should be published as soon as possible, the attention of his Excellency being directed to the fact that last year's conditions were fully complied with by the schools under non-Roman Catholic management; and (3) that in the interests of education a censor should be appointed by the Government in Ireland to supervise all cinematograph films before they are publicly exhibited at performances where children are admitted.

THE association has also forwarded suggestions to the Intermediate Board asking that the time allowed for the examinations in classics should be extended to three hours; that the rules relating to inspection should be made clearer, especially with regard to the marking of attendances, approved courses, and the payment of the grant; that texts should not be prescribed of which there is no available school edition; and that prescribed poems in English literature should be taken from some inexpensive anthology.

THE Department of Agriculture and Technical Instruction has issued a circular directing attention to

new steps which it is taking to encourage instruction in child hygiene. The Department has a syllabus in physiology and hygiene as a special subject of its programme for day secondary schools, and the programme of first aid to the injured and hygiene and emergency nursing has been widely taken up throughout the country. The Local Government Board for Ireland has recently issued a circular letter to local authorities outlining a scheme dealing with maternity and child welfare, in aid of which a grant of £5,000 has been made available. In this connection the Department has formulated a syllabus of instruction in child hygiene, and is prepared to assist local technical instruction or other approved committees in organising classes and conducting examinations in this subject. Such classes will be eligible for grants from the Department, and all local committees interested in this matter should therefore consult the Department.

THE Hermione lectures at Alexandra College, Dublin, were this November delivered by Prof. Selwyn Image, late Slade professor of fine art, Oxford. The course was generally entitled "Four Lovers of the Countryside," to each of whom one lecture was devoted, viz. George Morland, Thomas Rowlandson, Thomas Bewick, and Samuel Palmer.

WELSH.

THE Rev. R. Trevor Owen, vicar of Bodelwyddan and canon of St. Asaph, who died at the end of October, was for many years editor of *Archaeologia Cambrensis*; he was at one time an assistant-master at Llandovery College.

At the Turner House Museum, Penarth, there are held periodical exhibitions of objects and pictures illustrating some subject of historical or archaeological interest. At present the subject treated is modern British statuary, with reference to the series of statues presented by Lord Rhondda to the city of Cardiff. The next series will deal with the castles of South Wales.

STEADY progress is being made in the furthering of the two great Welsh educational movements—the reform of the university and the unification of education below university standard. A conference between representatives of the Central Board and the Education Committee of the Welsh Parliamentary Party took place at the House of Commons on October 7th. It was reported that, with one exception, all opinions received in answer to inquiries had been favourable to the creation of a National Council of Education. It was decided to form a joint committee to call together a conference representing all the interests concerned. The assumption was made throughout the conference that nothing would be done during the war with the exception of preparing the way for future action.

Two things will have to be kept plainly in view in this work of construction in Wales: (1) that all branches of the teaching profession must be adequately represented on all bodies exercising power over education; teachers, who are not merely, as some people think, classroom workers, as a body know quite as

much of the broader issues of education as do politicians and members of elected bodies, and are in even closer touch with the needs of the community; (2) that no arrangement will be acceptable to teachers which leaves it possible to have different conditions of salary, tenure, and pensions, or any break at all in these conditions at the border; for instance, it must be possible, in spite of any claims to financial or administrative independence, for a teacher to migrate from a Welsh to an English, or from an English to a Welsh, school without losing the benefit of his past service as counting for a pension

THE National Museum has received a cheque for £10,000 for the building fund. The gift, which was made through Alderman Illyd Thomas, comes from Capt. and Mrs. W. R. Smith, of Cornborough, Penylan, Cardiff. Capt. Smith is the senior partner of an important firm of shipowners. Mr. W. S. de Winton, of Brecon, has also promised his valuable collection of porcelain, which includes fine specimens of Swansea and Nantgarw ware, and is valued at £4,000. The financial support procured by the exertions of Alderman Thomas has secured the completion of the building, but another £50,000 will be required before it can be equipped for occupation. Of course, in present circumstances little is being done in extending the collections by purchase. The mineral collection has recently been overhauled, and as it is in an incomplete condition an effort is to be made to render it more representative of the resources of the Principality.

A PROPOSAL has been made for the formation of an association of assistant secondary-school teachers in Wales which shall be able to present the united opinions of the assistants in the same way that the Welsh County Schools' Association does that of the heads. It is not yet generally recognised in Wales that the W.C.S.A. does, in fact, represent the heads and not the schools. The proposal to form a new association at once raises the question of its relations with other associations already having powerful branches in Wales. The idea originated with the staff of Cardiff High School, the spokesman being Mr. Howell T. Evans, and the matter was discussed at the annual general meeting of the S.E. Wales branch of the I.A.A.M., held at Pontypridd on October 28th. It was decided that the formation of such an association was eminently desirable, and also that it was highly important, for the avoidance of a multiplicity of organisations, with their attendant subscriptions, and the consequent division and weakening of forces, that the new body should consist of the Welsh branches of the existing associations, it being proposed to admit no one to its membership who was not also a member of one of these bodies. The other Welsh branches of the I.A.A.M. have signified their adherence to this policy, which has also been approved by the executive of the association. The I.A.A.M., N.U.T., and several technical associations are strongly represented in Wales, and only a minority of the teachers belong to no professional body at all, so that the prospect of forming a powerful and representative association on these lines seems very good.

RECENT BOOKS FOR THE TEACHER'S LIBRARY.

- (1) *Democracy and Education: an Introduction to the Philosophy of Education.* By John Dewey. 434 pp. (New York: The Macmillan Co.) 6s. net.
- (2) *Converging Paths.* By E. T. Campagnac. 113 pp. (Cambridge University Press.) 2s. 6d. net.
- (3) *Scientific Method in Schools.* By W. H. S. Jones. 30 pp. (Cambridge University Press.) 1s. net.
- (4) *Froebel's Kindergarten Principles Critically Examined.* By W. H. Kilpatrick. 217 pp. (New York: The Macmillan Co.) 4s. net.
- (5) *The Bearings of Modern Psychology upon Educational Theory and Practice.* By C. M. Meredith. 137 pp. (Constable.) 1s. 6d. net.
- (6) *The Essentials of Teaching.* By T. J. Burnett. 250 pp. (Longmans.) 3s. 6d. net.
- (7) *Handwork and Social History.* By E. Stevinson. 112 pp. (Clarendon Press.) 2s. 6d. net.
- (8) *How Children Learn to Draw.* By W. Sargent and E. E. Miller. 264 pp. (Ginn.) 4s. 6d. net.
- (9) *The American High School.* By J. E. Stout. 322 pp. (Heath.) 3s. 6d. net.
- (10) *American University Progress.* By J. H. Baker. 189 pp. (Longmans.) 4s. 6d. net.
- (11) *Newsholme's School Hygiene.* New edition. By James Kerr. 352 pp. (Allen.) 4s. 6d. net.
- (12) *School Hygiene.* By L. Burgerstein. Translated by B. L. Stevenson and A. L. Osten. 188 pp. (Harrap.) 3s. 6d. net.
- (13) *The Healthy Girl.* By Mrs. J. Cunning and A. Campbell. 191 pp. (Oxford University Press.) 4s. 6d. net.

(1) In an absolute sense, though, of course, not relatively to the taste and needs of every teacher and administrator, Prof. Dewey's new volume on education and democracy is the most important work on education that has appeared for some time, and it deserves much more extended notice than we can at present give it. For philosophic insight into his subject Prof. Dewey probably stands first among living writers. In this book he considers the ideas implied in a democratic society, and applies those ideas to the problems of education. To quote the succinct statement in the preface, "the discussion includes an indication of the constructive aims and methods of public education as seen from this point of view, and a critical estimate of the theories of knowing and moral development which were formulated in earlier social conditions, but which still operate, in societies nominally democratic, to hamper the adequate realisation of the democratic ideal." In the earlier part of the book Prof. Dewey considers education as it may exist in any social group, and follows this up by an examination of the democratic conception in education. The middle portion of the book comprises a series of illuminating discussions of method and curriculum, whilst the final chapters show how the deepest questions of education are connected with the deepest questions of philosophy. Readers who are already acquainted with the author's previous publications, and in particular with his volumes, "The School and Society," "How We Think," and with his numerous educational essays, will often be conscious of renewing their former acquaintance. But they will thank the author for co-ordinating and extending in these massive chapters his conception of education as a social process. A book written with such a true philosophic grasp cannot be very easy reading, but many parts of it are timely reading for us in Britain, who are hoping by means of educational reconstruction to realise democracy at its best.

(2) Not long ago we noticed in these columns Prof. Campagnac's essay towards "A Theory of Education," and we now have the pleasure of extending a welcome to the collection of papers which he issues under the title "Converging Paths." Prof. Campagnac's type of mind is not that which is likely to excogitate a system of education, and here he resembles many another brilliant writer on philosophical and kindred subjects. But he has the gift of raising the discussion of a particular topic to a level so high as to make the advocates of different methods often feel that what they really mean is essentially the same. Though, therefore, the papers that make up this volume are on such apparently diverse themes as religious instruction, commercial education, standards in taste and morals, etc., we are bound to admit that the title, though perhaps a little fanciful, is on the whole not inapposite.

(3) In the discussions which constantly take place concerning the rival merits of scientific and humanistic studies the point is too often lost sight of that "scientific" and "humanistic" are not mutually exclusive terms. There is no reason why physical and biological studies should be entirely dehumanised, and there is no reason why methods usually supposed to be peculiar to "science" should not be employed in literary and linguistic work. To put the same point otherwise, the setting of a problem, to be worked out in logical steps, should be a common occurrence in the teaching of all subjects. It is to illustrate this truth that Mr. W. H. S. Jones puts forth the suggestive pamphlet entitled "Scientific Method in Schools." Mr. Jones's versatility enables him to take his illustrations from subjects so varied that we find it difficult always to follow him. But we are sure that he is on right lines, and we hope that other teachers will follow up the clue he provides towards better methods of mental training.

(4) About a year ago we noticed with cordial approval a short critical account by Prof. Kilpatrick of the main positions taken up by Dr. Montessori regarding the education of children, and in the volume now before us he applies himself, with equal vigour and success, to a critical examination of "Froebel's Kindergarten Principles." Orthodox Froebelism is, we believe, by no means so common now in England as it apparently is in America. Still, we are of opinion that this book should not be neglected by any English Froebelian who wishes really to comprehend Froebel. Prof. Kilpatrick thoroughly understands the art of criticism. Whilst he unsparingly exposes Froebel's weak points—his symbolism and other mistaken psychology—he generously concedes the strong points in Froebel's system—his sympathy with childhood and his respect for the child's individuality. We do not know of a more careful and candid estimate of the historical position of Froebel than is here provided.

(5) There is in many quarters a tendency to under-rate, and even to deny, the importance of psychology to the teacher; but we think that that tendency would be less common if all our educational psychologists were as wise in their choice of topics, and as suggestive and practical in the treatment of them, as Mrs. Meredith shows herself to be. It is true that the title, "The Bearings of Modern Psychology on Educational Theory and Practice," leads one to expect more than one gets, and that the book should probably be used to supplement a more systematic treatment. Still, all the topics selected are important meeting-places of the psychologist and the educator, and the writer deals with them in a manner which should appeal to the young teacher.

(6) Mr. Burnett's volume on "The Essentials of Teaching" is intended to supply a new need, the need of those amateur teachers who are being employed in

trade continuation schools. The book is based upon a series of lectures delivered to the non-professional teachers engaged in teaching practical subjects in the continuation classes of the Edinburgh School Board, and it is issued in the hope that, until a national scheme of training is set up, the lectures may do something "to help the untrained teacher to perform his work with a new interest, with higher motives, and with more efficiency." We think Mr. Burnett's book should be very useful, not only for its immediate purpose, but also to beginners in the art of teaching, wherever they may be found. The topics are well chosen, and the treatment is simple, untechnical, and attractive.

(7) Teachers of preparatory and junior forms of secondary schools, and of children of corresponding ages in elementary schools, will find a valuable storehouse of suggestion in Miss Stevinson's "Handwork and Social History." The idea of connecting handwork with social history is, of course, common property among progressive teachers of young children, but the business of translating the idea into practice often presents a good deal of difficulty to the busy teacher who has not specialised in history. Beginning with the Stone age, and ending with the Middle Ages, the writer gives brief and clear descriptions of social life, and these descriptions are accompanied by nearly a hundred illustrations, taking the form of sketches of actual work done by children. These sketches are an outstanding feature of the book, which is cordially commended to the attention of the teachers for whom it has been prepared.

(8) We think there must be very few teachers of drawing who would not derive much profit from the volume entitled "How Children Learn to Draw," by two specialist members of the staff of the school of education at the University of Chicago. It is an original and genuine attempt, based on practical experiment and on adequate knowledge of child nature, to get at the truth about the place of drawing in elementary education, and the methods by which the utmost educational value can be got out of drawing. That interest in telling or describing something is the root motive of all good drawing is the fundamental principle upon which the writers proceed. They find, too, that sedulous drawing directly from objects, unaided by other kinds of study and practice, has not proved the most effective way of learning to represent them. And they find that progress in drawing is not general, but specific, so that increase in ability to draw birds may not imply a corresponding increase in ability to draw trees. The book is well illustrated, and we agree that it is none the less valuable because all the experiments have been carried out in one school.

(9) Anyone who wishes to understand the problems presented by the American high school—and in these times of intended educational reconstruction a comparison of notes with other countries is much to be desired—may turn with advantage to Prof. Stout's new book. The central idea of the book is that the high school, receiving as it does a constantly increasing proportion of boys and girls who get there their final training for the social duties and opportunities that await them, needs to re-define its aims, and therefore to re-examine the means employed to accomplish those aims—the curriculum, organisation, and teaching. It is obvious that in a quite special sense the same problems confront us in Britain, and it is the breadth of Prof. Stout's survey, and its insistence that the school must progressively adapt itself to social needs, that make the book an interesting one for purposes of comparison.

(10) Another field for comparative study is that of the universities. The ordinary educated citizen little

understands the enormous influence which the universities of any civilised country may have upon national life, though by this time he should have been enlightened by the case of Germany. President Baker, a veteran among American university administrators, sums up the present situation for his country in the work entitled "American University Progress and College Reform relative to School and Society." In certain vital respects we stand much nearer to America than to Germany in regard to educational ideals, for we, like America, should regard that "isolation and estrangement which the pride of learning, in the conservative German school, has hitherto encouraged" as "a menace to our entire civilisation." Many of the problems discussed by President Baker are closely paralleled by similar problems in this country.

(11) To the last generation of teachers Newsholme's "School Hygiene" was one of the few standard textbooks on the subject. But in recent years such rapid and important advances have been made that the book had got sadly out of date, and stood in need of being either mended or ended. The publishers decided, with the author's consent, on the first alternative, and the task of mending has been entrusted to the eminently capable hands of Dr. James Kerr. In truth, however, Dr. Kerr has produced what is practically a new book, the original having been made use of only as a mere framework. Not only has the information contained in the older work been extended and corrected, but many new topics are now dealt with which had not been thought of thirty years ago. The new book will, we believe, be as highly esteemed as the old one was—which is saying a good deal.

(12) In some ways it is doubtless an advantage that the little treatise on "School Hygiene" by Prof. Burgerstein, of Vienna, should have been translated into English. Every work of the kind possesses its own distinctive features, especially when, as in this case, it is written by a high authority. Besides, the numerous incidental opportunities which the book affords of making comparisons with a foreign country are both interesting and instructive. So far we are able to welcome the appearance of an English translation of the book. We do not think, however, that it is at all likely to displace the standard works on school hygiene which we already have in English, and indeed we do not see why it should, notwithstanding that it is a good manual and well translated.

(13) There is one feature in particular about the book entitled "The Healthy Girl," by Mrs. Cuning and Miss Campbell, that struck us at once as eminently wise. Those matters which it specially concerns a girl to know about herself do not, so to speak, "hit one in the face" directly one opens the book. They take their place, their due place, no more and no less, in the course of a series of chapters—all of them sane, simple, and interesting—on personal hygiene. It is a fault, though not, we think, a serious one, in the construction of the book that, though it is primarily intended "to help the girl who is leaving school and learning to face life," yet much of it seems to be addressed to mothers and teachers rather than to girls. But the book is good, and we should be glad to know that it fell into the hands of thousands of girls.

The Rambler Travel Books. Asia. 80 pp. *Russia.* 80 pp. (Blackie.) 9d. each.—These interesting supplementary readers are well illustrated in black and white and in colours. They comprise carefully chosen excerpts from first-hand accounts of foreign lands judiciously arranged to convey a good impression of what life in those lands means. Children read them with delight.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Aide-Mémoire of Everyday French Words and Phrases. By Basil Readman. (Blackie.) 3s. net.—This is rather a queer book. It contains seventeen blank quarto pages for grammatical notes, and 128 pages with feint lines for fair copies, and also twenty-six pages of words with French renderings and eleven pages of idiomatic expressions, all faced by blank pages. The vocabularies are curiously arranged ("Hobbies" come before "Parts of the Body"), and it is not at all obvious on what principle words have been included or omitted. Thus we have "le doigt," but not "la main"; "l'os," but not "le sang." There are no indications at all as to the "grammatical notes." For vocabulary and grammar the notebooks compiled by Mr. Webber or Mr. Hodges are much more serviceable; and most people will prefer a separate exercise-book for fair copies.

Carte de Grammaire. Arranged by L. E. Theedam. (Mills and Boon). 6d.—To condense even the main features of French grammar into the space of six octavo pages requires some courage. On the whole we may say that Miss Theedam has shown good judgment in deciding what should be left out; we are, however, not quite clear why she has not given the present subjunctive of "savoir" and "vouloir," and the same tense and the future of "faire." It is a pity that she has retained the terms "passé défini" and "passé indéfini," which were never satisfactory, and are now beginning to disappear, and that it is implied that "Que?" is equivalent to "Que'est-ce qui?" as well as to "Qu'est-ce que?"

L'Armée Française sur le Front, 1914-1915. Par Franc-Nohain et P. Delay. Selected and edited by G. H. Clarke. 46 pp. (Oxford University Press.) 6d. net.—These brightly written chapters on certain aspects of the war will interest our boys and girls; there is so much that is familiar from the letters and conversations of our own Tommies, and it is good to realise how the "poilu" and his family think and feel. Just a little illustration is wanted to make the appeal complete, and perhaps a footnote row and then would have been welcome—but this is one of the Oxford "Plain Texts," so that is excluded. It is a good little book so far as it goes, and we wish it many readers.

Italian Grammar Self-Taught. By A. C. Panagulli. 104 pp. (Marlborough.) 1s. 6d. net. Key to the same, 32 pp. 6d. net.—Considering the limitations of space, this little Italian grammar is a very creditable production. The facts are clearly and concisely stated, and the book is well printed, with commendably few slips. It even contains some pages of "reading exercises," i.e. six prose extracts and two pages of idiomatic expressions. Our feeling is that the book would have been better if these pages had been omitted in favour of more, and more varied, exercises. Most of these require translation from English into Italian; only occasionally (as in Ex. vi.) do we come across anything in the nature of a "reform exercise." It seems a pity that there are not more frequent comparisons with French, and even Latin; it may be assumed that most learners of Italian know one of these languages, if not both. We note the following matters of detail: the description of the "gl" and "gn" sounds (p. 9) is not satisfactory; it is a mistake to talk about an ablative case in Italian; the term "reflexive" is generally preferred to "reflective" (p. 43); "thou wilt repent thyself" (p. 44) is not Eng-

lish; to explain "si" in "si dice" as equivalent to French "on" (p. 59) is misleading; "here she was born, she saw him and married him" (p. 79) is a little startling. A very extensive vocabulary is given incidentally; in order that it might be properly assimilated there should be far more exercises than the book contains at present.

Turgenev's Poetry in Prose. Edited by B. A. Rudzinsky. 60 pp. (H. S. Marshall, 12 Theobald's Road, London, W.C.) 1s. 6d. net.—Eleven "poems," averaging a little more than a page in length, are supplied by the editor with notes which consist almost entirely of translations (often where the text presents no difficulty at all) and with a vocabulary of nouns, another of adjectives, another of verbs, and a fourth of "various words." This does not strike us as useful, and it is certainly inconvenient. It should be added that accents are given throughout, and that a rather unattractive portrait of the author is the frontispiece.

Classics.

Latin Prose for Middle Forms. By W. H. Spragge and A. Sloman. viii+148 pp. (Cambridge University Press.) 3s. net.—There is nothing very new about this book, except that long vowels are marked. There is a good deal of sensible advice prefixed to the exercises, with some differences of idiom and hints on metaphor, and also to the separate exercises, each of which is made to illustrate some special topic. Idiom and metaphor are too slightly treated; in metaphor at least it might usefully be shown what are the common Latin metaphors, and a warning given to treat the rest as simile, unless (as often happens) they are dead and mean nothing at all. The true test is to visualise. Each exercise has a few disjointed sentences, and a connected piece, often on a similar subject. Fifty connected pieces and a few subjects for free composition are added. A great deal of the book will be unnecessary if the class has plenty of oral practice and some free composition in the course of its work; but this book is obviously meant for the unreformed way of teaching.

English.

Surnames. By Ernest Weekley. 364 pp. (Murray.) 6s.—This, as the writer explains, is part of a promised dictionary, and is a successor to the "Romance of Names." The dictionary is badly needed, as many other dictionaries are, yet writers go on multiplying the unnecessary. The students for whom only this book is compiled may be a little puzzled at the method, for which, so far as we see, no explanation is offered. Bibliography and a short survey are followed by chapters on the Teutonic name-system, local, occupational, physical, costume, vegetable, pageant, and Shakespeare-type surnames; French and German names are added; there is an excellent index. We look in vain for anecdote, and a thorough tracing of a name such as Ormerod, along with cognate words in other languages, would have been welcome. To show how many interesting names slip through the net, we may say that in one short London street we can see Ingamell, Latchford, Grisrook, Moir, Merryweather, only one of which Mr. Weekley notices. Surely Greathead, Redhead, Grossetete, Grosskopf, Naso, Tolstoi, Œdipus should occur on one page and almost in one paragraph. But the index is always at hand. The compiler pays his debt to Bardsley and, curiously, to Miss Yonge. A chapter on the uses of the study, philological, historical, and even psychological, would be an addition. The writer's name is current coin for his scholarship.

Chatterton and his Poetry. By J. H. Ingram. (Poetry and Life Series.) 150 pp. (Harrap.) 1s.—Mr. Ingram holds a brief for the unhappy boy who, mainly owing to his connection with Walpole and to Shelley's unsuitable epithet, has attracted the attention of the critic rather than of the alienist. Chatterton's tragic story will always move to pity; and the Bristol church is just as reminiscent of him as St. Peter Mancroft is of Sir Thomas Browne; but apart from a few pungent lines of satire and "The Song of Ælla," Chatterton wrote nothing. He was, as Horace Walpole said, a consummate liar, and only the gross ignorance of his day prevented his being instantly exposed. The "Song," however, does remain, and will remain. Chatterton belongs to a type that does not die; and it is a good thing that he should have his apologists. The world never has known how to treat its Beddoes, its Richard Middletons, and its Rowleys.

Selections from Coleridge. Edited by L. R. Gibbs. 90 pp. (Ginn.) 1s.—This little book is noticeable for its evident wish to point out that "The Ancient Mariner" is something more than a child's ballad with a moral ending. Most editors have nothing to say about the poem, which alone of all short poems in English literature has attracted the artist. The notes are good; but why, after discouraging our fantastic and fallacious school talk about the scansion of verse, does the editor speak of anapæsts, marking a passage with the longs and shorts of the Greek grammarian?

London Shown by Shakespeare. By Hubert Ord. 85 pp. (Routledge.) 1s.—This is a suggestive but too brief a booklet on its subject. The essay on the Sonnets suggests the "Romance of the Rose" as a source; the lecture on the child in Shakespeare does not convince us that the poet ever tried to draw more than one child, and he is put back into his cupboard after a line and a half. The four pages on elocution contain a word of wisdom.

The English Journal for October, 1916, 60 pp. (Chicago Press), contains some useful thought on new methods of English composition, and some instructive information on the reading of American children. The Better Speech discussion fails to take notice of Mr. Henry James's startling arraignment of U.S.A. speech. Perhaps his plain speaking is not yet appreciated. Our cousins have much more to repent of than such enormities as "I have got the book." Still, we cannot throw too many stones, for the censor-lieutenant stands amazed at the inability of Tommy, who has been to school since 1870, to write the most ordinary letter. From another number of the *Journal* we gather that films to which the schoolgirls go rapturously are those "which the churches and the women's clubs of the college town forty miles away succeeded in banishing."

History.

Europe in the Nineteenth Century. By E. Lipson. iv+298 pp. (Black.) 4s. 6d. net.—Last year Mr. Lipson scored a remarkable success by the publication of his work on the economic history of England in the Middle Ages. He now turns—we trust only as a temporary deviation from his path as an economic historian—to the study of the nations of modern Europe. He does not, except at the close of the book, treat Europe as a whole, but discusses each of its leading peoples in turn. This is a curious method to adopt, especially on the part of a historian whose emphasis is always laid on the social and economic aspects of his subject rather than on its political aspects. For

division into countries is essentially political. Moreover, even in the political history of modern Europe the taking of the country as the unit is exceedingly awkward. For the most distinctive and impressive movements of the nineteenth century have been Continental in their scope. The congresses of 1815-22; the risings of 1830 and 1848; the international conferences of Paris, Petrograd, Geneva, Brussels, and Berlin; the assemblies at The Hague; the Democratic and Socialist advances—these and many others have been general in their manifestations, and it is impossible to treat them adequately under the heading of any one European State. Mr. Lipson tries to overcome the difficulty by frequent cross-references *infra* and *supra*; but the difficulty is insuperable. Hence his book, in spite of many excellences, cannot be regarded as a satisfactory text-book of nineteenth-century history, but only as a valuable supplement to those text-books (now fairly numerous) which approach the subject from the international point of view.

The Political History of France, 1789-1910. By M. O. Davis. 151 pp. (Clarendon Press.) 2s. 6d. net.—Our present close alliance with France in the great task of saving humanity from German *Kultur* has naturally quickened our desire to know more than we do of the history of our gallant neighbours. Miss Davis provides us with a brief and well-written sketch of French history from the outbreak of the Revolution to the present day. Our only criticism of her useful and interesting little book is that it is not quite proportionate in its treatment of the different sections of the period with which it deals. The Revolution and the wars that resulted from it (1789-1815) occupy more than five chapters out of the total of nine, and ninety-three pages out of the 144 devoted to the whole narrative; hence the century following the Settlement of Vienna is necessarily dealt with in the most summary manner. This is a matter for regret, because, while many people have some knowledge of the voluminous literature of the Revolutionary and Napoleonic era, comparatively few are acquainted with the details of the re-birth of the French nation during the first forty years of the Third Republic. It is the last rather than the first period that should have been fully portrayed.

History through Illustrations. Book I., *Prehistoric Times to A.D. 1154.* By James Higginbottom. 188 pp. (Pitman.) 3s. net.—This volume is primarily a notebook for elementary-school teachers. Its author is headmaster of the Churwell Council School, Morley, and he here expounds and illustrates a method of teaching history which in his own school has proved eminently successful. The basis of the method is a series of black-and-white illustrations, apparently reproductions of clever blackboard drawings. Teachers are expected to copy the illustrations on their own blackboards, or more permanently on sheets of paper, and to use them as the nucleus of their lessons. The letterpress provides the relevant outlines of the lessons. The value of the book in the hands of a teacher will depend largely on his skill as a draughtsman, the time which he can spare for the making of his sketches, and his knowledge of the history required to make the sketches educative. The subject-matter of this volume covers not only English history, but also the history of the early civilisations of the Nile, the Euphrates, and the Mediterranean.

The Navy of the Restoration. By A. W. Tedder. x+234 pp. (Cambridge University Press.) 7s. 6d. net.—Mr. Tedder has made a valuable and detailed study of the influence of sea-power on politics, and of the counter-influence of politics on sea-power during the years 1658-67. On one hand, he shows how

large a part the Navy played in bringing about the Restoration, and, on the other, in his account of the Second Dutch War he reveals the painful spectacle of "a great service being rotted to the core by the foul spirit that came into England with Charles II. and his court." Mr. Tedder, however, does much more than trace the connection between the Fleet and the Court. From the Pepys MSS., the Admiralty Records, and the naval documents in the Public Record Office, supplemented by information gathered from many subsidiary sources, he presents a minute picture of naval administration and maritime policy during the nine years of which he treats. "The Restoration period," he points out, "is one of vital interest and importance regarding the development of the Navy as a self-contained, independent service, and as a part of the nation," and he adds: "It is not too much to say that it is during this period that there is the first dawn of a service consciousness—*esprit de corps*." Mr. Tedder is to be congratulated upon having produced a most interesting and useful study. In an appendix he provides an exceptionally full and well-arranged bibliography.

The Empire and the Future. A series of Imperial Studies Lectures delivered in the University of London, King's College. xvi+110 pp. (Macmillan.) 2s. net.—The lectures published in the compact little book before us excited much attention when they were delivered in King's College last year. This is not surprising, for the lecturers were men of acknowledged eminence, and their subjects were of absorbing importance. It is well that these notable utterances should be put into permanent form and presented to a wider public than that which originally listened to them, for they are all of them of enduring value. Dr. Michael Sadler deals with the universities and the war; Sir Charles Lucas treats of Empire and democracy; the Master of Balliol discourses in characteristic vein on the people and the duties of Empire; Dr. H. A. L. Fisher, fresh from his visit to India, discusses the problem of Imperial administration; Mr. Philip Kerr, editor of the *Round Table*, considers the types of Commonwealth and Empire; finally, Dr. G. R. Parkin, the veteran Federationist, enlarges upon the duty of the Empire to the world. An introduction, entirely worthy of the remarkable series which it prefaces, is contributed by Mr. A. D. Steel-Maitland, Under-Secretary of State for the Colonies.

The National Anthem: a Report Prepared for the L.C.C. Education Committee. By Dr. F. S. Boas and Dr. J. E. Borland. 24 pp. (King.) 3d. net.—This is an unusual and extraordinarily interesting official document. It appears that the question had been raised whether or not the form of the National Anthem in use in the Council's schools is the original one. Hence, to settle the question so far as possible, the Education Committee requested two of its inspectors to investigate and to report, the one on the words, the other on the music of the anthem.

Dr. Boas, after an exhaustive survey of the evidence, comes to the conclusion that the National Anthem in substantially its present form can be traced to the period of the Restoration, but not earlier. He is inclined to think that it was based upon a more ancient Latin song of ecclesiastical origin. Incidentally he notes and explains some significant variations in the various stanzas. The most important relate to the first line of the first stanza. The original version, "God Save Great Charles our King," gave place after the fall of the House of Stuart to the form, "God Save Our Lord the King," which both Jacobites and Hanoverians could sing with equal though ambiguous fervour. The Forty-five Rebellion, however, which

destroyed the Jacobite cause, restored the anthem to the form, "God Save Great George our King." This continued to be the authoritative version until the accession of the trisyllabic William and the polysyllabic Victoria necessitated the omission of the name for rhythmic rather than political reasons. Hence the modern form, which seems likely to remain permanent, "God Save our gracious King (Queen)."

Dr. Borland traces the motif of the familiar tune back to an air for virginals written by a certain Dr. Bull about 1619. He thinks, however, that its elaboration was due, not to individual composers or to deliberate design, but to gradual evolution after the manner of a folksong.

History: the Quarterly Journal of the Historical Association. New series, No. 3. 64 pp. (Macmillan.) 1s. net.—There are three articles in the autumn issue of *History*. The first is by the editor, Prof. A. F. Pollard, on the growth of an Imperial Parliament. The writer argues that just as the English Parliament developed gradually and spontaneously during a long period of time, so an Imperial Parliament should be allowed to come into existence, if at all, by slow and natural evolution, and not by means of a deliberate and probably premature administrative act. Miss Constantia Maxwell completes a study, begun in the July issue, of the colonisation of Ulster. Dr. J. E. Morris contributes a sympathetic and scholarly study of the local history and antiquities of Ludlow. "Notes and News," "Correspondence," "Reviews," and "Bibliographies" occupy the remaining pages of this valuable magazine.

Geography.

Provincial Geographies of India. The Panjab, North-West Frontier Province, and Kashmir. By Sir James Douie. 373+xiv pp. Maps and illustrations. (Cambridge University Press.) 6s. net.—This is the second volume in this useful series, and is a fitting successor to the first volume on Madras, which received a warm welcome in these columns. No one who wishes to know India can afford to ignore this "thumb-nail sketch" of a portion of the Empire which has many historic associations. From Delhi to Peshawar the country contains much to interest the general reader, and the geographer will find equally valuable matter in the descriptions of the physiography, the vegetation, and the people of this land, which is but two-thirteenths of India, and yet almost equals Austria-Hungary in area. The canal-irrigation systems are treated thoroughly, and the component administrative districts are separately described and illustrated by very clear sketch maps. Strictly speaking, the Panjab, the land of the five rivers, does not include the Indus Valley, but only the country from the Jhelam to the Sutlej. These two rivers, with the intermediate streams—the Chenáb, the Rávi, and the Biás—join as the Panjnad, or five rivers, and, after a course of forty-four miles, supply the Indus with a volume of water equal to that of the main stream. A book for the school library.

Handwork and Geography. Part i. By G. Pickering and J. B. Robinson. 101 pp. (Pitman.) 2s. 6d. net.—Most of this book is a handy guide with numerous useful exercises to all the outdoor work which lies on the borderland between mathematics and geography, and forms an elementary introduction to surveying and geodesy. The more purely geographical matter includes exercises on field sketching, the orientation of an ordnance map, the construction and use of a pantograph. Teachers will find valuable information regarding the manufacture and use of school-made apparatus, such as a cross-head, angle-meter, plane table, and clinometer.

Philip's Large-Scale Battle-Front Map of Europe. (Philip.) 2s. 6d. net.—This map is intended to show the Allies' iron ring. The size is 46 in. by 36 in., and the scale about 50 miles to the inch. If ordinary maps talk, this map shouts its message to the world. Across the face of Europe bold black lines mark the attempt of the Allies to make a ring round the Central Empires; and as a stimulant to increased endeavour and a more definite and determined purpose, we can imagine nothing which could be more usefully placarded from one end of the country to the other. After two years of war we may well be reminded so forcibly of the magnitude of our task.

Mathematics.

The Elements of Non-Euclidean Plane Geometry and Trigonometry. By H. S. Carslaw. xii+179 pp. (Longmans.) 5s. net.—This book has been written by Prof. Carslaw with the object of diffusing amongst teachers of elementary geometry such a knowledge of the logical bases of geometry, especially with reference to the theory of parallels, that they may be enabled to form independent opinions of real value upon questions relating to the teaching of the subject. That such a book is needed at the present time there can be no doubt, for some of the changes in the methods of teaching which have been advocated in various quarters would receive little support if a well-instructed opinion were brought to bear upon them. As an example, we may instance the *direction-theory* of parallels, which Prof. Carslaw rightly terms vicious. The first two chapters contain a historical account of the steps by which mathematicians were led to recognise that the parallel postulate of Euclid is an unproved and unprovable assumption. In the following chapters the fundamental theorems of the hyperbolic plane geometry and trigonometry are enunciated and proved, and then, more briefly, the corresponding theorems in elliptic plane geometry are discussed. The final chapter may be regarded as a general review of the whole subject, and is devoted to a consideration of the questions of the self-consistency of the non-Euclidean geometries and the impossibility of proving the parallel postulate. The argument is presented in an extremely clear and convincing manner, and as the analysis introduced throughout the work does not go beyond ordinary algebra, trigonometry, and the elements of the calculus, the book should reach a wide circle of readers.

An Introduction to the Use of Generalized Co-ordinates in Mechanics and Physics. By W. E. Byerly. vii+118 pp. (Ginn.) 5s. 6d.—This book does not appeal to the candidate for mathematical honours, but rather to the student of physical science who desires to gain a working knowledge of the equations of dynamics in their Lagrangian and Hamiltonian forms. A clear but concise account is given of the essential principles of the subject, and they are applied to a number of simple problems in particle and rigid dynamics. In several cases the same problem is solved, first by the Lagrangian method, then by the Hamiltonian, and then again by the method of ignorance of co-ordinates, and this procedure undoubtedly helps the student to obtain a clear idea of the relative advantages of the different methods. In the final chapter the subject of ignorance of co-ordinates is again taken up, and it is shown how the theory may be applied to interpret apparent potential energy in terms of the kinetic energy of concealed masses. In the chapter on impulsive motion a good account is given of the application of Thomson's and Bertrand's theorems to the determination of the motion produced by blows, and in the following chapter Hamilton's principle and the principle of least action are dis-

cussed. Although the amount of space devoted to them is small, it is probably sufficient in view of the general plan of the book.

There are some unfortunate misprints. One in the third line from the bottom of p. 12, and another at the head of pp. 77 and 79, are so glaring that it is difficult to understand how they could have escaped notice. In one or two other places the omission of the dots signifying differentiation with respect to the time may puzzle the beginner.

Science and Technology.

Elementary Textbook of Economic Zoology and Entomology. By V. L. Kellogg and R. W. Doane. x+532 pp. (Constable.) 6s. 6d. net.—This book sets out to consider animals from the special point of view of their possible use or hurtfulness, or even danger, to mankind, and of man's power to develop the use and minimise the injury. This aspect of zoology needs pointing out persistently, for the practical importance of the subject is by no means generally recognised. The authors have succeeded admirably in their aim, and have provided a most interesting survey of animals as potential or actual friends or foes to the human race. The first chapters deal with the general facts of animal structure and life, while later chapters, arranged on a basis of natural classification, give special attention to the economic relations of particular members of the groups. A special section, forming nearly one-third of the book, is devoted to insects which are harmful to man either because they spread human diseases, or because they are injurious to his domestic animals or his crops. The book is attractively written, with avoidance of unnecessary technicalities, and contains 245 well-produced and helpful illustrations.

The Chemistry of the Garden. By H. H. Cousins. xx+143 pp. (Macmillan.) 1s.—Many amateurs working in either school or home gardens are already familiar with this helpful primer, and those who are not should hasten to obtain the book, which explains simply the general principles of manuring, the nature of the manures in common use, and their effects on soils of different types. Careful instructions are given as to the best methods of purchasing the manures economically, and of applying them to the greatest advantage according to the particular needs of the plants to be grown. The last two chapters are specially concerned with the fungoid and insect pests which are liable to play havoc in the garden. The book has been brought up to date, and takes account of recent work on the activities of soil bacteria. Altogether it is a thoroughly practical little volume, containing a surprising amount of information, and should save its readers from much of the disappointment and needless expense which commonly fall to the lot of beginners in gardening.

We have received vol. viii. of the *Journal of the Municipal School of Technology, Manchester*. The purpose of the journal is to publish, or to collect together, records of original investigations by members of the School of Technology during the year 1914. The investigations extend over a wide range of applied science, and the value of them to industrial work will be very pronounced. The subjects include the endurance of steel under slow reversals of stress, experiments with lathe-finishing tools, the abatement of smoke and modern boiler-room practice, the action of nitric acid on cellulose, the inflammability of gaseous mixtures, the history of dyeing, the acceleration of the vulcanising process, industrial gas-burning, the determination of carbon monoxide in air, the strength and wearing qualities of cloth, a null method of testing vibration

galvanometers, the commutation of large continuous-current generators and rotary converters, etc. This volume has been printed in the printing department of the Municipal School, and it is an excellent piece of workmanship.

Electrical Measurements and Testing. By C. L. Dawes. (Chapman and Hall.) 3s. net.—This is one of the "loose-leaf manuals" issued in the "Wiley Technical Series." The author, who is instructor in electrical engineering in Harvard University, has collected together in this book the full instructions for about forty experiments and tests. These are very appropriate for use in any well-equipped electrical engineering laboratory. The subjects of the experiments include wiring, incandescent lamps, testing of instruments, direct-current and alternating generators and motors, transformers, rotary converters, etc.

EDUCATIONAL BOOKS PUBLISHED DURING OCTOBER, 1916.

(Compiled from information provided by the publishers.)

Modern Languages.

"Aide-Mémoire of Everyday French Words and Phrases." By Basil Readman. (Blackie.) 3s. net.

"Recueil gradué de Bons Mots et Anecdotes courtes à l'usage des Commencants, avec Notes en Français facile." By G. N. Tricoche. 124 pp. (Hachette.) 2s.

"A Practical Introduction to French." By L. H. Alexander. 376 pp. (Oxford University Press, American Branch.) 5s. net.

"Some Questions of Phonetic Theory." Part i. By Wilfrid Perrett. (University of London Press.) 2s. 6d. net.

"A Sechuana Reader: An International Phonetic Orthography with English Translations." By David Jones and S. T. Platje. (University of London Press.) 3s. net.

Classics.

"Demonstrations in Greek Iambic Verse." By W. H. D. Rouse. (Cambridge University Press.) Alteration in price to 2s. 6d. net.

"The Aeneid of Virgil in English Verse." Vol. i., Books I.-III. By Dr. Arthur S. Way. iv+144 pp. (Macmillan.) 3s. 6d. net.

English.

Shakespeare: "Romeo and Juliet." 150 pp. "King John." 124 pp. "Richard III." 178 pp. "Coriolanus." 204 pp. Edited by E. C. Black. (Ginn.) 1s. 6d. each.

Defoe: "Robinson Crusoe." Edited by W. P. Trent. 360 pp. (Ginn.) 2s. 6d.

Kingsley: "Water Babies." Edited by J. H. Stickney. 280 pp. (Ginn.) 2s.

Coleridge: "Selections." Edited by L. R. Gibbs. 90 pp. (Ginn.) 1s.

Goldsmith's "Deserted Village," "Traveller"; and Gray's "Elegy." Edited by L. Pound. 86 pp. (Ginn.) 1s.

"King of the Golden River." By John Ruskin. 71 pp. (Ginn.) 1s.

George Eliot: "Romola." With an introduction and notes by C. B. Wheeler. 724 pp. (Oxford University Press.) 2s. 6d. net.

History.

"The Days of Alkibiades." By C. E. Robinson. 326 pp. + 16 illustrations. (Edward Arnold.) 5s. net.

Breasted's "Ancient Times." 742 pp. (Ginn.) 6s. 6d. net.

Robinson's "Mediæval and Modern Times." 777 pp. (Ginn.) 6s. 6d. net.

Myers's "Ancient History." Second, revised, edition. 592 pp. (Ginn.) 7s. 6d.

"England: From the Earliest Times to the Great Charter." By Gilbert Stone. 640 pp. (Harrap.) 10s. 6d. net.

"Ireland under the Stuarts and during the Interregnum." Vol. iii. By Dr. Richard Bagwell. (Longmans.) 15s. net.

"A Class-Book History of England." By Rev. D. Morris. (Longmans.) Part i., 2s. 6d.; part ii., 2s. 6d.

"Short History of Germany." Two vols. By Ernest F. Henderson. Vol. i., xiv+518 pp. Vol. ii., viii+604 pp. (Macmillan.) 15s. net.

Geography.

"New Regional Geographies." Vol. ii., "Asia and Australasia." With many maps. By Leonard Brooks. 264 pp. (University of London Press.) 3s.

Mathematics.

"The Elements of Non-Euclidean Plane Geometry and Trigonometry." By Prof. H. S. Carslaw. (Longmans.) 5s. net.

Science and Technology.

"Elementary Qualitative Analysis: A Laboratory Guide." By Prof. B. Dales and O. L. Barnebey. 206 pp. (Chapman and Hall.) 6s. 6d. net.

"Bridge Engineering." Two vols. By Dr. J. A. L. Waddell. 2177 pp. (Chapman and Hall.) 42s. net.

"Steam Power." By C. F. Hirshfeld and T. C. Ulbricht. 420 pp. (Chapman and Hall.) 8s. 6d. net.

"Elementary Practical Chemistry." Part ii. Eighth edition. By Dr. F. Clowes and Prof. J. B. Coleman. 272 pp. (Churchill.) 3s. 6d. net.

"Text-Book of Physics." Fourth edition. Edited by A. Wilmer Duff. 706 pp. (Churchill.) 10s. 6d. net.

"The Essentials of Chemical Physiology." Ninth edition. By Prof. W. D. Halliburton. (Longmans.) 6s. net.

"A Laboratory Manual of Foods and Cookery." By Emma B. Matteson and Ethel M. Newlands. xii+326 pp. (Macmillan.) 6s. 6d. net.

"The Application of Hyperbolic Functions to Electrical Engineering Problems." By Prof. A. E. Kennelly. (University of London Press.) 7s. 6d. net.

Miscellaneous.

"The First Epistle to the Corinthians." Edited by R. St. John Parry. (Cambridge Greek Testament for Schools and Colleges.) lxxvii+284 pp. (Cambridge University Press.) 4s. 6d. net.

"A Manual of Fire Prevention and Fire Protection." By Dr. Otto R. Eichel. 69 pp. (Chapman and Hall.) 4s. 6d. net.

"Buddha and the Gospel of Buddhism." By Ananda Coomaraswamy. 350 pp. (Harrap.) 15s. net.

"Forty Thousand Quotations." By Charles Douglas. 2008 pp. (Harrap.) 12s. 6d. net.

"Sex-Education: A Series of Lectures concerning Knowledge of Sex in its relation to Human Life." By Prof. Maurice A. Bigelow. xii+252 pp. (Macmillan.) 5s. 6d. net.

"The Year Book Press Series of Unison and Part Songs for Schools":—No. 128, "The Best School of All." Composed by Sir Hubert Parry. No. 139, "The Larchwood." Composed by Dr. C. H. Lloyd. No. 140, "Grey Stones." Composed by Dr. C. H. Lloyd. 8 pp. each. (The Year Book Press.) 3d. each.

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.

Mathematical Inaccuracy in Arithmetic.

THE question as to whether, and, if so, how far, the use of contracted methods should be compulsory in school teaching appears to have led to almost endless controversy. As an examiner, I am constantly faced with long strings of digits resulting from operations of multiplication and division carried to a degree of unmathematical inaccuracy that is enough to make a man's hair stand on end. Even in some recent textbooks the indications are very obscure as to how far the results of any operation with approximate data are arithmetically correct.

The rules, however, in such cases are so very simple that every teacher ought to insist on his pupils following them, whether he requires his pupils to learn contracted methods or allows them to add the superfluous digits provided that he insists on their being afterwards struck out. They are as follows:—

(1) In working with approximate data, the results arising from the addition or subtraction of the digits in any column are false if that column contains any blank space at the *right*-hand side of a line of figures above it.

(2) In multiplying a number by one with a smaller number of digits (the latter being, like the former, only approximate), the results arising from the addition of the digits in any column are false unless that column contains one more figure than the next column on its *left*.

(3) In dividing an approximate number, o's must not be added at the right hand of any remainder unless there are o's actually standing above them in the dividend (which is rarely the case). Not only will the portions of the remainders standing under these added o's be false, but any figures of the quotient resulting exclusively from the retention of these remainders will also be false.

As a matter of fact, no teacher would really try to make his pupils remember these rules in words. When they had worked out a sum, he would say to them, "There is a blank in that line above the column containing your 7, and you don't know what that blank means, so you are not justified in saying that figure is a 7, and you must strike it out as incorrect," or, "You cannot put that o on to your remainder as there is no o above it in your dividend. All your figures underneath it must be struck out."

The practical effect of the candidates' errors in this respect is that when they are required to multiply or divide π by c , they send up the product or quotient of 3.14160000 by 2.71830000 to nine significant figures, whereas the correct result to this degree of approximation can only be obtained by taking the values 3.14159265 by 2.71828183.

Finite decimals very rarely occur in practice, and in the few cases in which they are actually met with greater precision would easily be obtained with little extra trouble by adding zeroes to the left of the significant digits, sufficient to fill up the "incomplete files" of digits which would otherwise occur without them. In the *Mathematical Gazette* I have pointed out that it is the methods of multiplying and dividing *integers* as commonly taught that are really *contracted* methods, and if these contractions were abolished the difficulties would cease to exist. For example, if 314 has to be

multiplied by 271 the line resulting from the multiplication by the 2 should be written 62800, instead of 628 followed by two blank spaces. Similarly, in dividing 67524 by 314, the first digit of the quotient being 2, the corresponding product (if not omitted, as in the Italian method) would be 62800, instead of 628 and two blanks, and the remainder 4724 instead of 472 and one blank space.

Unfortunately pupils who perpetrate these unmathematical inaccuracies not only pass the entrance examinations of our universities, but graduate in arts and science, sometimes with first-class honours in mathematics, and then go out into the world and teach their pupils to evaluate similar strings of false digits. This actually happened in my own case, and it was only when I accepted an engagement to write text-books that I began to realise in a hazy way the gravity of my early sins. But that was a good many years ago.

Someone will no doubt write and say that even with my method the last digit is very often incorrect or untrustworthy. I should not take off marks for this, because this ambiguity may reasonably be taken for granted. But it only forms a stronger argument for penalising the candidate who retains a long string of decimals *after* the doubtful one. G. H. BRYAN.

Mathematical Education.

THE Teaching Committee of the Mathematical Association concurs with the councils of the Classical, English, Geographical, Historical, and Modern Language Associations in the view that any reorganisation of our educational system should make adequate provision for both humanistic and scientific studies; that premature specialisation should be avoided; and that technical preparation for a particular profession should be conceived in such a spirit that it misses none of the essentials of a liberal education.

In reply to the invitation of the representative conference to make a statement as to the position of mathematical studies in schools, the Mathematical Association Committee would submit that from a school course of mathematics the pupil should acquire: (1) an elementary knowledge of the properties of number and space; (2) a certain command of the methods by which such knowledge is reached and established, together with facility in applying mathematical knowledge to the problems of the laboratory and the workshop; (3) valuable habits of precise thought and expression; (4) some understanding of the part played by mathematics in industry and the practical arts, as an instrument of discovery in the sciences and as a means of social organisation and progress; (5) some appreciation of organised abstract thought as one of the highest and most fruitful forms of intellectual activity.

(Signed, on behalf of the Mathematical Association)
A. N. WHITEHEAD

(President),

A. W. SIDMONS

(Chairman of the Teaching Committee).

November, 1916.

(Any communication with regard to the above may be addressed to Mr. A. W. Siddons, Harrow School.)

Facilities for Commercial Education.

THE Central Committee for National Patriotic Organisations is anxious to draw up for publication a brief, but complete, statement of all educational facilities (including grants, scholarships, etc.) now in existence or in contemplation throughout the United Kingdom, which deal with commercial and business education, with special reference to foreign commerce, as conducted in this country or overseas. For this purpose I have approached, I believe, all the universi-

ties, colleges, chambers of commerce, and various other associations interested in the question, and a very large amount of valuable information has already been received. In case, however, any source of knowledge has been neglected, I shall be very glad if you would kindly publish this letter, and I shall be grateful to any heads of colleges, schools, institutions, etc., offering such facilities, who would forward a statement to the address given below.

It is hoped that this publication may be followed by a second, in which criticisms of the present system and practical suggestions for the future collected from educational, business, overseas, and other experts, and divided under definite subject headings, may be embodied.

Canadian Pacific Building, HENRY CUST.
61 Charing Cross, London, S.W.

John Curwen and a Welsh Air.

MESSRS. J. CURWEN AND SONS have directed attention to the following note, taken from the *Musical Herald* of November, 1916:—"That story of Mr. Lloyd George's about John Curwen's favourite Welsh composer being Alaw Gymreig (Welsh air) has been traced to its source. Instead of John Curwen, it was an English organist at Mold Parish Church who showed his ignorance, and he exposed it to the late Mr. Robert Drury, well known to us at a later period as a Liverpool bank manager, a bass vocalist and keen Sol-faist. Mr. John Morgan writes from Utah, U.S.A., giving the whole story as told by Councillor Thos. Parry. Briefly stated, Drury lent the organist Ieuan Gwyllt's new tune-book. Meeting afterwards, the organist spoke with delight of the tunes by 'Haylaw Jimrig.' Drury said that there was no such composer. The Saxon took him home to prove it. Opening the book triumphantly, he pointed to the 'composer's' name, and chaffed Drury about his ignorance of the names of his country's composers. Uncontrollable laughter followed Drury's amazement."

Without casting any doubt whatever on Mr. John Morgan's story of Councillor Thos. Parry's account of what happened to Mr. Robert Drury, it may be permissible to observe that what happened at Mold in no way affects Mr. Lloyd George's account of John Curwen. And even if this paragraph disproved—as it does not—Mr. Lloyd George's story, I cannot accept it as a correction of my account of what Mr. Lloyd George said. YOUR (WELSH) CORRESPONDENT.

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