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THE CANADA
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MAY, 1891.

THE EQUALITY OF GREEK WITH FRENCH AND GERMAN—
A REPLY.

BY W. H. FRASER, B.A., UNIVERSITY OF TORONTO.

(Continued from April Number.)

IN the last issue of this magazine my reply to Professor Hutton was entirely devoted to the discussion of matters which he proposed not to discuss, but which were, in fact, referred to by him at considerable length in the article in question. Paradoxical as it may seem, this second half of my reply will be chiefly devoted to the discussion of matters which he proposed to discuss in his article, while failing to do so.

2. The curriculum of the University of Toronto and the comparative difficulty of Greek, French, German.

A statement of the scope and object of the Greek, French, and German courses respectively, laid down in the curriculum would seem to be an essential preliminary to any discussion under this head. Instead of giving us this indispensable definition of the question, Professor Hutton has asserted that a certain undefined quantity called Greek is much greater than either of two other equally undefined quantities, called French and German, and, without more ado, he has

hastened triumphantly, though illogically, to the conclusion that pass Greek is or should be equal to pass French plus pass German in the University of Toronto. In order that the discussion may proceed intelligibly, I hasten to supply his omission.

The curriculum of 1890-95 shows that the scope of the pass Greek course of four years is, (a) the translation into English of certain texts, (b) sight translation of easy Greek (with the help of vocabularies), (c) Greek prose involving a knowledge of Abbott's Arnold's Exercise Book (or its equivalent).

The scope of the pass French course is, (a) translation of certain texts into English, (b) sight translation of modern French (without vocabularies), (c) translation of English into French, (d) composition in French, (e) dictation, (f) outlines of history of literature. The German course is parallel, but omits original composition. Grammar is required in both, as also in Greek.

To give my readers a still clearer

idea of what Professor Hutton's equation of Greek = French + German means in the curriculum, I shall put down the fourth year work by way of example:—

(a) In *Greek*: Texts, Meno, Ion; grammar; easy sight translation (with vocabularies); English into Greek prose (as in Abbott's Arnold's or its equivalent).

(b) In *French*: Texts, Zaïre, Le Barbier de Séville, Atala, Émaux et Camées, Hernani, Eugénie Grandet; grammar; composition in French; dictation; translation of English into French; sight modern French (without vocabularies); history of literature of the 18th and 19th centuries.

(c) In *German*: Texts, Wallenstein, Heine's Prosa (selections), Wildenbruch's Neue Novellen, Faust, pt. I.; grammar; translation of English into German; sight modern German into English (without vocabularies); history of literature prior to 18th century.

Expressed in the terms of the equation and apart from generalities and ecstasies on the merits of Greek in the abstract, this means that it is as easy for the student to reach the pass standard (33 per cent.) in (b) and (c) together as to obtain the same per cent. of (a). I leave this astounding statement in the meantime in order to examine the supposed evidence upon which the equation is based. It consists substantially of the following items: (1) Professor Hutton's *ipse dixit*. This item admits of no discussion. (2) The following statement drawn from Professor Hutton's own experience. He says, "I have myself little French and less German, measured by the hours I have given to these languages; yet I still find even now that I can translate French at sight with considerable (*sic*) more ease than Latin." This experience is confirmed, we are told, by that of Mr. Dale and Professor Campbell. Appealing again to his own experi-

ence, Professor Hutton says of German, "After devoting to it not one-hundredth, nor, I think, one thousandth part of the time given to classics, I find not unnaturally that Latin is easier now to me, and, on the whole, Greek also; though if I should open at random a book of Greek and German poems, there would be, I believe, a fairly large minority of cases in which I should catch the idea of the German more quickly than of the Greek." This is all very marvellous and interesting, but what does it prove? It might seem to prove at first sight that, as Mascarille says in *Les Précieuses*, "Les gens de qualité savent tout sans avoir jamais rien appris." Or, if we may allow the statement of fact to go unchallenged, may it not merely prove that these gentlemen, after many years of linguistic preparation and development in Latin and Greek have acquired without much labour what is after all even by their own showing a very humble acquaintance with French? The strongest part of this evidence is Professor Hutton's marvellous acquaintance with German. He has devoted infinitesimal time to it and yet, wonderful to relate, he can translate it with more ease than Greek in many cases. (By the way I hope he does his Greek no injustice.) Granting all that he claims, it is still most irrelevant to the question. These gentlemen are not pass-men, and besides, even if they were pass-men and possessed this *translating* knowledge and nothing more, they would still be regularly plucked at the annual examinations, for no pass-man in French and German at the University gets through on mere translation. It is the smaller part of what is required of him. Will Professor Hutton appeal with the same confidence to his own knowledge of what are made the real tests in pass French and German, viz., composition, translation of English into

French and dictation? It is hardly likely that he will do so. Even if he will and can, the argument is none the less irrelevant. I fear that this discussion must prove largely fruitless until the friends of pass Greek try to realize the vast difference which exists between their definition of proficiency in a language and the one upon which modern language men insist. We are talking about power to use a language to express thought: they are talking about power to translate it into English, with helps. (3) Professor Fletcher opines that one can become more proficient in French and German in a given time than in Greek alone. Presupposing the methods at present in vogue in each respectively, this is precisely my own belief, but that proves nothing with regard to the relative difficulty of passing the tests prescribed by the curriculum, which is the question we are discussing. Besides it shows incidentally that the pass-man in French and German is much more likely to have some permanent knowledge at the end of his course, while the Greek man is extremely likely to have nothing for his labour (and no one would admit this more readily than Professor Hutton under ordinary circumstances). (4) Mr. Cody's summing up needs only to be stated in order that it may condemn itself. He says, "the pass French course simply cannot be made hard . . . it is a mere matter of time to accomplish it." I might remind him, however, that whatever fine distinctions may exist in his own mind between "time" and "hardness," yet there are only twenty-four hours in the pass-man's day, and, as he will presently see, the want of a longer day seems to prove uncommonly fatal to success in pass French and German. The number of witnesses called by Professor Hutton for the prosecution is surprisingly small, and, as I have shown, the testimony

does not touch the question except in the vaguest way. Some of the more prominent classical scholars in Ontario, and among them those who are at the same time ripe scholars in modern languages, are conspicuously and ominously absent. (5) There is still a further argument which for *naïveté* deserves to be placed by itself. "Would it not be easy," says Professor Hutton, "to construct whole sentences of intelligible rational French, which could be translated by an intelligent, well-read Englishman, whose knowledge of French was acquired in a dozen lessons; *simply owing to the very large number of words common (except for a letter of two) to the two languages?*" (Italics mine.) My fellow-teachers of modern languages will recognize in this an extreme re-statement of that venerable and vulgar error, common to the elementary pupil in French, which it is our first business and care as teachers to eradicate. To find it used here as an argument makes one fear greatly for the alleged knowledge of the person who advances it.

Since the discussion is based on the revision of the curriculum for 1890-95, I must in the next place explain what that document prescribes as to the relation of French and German to Greek. The pass-man is told in effect with reference to his foreign languages: "You must take Latin and any two of the following three: Greek, French, German." Hence this curriculum says, "Greek is equal to French or German." Now what could have induced the Senate to make a prescription of this kind? The Senate, when it framed the above clause, was probably not aware of the appalling politico-metaphysical complexity of its own motive in so doing. Here is the motive in all its horror, as given by Professor Hutton (p. 45): "The demand (for equality) then, is partly a confusion of thought intro-

duced from the sphere of politics, and arising from a two-fold confusion, partly between the intrinsic and educational value of the subject taught and the dignity of the teacher teaching it." (I do not profess to understand this fully, and must leave my readers to wrestle with it.) For my part, however, I feel disposed to favour the alternative explanation which Professor Hutton thinks may possibly account for the demand for equality, viz., that the Senate actually thought that it would take as much labour on the part of the student to obtain thirty-three per cent. of either the prescribed French or the German course, as of the Greek. A glance at the requirements of the curriculum ought to convince any one that the inherent probability that this actually is the case is very great. Such a glance will also exhibit incidentally the difference between classical and modern language ideals with respect to language study. The main object of the pass Greek course is to enable the student to turn prescribed Greek texts into English with grammar and dictionary—the so-called "working knowledge" of Greek. Now, it is undeniable that the translating of the few texts prescribed may be done, and commonly is done, with the help of "cribs," and thus degenerates into a mere process of memory, combined with the mechanical matching of the words in the "crib" with those in the text. It is also a fact that it has heretofore been possible to pass in Greek on translation alone. Observe too that the easy sight Greek is rendered a farce by the help of vocabularies. The above, with the grammar, has been heretofore the sum and substance, the beginning and the ending of pass Greek in the University. In 1890, however, an elementary prose exercise-book was added—an important change, and, as I take it, a concession to modern language meth-

ods. But as this little book is spread over four years, it can hardly be a very serious addition to the labours of the student, especially as it forms, I understand, but one year's work for boys in the higher forms of our collegiate institutes.

As to the nature of the tests imposed in them, the courses in French and German really begin where the course in Greek leaves off. Texts are assigned, to be sure, but they are not the *pièce de résistance* at examination as in Greek. In French, for example, in addition to grammar, the candidate must read at sight any modern French (without vocabularies); he must also be able to use the language both to express his own thought in original composition and to translate any kind of English into French; further, he must understand the language when it is read to him. Not only are these tests vastly higher in their scope than those imposed in Greek, but more useful to the student, for, as every real teacher of language knows, even the paltry accomplishment of turning either Greek or French into English will not be permanent if the learner has not got beyond the mere grammar and dictionary stage at which the teaching of pass Greek practically stops.

If Professor Hutton's equation of Greek = French + German is right, and the 1890-95 curriculum wrong, we should expect to find that the work of preparing the students for examination is much greater in pass Greek than in either French or German. Hence, we should expect to find that the number of lectures to pass Greek men in University College is equal to that given in French and German together. Now what are the facts? The sum total of pass lectures in Greek in all four years is *five*; in French and German together it is *eighteen*. It must be noted too that the Greek

department is fully equipped as to teaching power, and hence it is to be presumed that all the lectures necessary are given. French and German are but poorly equipped, and more lectures are needed but cannot be given. If Greek requires as much labour as French and German put together, by what sort of pedagogical magic do the instructors in that branch crowd into five lectures the work for which eighteen are admittedly insufficient in French and German. As to the nature of this mysterious process I refer my readers to the opinions of Messrs. Fairclough and Robertson (p. 168 of this article).

Moreover, if Professor Hutton's equation is right and the curriculum wrong, we should expect to find the percentage of failures greater in pass Greek than in French or German. Here, too, the facts are against his equation and in favour of the curriculum. At the last annual examination, 1890, the failures in pass classics were: first year, 53 out of 173; second year, 36 out of 112. In French, first year, 35 out of 79; second year, 41 out of 77. German, first year, 20 out of 79. Previous records perished in the fire last year, but would tell a similar story.

A consideration of the actual demands of the curriculum and of the above facts and figures ought to have led Professor Hutton to suspect that there was something wrong with his supposed equation and that the curriculum was right after all in putting these subjects on a footing of equality. But, judging from his article, it appears very doubtful whether he considered either the curriculum or the facts, for, inspired by his belief in the importance of his translating power in French and German, picked up at odd moments, he waxes still more enthusiastic and declares that pass French or pass German can only be made an equivalent to pass Greek on

the curriculum by resorting to certain extraordinary and ingenious expedients, for some of which, as far as I know, he may fairly claim patent right, to wit: the addition of "history, archæology . . . strings of authors to be referred to and books to be read . . . the higher criticism." Having set up these very gruesome looking men of straw, he proceeds to knock them down one after another in the following style: He says of philology, for example, "from the educational side philology has no practical value . . . it may be confidently recommended to elderly gentlemen with a little money, no occupation, virtuous habits, a sanguine temperament and a judgment not too exact or exacting in the measurement of evidence." I confess I thought at first sight that this description of a philologist was intended for a joke, or was meant for a philanthropist of the Pickwickian type, but as there is but one professor of philology in Ontario, and as Professor Hutton is particularly well acquainted with him, we must, I suppose, accept the description as authentic, only lamenting the fact that one who fills the philologist's chair should express such contempt for the science he is paid to teach. But to return, who has ever proposed to make the pass French or German course difficult by this method? As a member of Senate, Professor Hutton must know that after years of effort honour modern languages have only just succeeded in getting rid of such extraneous matter as honour History and Ethnology, and that the courses now (both pass and honour) demand almost nothing beyond a knowledge of the language itself. To come to facts, I ask him to point out to the educational public which of the requirements of either the pass or honour courses in French and German he objects to on pedagogical principles. He will look in vain for

"history, archæology," or any of the other foolish expedients which he suggests; and moreover, if he attempts to re-impose what has been discarded after a long struggle as useless he will meet with the opposition of modern language men at least.

As an illustration of the fact that it is possible to make a French or a German course equal to one in Greek without the above devices, I would refer Professor Hutton to the practice in Harvard University. If it is possible to establish such an equality there it is possible here. At Harvard, as "advanced subjects" (part of the matriculation test), Latin, Greek, French, German are on a footing of perfect equality. I quote here an explanatory remark from a speech by President Eliot. He says: "We require for admission to Harvard College, besides a knowledge of certain elementary subjects, the passing of examinations in at least two advanced subjects. Now the advanced subjects used to be . . . only Latin, Greek, Mathematics, but in 1887 we put French and German on a perfect equality." Comment is needless. I will only add that many years ago a pass-man in the University of Toronto also was allowed in the third and fourth year an option between Latin and Greek on the one hand, and French and German on the other, and that without the extraneous matter aforesaid.

The friends of pass Greek appear to have thought that the 1890-95 curriculum struck a terrible blow at Greek. Professor Hutton alludes to the "abstract injustice and practical mischief" of the changes made. He says again, "the last curriculum (1885-90) made their yoke easy, and the new curriculum has diminished their yoke." Mr. Cody, too, owing to an ignorance of the curriculum, which is perhaps pardonable in a gentleman of his inexperience, is quite

sure that certain very baneful effects are directly traceable to the new curriculum. These false impressions, under which doubtless many others labour, are worth correcting. Professor Hutton's whole article indeed was founded on a false impression. He starts out by assuming that the old curriculum (1885-90) said: "pass Greek is equal to pass French and pass German, plus a little more." I observe that he has since then stated in *The Mail* that this was a misconception, as indeed it was, and a very gross one. If he had read the 1885-90 curriculum beforehand, or better still, if he had understood it, all this expenditure of printer's ink might have been spared. Now, what did the 1885-90 curriculum really say? It said in effect, though the wording was somewhat obscure: "Pass-men must take, in the first and second years, any two of the three languages (Greek, French, German), and in the third and fourth years, Greek or French + German." The new curriculum said in effect: "Pass-men must take in all four years any two of the three (Greek, French, German)." With this statement of the facts before us, what becomes of the supposed ill effects upon Greek in the schools? A high school boy asking in 1885-90, "Can I get my B.A. degree with Latin, French and German and without Greek?" is answered by the curriculum, "Yes." Precisely the same answer is given to precisely the same question by the curriculum of 1890-95. The new curriculum did little else than re-state the requirements in other words, but in words which deprived pass Greek of its certificate to a superiority which does not actually exist. The loss of this certificate is, I fancy, the chief grievance of the champions of pass Greek. Surely they will not argue now that a boy in the schools will be turned away from Greek to French and Ger-

man, when it is seen that both new curriculum and old permit him to take French and German all through instead of Greek, and that both new curriculum and old tell him he must take either French *or* German in the first and second year whether he takes Greek or not.

Since the discussion began the aspect of the question has been completely changed and complicated by the action of the Senate last month. A statute, introduced by Professor Hutton, was then passed, by which, in all four years of the course, pass Greek is made equal to French plus German. If my readers will turn back to p. 162 they will see what a preposterous equivalence this is for the fourth year. It is equally so in the lower years. As the curriculum stands at the present moment, taking the whole four years, we get contrasts like the following: 565 pp. of Greek texts = 4,170 pp. French and German texts; Abbott's Arnold's Exercise Book = Original French Composition + the translating of English to French + the translation of English to German; easy sight Greek (with vocabularies) = translation of any modern French + translation of any modern German. The power to understand French and German, when read, and the outlines of the history of literature are not balanced by anything in Greek, even in name. But nothing, I think, makes the pretended equivalence quite so absurd as the contrast in lectures already referred to—five in pass Greek, eighteen in pass French and German.

These contrasts, absurd as they may seem, are perhaps not the worst feature of the present situation. Since at least the year 1857, and continuously up to the present time, the curriculum has said that no pass man should get the degree of B.A. without at least two years study of a modern language, whether taking Greek or

not. For a considerable period not merely two but four years' study of a modern language was demanded. This principle was at that early date deliberately laid down. The reasons for doing so, given in a convocation speech by Rev. Dr. McCaul, then President, part of which I quote, are as sound to-day as they then were, and one can only wonder at the breadth of view and progressiveness of those earlier times in such painful contrast with the counsels which now prevail. He says: "The objection limits itself to the Modern Languages and the Natural Sciences. Now, in the first place, I would state that we have added only those subjects which, within the last few years, have made the greatest progress and the utility of which has been so universally recognized that they are essential elements of a good education (applause). Is it desirable that we should send forth our graduates without any knowledge of those modern languages, which are now so important?" (Professor Hutton and the Senate say now that we should do so.) "There is no scholar who omitted to acquaint himself with the modern languages, but who has had cause for deep regret. What scholar, for example, ignorant of the German, in which the very highest thoughts within the range of human intellect are to be found, but has suffered from the loss?" and more in the same strain. This principle, so wisely laid down, has been adhered to continuously for upwards of thirty-five years. But the Senate, by its recent action under Professor Hutton's direction, reverses all this and turns the hands back on the dial so that they now point to the year of grace 1857 or earlier. Inside the Senate and outside of it, the educational public has been deploring for years the disgracefully low pass standard, and yet the Senate has now further reduced that standard. On this ground alone,

it is impossible to see how that body can maintain the position it has taken. The only reasonable explanation of its extraordinary action is one hardly creditable to it, viz., that it did not inquire into or understand the force of the statute in question before voting on it. This explanation is but a sorry one at best, but friends of education will, I hope, more readily believe that the Senate has made a blunder than that it has deliberately determined to repudiate its own record and to materially lower its pass standard.

There are also other serious complications. The French and German courses were increased in 1890, when each of these subjects was made equal to Greek, in order to avoid all possible cause of complaint. These courses still stand unrevised. By the *volte-face* of last month each of them has only half the value as compared with Greek which it had when the curriculum was framed. The Senate declares in 1891 that its conclusions of 1890 were wrong by 50 per cent., a very serious admission for a body which might be expected to have some regard for its own reputation. Moreover, students of Orientals, who by the 1890 curriculum were allowed to combine Greek and Hebrew, now find themselves in the unfortunate position of being obliged to take Hebrew, if at all, as an extra subject for which they get no credit. In fact the whole situation is so indefensible from every point of view that the Senate cannot possibly leave the curriculum in its present condition. An early re-revision may be looked for.

3. The present position and prospects of Greek.

Professor Hutton in his article admits (p. 87) that the numbers in pass Greek in the University have fallen off some fifty per cent. in ten years, and for this unfortunate condition of affairs he blames the

option which has existed now for some years between Greek, French and German. Pass Greek is evidently in civil case, *in extremis* as it were, but the curriculum is not to blame, at least so think some of the more enlightened classical men, as I shall presently show. If pass Greek is to be saved, its friends had better inquire into the nature of its malady rather than occupy themselves in forcing from the Senate by surprise or strategy a certificate of health and vigour which do not exist. At any rate dissolution will not be delayed for long by a malicious attempt to cripple a vigorous but inoffensive neighbour. No adjustment of the curriculum can avail to save a subject which after three years of preparation (see p. 46) and four years in college leaves the student such meagre permanent results. As to suggestions for saving the life of the unfortunate moribund, I shall not offer my own advice, but I commend to the thoughtful consideration of Professor Hutton and the other friends of pass Greek the following brief quotations from recent articles in this magazine on this very theme, from two of the most distinguished and successful classical teachers in Ontario. These quotations indicate more clearly than I should dare to do the nature of the malady and the hope of cure. Mr. Fairclough, Lecturer on Greek, University College, says in Sept., 1890: "Of late years great improvements have been made in our schools and colleges in the position and teaching of modern languages . . . the teachers and professors of French and German have shown such enterprise and enthusiasm, and have made such progress in methods of instruction that their Latin and Greek brethren, who used to turn up their classical noses with scorn at anything Teutonic or Romance, now humbly crave pardon and sue for pedagogical enlight-

enment." He pertinently asks whether one of our students after six or seven long years devoted to Latin and Greek has mastered more than the barest elements, whether he can even translate into English, or whether he can without fear and trembling explain the meaning of a line from Virgil or Horace or Homer. Mr Fairclough in sorrow is forced to give a negative answer.

Mr. J. C. Robertson, Owen Sound, says in addressing his fellow-teachers in this magazine (Oct., 1890): "As things are going now, even if fortune, to whom, rather than to any efforts of

yours, you owe what influence remains to you, should in the shifting scenes of educational affairs, offer you your former proud position, you could not retain it, so hopelessly antiquated are your methods. What then do I urge? That you put away the many obsolete methods still in vogue, that you come to some agreement about the objects you should have in view and the best means of attaining them, and that you try to bring it about that there be proper examination of what is done: for the way in which the thing is now managed is a perfect farce."

THE SCIENTIFIC HUMANITIES.*

(Continued from April number.)

BUT the physical sciences, it will be said, elevate us to the world of forms; they give to our young men just the groundwork which they need; they give them the habit of observing, of experimenting and of drawing inductions. An optical illusion, pointed out by more than one philosopher from Herbert to Guyau. It is imagined that the teaching of the sciences *ex professo*, as they are taught in our colleges, develops the same qualities of mind as were necessary to our great thinkers who established and advanced the sciences. The teaching of the sciences, even the physical and the natural, does indeed develop the memory and power of deductive reasoning, but very slightly the inductive power or the spirit of speculation or of hypothesis, which, however, are precisely the great sources of all discovery. Call to mind the series of guesses, of trials, and hy-

potheses, which resulted in Pascal's being able to formulate the laws of the weight of the atmosphere, a series which goes back to Galileo and Torricelli. What does the teacher of physics in any of our colleges do now? Does he make inductions, observations and hypotheses? Not at all. He does not detail to his pupils the induction series. He takes the inverse course; he details dogmatically the theory of the weight of the air, and he deduces its principal consequences, and he gives new deductions to be worked out under the form of problems. Among his students there is no development of the mind of a Torricelli, of a Galileo or of a Pascal. He tells them that the atmosphere is heavy—that this is demonstrated; that the earth turns—this too is demonstrated. Perhaps, *apropos* of these two important questions, he recounts to them a little of their history; and this is of some value to the theory taught, because it is a good example of the intellectual process which leads to discovery.

* Translated for the *Knox College Monthly* from the *Revue des Deux Mondes*, by Prof. G. D. Ferguson, Queen's University, Kingston.

The teaching of the sciences *ex cathedra* and science itself are things so different that the one may be regarded as so much opposed to the other as the active is opposed to the passive, or invention to memory.

Now, however, let us see in its working this intellectual gymnastics, for which these young men, according to Spencer, Bain and Huxley, are indebted to the teaching of the positive sciences.

A learned professor of chemistry enters his class-room, the subject of his lecture is affinity. The students take their pens and are all attention.

"In order," the professor begins, "to explain the union of simple, but different bodies, comprised in the same molecule, it is necessary to acknowledge the existence of a force, which has at first brought them in contact with one another, and which maintains this union when it has once been effected. This force is called 'affinity.'" The pupil, without knowing anything of the nature of this force, which maintains the union of the bodies, writes as rapidly as possible some verbal definition, which he endeavours to store in his memory. "Let us now examine the character of this affinity and the principal causes which modify it." The pupil writes—character—causes which modify. The professor continues, "In order that there should be this affinity between two bodies it is necessary that there should be contact; a very simple experiment will show this. Here is a solution of barytes in water, and here is a rod, the end of which I will dip into sulphuric acid. Sulphuric acid and barytes have a strong tendency to combine and form a white substance known as the sulphate of barytes." Another name to be engraved on the memory. "I approach the sulphuric acid to the surface of the fluid, but you see no combination has been effected. Now, however, I

touch the solution of barytes, and as the result of the contact you observe the sulphate of barytes is produced. It appears in the glass under the form of a white insoluble powder." * The pupils look, and the whole scientific effort, the entire induction, the whole result of the experiment is, so far as they are concerned, the presence of a white powder in the water. Certainly the experiment is interesting, perhaps amusing. What, however, has it done for the pupils? Has it afforded them the very least initiation into the methods which have led to the discovery of the beautiful law of affinity, or the philosophic connection of forces with one another, or the marvellous transformation of the one into the other. Each experiment, in physics or chemistry, however ingenious it may be, is quite determined and regulated beforehand; it unfolds itself as a description before spectators who are absolutely passive. They are not experimenters because they have watched its performance. They may have seen the turning of the wheel of an electric machine, or the process of forming a vacuum by the means of an air pump, or that a heated ball cannot be made to pass through a ring, through which it passed a little before. All this is very well, but teaching by aspect is not teaching by *action*; our pupils do not act, they look, they take notes, and perhaps they write them out; but it is wholly limited to the taking of notes and seizing certain phrases. The mind has scarcely any further development even in a scientific connection.

But take the case of natural history. Here, indeed, the pupils come to learn, to observe, and to know things and, as Mr. Blanchard insists, "men."

Let us again listen. "After what we said in our last lecture concerning

* A lecture delivered in the Great Lyceum at Paris.

the place which the nourishing fluids fill in the animal economy, and the influence which respiration exercises on the physical properties of these fluids, it is evident that they must be in continual movement, in order that all parts of the body may receive the materials necessary for their nutrition. This movement constitutes that which physiologists call the circulation of the blood." We may here note the change from the inductive and experimental method to the deductive and dogmatic method in the teaching of the sciences. Instead of telling us by what prodigies of patience and of intelligence the circulation of the blood has been discovered, we are merely told, "It is evident that the blood ought to circulate and in fact does circulate." Or it is merely added, This phenomenon was unknown to the ancients. The discovery of it is due to Harvey, who was physician to Charles I., King of England (1618)." Presented in this way this fact, more important than a battle, remains a mere dead detail — another little weight for the memory. "Among the higher animals the circulation takes place in the interior of what has a very complicated appearance—composed, first, of a system of canals or of numerous tubes,"—and then follows a minute description, illustrated by anatomical sections, but without any of those experiments which are the support of the teaching of physics. The pupils look on, and they try to fix in their memory the different names of the arteries and veins, and their definitions. They will not here, any more than in the previous case, have called into exercise any other faculty than memory, which, while their fingers have written mechanically on the paper, will have written, not less mechanically, in the circulations of their brains, a certain number of facts and of words. And yet certain scientific men smile at the

pupil who makes Latin verse or writes a Latin composition. We, on the other hand, maintain without paradox, that the scientific spirit—that is to say, the spirit of induction, of research, of foresight, of hypothesis, of observation, of guessing, of ingenuity, and of patience—the patience of a Newton, is more developed by the study of grammar and of literature than by the study of the sciences. In order to analyze a sentence, to seize properly its meaning, or to translate his own thoughts into expressions which shall convey his ideas, especially if it should be in any of the ancient languages, the pupil will require to make inductions, to observe, to make attempts, to experiment, to exercise his ingenuity, to make suppositions and hypotheses of every kind. And this exercise will render him more like the inventor of the thermometer or of the barometer, than if he assisted, from a distance, seated on the bench of his class, at the construction of a thermometer or a barometer. All the summaries of a pupil of science are, for the purpose of cultivating a spirit of scientific invention and of speculation, not worth a translation, a composition or the making of Latin verse. The spirit of acuteness is more necessary for the physicist, for the naturalist, or the geometrician himself than the geometric spirit. During all the time he was at Eton, Gladstone read Homer, and wrote Latin verse, and was scarcely taught the elements of arithmetic. Let us reverse matters, and suppose that his literary studies were neglected, but that he was well grounded in arithmetic; it is extremely doubtful if he would have made the incomparable minister of finance he afterwards became. Claude Bernard began by writing pieces for the theatre, and experimenting ideally on characters, before experimenting really on organisms. There is, however, very great ex-

aggeration as to the habit of observation which is believed to be developed by the study of external facts. The elements of geology are taught to our pupils of the sixth class. "Silicious stones," says the programme, "rock crystal, agate, silix, flints, millstones, sandstone, granite, the complex structure of granite, sand, pebbles, plaster of Paris." In the programme for the fifth form we find, "Stratified and unstratified rocks, trilobites, mollusks and fossil fishes, silurian strata, slate, Devonian strata, the marbles of the Pyrenees, secondary strata, ammonites, belemnites, triassic formation, rock salt, and gypsum, jurassic formation, oolitic limestones." The best thing in this programme is the excursions into the country, for which it affords the pretext. But we are no better able "to observe men,"—to discern and direct character—because we can tell the nature of a stratum, or distinguish a piece of quartz, or have learnt all sorts of learned names, or have made a herbarium, or counted the petals of a flower. To have acquired the power of carefully examining the world around us does not by any means imply that we have also acquired the power of looking within us. A great naturalist may be the most ingenious of men and of psychologists. This is by no means of rare occurrence. The study of animals indeed may approach more nearly the study of man, but we can scarcely expect that children should be careful students of animals. Besides, animal psychology is more difficult than human psychology. The studies of natural history, which are of all the most passive, on account of the purely descriptive and narrative character which they assume in a course of instruction, constitute knowledge rather than science. They serve the purpose of exercising the memory, of affording amusement, and of driving away *ennui*, or we may regard them

as studies of practical utility, but they have no educative value, unless it be on their poetic and philosophic side—a point of view from which they are not considered.

The third defect which ought to be avoided in teaching the sciences is that which we call particularism, which confines each science within its own domain, without connecting it with others, or regarding it from a synthetic point of view. As it is at present our teaching of the sciences in their multiplied and isolated forms, is a second Tower of Babel, added to that of the course of ancient and modern languages, or of ancient and modern history. Taught each in its own idiom they present a series of specialties which unroll themselves before the pupil. The knowledge which consists of facts furnished in a fragmentary form and detached from one another has no longer a scientific consistency, nor an educative value. Just as our intellectual faculties seek for a unity of principle, so our moral faculties seek to bring various ends under the unity of the highest good. If the instruction which is given does not lead to that unity whence comes our conception of the great laws of the world and society, it will fail to make us understand the ideal end of life, and cannot make science lead us to it. But in this way the different scientific studies lose not only their supreme verity and beauty, but also their morality. They are in danger of falling into the same evils as at present affect literature and art. We must be struck with what is called the "subjectivism" of our *litterateurs*, our poets, our artists, our critics, each occupied with the *Ego*, with his own impressions, with his own personality more or less limited. There is an egoism in literature, in poetry, in art; it is to be hoped that this intellectual egoism may not at length find its way even into science.

The lowering of the mental standard, which results from the extreme division of labour, extends to those who are to instruct others. "The mind of a man becomes inevitably shrunken," says Stuart Mill, "and he loses all interest in the great ends of humanity, when all his thoughts turn to the classification of a small number of insects, or to the resolving of a few equations, just as much as if he were employed in manufacturing the points or the heads of pins." Specialism, inclined to separate each study from all others, is the fault of too many of our *savants*, who, contrary to their interests, have a decided aversion to large philosophic views. The specialities which receive their entire attention, the wheels, infinitesimally small, which they are employed in turning in the great social machine, prevent them from having the sentiment of a complete unity, or even of the unity of one science with others. Yet it is this sentiment which constitutes public opinion. Hence their work becomes "a simple tribute to material necessity" instead of being the happy fulfilling of a social duty.

Our system of education is no more in keeping with the positivist conception than with the idealistic. Auguste Comte says: "The first and essential condition of positive education, intellectual as well as moral, ought to consist in a vigorous universality." He expressly desires "an education capable of varied extension, but according to a system always identical and equal." What is universal in the sciences is, according to him, to be found in their spirit, in their methods and their great results; this is the positive ground-work of scientific education, and so Auguste Comte saw, in the specialism of studies, one of the greatest and most growing evils which are retarding a moral and intellectual renaissance in France, and he held that all the forces of society ought to be employed in opposing such a direction being given to our intellectual forces. There is but one remedy for this evil, and it is in an education at once broad and general, and at the same time unified, and which may serve as the common ground-work for ulterior specialities.

"CANST THOU GUIDE ARCTURUS?"

BY E. W. MAUNDER.

A FEW months ago the Astronomer Royal announced to the Royal Astronomical Society, of which he was then the President, that a new catalogue of stars had just been published at the Royal Observatory, Greenwich; not the first by any means which has been issued from that institution, for it is a most important part of the regular duty of its chief to prepare such catalogues at convenient intervals of time.

It does not seem likely at the first glance that there could be anything

in such a publication of interest to any but a professional astronomer. And yet there can be no doubt that it is only our ignorance which hinders us from seeing a wonder and a romance on every page, for every line is the register of a sun; a sun in many cases larger than our own, and most, if not all, of which are probably the centres of systems of planets not less beautiful and complex than that of which our world is a member.

We judge that it must be so, for in

the instances in which we are able to pick up little fragments of information about some star, we rarely fail to find the result full of wonder and interest.* Let us take the case of one star from this Greenwich catalogue, and see if it will not prove an example of this kind. We will take this one. "No. 2214, 16 Bootis, α ," better known by its name of "Arcturus," as our text; not chosen at random, for it was this star that first taught men that the so-called "fixed" stars had movements of their own. Running the eye across the page, we find in the columns headed "Annual Proper Motion," the entries, " $-0^{\circ}.0799$ " and " $+1^{\circ}.977$," and we notice that these are larger than the corresponding entries for other stars. For Arcturus seems to us to move more swiftly across the sky than any other of the brighter stars. True the eye alone could never detect its motion in a single year, or even in several years; but its drift is most perceptible in a telescope, and in the course of generations its change of place becomes evident even to the unaided eye. In eight hundred years it will traverse a portion of the sky equal to the diameter of the full moon; in the two thousand years that have elapsed since the date of the first catalogue of which we know—that of Hipparchus—it has travelled two and a half times that distance.

Already we have drawn upon three countries for our information. The "annual proper motion," the apparent distance in the sky, that is to say, which Arcturus traverses in a year has been deduced by a German astronomer from a comparison of a Greenwich catalogue of the last century with a Russian one of this. For further information, we cross the Atlan-

*The Gresham Lecturer on Astronomy, the Rev. E. Ledger, gave this spring a course of four lectures on a single star—Sirius.

tic, and Dr. Elkin, of the Yale College Observatory, informs us in his annual report of date June 7, 1888, that the "annual parallax" of Arcturus is " $+0^{\circ}.018$."

"Dry figures again," but their meaning is a most marvellous one. They mean that as viewed from the distance of Arcturus, the entire orbit of the earth around the sun would look no larger than the circumference of a halfpenny when looked at from a station ninety miles away. Note that it is not the huge bulk of the earth; no, nor even that of the sun, more than one hundred times greater in diameter, which would appear of this infinitesimal size as seen from Arcturus, but the entire orbit of the earth, 186 millions of miles across. It is this distance, utterly beyond our powers to realize as it is, which would be so dwarfed by the vast interval which divides us from Arcturus as to seem no larger than a halfpenny would appear if set up on the cross of St. Paul's and looked at, say from Leicester.†

It may be asked how we know how large the orbit of the earth would appear to be as seen from Arcturus. We know it because the real change in the position of the earth as it passes in six months from one side of its orbit to another makes the star appear to change its place by a very small amount. The star seems, that is to say, to travel round a tiny orbit

† Dr. Elkin's value for the distance of Arcturus is probably the best we have at present, and as such it has been adopted throughout this paper. But it will be readily understood that in measuring quantities so minute in appearance, but implying distance so vast, the errors may bear a high proportion to the result. Thus the "annual parallax" of Arcturus might possibly be better represented by a farthing or a penny as seen from Leicester, rather than by a halfpenny. But in any case, whatever observations we adopt, Arcturus remains distant, vast, bright and swift, beyond terrestrial comparison, beyond human conception.

in the year, and this orbit that it seems to follow must be just the same apparent size as seen from the earth as the real orbit of the earth would be as seen from Arcturus. As, however, the star has a real forward motion of its own, of which we shall speak in a moment, the actual effect of the change of the earth's place on the apparent motion of the star is not, as would be the case if the star were really at rest, to make it seem to revolve in an orbit, so much as to make it appear to follow a winding rather than a straight course. One half of the year it is a little on one side of the straight line giving the general direction of its course, and the other six months a little on the other side.

The distance of Arcturus would be marvel enough if that fact stood alone. It would speak of a universe of all but infinite vastness, a universe too great for our feeble thought ever really to fathom. But two other facts stand out which set the marvel higher. The one is that to which we have just alluded—viz., the exceeding swiftness with which Arcturus is seen to move; the other the brightness with which it shines. For taking its annual motion at the figures Dr. Elkin has adopted, we find that the distance the star travels in the year, as seen from our standpoint, is 127 times as great as the distance between the earth and the sun as seen from the standpoint of Arcturus; 127 times ninety-three millions of miles; or nearly twenty-four thousands of millions of miles in the year; 374 miles in every second of time.

How can we get any idea of a speed like this? No terrestrial experience gives us the faintest idea of it. We may perhaps have stood in some country station when an express train dashed past, the "Flying Dutchman" or "Flying Scotchman." What an impression it gives of speed and power, as it seems to "devour

the way" before it! How the very ground trembles as it rocks and sways in the vehemence of its forward rush! The speed with which the tiny black smoke-crowned speck on the horizon swells up into the gigantic machine at hand, the headlong haste, the roar and rattle, the tornado which follows it, the clouds of dust and fragments swept into its train, the rapidity of its passage past the spectator, and its quick disappearance beyond, mark it as a wonder of human ingenuity, of human intellect and courage, of human skill. Yet its speed was probably but fifty or at best sixty miles an hour. The snail that takes an hour to labour across the garden path is far swifter as compared with the express train than that train as compared with Arcturus. "The Flying Dutchman" must increase its speed nearly five and twenty thousand times before it can race with this flying star. It must be ready to belt the entire earth, not in an hour, but in very little over a minute of time to give it a chance of success.

But even if we leave the works of man, and compare the speed of Arcturus with the velocities we recognize in the solar system, it still appears remarkable. Let us take the earth's rotation on its axis for an example. Suppose we could rise up from the surface of the earth to a convenient height, and detaching ourselves from the attraction of the earth so that we were no longer carried round by its rotation, yet at the same time travelling by its side with an equal pace, as it journeyed round the sun, what should we see? If we rose from London we should see streets, churches and houses hurrying past us with more than ten times the speed of the fastest express. If we soared above the East India Docks, which are on the exact meridian of Greenwich Observatory at the even minute, the vast city would come rushing towards and in seven

seconds the lofty tower of Limehouse Church would pass beneath us. Eleven seconds more, and the Tower of London would reach us, the Bank and Cannon Street railway station would pass in the four next seconds, and two more beats of the pendulum would bring us St. Paul's. Another three beats and it is the Courts of Justice and Temple Bar which meet us, seven seconds later and we cross Regent Street, by the thirty-ninth second from our start we should find we were over Hyde Park and the Marble Arch, and before the minute had expired we should have passed Hammersmith.

But if, instead of being carried along with the earth in its journey round the sun, we had stood aside altogether, and remaining perfectly at rest had watched the planet's giant bulk as it rushed past us, we should have witnessed a vastly greater speed, for its rapidity of movement forward in its orbit is one hundred times greater than its rapidity of movement on its axis, for any place in the latitude of London.

Let us in imagination take such a stand in advance of the earth and wait for its coming. If our station be some 900,000 miles away, we shall see our earthly home shining in the distance and of about the same apparent size as the full moon appears to us now. But ere long we should notice that it was growing larger and larger as it hurried forward. In six hours it would have nearly doubled its diameter; and in three hours more it would have doubled it again. And now its size would increase with the most obvious rapidity, and we should see the familiar outlines of our continents and islands with ever increasing distinctness. Still it would advance, and we should see that by this time it would be presenting to us an entirely different side to that which we saw at first. If the Ameri-

can continent had been presented to us at first, it would now have passed out of sight, and the Eastern Hemisphere would be before us. Soon the whole heaven would be filled by the advancing globe, and some thirteen hours after we saw it first, then nine hundred thousand miles away, no larger than the moon, it would rush past us. We should not now have to wait for more than a minute whilst London and its spreading suburbs were passing by; if one instant Barking were before us, then, ere the pendulum had completed its swing, the mighty city, with its myriads of houses, and its five millions of human beings, would have dashed past, mingled into one undistinguishable blot by the swiftness of its passage, and we should look down on Brentford.

But what imagination can help us when we try to call up before us the almost lightning speed of Arcturus? Even our earth seems to crawl at a snail's pace in comparison. For Arcturus the journey of a single second of time would be no such trivial distance as separates Barking from Brentford. London to Dundee measures the stride it takes during one beat of the clock!

And this great world of ours, what is it in comparison with the giant star? Like a pebble to a mountain. For though only four or five stars in the entire heavens seem to shine more brightly, it is almost the most distant of all the leaders of the heavenly host, far more distant than Sirius or than Vega. If a powerful telescope be turned upon Arcturus a tiny companion star can be seen in its near neighbourhood, a star that sends us but one part in twenty thousand of the light its great superior transmits. Our sun would appear but little brighter than that infinitesimal speck if it were placed as far away.

We cannot tell how much larger Arcturus is than our sun, for every

part of its surface may shine much more brightly than a similar area of the solar surface. If Arcturus shines no more brightly, surface for surface, than the sun, then it must be nearly as much larger than it in volume as it again is larger than the earth; that is, more than a millionfold. Such a star would fill the entire void of ninety-three millions of miles which intervenes between our earth and our sun. But without assigning to it any definite dimension, we may be quite confident that it is larger than the sun, very many times larger. It is not only the swiftest star of which we yet know, but, so far as our present information goes, it is also the largest; at once the Titan and the winged Mercury of the celestial orbs.

Does not all this give a new and marvellous meaning and force to the words the Creator addressed to the patriarch Job: "Canst thou guide Arcturus and his sons?" We cannot indeed be sure that the Hebrew word our translators have rendered "Arcturus" was intended to refer to that star, but could any interpretation be more appropriate? To Job the question doubtless seemed to mean: "Canst thou guide this or that star across the sky as it seems to traverse the heavens from its rising to its setting, night after night?" To us it sets forth one of the most stupendous examples of the Creator's power we

have as yet been able to recognize. "Canst thou, who cannot even change by a hair's breadth the course of the tiny globe on which thou dwellest, canst thou guide Arcturus, mightiest and swiftest of the stars, and distant from thee ten hundred millions of millions of miles?"

We cannot even guess the motive power which drives the giant star at such a speed. We recognize the compelling force urging our world along, and find it in the attraction of the sun. But gravitation can give us no clue whatsoever to the flight of Arcturus; we are baffled to account for it. We have no answer when we are asked concerning it, but one, but that is a sufficient one: "It is the will of God."

"Arcturus with his sons." Doubtless the giant star has a family not less suited to his size and dignity than are the planets of the solar system to its great ruler. Indeed, it may well be that Arcturus may possess as one of its dependents a star as glorious and as great in itself as our own sun. "Canst thou guide Arcturus with his sons?" What answer can we give but that of the humbled and repentant patriarch: "Behold I am vile; what shall I answer Thee? I will lay mine hand upon my mouth. I know that Thou canst do everything, and that no thought can be withholden from Thee."—*Sunday Magazine.*

"SOME CONSIDERATIONS ON THE THEORY AND PRACTICE OF TEACHING."*

OF the purposes of an institute such as this and its meetings, some are obvious and practical, such as the following: To strengthen and encourage each other in a profession which, though profoundly interesting,

is at the same time irksome and trying beyond all others.

To compare and freely criticize ideas and methods in teaching which each may have formed as the result of solitary reflection or individual experience.

To form a collective body of opin-

* An address delivered before the Nelson Educational Institute.

ion on educational matters, especially as affecting the colony, which may have weight with educational authorities, or with other Institutes of a similar kind.

These and such like advantages are patent to all. We know that we gain much benefit and much refreshment from meeting together and hearing each other's voices. Whether the words spoken be wise or feeble, the actual human contact, the sense that others are here who share the burden, which in our solitary labours seems almost insupportable — these things carry strength with them quite apart from the question whether we actually receive any new enlightenment or practical guidance in the difficulties of our profession. But there cannot be the slightest doubt that these latter benefits will come, too. No man is so completely master of his profession that he cannot learn from others, and the man who thinks that he is, is a coxcomb. Nay more, experience tells us that those who are greatest in their own calling are most willing and eager to grasp at suggestions from without, are most receptive to new impressions, and are most ready to sacrifice a cherished notion, if any fresh light, from however humble a source, has shown it to be untenable. We should, therefore, deal with each other with perfect honesty and candour. Whoever has an opinion should express it. For if it be right he knows not what fruitful effect it may have in the minds of others; and if it be wrong, the sooner he is aided by a little wholesome criticism in eradicating it from his own mind the better.

But besides these obvious advantages arising from an organization such as this there are others which must not be lost sight of. In the practical details of teaching we are in danger of forgetting the fact that teaching is an art, based on facts of

human nature, and resting, like every other art, ultimately on first principles. We may think that we have nothing to do with these things, that our business is with the practical work of education, and that theories and first principles may be left to dreamers and philosophers. But if this belief be deliberately taken up and acted on, it will have the effect of producing charlatans and sciolists, not teachers. For let us consider—We are operating on an organism of marvellous delicacy and complexity, the human mind. We are leading it into untried paths, we are training it to perform ever fresh and new processes. We are moulding a character made up of innumerable lights and shades, of mysterious potentialities for good or evil. Can it be said that it is of no consequence to us to study the nature of this organism, to know something of the laws and conditions of its development, to understand the nature of the nourishment which it requires, and why one kind of nourishment is good and wholesome, and another kind deleterious? No, we cannot for a moment pretend that we are teachers while we shut our minds to these things. There is a theory as well as a practice of teaching, and it may be safely asserted that the more the theory is understood, the more efficacious will be the practice. But in the ordinary daily drudgery of our profession it is hard to keep these things in view; nay, more, to be constantly falling back on first principles would seriously impair our practical work. But at meetings such as these the want may be, partially at least, supplied. We can here bring ourselves into occasional contact with the deeper meanings of our profession, and thus exalt our view of it at the same time that we gain a fuller insight into its principles. Real progress in any art or profession requires that we should occasionally tear up

its foundations and examine them afresh.

But the examination must be thorough and honest. We must not be satisfied, on the one hand, with traditional methods which will not stand investigation, nor, on the other, with abstract definitions which are too vague to admit of practical application. We must be able to give a reason for the faith that is in us; we must know what we are aiming at, and be able to explain and justify the way in which we are trying to reach our object. It is of little help, for example, to be told that "education" is from a Latin word which means "to draw out," and that the business of education is not to communicate knowledge, but to draw out and expand the pupil's mind. Psychology steps in and replies that the human mind is not a thing, but a congeries of powers and faculties. And then it asks, Which of these are to be developed? and if the answer is all of them it asks still further, In what order are they to be developed, and what is their relative importance? And when these points have been settled the practical application begins. How are we to proceed to develop these various faculties? What are we to do and what to teach? Has the communication of knowledge as such no effect at all in such development, or is it merely a mechanical process, to be judged apart on its own merits? And what would be the nature of a mind highly developed but absolutely devoid of stores of acquired knowledge? As soon as these questions have been faced and the answers driven to their logical conclusion, we shall be in a position to estimate the value of the abstract definition, that education means a drawing out.

No doubt those who use this definition have in their minds the development of the thinking faculty pure

and simple, and we are familiar with the expression, that the business of education is to teach a boy to think for himself. But what of other faculties, memory, taste, imagination, love of literature, rapidity of mental movement, and another, which is perhaps not so fully cultivated as it ought to be, the faculty of enjoyment, whether in work or amusement? Probably many of you have read the autobiography of John Stuart Mill, which contains an account of the most gigantic experiment ever made on the human mind. His father was a man of great mental power, and he determined to train his boy to be a reasoner only, everything in the nature of emotion being eliminated. The son was reading Greek at four years old, mathematics a year later; at ten he had gone through an extensive course of Political Economy, and had criticized and pointed out the fallacies of every book which he had read; at twelve he was writing articles for Reviews on subjects connected with Logic and Philosophy. He was never a child, never had any amusements, and in his autobiography, written at middle age, never alludes to his mother. By twenty he had thrown himself passionately into the work of Social Reform, and believed that in this task his aspirations would find satisfaction for the remainder of his life. But the time soon came when the results of this abnormal and one-sided development were to show themselves. A crisis came in his mental history. The world of his hopes and efforts suddenly became a dreary waste. The things which he had cared for he cared for no longer, and there seemed nothing else to care for. Life seemed utterly emptied of purpose and meaning. He asked himself what satisfaction it would give him if the reforms for which he had been striving became suddenly accomplished facts, and there was no

joy for him in the thought. All this simply meant that the sides of his nature which had been starved from birth were crying out for food when it was too late. He was too richly endowed a personality to be welded into a mere reasoning machine with impunity. The ghosts of his strangled faculties sprang up to mock him. There are, after all, serious risks in "teaching a boy to think for himself."

What we have to do, then, is to emancipate ourselves from the influence of phrases, and face the facts of human nature as they are. We shall find that we have to deal with a living organism, capable of expansion in many directions, containing the germs of powers or faculties which may be made to fructify or may be starved to death. And in contemplating these latent possibilities, a teacher may well stand aghast at the task before him. If every teacher had free play to train his pupils as he liked, the chances are that some of them would lose their reason. And probably, too, these would be the most gifted of the profession, those who saw most widely and deeply into the tremendous issues involved. The mind would not be able to bear the strain of responsibility and perplexity. How and what to teach a boy would be the most terrible question of our modern life. Fortunately, or unfortunately, the question is taken out of our hands, and to a considerable extent solved for us by the practical exigencies of life. If a boy is to get a position in the world he must conform, to a considerable extent, to the educational requirements which the accumulated wisdom of generations has prescribed. We may dislike examinations, but in the present constitution of things we cannot escape from them. We must tread the beaten track on which they stand as the goal. But I am trying to-night to draw your minds and my own away from the fetters which are

laid on us by the social and educational system under which we live; to penetrate the mists of custom and tradition, and breathe the freer air beyond.

These numerous faculties of which I have been speaking must all have full and free play. It is the fashion, for example, to disparage memory in comparison with reasoning power, with this everlasting "thinking for one's self." But memory is a noble gift; it makes its appearance early, it reaches the culminating point of its power when the reasoning faculty is in its infancy. In this chronological arrangement surely the voice of nature speaks. As the faculties appear let them be trained and developed, and let not the period of one set be invaded by a premature forcing of those of later growth. And this all-important truth must be borne in mind: that we may develop any faculty to its utmost limit without incurring any risk of injuring those that come after. Some have held that a highly developed memory is fatal to originality, and instances are brought forward of men of prodigious powers of memory who never enriched the world with a single original thought. We might just as well say that a man who knew accurately every machine that had ever been invented was thereby incapacitated from ever inventing a new one. The persons with the gigantic memories would not have been a whit more original if they had never exercised their special faculty. It is almost superfluous to add that numbers of instances can be brought forward showing that memory and original genius in the same man are quite compatible with each other. The names of Milton, Macaulay, Sir Wm. Hamilton and a host of others will at once occur to you.

And so, too, let us not hesitate to cultivate in a boy a taste for literature and a vein of imagination from a fear

of diluting his common-sense and practical wisdom. There is room in a well-trained and well-balanced mind for much more than is commonly supposed. We know that Shakespeare was a keen man of business; and many poets have exercised important influence in practical politics. Here in the colony we may be assured that our boys will acquire the wisdom of this world before they have very long passed from under our control; but while their minds are still plastic, and their taste comparatively untainted, let us try to instil into them some feeling for the beautiful in nature, books, and art. It will not interfere in the least with their mathematics or any other dry study, provided of course that due balance is observed in the mode and time of communicating each. This cultivation of what may be called the æsthetic faculties side by side with the understanding is liable to be neglected at school, under the impression that it will come later of its own accord, when the boy has begun to read for himself. But it is the business of systematic educationists to leave nothing of this kind to chance. And, as a matter of fact, the longer this side of a boy's mind is neglected, the thicker the crust that grows over it, and the less likelihood of any natural impulse being sufficiently strong to break through it. I know, of course, that English poetry forms a subject of education in most schools, just as classical poetry does in the higher schools. There is the same danger attending both, viz., of the poem being turned into a lesson in grammar, analysis, and mere verbal exposition, the life and spirit being completely knocked out of it by this process of hacking and hewing. I do not mean for a moment that the language of poetry ought not to be parsed, analyzed and expounded. But the work of the teacher does not

end here. Boys should be taught to love, reverence and admire the works of great masters, whether in a book, on an instrument, or in a picture gallery, and we all know that love, admiration and reverence are not the most spontaneous feelings of the youthful mind. Here, too, a chronological order should be observed. Poetry should first be brought home to a boy in all its beauty and thrilling power; the study of it as a linguistic exercise should come later. It is because this order is almost invariably reversed that Horace, Racine and Milton awaken in after life reminiscences of torture rather than exalted pleasure, and are generally thrown aside for ever when the moment of emancipation comes. And this chronological arrangement may be illustrated by analogies in literary history. In the fresh and creative period of Greek literature grammar as a study was unknown. The men of that time found their intellectual nourishment in learning-off the poems of Homer, the war-songs of Tyrtæus and the semi-mystical speculations of the early philosophers. The opening of the analytical period marks the beginning of poetic decay. *Experimentum fiat in corpore vili.* So far as a language is studied analytically it is a classic and is dead.

The title of this address, of course, suggests, as it was suggested by, Thring's "Theory and Practice of Teaching." The author was Head Master of Uppingham School, and was one of the most distinguished educationists in England. The book itself is widely read; it is written in a fine, earnest style, but is pervaded by a tone of hopelessness, which to those who believe in the future of education is depressing. To the author our modern system is hopelessly wrong, but, as is always the case when extreme views are taken, his development of his own theory is

full of inconsistencies. But the dominant note of the book is the worthlessness or positive mischief of knowledge when "shovelled" (to use his own expression) into the mind. It is false according to Thring to say that knowledge is power; we should say that education is power. But, according to his view, the communication of knowledge plays no part at all, or rather, plays a mischievous part in the work of education. He would restore something like the Socratic dialectic, and open the youthful mind by a system of cross-examination on its familiar and established conceptions. He says, what is perfectly true, that Socrates would have no chance at all in an English competitive examination and yet Socrates has exercised the very

profoundest influence on human thought. Of course, it is obvious to reply, neither would Moses, nor St. Paul; and yet it is safe to assert that the influence of either of these men has been much deeper and more far-reaching than that of Socrates. Of course the introduction of Socrates has reference to his peculiar mode of pursuing the search after truth, and we must not press too closely the writer's somewhat rhetorical illustrations. We can see plainly enough the main drift and tendency of the contrast which he is elaborating, as between a rigid system of self-examination, with a view of clearing up slovenly notions of things, on the one hand, and on the other, the accumulation of tangible information, apart from its effect on the powers of the mind.

(To be continued.)

SCHOOL HEALTH AND SCHOOL HOURS.

PROFESSOR AXEL KEY, of Stockholm, read a paper at an international scientific congress in Berlin, considering the results of a commission appointed to investigate the health of scholars in all the schools of Denmark and Sweden. Facts concerning physical development were wanted; 15,000 boys of the secondary Swedish schools, and 3,000 girls in private schools, all belonging to the wealthier classes, were measured and weighed. It was found that boys from seven to eight years of age grew rapidly; in those from nine to thirteen the growth was less marked; whereas between the ages of fourteen and sixteen, the time of puberty, they increased still faster in both height and weight. The periods of the girls' development correspond with those of the boys, but it was more rapid. The children of the

well-to-do classes were physically a year in advance of those of the same age among the poor. Another point was that the growth of children varies at different seasons of the year, especially in winter and summer. From the end of November to the end of March they grow but little. From March to July or August their height increases, not their weight. During the rest of the year the converse is the case, and the increase in height is very slight, while the weight increases much. These facts have a bearing upon the time of the summer holidays. When they have been earlier than usual, the children have been found to increase in weight, which shows that, if possible, the first weeks of summer should be employed as a period of rest.

Another result has been to show that at the end of the first school year

17 per cent. of the children examined were found sickly or ailing; at the end of the second year 37 per cent.; and after the fourth year 40 per cent. Similar results were found to exist in Denmark. It appeared that as the mental strain augmented, the diminution of physical power also increased. This is especially so with the girls, 61 per cent. of whom were ill or showed signs of chronic ailments more or less serious, and 10 per cent. had curvature of the spine. The excessive length of the hours of study seemed to fully account for this state of things, the hours of study increasing from seven daily in the junior classes to eleven or twelve in the senior.

In France the same subject is occupying considerable attention. The primary schools are open for thirty hours during a week of five days, and in addition to this they have home lessons to prepare in the evenings. In 1881 a commission appointed by the Government recommended a reduction of hours according to the following scale of ages, viz.: three and a half hours daily for scholars from seven to nine years old, four and a half hours for those from nine to eleven years, five and a half hours for those from eleven to thirteen years.

As the rector of the French academy of Chambéry lately remarked in his report on this subject: "The real result of work is in inverse proportion

to its duration. The mind forms habits of dreaming which are often unhealthy. The idleness and thoughtlessness of many pupils have no other cause." If this be so with more advanced pupils, it must be much more so with unformed growing children. There can be no doubt that the children of the poor, especially in large towns, where their surroundings are so opposed to their due bodily development, are far less capable of sustained mental effort than those of the higher and more favoured classes; and yet too often more is exacted from them. In how many cases have inherited sickness and incapacity to be taken into account, as well as insufficient nourishment? When, therefore, we consider such facts as we have mentioned, and the general results of experience, the practical conclusion would seem to be this: The wise teacher will do his utmost to sustain the interest and attention of his scholars in school, and will see that they do work while they are at work; but when they are dismissed from his care he will not require any further study from them during the remainder of the day. They will then return in the morning refreshed and invigorated by recreation and sleep, and grow up possessors of that priceless blessing, "a sound mind in a sound body."—*The School Journal*.

THE STATE UNIVERSITY IN AMERICA.

HIGHER education has long been growing more rational. Yet there is a wide-spread feeling of discontent with the present ideal of academic culture which sometimes degenerates into downright pessimism. It must be conceded that education costs too much time and too much money for the kind. The college curriculum should be still further

transformed in order to bring it into harmony with the requirements of modern life. Our average standard of attainment is very low, and the reason is plain—we have wasted our resources. But happily we are ceasing to be proud of the fact that we have "four hundred colleges and universities." With us, as in England, the conviction is deepening that

the founding of a college is not necessarily a blessing to the community. Accordingly, the two most recent proposals for university reform have had in view a shortening of the undergraduate course to facilitate an earlier entrance on the professions, and a general elevation of the standard of culture for the whole country through a proper division of labour. The earnest discussion drawn out by President Eliot's recommendation to reduce the course of Harvard to three years has called attention to the arbitrary barriers still set up between the so-called "disciplinary" and the professional studies; while President White's suggestive plan for relegating most of our colleges to the rank of gymnasia, intermediate between the public schools and a small group of real universities, places before us in unmistakable terms the wastefulness and the inherent vices of petty endowments—the imperative need of large revenues in order to meet the demands of modern science. But in its details Dr. White's classification is impracticable, it seems to me, because it ignores organic and historical differences in the character of American schools. The smaller colleges and the smaller universities, whether sectarian or secular, whether resting on private endowments or created and supported by the State, will in due time, it is hoped, through a process of evolution, directed by "right reason" and wise "educational effort," take their places in the lower rank assigned them in this scheme. The differentiation of a class or classes of real universities as opposed to a more numerous body of intermediate colleges, frankly acknowledging themselves to be such, will indeed, there is reason to believe, be the result of social evolution. But that evolution must necessarily express, not ignore, the deeper lines of historical development. It must have as its vital principle a powerful social idea, a national

sentiment. Now, as a matter of fact, is not such an evolution really in process—an evolution whose roots are in past generations, which is sustained by national policy, and which needs only more conscious direction to enable it to produce the requisite concentration and a standard of academic culture which shall at any rate prove satisfactory to the people? Such an evolution may be seen, I think, in the rise of a close relation between the State and higher education. I venture to suggest that any hopeful plan for a division of labour among collegiate institutions must begin with the State universities. Even the oldest of these have had but a brief experience; yet so uniform and rapid has been their development that already two facts are plainly revealed: first, the State university is the latest and noblest product of the same tendency in American thought which has produced the common school; secondly, through its novel and close relation to the State, it has differentiated a distinct organism and a distinct character which entitle it to be regarded as the American type. If we fix our eyes on the six or eight foremost schools of the North-west, whose development has been guided mainly by the University of Michigan—not forgetting that some of our best institutions elsewhere, from Vermont to the Carolinas, are State schools—we shall see that the differentiation of the State university has been determined by its peculiar relation to society. Governed usually by a board of regents, whose members are either appointed by the governor or elected by popular vote, organized under the laws of the State, often dependent on the Legislature for present means of support, it touches the general body politic at every point, and its pulse beats in sympathy under every influence which affects the commonwealth for good or ill—*George E. Howard, in the Atlantic Monthly for March.*

NOTES FOR TEACHERS.

"I OWE my first success in life to my good handwriting."—*Benjamin Franklin.*

AN ELECTRICAL INVENTION.—A very useful electrical invention, which will tend to lessen the disastrous results from accidents in factories, is being quite extensively adopted in England. The breaking of a small pane of glass, which is adjusted against the wall of every room in the factory or shop will at once stop the engine, an electrical current being established between the room and the engineer's room, connecting with the engine's throttle valve, shutting off the steam in an instant. By this means the engine was stopped at the mill in New Wortly in a few seconds when a girl had gotten her clothes entangled in an upright shaft, and she was not hurt.—*Amateur Electrician.*

TO THINK WITH HIS MIND.—"Pedagogy is, first of all, the science of translating yourself as a teacher into your pupil's exact environment, and putting yourself at his exact stage of development, so that you will be able to think with his mind, and so, be able to experience in yourself the embarrassments under which his struggling little brain labours, and be able to view your own tuitional approaches to him through his eyes. That is the art of teaching. It is experience of the truth, coupled with experience of the pupil, who is trying to get at the truth. I have in mind now a little fellow who, at the age of eight, was regarded by the rest of us boys as being only about a quarter witted. It was the result of some infantile disease. His father, whose name is known almost everywhere in our

country as one of the foremost among educators, took personal charge of his dear boy's education. We despised the boy and pitied his father. If the little fellow had been sent to a common school he would probably have been in the mad-house before now. As it was, he ended by going to Oxford and carrying off a prize. That great strapping father, six feet high, got clear over on to the inside of the poor, pinched possibility of a boy, and incarnation saved the little chap. That was his genius as a teacher, that he could, in the same instance, be a great, wise, gifted man and a puny, feeble-minded child. He was so great that he could get into a small place without feeling cramped by it. You must remember, though, that he was the boy's father. Love had something to do with it; a good deal to do with it. No one can feel another's condition as his own condition unless love is enlisted. You can imagine another's condition, you can cipher out another's condition by a process that has no heart in it, but you cannot feel another's condition except as you love that other."—*Rev. Dr. Parkhurst.*

AN ENGINEER TAUGHT BY AN INSECT.—It has been said that the operations of the spider suggested the arts of spinning and weaving to man. That may be doubtful, but it is quite certain that to a hint from an insect was due the invention of a machine instrumental in accomplishing one of the most stupendous works of modern times—the excavation of the Thames tunnel. Mark Isambard Brunel, the great engineer, was standing one day, about three-quarters of a century ago, in a ship-yard, watching the movements of an animal known as the

Teredo Navales—in English, the naval wood worm—when a brilliant thought suddenly occurred to him. He saw that this creature bored its way into the piece of wood upon which it was operating, by means of a very extraordinary mechanical apparatus. Looking at the animal attentively through a microscope he found that it was covered in front with a pair of valvular shells; that with its foot as a purchase, it communicated a rotary motion and a forward impulse to the valves which, acting upon the wood like a gimlet, penetrated its substance; and that as the particles of wood were loosened,

they passed through a fissure in the foot and thence through the body of the borer to its mouth, where they were expelled. "Here," said Brunel, to himself, "is the sort of thing I want. Can I reproduce it in an artificial form?" He forthwith set to work, and the final result of his labours, after many failures, was the famous boring shield, with which the Thames tunnel was excavated. This story was told by Brunel himself, and there is no reason to doubt its truth. The keen observer can draw useful lesson from the humblest of the works of God.—*New York Ledger.*

PUBLIC OPINION.

THE GOLDEN CALF.—There is undoubtedly too much vulgar consideration of the power of wealth. In America, particularly in the United States, the great millionaires attract more attention than the great men in statesmanship, science, literature and art. We say nothing as to the quality of such attention, referring merely to its amount. In Talleyrand's *Memoirs*, just published, there is a remark to this effect, that the love of money was great in America when he visited it, and the admiration for moneyed men was often coarsely expressed. Whereupon the *New York Christian Advocate* remarks: "Is it any better now? What statesman, philanthropist or scholar would attract so much attention as Jay Gould?"—*The Christian Guardian.*

PURPOSES AND METHODS OF READING.—So many men have become eminent notwithstanding the apparent intellectual poverty of their surroundings that it is interesting to en-

quire whether scarcity of books is such an evil as it appears to be to those who are accustomed to have large libraries at their command. A very little reflection serves to show that it is not the amount that a man reads so much as the depth of his reading that counts toward his intellectual development. It follows that one who is really studious may gather from a few good books more than another from a whole library. The boy with literary tastes restricted to a few good books, reading them at some sacrifice and obliged to study them closely because he has nothing else to turn to, becomes strong mentally. He has not merely read the books, he has assimilated the thoughts he has found in them; they have become a part of his mentality. It is for this reason that men who have apparently had few opportunities for mental culture sometimes surprise the world by their intellectual power if not by their learning. The lesson to those who have many books and many sources of study is not hard to

find. Literary studies should be carried on deliberately, not with the purpose of covering a great deal of ground, but with the purpose of making sure that everything possible is known of that which has been gone over. A liberal education in letters might be obtained from a study of the Bible alone. A very few books by great masters would suffice to make one familiar with all of the principal forms of literary expression, provided they were closely studied. Reading in the ordinary sense, carried on as is customary in our day, when books are so plentiful, means a mere skimming over the pages to gather the story that is told or the principal thoughts that may be expressed in the essay or review. It ends where study should begin. The poor boy with only half a dozen cherished volumes, who, with that small library, "educated himself," was in fact forced to adopt the methods of reading and study which are now approved by those who have given most thought to the subject. The real student first reads his chosen book mainly to get its story or thought, and then, having the general subject before him, re-reads it for purposes of study and research, and he may re-read it a dozen times before he has so fully mastered its contents that he may be said to have absorbed it. It may be objected that such a system of serious study would not permit the reader to get through a tenth part of the literature a well-read man is supposed to have perused. That is true to some extent but it is better to have read a few good books and mastered them than to have skimmed through many scores of volumes and gathered from them only a hazy memory of the index lines. Moreover, a little practice in real study makes one proficient in intelligent reading, so that it is not necessary to spend as much time over the tenth volume of a

course as over the first to gather all from it that one needs. The multiplication of books and other reading matter is a real evil to those who can not command their mental appetites. It tempts them to discursive and careless reading that at best can do little more for them than furnish them with amusement for the hour. On the other hand, the multiplication of books brought within the reach of all is a great blessing to those who are disposed to make a serious study of them and who can resist the temptation to sacrifice thoroughness of study to the gratification of their curiosity. Where scores had an opportunity to educate themselves by reading a century or more ago, thousands now have this opportunity, and, notwithstanding the added temptations to which the latter are subjected, more succeed in reading intelligently, so as to promote their mental growth, than in the day when books were scarce.—*Baltimore Sun.*

THE LOVE OF LEARNING.—In a recent volume of "Addresses to Girls," by the late headmaster of a school at Clifton, England, the writer says wisely that "intelligent industry without the inducement to prizes is a far more precious and far more durable habit than industry stimulated by incessant competition." No girl or boy can acquire anything at school so valuable as the love of learning. In regard to present educational advantages, the author says: "Do not imagine that any school education is really as effective in the formation of strong intellectual tastes and clear judgment and ability as the self-education which was won by the mothers of some of you, by the women of my generation and those before. The advantage of our day is that education is offered to a much larger number."

GEOGRAPHY.

GREAT NORTHERN RAILWAY LINE.

—Since operations commenced last October, 130 miles of track have been laid, thus extending the line west to Cut Bank, at the foot of the Rocky Mountains. At present a large force of men are at work erecting an immense trestle bridge to span the River Cut Bank. This bridge will be 1,246 feet long, 145 feet high and will require for its erection 1,350,000 feet of timber. It will be completed in about two weeks more, and will, I think, be the largest structure of its kind on the continent. The country through here is rolling prairie, formerly the home of the buffalo, the quondam existence of which animal, and that too in large herds, is evidenced by the vast quantities of bleached bones which strew the plains. This State is now the paradise of the ranchman and cow-boy. Immense herds of cattle may be seen passing here on their way to Chinook, from which point they are shipped to the markets of the East. There is a large number of Indians in this vicinity, mostly of the Cree tribe, renegades from Canada during the recent Riel rebellion. A little farther west we enter the Stoney and Flathead reservations. Fort Assiniboine, seven miles west of here, is the military headquarters for the North-West country. After passing the summit of the Rockies we strike the Flathead country, a region that is rich in magnificent timber and well adapted also for agricultural pursuits. The trees of that land rise tall and straight, in many cases to two hundred feet in height, not a limb less than seventy-five feet from the ground. In fact they are regular giants of the forest. —*From a Correspondent at Havre, Montana, U.S.A.*

THE PLANET MERCURY.—Schiaparelli, the Italian astronomer, who has been studying Mercury says that instead of turning on its axis once in twenty-four hours it only turns once during a revolution around the sun. In other words it always presents the same face to the sun in the same manner as our moon always presents the same face to the earth. He has found streaks on the planet running in different directions; in one place they are shaped like a figure 5. There are evidences of an atmosphere and watery vapour floating in it, and Schiaparelli believes he has seen clouds there. It has generally been thought that Mercury was not inhabited, but owing to the presence of water and air we cannot positively affirm the absence of life. If one lived on the sunward side of the globe we should have perpetual day and of course on the other side perpetual night; but it has a large libration and longitude as it journeys around the sun, and the result of this is to produce the same effect as if it rocked to and fro on its axis to the extent of 24° on each side of the meridian line. Consequently there are regions along the eastern and western edges of the sunward side of the planet that are alternately brought into sunshine and plunged back into darkness.—*The School Journal.*

A RIVER THAT FLOWS INLAND.—

There is an interesting instance of water flowing inland from the sea. It is found on the island of Cephalonia, in the Ionian sea, west of Greece. The phenomenon occurs on the south-west side of the island near the small town and port of Argostoli. Two streams flow at a short distance

from one another, straight from the sea, for a few yards, and then follow different courses. One turns at right angles and runs for some ways parallel with the shore and close to it. Then it turns again toward the sea, and running, of course, deeper and deeper, doubles completely under itself, thus forming a loop, and finally passes out of sight deep down in a landward direction. In its course it turns two flour mills, which will give an idea of the strength of the current. There is no tide in the sea here, and the flow of the salt water brook is perfectly steady and continuous. The other stream disappears in the ground in a similar way. This curious

phenomenon has not attracted much attention because Argostoli is not on one of the regular tourist routes. No one knows what becomes of this water, but it probably flows to some subterranean reservoir, and it may have something to do with the earthquakes that occur in that neighbourhood once in a long while, or, possibly, it feeds some distant volcano, for, as is well known, the most generally accepted theory of the cause of volcanic eruptions is that they are due to steam generated from water, admitted through cracks in the earth's crust, or in some other way.—*Goldthwaite's Geographical Magazine.*

EDITORIAL NOTES.

IN MEMORIAM.

WILLIAM HENRY CORRY KERR, M.A.

MR. W. H. C. KERR was born at Perth, Ontario, on the 10th February, 1837, and educated at the Grammar School there and at the University of Toronto. He won many prizes, and in the year 1859 he graduated as classical gold medallist. He then entered the law office of Ross, Crawford & Crombie, but while devoting himself to the study of law he was careful to keep up his classics. He was on several occasions co-examiner in classics with the late Dr. McCaul. After a short practice of the legal profession in Toronto, Mr. Kerr removed to Brantford in the spring of 1863, and in August of the same year he married Miss Annie LeSueur, daughter of Mr. Peter LeSueur, then of the Post Office Department, and now Civil Service Commissioner, and sister of Mr. W. D. LeSueur, the present Secretary of the Post Office Department. After practising with much success in Brantford,

the sad death of two of his children induced him to remove to this city, where he has since resided, occupying himself with his professional duties, but not neglecting his favourite study of the classics, and taking an active and public-spirited interest in public affairs.

Mr. Kerr's chief literary work consists of translations, especially of English verse into Greek and Latin, many of which were contributed to *THE MONTHLY*, and other Canadian Journals. Our readers will remember among these, "Onward Christian Soldiers" (Greek Version), *July—August 1874*, and "A New Testament Idyll in New Testament Greek" *April, 1890*. It was Mr. Kerr's intention to issue these translations in book form, and this intention, we are glad to learn, is still to be carried out.

His profession, his church, and the city have suffered no slight loss by the removal of Mr. Kerr, while the loss to his friends and his family is unspeakably great. His amiability of disposition, wide culture, and kind

liberality were known to all who came in contact with him, and his memory will be fragrant in many hearts.

Δεῦτε Χριστοῦ παῖς.

REPORT OF THE MINISTER OF
EDUCATION FOR THE YEAR 1890
WITH THE STATISTICS OF 1889.

IF the increase in the size of this Report were a fair indication of the progress of education in the country, that progress would be very great indeed. The Report for 1888 contained 238 pages, that for 1889 had 328 pages, while the bulky volume before us comprises 437 pages. It needs but a cursory glance through its pages to see that the improvement in educational matters is much more moderate than the increase in the size of the Report would indicate. In 1889 there were 86,515 pupils between the ages of seven and thirteen who did not attend the required one hundred days during the year though they were entered on the registers. This number is seventeen per cent. of the whole attendance counting the ages, not from seven to thirteen, but from five to twenty-one. In addition to this there were 6,132 children between seven and thirteen years of age who did not attend any school whatever during the year. When we consider that the total expenditure for all educational purposes in 1889 was \$5,145,370 it is evidently not the fault of those who supply the money that all the children of the country are not made to participate in the advantages of our excellent system of education. It is to be hoped that Mr. Ross will take advantage of the present opportunity, when the new education bill is before the house, to make the compulsory clauses more operative than they are at present, for it is not pleasant to contemplate passing another five years under such defective legislation.

STATISTICS OF PUBLIC SCHOOLS —
ATTENDANCE.

The total number of pupils enrolled was 468,025, average attendance 235,790, per centage of average attendance 51. The number in regular attendance has been gradually increasing. In 1879 the average attendance was 45 per cent. of the registered attendance, in 1888 it was 50 per cent. and in 1889 it was 51 per cent. The attendance is always worst in the counties and best in the cities. In the counties the percentage was 47, in the towns 60 and in the cities 64. The county of Waterloo, not for the first time, boasts the highest average, 57 per cent. Pembroke has 72 per cent. which is the highest for any town, and Hamilton with a percentage of 74 stands first in the province among the cities.

TEACHERS.

The total number of teachers employed in 1889 was 7,421 consisting of 2,658 males, and 4,763 females. The number of the latter has been gradually increasing, while that of the former has been diminishing. In 1879 the numbers stood, males 3,153, females 3,443. The truth is that the pittance paid as a salary is not sufficient, not only to induce men to remain in the profession, but it actually deters them from entering it, as they can get better pay for their labour in other employments. Of the total number of teachers, 3,920, or over one-half, had only third class certificates, while there were only 247 with first class certificates. There were ten counties in the province without any teachers with first class provincial certificates. These counties are Dufferin, Elgin, Essex, Frontenac, Grey, Haliburton, Lanark, Prince Edward, Stormont, and Welland. We cannot tell whether there are any cities and towns in the same backward condition or not, as no statistics are given for these ex-

cept in the aggregate. There is one bright feature in these returns that Mr. Ross must be credited with and that is the decrease in the number of "temporary" and "other certificates." These he has managed to reduce to 318 according to the returns for 1889, and on page 153 we find that he has managed to authorize 16 less in 1890 than in 1889. Bulky as this report is we have searched in vain for any statement of the average number of pupils to each teacher in the public schools, so we must calculate it for ourselves. Basing our calculation on the average attendance the average number of pupils to each teacher in the province was 32, in the counties 29, in cities and in towns 43.

SALARIES.

Since 1885 the average salary of male teachers in the province has decreased from \$427 to \$421, that of female teachers has increased from \$281 to \$296. The decrease in the salaries of male teachers has been almost altogether in the counties where the salary fell from \$405 in 1885, to \$389 in 1889. The cities show the most satisfactory results, the average salary of the male teacher rising from \$776 to \$870, and that of the female teacher from \$359 to \$389 in the same years.

SCHOOL HOUSES.

The 7,471 teachers do their work in 5,434 school houses. Hence by far the larger number of schools have only one teacher each, and are ungraded. The log school house with its pleasant memories and associations is gradually disappearing, there being but 501 left to grace the landscape out of 1,466 in 1850. It is being replaced by a frame building, or one of brick and mortar. Of the former there are 2,351, of the latter 2,060 while there are 522 stone buildings.

RECEIPTS AND EXPENDITURE.

The total receipts were \$4,583,757. The total expenditure was \$3,954,075. Of this expenditure about 61½ per cent. went for teachers' salaries. Of the receipts the Legislative Grant for teachers' salaries amounted to \$258,883 or 5.64 per cent. of the whole, the remainder coming from Municipal Assessments, Clergy Reserves Fund, etc. The Legislative Grant amounts to about \$35 per teacher, while that to High Schools and Collegiate Institutes amounts to \$229 per teacher. Is it not just possible that the Legislature is paying too little attention, and giving too little support, to the elementary education of the country? One question that each legislator should ask himself is this: Is the training given in the Public School worth to the country only one-sixth of that given in the High School? The cost per pupil in average attendance was for the province \$17, for counties \$15, for towns \$16, for cities \$24.

STATISTICS OF ROMAN CATHOLIC SEPARATE SCHOOLS.

Total number of pupils in registered attendance 32,790, average attendance 18,153; this gives a percentage of average attendance of 56, which is five per cent. higher than that of public school attendance. The number of teachers was 546; this gives 60 in registered attendance, and 33 in average attendance to each teacher. The total receipts were \$267,304, the total expenditure was \$244,440. The Legislative Grant amounted to \$17,421, which was at the rate of about \$32 per teacher. The cost per pupil in registered attendance was \$7.45, in average attendance a little over \$13. No comparison can be made between the expense of the public and separate schools as many teachers in the latter belong to religious con-

munities, and get mere nominal salaries.

STATISTICS OF HIGH SCHOOLS AND COLLEGIATE INSTITUTES.

The total registered attendance of High Schools and Collegiate Institutes was 18,642, the average attendance was 10,798, and the percentage of average attendance was 58, a decrease of one per cent. as compared with 1888. Newburgh High School had by far the best average attendance, showing a regular average attendance of 39 out of 44 pupils, or 88 per cent. No other school approaches this, the nearest being 71 per cent. gained by Clinton Collegiate Institute, and Port Hope, Smith's Falls and Trenton High Schools. There are 120 schools to accommodate these pupils, and in them are employed 427 teachers. The total receipts amounted to \$703,042, of this \$97,944 was made up of the Legislative Grant for teachers' salaries, this as we have seen was at the rate of \$229 per teacher. The Legislative Grant to these schools is 13.9 per cent. of the whole receipts, while the grant to Public Schools is but 5.6 of the whole receipts. These are facts which are quite worthy the attention of our legislators with the view of granting more liberal aid to our Public Schools. The total expenditure was \$645,338, of this amount \$376,878 or 58 per cent. was spent on teachers' salaries; dividing this amount by the number of teachers we get \$883 as the average salary of High School teachers in the province; \$327 was the average salary of Public School teachers for the same year. The cost per pupil in registered attendance was \$34.61; in average attendance it was \$60. Altogether the High School and Collegiate Institutes are in a prosperous condition, and, we have reason to believe, are doing better work than they ever did.

COUNTY MODEL SCHOOLS.

Mr. Tilley, the Inspector of County Model Schools, precedes his statistical report with some remarks on the condition of these schools and suggestions for their improvement which show him to be in touch with the most advanced educational thought of the country. It would be a happy thing for the country if Mr. Ross would adopt some of the recommendations which Mr. Tilley makes, and which he supports by cogent reasons. He recommends, for example, that the Model School term for students in training be materially lengthened. He recommends an improvement in the appointment of teachers to these schools to whom higher salaries should be paid. He recommends that the professional certificates of the third class granted to the students of these schools should be valid for five years instead of three but should be limited to the county in which they are issued. In 1890, of the 1,293 students in training 1,228 passed the final examination and obtained certificates to teach. This was 95 per cent. of the whole. Yet in the literary examination which preceded their entrance as students in training in the Model Schools only 43 per cent. managed to pass. If the tests of efficiency to act as teachers were the same as those for proficiency in literary attainments we would have no reasonable ground on which to object to the difference in these percentages, but inasmuch as the qualities of a successful teacher are so different from those of a successful scholar that a separate examination is needed for each we must regard the difference in the results of the two examinations as anomalous. The same remarks will apply in a modified degree to the professional examination of second class teachers for professional certificates after completing their Normal School course.

In 1890, 411 students attended both Normal Schools and 379 passed successfully; this is about 92 per cent.

THE CAMBRIDGE DAY TRAINING COLLEGE.

THE proposal to found a Day Training College in connection with the University of Cambridge was agreed to on the 12th March, 1891. The Teachers Training Syndicate of the University of Cambridge will have the new college in active operation next October. The Cambridge scheme provides that the head master of one of the town schools shall be engaged as Normal master, and that the Professor of Education in the University will deliver the lectures on Education. This scheme brings the public elementary schools into direct connection with the universities. In this we rejoice; for the well-being of the people, for the prosperity of the country we must have the very best men in charge of the public schools. One feature of the

best public school teacher is that he has the highest academic standing. In Scotland, although many teachers have to pass their lives in imparting the elements of education to pupils in some of the almost inaccessible and nearly unknown corners of that far-famed land, it is not deemed possible to over-educate such teachers. May Canada be blessed by having teachers of the same spirit in her schools.

A SONG.

To sleep! to sleep! The long bright day is done,
And darkness rises from the fallen sun.
To sleep! to sleep!

Whate'er thy joys, they vanish with the day;
Whate'er thy griefs, in sleep they fade away.
To sleep! to sleep!

Sleep, mournful heart, and let the past be past!
Sleep, happy soul! All life will sleep at last.
To sleep! to sleep!

—Tennyson in *The New Review*.

SCHOOL WORK.

CLASSICS.

J. FLETCHER, B.A., Toronto, M.A., Oxon., Editor

QUESTIONS ON CÆSAR, BOOK I.

BY H. I. STRANG, M.A.

1. Translate into good, idiomatic English, chap. 16: "*Interim. . . . accusat.*"

(a) *Flagitare*. What is peculiar in the use of this infinitive? Point out a similar instance in the passage.

(b) *Septentrionibus*. Name the other three points of the compass in Latin.

(c) Compare *matura*, *minus*, and *diutius*.

(d) *Intellexit*. What other compounds of *lego* form their perfect this way?

(e) *Metiri oporteret*. How often was this done?

(f) *Convocatis principibus*. What other construction could be used.

(g) Point out anything peculiar in the form or use of *magistratu*, *annuus*.

(h) *Pollititi essent*. Account for the use of the subjunctive.

(i) Point out in the passage examples of verbs governing (1) two accusatives, (2) An ablative.

(j) *Ne pabuli quidem*. What caution as to the order of these words?

2. Translate chap. 25: *Cæsar . . . pugnare*.

(a) *Paise suo, cohortatus, impemento*.

(b) Account for each of the ablatives in the last sentence.

(c) Give the principal parts of *tolleret, destrictis, perforerunt, euellere*.

(d) Account for each instance of the subjunctive.

(e) *Jactato*. What kind of verb? Why so called, and how formed?

(f) *Loco superiore*. Decline the plural.

(g) Mark the penult of *remouet, commode, impedita, colligat*.

3. Translate chap. 31: *Quibus . . . teneretur*.

(a) Construction of *fractos, hospitio, Romam*.

(b) Mention any peculiarity in regard to inflection or meaning of *jurejurando, liberos, auxiliurum, solus*.

(c) *Auxilium postulatam*. Give two equivalent constructions.

(d) Change the second sentence to *Oratio recta*.

(e) *Quibus proeliis*. Decline the singular.

(f) *Fractos*. Write the 3rd singular of each tense of the indicative and subjunctive active.

4. Translate chap. 40: *Sibi quidem . . . subleuarent*, turning it into direct narrative.

(a) *Sibi*. Why not *se*?

(b) *Pulsis*. Name the two victories alluded to.

(c) *Seruire tumultu*. Explain what is referred to. When is the penult of adjectives in *illis* long, and when short?

(d) Explain the construction of *quos* and *aliquid*, and point out any grammatical peculiarity in the use of *quos*.

(e) Compare and derive *nuper*.

(f) *Furore, diligentia, exercitus, aequitate, imperator*. Explain how these nouns are formed, and give similar instances in each case.

5. Translate chap. 46: *Nam etsi . . . injectum est*.

(a) *Fore*. What other verb forms of the same origin?

(b) *Pulsis hostibus*. Give different ways of translating this.

(c) *Equitatus, equites*. Mention any difference in the use of these words.

(d) *Legionis delectae*. Explain the reference.

(e) *Vulgus*. Mention the chief gender exceptions in the 2nd declension.

(f) *Elatum est*. Inflect the present indicative active and passive.

6. Translate idiomatically:

(a) "Demonstrant sibi præter agri solum nihil esse reliqui."

(b) "Mittunt legatos, qui dicerent, sibi esse in animo iter per Provinciam facere; rogare, ut ejus voluntate id sibi facere liceat."

(c) "Quod si quid ei a Cæsare grauius accidisset, cum ipse eum locum amicitiae apud eum teneret, neminem existimaturum non sua voluntate factum; qua ex re futurum, uti totius Galliae animi a se auerterentur."

7. Translate into Latin:

(a) Leaving these two cohorts and a few horsemen to defend the baggage, he followed the Gauls all night with the rest of the army.

(b) After advancing about twelve miles through the woods we were informed by one of the scouts whom we had sent forward that the Germans had encamped near the river Rhine.

(c) Fearing that they might attack the camp in the absence of the consul we set out the same night with all the forces we had with us.

(d) Alarmed by the approach of the Roman legions, the chiefs of these states, having conferred with one another, sent ambassadors to Cæsar to promise to give hostages if he would make peace with them.

MODERN LANGUAGES.

Editors { H. I. STRANG, B.A., Goderich.
W. H. FRASER, B.A., Toronto.

EXERCISES IN ENGLISH.

1. Combine each of the following pairs of sentences, first into a compound, and then into a complex sentence:

(a) The workman was called. He did not hear.

(b) He missed his lesson. The master kept him in.

(c) Do it now. You will forget about it.

(d) It may take me some time. I intend to finish it.

(e) He would not let me have it. I wanted it very much.

2. Contract the following into simple sentences :

(a) When we reminded him of his promise he got quite angry.

(b) He tried it several times and then handed it back to her.

(c) How can he do it, if he has neither capital nor credit?

(d) The gentlemen who have been appointed to audit the books will attend to that.

(e) The following is said to be a test which never fails.

(f) The incident occurred when I was a boy.

3. Combine the following sentences into not more than four :

Xenophon had two sons. The elder was named Gryllus. Gryllus fell in battle at Mantinea. Xenophon heard of his death. He was offering sacrifice to the gods at the time. He did not think it right to stop the ceremony. He merely laid down the crown. He asked the manner of his son's death. He had died fighting very bravely. Xenophon was told this. He replaced the crown on his head. He felt pain at his son's death. He felt greater pleasure from his valour. He called the gods to witness the fact.

4. Change to indirect narrative :

(a) Turning to the bystanders he said : "Why do ye delay? Leave me to the fate which you can not avert. I value your sympathy, but I do not feel justified in asking you to risk your lives in the vain hope of saving mine."

5. Change to direct narrative :

He asked the citizens if they thought he could ever fail to remember the favours he had received at their hands. They might depend upon it he would do his best to deserve success, even if he could not attain it ; and they should have no cause to regret the kindness they had shown him during his stay among them.

6. Criticize and improve the following sentences :

(a) He wasn't a man whom any one would have thought would have done such a thing.

(b) I don't know as I will be able to finish it before dark.

(c) Neither you nor no other boy can prove that it was me that done it.

(d) He carried it all the way, without hardly spilling a drop.

(e) He asked leave to set up a mark like they used to shoot at.

(f) After having done this, and not wishing to be known, he disappeared from the ground.

(g) He told the knight about his adventures on his return who was very much surprised, etc.

(h) He looked kind of surprised when I told him that there was over twenty applications for it.

(i) Locksley told Hubert he could have hit the prize just as easy as he did if he had tried.

(j) In this paper I shall only attempt to deal with the first of these cases.

CLASS-ROOM.

EAST MIDDLESEX PROMOTION AND REVIEW EXAMINATION, APRIL 1891.

GRAMMAR—3RD TO 4TH CLASS.

Time 2½ Hours.

LIMIT OF WORK.—The sentence clause and phrase. Classification of parts of speech. Inflections of nouns and pronouns. Analysis and parsing. (The first twenty-nine lessons of the authorized text-book.)

Maximum 91 ; count 90 marks a full paper ; 23 minimum to pass.

1. Analyze :

And all the trees on all the hills

Open their thousand leaves.

Silently down from the mountain's crown

The great procession swept.

Perchance the lion stalking

Still shuns that hallowed spot.

Where lights like glories fall.

And his uncoffined clay

Shall stand with glory wrapped around

On the hills. [16]

2. Change the number of all nouns and pronouns making all other necessary changes in :

The chief's eye flashed ; but presently
Softened itself, as sheathes

A film the mother eagle's eye

When her bruised eaglet breathes. [12]

3. Explain the difference in :

(a) The boy's rooms were furnished.

(b) The boys' rooms were furnished. [4]

4. " In the same way the beautiful asters
of our woods with their flowers of yellow or
purplish disks, and lovely rays of white or
purple, let their little fruits fly away from
their heads as soon as ripe and dry."

Write in columns the words in the above
extract whose function it is :

(a) To name. (b) To assert. (c) To take
the place of names. (d) To link statements
or words. (e) To change meaning of nouns.

(f) To modify meaning of verbs. [31]

A word is not to be repeated in the same
column.

5. Correct :

(a) Willie seen his brother acting very
bad. [6]

(b) Twin Brother's hop yeast sold here. [3]

(c) Wasn't you and him in the third class
before me ? [6]

(d) Them's mine ; here's your's. [6]

(e) Let him and me see which can add the
fastest. [6]

GEOGRAPHY—3RD TO 4TH CLASS.

Time 2 Hours.

LIMIT OF WORK.—Definitions continued ;
first, accurate knowledge, then the memoriz-
ing of the definition. The great countries,
large cities and most prominent physical
features on the Map of the World. Maps of
the county, of the Province of Ontario, of
Canada and America. Map drawing. Motions
of the earth, seasons, zones.

Maximum 116 ; count 80 marks a full
paper ; 20 minimum to pass.

1. Draw an outline map of the county,
marking the townships and one railway line
running from east to west. [14]

(2) Draw an outline map :

(a) Marking and connecting Lake Super-
ior, Michigan, Huron, Georgian Bay, St.
Clair, Erie, Ontario, River St. Lawrence. [12]

(b) Location Goderich, London, Port
Stanley, Hamilton, Toronto, Montreal,
Quebec City. [7]

3. (a) Define a peninsula ; name and
locate two examples in America. [4]

(b) Define a cape ; locate two examples
in Africa. [4]

(c) Define a river basin ; name two in
Europe and the countries wholly or partly
contained in them. [6]

4. Two ships M and S sailed from San
Francisco to Melbourne, Australia ; M kept
sailing south and west, S south and east.
Trace the route of each telling through what
waters and past what bodies of land they
sailed. [12]

5. Give the exact position of the Bay of
Fundy, the Peace River Valley, the Behring
Sea, the Isthmus of Panama, Wales, Sicily,
the Congo Basin, Persia, and Chili. [15]

6. In Patagonia, Australia and Cape
Colony it is warmer in February than in
July. Why? [6]

7. Briefly sketch the possible history of
the pine lumber and nails used in building
this school-house, telling where the "raw
material" of each may have been found and
the course it has since passed through. [12]

8. Newfoundland: Where situated. Its
capital. Government. Chief natural pro-
ducts. Why receiving so much attention in
the newspapers at present. [15]

9. Define and give example of: canal,
tunnel, dyke. [9]

DRAWING—3RD TO 4TH CLASS.

Time 1½ Hours.

Maximum 80 marks ; count 60 marks a full
paper ; 12 minimum to pass.

1. Make a drawing of a gate showing the
two posts. (Memory drawing.) [10]

2. Draw an original design using only two
curved lines,—construction lines may be
straight. [10]

3. (a) Trace a square two inches to the
side. (b) Trace diameters and diagonals.
(c) Bisect each semi-side. (d) From the
points of bisection trace lines (four) parallel
to the diagonals. (e) Bisect the semi-di-
ameters. (f) Join the points of bisection.
(g) Join the ends of the diameters. (h)
Strengthen (f) and (g) and the parts of (d)
outside of (g) and the corners of (a). [22]

SKETCH OF THE SECOND PUNIC WAR, 219 to 202 B.C.

BY PETER MCEACHREN, B.A.

DATES.	SPAIN AND GAUL.	ITALY.	SICILY.	AFRICA.
219	Hanibal reduces Saguntum.			
218	Hanibal leaves Hasdrubal in Spain. — defeats Scipio at Rhone, Ticinus, Trebia.			
217	Hasdrubal vs. 2 Scipios in Spain.	Hanibal defeats Flaminius at Tras. — defeated at Spoletium. — vs. Q. F. Max. in Apulia. — defeats Varro and Paullus at Cannae. — captures Capua. — rep'ls'd at Nola by Marcellus — repulsed at Beneventum by Grachus.		Syphax vs Carthage.
216			
215	Romans besiege Capua. Hanibal threatens Rome. — captures Tarentum. Romans capture Capua.		
214			
212	The two Scipios slain.			
211	P. C. Scipio, Jnr., vs Hasdrubal.			
210	— capture N. Carthage.			
209	Sc. defeats Has. at Becu'a.			
207			
206	Sc. subdues Spain.		Marcellus besieges Syracuse. — takes Syracuse.	
205			
204			
202			Syphax joins Carthage. Sc. & Masinisa vs. Syphax. Sc. defeats Han. at Zama.

CONTEMPORARY LITERATURE.

"MAIDENS Choosing" is the latest novel in the *Lippincott*, absorbing almost all the available space. The other articles though by necessity extremely short are interesting. The books are fairly and skilfully reviewed at the end.

THE *Overland Magazine* for April received. The illustrated article on "Dairying in California" appears in this number. "The Sherman of Early Days" and "Patriotism and School Education" are two of the more important articles.

THE author whose picture appears in the last issue of the *Book-buyer* is Miss Mary E. Wilkins. Her success in literature has been marked. A short sketch of her life is given. Among the books noticed are Black's "Stand Fast, Craig Royston!" The letters are, as always, interesting.

THE great sea novelist Clark Russel has a story appearing in the *London Illustrated News*. It is announced that J. M. Barrie will contribute a serial towards the end of the year. Grant Allen discourses in a characteristic way on spring. Grasse is made familiar to English people by numerous illustrations.

"MORAL Education" by Larkin Dunton is the opening article in the *March Education*. It is of the greatest importance to teachers. "The Relation of the College and University to the Community" is ably discussed by Pres. Thwing. The second historical paper on "Pestalozzi" and "Manual Training" are included in the issue.

"HARROW School," by Dr. Butler, appears in the April *English Illustrated Magazine*. It is a great pleasure to those on our side of the sea to be able to visit thus historical places. Italian girlhood is discussed in the present number. Crawford's story "The Witch of Prague" is continued. We cannot but regret the style in which the page is printed. The long line makes toilsome reading.

"LING Ching Ting," the opium eater, an extract from a tract by Dr. Baldwin is printed in the April *Missionary Review of the World*. "London papers and India's women" is an able article on the question at present agitating England. Other interesting papers are "A Jesuit Mission in India" and "Why Missions are Modern."

An Historical Geography of the British Colonies. Vol. II. By C. P. Lucas, of Balliol College, and the Colonial Office. 7s. 6d. (Oxford: At the Clarendon Press.) We have no unfavourable criticism to make of this work. Our only wish is Oliver Twist's—"More,"—and it is ungracious to express it now, with a new volume of no inconsiderable bulk, just issued, before us, which is really the third of the series (the first being termed an introductory volume). Mr. Lucas shows a great knowledge of his subject and an industry and skill which modesty alone makes us to hesitate to praise. He has availed himself of the special local knowledge of other gentlemen. The present volume is devoted to the West Indies and maps, tables, an index, etc., add to its value.

A New History of England and Great Britain. By Prof. Meiklejohn. (St. Andrew's: A. M. Holden.) We have long desired to find a history suitable for use in the upper forms of Public Schools, and in High Schools and Collegiate Institutes, that really might, with propriety, be termed a history and not an apology for one. This is something like a history. There are a dozen features of interest and value which characterize it, and we can unhesitatingly say that it is, on the whole, the best we have yet read. We hope to see it some day in our schools. Social history, genealogy, dates, great persons, historical terms, great events in other countries, etc., receive a share of attention, in fact, one is struck with the completeness of the work and with its admirable tone. It has already reached a third edition.

Classics for Children: Irving's Alhambra. 50c. (Boston: Ginn & Co.)

Heath's Modern Language Series. Sandeau's Mademoiselle de La Seiglière. Edited by F. M. Warren, Ph.D. (Boston: D. C. Heath & Co.) This pleasing comedy, well edited, with a sketch of the author's life and numerous English notes, is a good number of the Modern Language Series.

The Explanatory Poetical Reader. Edited by W. Moffatt. (London: Moffatt & Paige.) This is the thirty-fourth edition of the Poetical Reader. It is well worthy of its popularity, for the poems are familiar, suitable for children, elevated in sentiment, and nearly all by classical English authors.

Gay's Business Book-keeping. By J. E. Gay of the Malden High School. (Boston: Ginn & Co.) 75c.—Few text-books on this subject will bear comparison with this. It is a plain, sensible, really useful and practical method of teaching book-keeping by single entry. The press work is all that could be desired.

The Cambridge Bible for Schools and Colleges. General Editor, the Bishop of Worcester.

The Psalms. Edited by A. F. Kirkpatrick, B.D., Regius Professor of Hebrew. (Cambridge: At the University Press).

No volume of the Cambridge Bible will be received with more interest and pleasure than this, the first on the Psalms. The text is Psalms I.—XLI. and the profound scholarship and critical insight which mark other volumes of the series are strongly evident here. But there are passages both in introduction and notes, e.g., on "The Messianic Hope" and "Some points in Theology," etc., and quotations of noble words from Hooker, Dean Church and others of which many readers will be glad and which will make the volume acceptable to Bible students.

School Sermons. By A. W. Potts, LL.D. (Edinburgh and London: William Blackwood & Sons.) The first Headmaster of Fettes College was a great gift to the community in which he dwelt. Many lives are bet-

ter by the influence of his life and example, and while to them this volume will be a treasure, there are many others who will prize it and read it with interest and profit. There is a memoir and a portrait of Dr. Potts given and we observe that the profits of the sale of the work are, at his special request, to be devoted to the founding of a divinity prize at Fettes. The sermons themselves are marked by nobility of thought and expression, and strength and intensity of conviction. We know of no better book of the kind.

Maxwell's English Course: Advanced Lessons in English Grammar. By W. H. Maxwell. (New York: American Book Co.) 60c.—Grammars are drearier and harder to understand than most other text books. But this is an exception. Speaking generally, it possesses the merits of accuracy, simplicity, clearness, and completeness. The examples, instead of being stupid sentences, are frequently quotations from standard authors. We have pleasure in commending the work to the attention of teachers.

Appleton's School Physics. (New York: American Book Co.) \$1.20.—This is without doubt a valuable and important book. The aim of the editors has been to produce a text-book thoroughly in accord with knowledge and recent discovery in natural philosophy, approved laboratory methods, and the principles of the science of teaching. The literary editor is Prof. Quackenbos, of Columbia, and the different sections of the various departments of physics have been prepared and edited by Prof. Holman of the Massachusetts Institute of Technology; Prof. Nipher, of Washington University; Prof. Mayor, of the Stevens Institute; and Prof. Crocker, of Columbia, respectively. We regret that space does not allow us to write more fully of the merits of the work, but our readers will doubtless find out for themselves that it is a satisfactory text-book with many excellent features and few, if any, disadvantages.

Twelve English Statesmen.—Peel. By J. R. Thursfield. 2s. 6d. (London: Macmillan & Co., and New York.) Great

powers and great achievements belonged to this English Statesman: his wonderful capacity for affairs, his foresight, his management of men, his control of policies have rarely been equalled. This biography will fill no mean place inasmuch as it is in style interesting and thoughtful and at once real and readable. It is indeed, like the other volumes, a model biography, giving a clear and true picture of the man, his times and his work.

Good Living. A Practical Cookery Book for town and country. By Sarah Van Buren Brugière. (New York: G. P. Putnam's Sons.) \$2.25. Taste and skill in more than one line are displayed in "Good Living," which is one of the best cookery books we have seen. The recipes are numerous and evidently gathered from the lore of different nations. Each recipe is preceded by a table of materials and there are other tables given, notably one as to the time required for meats, vegetables, etc., to cook properly. The book abounds in useful hints and suggestions and is altogether an admirable one.

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Our readers will observe that special attention is given to examination papers in this magazine; in many cases hints and solutions

are added. We hope subscribers and others will show in a practical way their appreciation of the valuable work done by the editors of the different departments of THE MONTHLY.

We are grateful to the friends of THE MONTHLY who have, from many different places, sent us letters of approval and encouragement, and request their kind assistance in getting new subscribers for 1891.

The Editor will always be glad to receive original contributions, especially from those engaged in the work of teaching.

Bound copies of this magazine in cloth may be had from Williamson & Co., or from James Bain & Son, King Street, Toronto