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THE CANADA  
EDUCATIONAL MONTHLY  
AND SCHOOL CHRONICLE.

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FEBRUARY, 1879.

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THE PROMOTION OF CULTURE.

BY THE EDITOR.

THE not unreasonable expectation of those who closely and interestedly watch the result of educational work in Canada, is, that it shall largely contribute to the public culture, and be successful in elevating the tastes and refining the life of the people. In the cities, and in the older and more thickly-settled portions of Ontario, at any rate, is this influence expected to be at work. In the country towns, also, though Canada by a high authority is said to be "raw, rough, and democratic," there is an inviting field for the operation of the meliorating and refining influences of education. To a large portion of our people, in these sections, education means more than the acquisition of a few elementary facts, and such mental training as will enable our youth to cipher and to read. Even in the rural districts, except, perhaps, in the case of the settlers in the remote townships of the Province, and among the In-

dians, the demands upon education are ambitious ones. With no benighted labouring class in Canada, corresponding to the "Hodge" of the motherland, education has not to waste time upon uncouth and unpromising material. Hence, there is not the necessity to lower the plane of our primary education to that of his midnight ignorance. This advantage in our favour, we begin our educational work at a higher pitch, though the height we reach at the finish should be correspondingly elevated, and the results looked for those that mark the fulfilment of a great expectation. How far we realize these expectations is fair matter for thoughtful consideration; though, perhaps, we will save ourselves some trouble if we frankly confess that our realization of them is very imperfect. We have the machinery of education, the shafting, the belting, and the motive power,—and the work all goes on,

from the bottom of the system to the top, with gratifying industry and admirable method. But to a great extent, we fear, it is machine work, marked with the materialism of routine and the inelasticity of mechanism. The work, of course, is turned out; but it is done too much in the temper of uniformity, and in the methods of a lifeless system. We have the body of educational work without its energizing and liberalizing life,—the form but not the fruit. Even in the highest sphere of its operation, our university work is done in the flats and monotonies of professional duty, and rarely rises above the minor notes of enthusiasm. The modern intellectual movement may be an aggressive force in the lecture rooms, but little of the atmosphere of culture exhales from its halls. It would be unjust to say that there is mental rust, but there would seem to be a solstice of contentment and acquiescence unindicative of vitality and unfavourable to progress. The cold temperament too largely prevails, and work is not wrought in the energy and with the enthusiasm that should mark the achievement of a National University. Here, and at its highest development, our educational machinery, much as we may justly boast of it, is not altogether satisfying. Within the doors of the University, no doubt, there is scholarship, learning, and much honest work done, but it is a silent, unaggressive work, awakening little public interest, arousing less enthusiasm, and stirring no passion. Its contribution to the promotion of public culture is, therefore, not noticeably important.

Descending the scale of our educational system, it ought not to be wondered at, that, where the flame is not at the top, the fire is not over bright beneath. Fortunately, however, in the Collegiate Institutes and High Schools, we come upon institutions whose sources of life and main-

tenance are largely contingent upon individual activity, and professional ardour. In these institutions, moreover, competition and rivalry, in addition to the master's ambition, produce healthy and active life. But even here, the cramping influences of a purely professional occupation are visible, and individuality of effort and ambitiousness of aim are often shrouded in the winding-sheet of departmentalism. Programmes, inspections, examinations, and school routine, are not the inspiring subjects of a teacher's work, nor do they preach the gospel of the intellect to the hungering pupil. Here and there individual enthusiasm and force of character, if they do not throw off the shackles, mitigate the evil effects of their imposition, and education has a chance to show its work. At the best, however, while from University and from Department there come not the inspiring breezes of vigour and enthusiasm the influences of these institutions cannot be all that they might be, and their promotion of culture is not assisted.

In the Public Schools we do not expect education to soar into the region of culture, but much might here also be gained if that robust capacity for work which distinguishes the labourer in the Model and Public Schools of the country were softened by its genial humanities. The tone of the schools might be largely raised, and the tender and plastic nature of the young minds under training be directed into sympathy with the noble and the elevating. Relieved of much of the red-tapism which hampers the work of the High School teacher, the masters of the Public Schools have more opportunity to make individuality tell in the conduct of the school, and of encircling the sphere of their work with a bright zone of cultivation and refinement. But the Public School teacher will accomplish much

if, reverently and sympathetically, he endeavours to preserve the freshness and ingenuousness of childhood, and, by the influence of his own example, while leading the pupil up the golden ladder of mental acquisition, he encourages the cultivation of those graces of life which are the best adornments of youth. Stepping out of the schools, we look expectantly to the professions for evidence of sympathy with culture, and for practical results in its promotion. As professions, we find, of course, the conventional admission of its claims, but few organized efforts in its behalf. In Law, perhaps from the fact that the social status of its members is more favourable to its unselfish pursuit, the recognition of culture is more general. The dignity and learning of the Bench fortunately, also, give it large countenance. The Clerical and Medical professions on the other hand, do not, as professions, give practical encouragement to its promotion. The former, in neither its professional curriculum, nor in its Church Assemblies, encourages that benignant breadth of tone favourable to its existence. As a class, moreover, "the peril of committing themselves" is too characteristic of the profession to give aid to its expression, while the asperities of religious controversy too often drive culture from their midst. Among ministers, as among doctors, culture has, individually, to look for that generous, eager, and ambitious life which woos it to a home, and for that student-temper which, in the circle of its influence, best promotes it.

That among the commercial classes, and the trading community of the country, little is done to advance public culture has always been a matter of reproach; and with that little there is the disposition still to do less. Years ago, in our cities and towns, and when the wealth of the community was not what it is to-day, there

was more *esprit* in this matter, and our social and civic life was more pronounced in favor of the public good. With wealth has come indifference to the weal of the community, and with comfortable circumstances that selfishness which felicitates itself in isolation. Formerly lectures, readings, literary and debating clubs, "socials" for mental improvement, and other schemes of an educating and improving character, were wont to be patronized, but of these one hears little now-a-days. It would seem as if we had retrograded greatly from these times, while the apathy that now reveals itself, in matters that concern the intellectual life and public culture, leads us almost to despair of a revival of interest.

Nor is the press, in the main, more helpful to culture, or influential in the formation of an elevating public taste. Politics have, unfortunately, become our only education, and the theme and burden of the utterance of every journal. No purely literary paper can find adequate support outside small circles of the educated class, and monthly periodicals, of any high character, have but a precarious existence. The journals, as newspapers merely, are the only enterprises that find eager and constant supporters; and these, with some few exceptions, make no original provision for the serious student. Literary excerpts, save of the most fluid character, find little representation in their pages; and literary criticism is almost unknown. Politics, controversy, trivial occurrences, and gossip, are the main items of their daily bill-of-fare; the first of these being served and reserved, with all their inconceivable littlenesses, the round of the year. Of course, so long as the general public is satisfied with the cheap performances of journalism, and craves no higher food than a hurried daily press is willing to give it, the quality will

continue to be poor, and its bulk light; but the public demand and taste is not altogether for poor fare and light weight, and we have had, of recent years, sufficient evidence that the enterprise that has launched experiments in higher journalism finds a constituency of appreciative support encouraging enough to give them life in proportion to the area interested in their publication. The difficulty in the way of their permanent establishment has been that of maintaining the experiment long enough until the public eye and ear at a distance can be caught and interested in their existence. This is the work that could be done by disinterested wealth, responsive to the claims of social life, in contributing to its intellectual well-being, and the furtherance of its highest aims.

Many other objects appeal to the public spirit of our wealthy citizens for encouragement and aid, which, on reflection, will naturally suggest themselves to a liberal mind. None of these, however, presents greater claims upon the would-be benefactors of the people than the establishment and endowment of public libraries, and no influence can be more potent than theirs in contributing to the public culture. Whatever may be the difficulties that confront one, and particularly in depressed times like the present, in placing such projects on foot, they should not deter from hearty and persistent effort in establishing them. If no more ambitious scheme can be launched than a moderately equipped book-club, with ample provision for the purchase of those engines of thought, the modern reviews, monthlies, and the English critical and literary journals, let that, at least, be attempted. The more widely the formation of these reading clubs can extend, the better; and there is no town of any size but might light this intellectual torch in the com-

munity and avail itself of its helpful aid to mental illumination and advancement. It wants but the inspiring stimulant of enthusiasm, and the contagion of strenuous effort to set the project in motion; and, not of necessity by some influential person, but by those, here and there in the country, who have faith in the benefits their efforts would confer, and are loyal to the cause of culture.

From their occupation, the public would naturally look to their professional educators to lead them in this work, were they more accustomed to see teachers take an active part in performing those duties in society which pertain to the higher life, and for the fulfilment of which they are professionally so well adapted. We know that the social position conceded to teachers, as a rule, is not that to which they rightly should lay claim; but society is not altogether to blame either for its deficient acknowledgment of their status, or for the parsimony with which it rewards their labour. It is an old adage that we value a thing at the price we pay for it; but it is as true that we affix to ourselves our own price. "Respectability," as an old schoolmaster used to say, "is after all a personal attribute," and the teacher can as successfully assert his true position in society as any other member of the community. In Ontario, the High School masters are, as a class, worthy of greater social distinction than the public is accustomed to confer upon them, for their academic standing is higher in the aggregate than that of an equal number of any other of the professions. The attainments, also, of the Inspectorate, are of a high order, and there is no class in the community doing more praiseworthy work. Though lower in the professional scale than the Inspectors and their brother-labourers in the Collegiate Institutes and High Schools, the Public School masters of the Province

are a body of men of which any country may be proud, and the yeoman service they are doing in the intellectual development of the country entitles them to generous and admiring recognition by the people. As a force in the community for good, no class of men are in a position to exercise a more beneficial influence; and the potentialities of such a body of educators as we have now over the Dominion, in giving to it the blessings of intelligence, enlightenment and culture are remarkable in the history of so young a nation.

The only circumstance that can qualify unstirred commendation of a profession is that to which we have already alluded, but which, as we have said, attaches to our systems and machinery of education rather than to the instruments that give them effect. There must, of course, be these systems, and more or less of the regulating and restraining direction of a centralized executive; but, at the same time, there should be the greatest

possible freedom in their operation, consistent with desirable and legitimate control. And with every elasticity that can be given to the system, there should be as little to remind the profession of bureaucracy and departmental paternalism as possible. But above all, there should be the *living life* in the administration which should charge all the conduits of the department with the electric thrill of energy and enthusiasm, and cause the concentric circles of the system to tingle with the dynamic force of its impulse. In so important a bureau as that of education the want of some highly magnetized influence to infuse the system with zeal and activity is an imperious need. With it our educators will become schoolmen in the old and high sense of the word, and a taste for learning and the elegant amenities of life will be diffused. Without it the most potent lever in elevating the public taste and in stimulating the intellectual life and culture of the nation will fail of its highest work.

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## EDUCATION A SUCCESSION OF EXPERIENCES.\*

BY PROF. A. R. GROTE, BUFFALO.

A STUDY of the phenomena of the human intellect teaches us that there is a process going on by which external matters are being pictured in the brain through the action of the senses. The imagination itself is found to depend upon an ideal grouping of experiences, however fantastic and unconnected they may be made to appear. As time elapses and mankind advances, the brain-pictures seem to become more per-

fect, and to embrace more fully the characters of their originals, and their development in this direction is proved by our varying notions of things, and our changing conduct toward them. Education may, then, be primarily conceived as the process of storing sense-impressions in the brain, and the total condition and amount of the brain-pictures we might style knowledge. An education seems to resolve itself at last in-

\* An abridgment of an Address delivered before the American Association for the Advancement of Science, at St. Louis, last August, and published by the courtesy of the writer.

to a succession of experiences, however complex it may appear in its results, so that, in any discussion, it will make the matter much clearer if we study the machinery which makes education itself at all possible. It is evident that we only appreciate sight, or any one other of our senses, because it exists; and in the evolution of sense organs, the feeling of the want of them in the individual evidently succeeds their possession of the species. Through the senses a section of the universe is opened to us, a section which is limited by their powers in bringing, and the capacity of the brain for storing what is brought. But with the utmost exercise of our receptive powers our view of the world remains a section still. When we find, for instance, that vibrations of the air below thirty-two and above 100,000 per second, make no impression on the human ear, we understand that we are cut off from a wide range of possible sound. So that every mechanical appliance by which we can enlarge the field of experience tends to increase our knowledge, and, therefore, to affect our conceptions of the world about us.

The "atoms" of the intellect are thus seen to be the single sense-impressions, and the conclusion is inevitable that reason is generalized experience. It is possible to check the correctness of this conclusion through a study of the intelligence of the lower animals, and the efficiency of their senses. And so far we have found that the generalizations of knowledge which they are able to make, and which we have called in the past instinct, to distinguish them from our own reason, stand in direct relation to their capacity of receiving sense-impressions.

It may be said that what the lower animals do know, they come to know by similar means and in the same way that we acquire knowledge. It

is now the generally accepted conclusion by scientific minds, that instinct and reason differ in degree, and not in kind. Our literature is already full of proof, drawn from the habits of vertebrate and invertebrate animals, that this position is a just one, and explains fully the relationship between the intelligences of the different animals themselves, as well as between the intelligence of the races of men and that of lower types of existence. Reason is, then, built up out of past experience, which we use when brought into fresh contact with things. We become more reasonable as we experience more, and the object of education is to impart that reasonableness more quickly, so that the growing generation may not be obliged solely to find how things are from the slow process of its own experience, but profit by the knowledge which was gathered by those who passed away before. Reason, then, depending on the sense-impressions, must be affected by the character of the sense organs. If these were more perfect the acquirement of knowledge would be easier. In fact, they are found to be limited and unreliable beyond what we might at first be inclined to grant. But however justly we may distrust our senses on any particular occasion, we cannot consider them, or any one of them, as totally unreliable. All that we can do is to point out their insufficiencies, to check the evidence of one sense by that of another, to try by repeated experiment to establish the actual condition of affairs.

The pictures which our senses give us are not to be regarded as false although they may convey a misleading idea of the object perceived. Every action of the senses gives us a comparatively true perception of external objects. A correct judgment is formed after a full examination through all the senses that can be brought to bear

on the subject, and in this way the actual state of affairs may be discovered. The method of examination we may employ is determined not only by past experience, but by that analogy which prompts fresh experiments. At bottom this is what makes education attractive, that the mind grows in the direction to receive more and more complete pictures of things. And this is an answer to those who object to scientific hypotheses, that all such, based on observation or sense-impressions, are to some extent reliable and serviceable. It is not true, either in part or wholly, that we "take leave of our senses," to construct our scientific hypothesis, but the reasonableness of our hypothesis stands in relation to the extent of our acquaintance with its subject and related matters. But aside from the imperfection of our senses, which may make a correct judgment impossible, or at least difficult, we find ourselves sometimes under exciting conditions of the brain, when we mistake the subject of our thought for the object of our sense-impressions. False seeing and false hearing have come to be classed among the diseases of the brain, and the evidence collected on this head points to the conclusion that it is the memory which is here affected. The explanation of memory is, that it is the result of an effort of the mind by which we recollect the pictures and impressions already stored in the brain. The mind, "that veiled enchantress," as Draper calls her, is "veiled" because her feeders are so subtle, that we believe she exists without subsistence. But in all her phases she is seen to depend literally upon the senses for her vigor. The dream-doors of night's dwelling, opening at the touch of sleep, let forth a troop of images seemingly of fresh import, and perhaps of direst consequence. But reason, by simply bringing the figures into their proper se-

quence, reveals in them the pictures of the day's experience. Before discussing the imperfections of the senses, and which so deeply affect our conceptions, let us briefly consider the way in which one of them, that of sight, receives its impressions and conveys them to the brain.

Young, in his theory of the perception of color, has shown that there are three orders of pointlets or nerve ends of the retina, and that each order of nerve ends is sensitive to a different rapidity of the light waves. Helmholtz demonstrates that certain of the nerve ends in the retina are destructively affected, in both the live and the dead subject, by particular rays of light. We may conclude that the shape of any object, as it appears to us, depends upon the number of pointlets of the retina affected by it, and the color on the order of nerve ends stimulated by it so far as our sight of the object is concerned. The cause of the color of any particular object itself must be sought in the structure of its atoms, which absorb certain of the rays of light and reflect others. Thus all objects may be considered, in a general way, prismatic; that is, they effect a separation of the rays of white light in displaying the phenomena of color, but they do this by absorbing certain of the rays. This is the point where the chemist and the biologist meet—every phenomenon displayed by an object is found to depend upon the ultimate structure and arrangement of its component atoms. We may thus conceive of the action of the sense of sight without calling to our aid anything but the thing seen, the medium through which the thing attacks the eye, and the machinery which conveys the picture of the retina to the brain, where it is registered. We may in this way investigate the action of the remaining senses, and with a similar result.

Always there is the thing perceived, the media, the contact, the machinery of the sensory nerves, and the gray matter of the brain. Defining education, then, as the process of receiving a series of sense-impressions and experiences, let us consider in what way our knowledge is affected by the limitation and imperfection of the senses.

We have said that, from the limitation and imperfection of our senses, but a section of the universe is opened to us; in reality, we have but a partial idea of even this section. It will occur to every one that there are a large number of objects which they fail to take cognizance of, although they could do so if they had the opportunity. Such objects as distant portions of the earth's surface, foreign animals and plants, many of us have to content ourselves without seeing. We know them through the senses of other persons, who have written on them. Nevertheless, our total conception of the world is affected by our personal ignorance of these matters which go to make up the world. But, aside from this class of objects, there are also to be considered the large number of things we pass over from inattention, and a want of preparation of the senses to entertain them. How large a class this is we can easily understand when we know that the difference between scientists and other people is involved in the matter. For a scientist is merely one who diligently observes things that for the most part are not seen nor heard nor felt by others. Life is also too short to witness the outcome of many things, and the years in which we are willing to pursue inquiry too few. It has happened that generations have elapsed before a new age has carried on seriously the investigations commenced at an earlier epoch.

When we examine the sources of

our knowledge, it will be found, I think, that we have attained it in two kinds of ways, and that for convenience and a better understanding of education itself, we may take these two ways as a rough classification of our knowledge itself. The one is by direct experimental contact with things, and this is the most positive and certain, so that we may call the knowledge we acquire in this way real. The other way is through books and the teaching of persons other than ourselves, and we may call this kind of knowledge second-hand. In the process of education we draw upon both these sources of information, and both go toward determining our total mental status. They are, in fact, so interlaced that we have difficulty in separating them. What we have read about often seems only to be separated from what we have experienced by its lesser vividness, and the art of teaching evidently lies in the power of presenting second-hand knowledge, so that it has the force, or nearly so, of an absolute sense presentation. Undoubtedly there is a certain ease and facility in acquiring second-hand knowledge, which renders the process attractive to the mind; the mind, which, as we have said, grows in the direction of receiving information. But this second-hand knowledge carries with it the greater possibility of error. We have only to recollect that our second-hand knowledge is imparted to us through the machinery of words, and words, we all feel, but approximately express our ideas. This fact supplies the reason for the success of object-teaching in education. Undoubtedly the second-hand information of today is not the best information now possible, but, as a whole, it compares favorably with the second-hand information of twenty years ago.

From the fact that the vast majority of us acquire our conceptions of

external things largely during our school and college days, there is an evident reason for the popular unfriendly attitude towards new ideas drawn from experiments unknown to the past generation of school children. Between this second-hand information and real knowledge there is seen to be a constant inter-action; the first is always improved by the results of the latter, and so mankind is instructed as time elapses. The proceedings of our scientific bodies contain a mass of information which is brought later on into our school-books in different shapes.

The effect on the minds of the rising generation is cumulative, and most children start with ideas and a presentation of facts with which their parents perhaps finished their education, and few of us, we know, actively pursue our studies during mature life. But here we must be struck with the fact which a study of the inheritance of certain faculties of the mind present. Much, we know, almost everything, is transmitted from the parent to the child, and along with the copy of the structure, the resemblance is carried out into minor details of form and feature. And in the same way the structure of the brain, which we yet fail to well understand, is affected. The faculty for receiving a certain class of brain-pictures rather than another, the bent of the mind in a certain direction, follows with the color of the hair and eyes and the shape of the skull. But this faculty may exist and at the same time an absence of the brain-picture, which would satisfy and fill it, may cause its obliteration in the child from disuse. We must then clearly distinguish the factor of heredity as affecting the sensory nerves and the brain, when we consider the total mental condition of the individual. The action of the senses and the exercise of the brain beyond a certain extent, which

varies with the individual, are painful and therefore distasteful. Up to what point they may be carried in any given case is difficult to determine. Sufficient it is for us to appreciate that, for the mass of mankind, a small total amount of sense and brain work suffices, and that we are generally willing to avail ourselves of the less tediously acquired knowledge which we receive through books. And even these it is almost usual to read carelessly and to avoid comparing, taking the remarks of author after author listlessly into our minds, until our reason is clogged with contradictory impressions, and our total mental attitude becomes feeble and vacillatory. And here this fact presents itself, that in proportion as we apply to the sources of our real knowledge, and generalize from the results of our sense-impressions, we are able to criticise our second-hand information, and work toward a truer apprehension of ourselves and the world we live in.

Those who rely chiefly upon second-hand knowledge in effect refuse the present opportunity, which is alone their own, and must necessarily accept a lower philosophy of their lives. And by philosophy we mean, after all, an explanation of ourselves and the world in which we are. The range of meaning in words is so great, that ordinarily, we conceal under this term one knows not how much that is mysterious and that may be even held unnecessary. But by philosophy we evidently mean that correlation between the brain-pictures by which the which is contradictory is explained or brought into its true succession. We all know how comparatively easy it is for us to entertain contradictory beliefs, and how we do not even notice this contradiction until we come to compare our ideas, which we do not all of us try to do. But something of a phil-

osophy we all of us attain to as the natural result of our sense-impressions. As we rise to general conceptions, we bring this philosophy to bear upon them, and we are apt to answer very difficult, even unanswerable questions, in a way which at once measures our knowledge and tries our judgment. Even when our philosophy gets damaged by facts we go about with it and wear it in some fashion, still preferring the old cover to the exertion of getting a sounder one from new sense impressions and a sounder correlation of ideas. But our philosophy or mental condition towards the rest of the world is of vital importance, since from it we derive much of our happiness. A life is often wearily spent in struggling to face even very ordinary mental difficulties, in the endeavor to reconcile our experiences with our derived ideas.

What is needed, then, is some more accurate comprehension of what we are and to what things are tending, and to get at this we must lay under contribution all the possible sources of knowledge. From a conscientious application to the evidence of our senses, we may come to some certainty of what things are and have been, and from a careful study of literature, we may find out the direction of development in human affairs. The result of both these lines of investigation to the student is a culture as high as the amount of labour he has expended, and a happiness as complete as his mental development is equal sided. In any event this culture will be found to confer upon its possessor immunity from many of the sorrows of this life.

But obviously, this total happiness depends on the correctness of this, his philosophy upon which it rests. A picture on the brain, received how it may be, if partial only, is nevertheless lasting, and has its effect in

deciding the mental tone. And from these incomplete pictures we arrive at false or incomplete conceptions. In this way the persistence of ideas may be explained by the persistence of the physical impress on the brain, and the mental labor requisite to alter or erase such a partial and misleading picture is always great. Great in any event, it becomes too heavy a task for many of us when the pictures have, most of them, taken this turn. We are then committed to a wrong view of life, and must suffer the consequences. We must share in this event the average happiness which the defective philosophy to which the pictures lead us ensures. And the way in which pleasure and pain generally arise is the same as the way in which they come to the sense-organs and the nerves. Pain arises in the body when any sensitive portion is torn or interfered with, and again, where the wearing of the tissues is greater than the supply from the blood of the waste, as in being tired, or hungry, or thirsty. Pleasure arises from as vigorous an action of the organs of the body as can be maintained, without expending more force than is supplied to the tissues and nerves from the blood. And exactly in the same way, by wear and tear, we find our senses affected. So that the conclusion is inevitable that the injury we inflict on the total organism, from undue exercise of the senses, is as pernicious to its proper development as excessive muscular work would be. The intellect, as distinguished from the emotions, is that part of the mind which discriminates and appreciates differences, but this fails us, too, after severe studies. A hard example in Arithmetic, for instance, and a difficult feat in gymnastics, present similar demands on the system; and at a certain age, indeed, the amount of vital repair necessitated by the first

may be greater than that demanded by the second.

A work of immense labour it is to unravel the network of complex thought which surrounds us to-day, and determine the origin of the separate threads. Such a labour is comparable to that of the biologist, who, through a succession of different but allied species of animals, traces the origin and modifications of a bone or muscle. But so much exists upon this subject already, that I have ventured to give the material points of our mental progress, which may possibly assist us in our conceptions of the successive stages through which the mind of man has already passed. At the outset we cannot too strongly insist upon the comparative value of such terms as "civilization." Our general tendency is to give a fixed value to such words, measuring them by our own standard, and to this unconscious action, which has a wide application, and from which nothing but culture will free us, deeper thinkers have given the name anthropomorphic. In this instance, since our civilization is constantly changing, we can only consider ourselves as standing on a plane of comparative excellence, while a comparison of our own with the civilization of the Chinese, Hindoos and Japanese, shows us that in some few points, it may be, we have a lesson to learn; while in others, as in the character of criminal punishments, these nationalities occupy ground that we have abandoned centuries ago. The motor of civilization must always consist in an improvement of the machinery for the exchange of thought. This follows from our conception that our intelligence results from our sense-impressions on the brain, and that we understand by education the process of acquiring these brain-pictures. Clearly, the acquirement of articulate speech marked the first advance in

human communities in mental evolution. It does not appear that we know how articulate speech came to us, although we may hope that in the disintegration of vocal sounds by some such invention as the phonograph, a reasonable theory of its successive steps may be brought out. The first marked advance upon the formation of language lay in the discovery of the characters of writing which we call phonetic, the steps to which were marked by the use of different grades of object signs. Through the invention of writing, a man's experience in this world was not lost when Death struck him dumb. For the earliest writings we have retained a special reverence which lasts until to-day, and has not been dissipated by extended familiarity with the process. The next step lay in the invention of printing—always following the same line of advance which mental development had marked out from the first, the growth of the mind toward receiving more and more perfect brain-pictures of external things, and the effort to assist this growth through the dissemination of ideas. Before the invention of printing, an important part of the process of education was limited to the few, because these alone possessed the art of writing, and the means to secure collections of manuscript of different kinds. Hence the difference between ancient and modern civilization lies chiefly in this, that in the former the masses could be improved from outside of themselves by the orator. The printing press, at a later time, enabled the people to take the orator home with them, and review at any time his messages. In ancient times writing required to be read, and the stated re-reading came to be a custom in public before the action graced the hearth at home. So we may consider the advance of mental intelligence to be marked by these three great

inventions: speech, writing and printing, while in our own day the spreading and perfection of our intelligence has been aided by the kindred inventions of the telegraph and telephone. Civilization thus appears as the consequence of the dissemination of experiences among mankind.

Those who have brought together the story of the ancient civilization of Greece have agreed with unanimity that the separation between the mass of the people and the intellectual portion became at length insurmountable, and finally led to national destruction. This makes for our own view, that it was to a defect or incompleteness in the machinery for the dissemination of knowledge that we must ascribe the dying out of the older States. An intellectual aristocracy was established in Greece, which, in order to maintain its superior position, and from natural and selfish motives, endeavored to prevent the spreading of new facts, but it was assisted in this action by the limitation which an ignorance of the art of mechanically duplicating writing threw around it. Philosophers have explained the fall of Greece by considering it as a necessary step in the progress of humanity and the perfection of a future bloom of knowledge. And so in one sense it may be, but still, exactly where the defect lay and where there is a positive advantage in the conditions of modern civilization, and wherein modern civilization more adequately protects the State, has sometimes escaped them. To understand this fully we must come back to natural history, to anthropology, at last. A large class of persons with a certain bias persistently decry our modern civilization, and look for its more or less speedy evanishment, merely because Rome perished and Greece decayed.

But nowhere in nature is there exact repetition, and to understand

the new civilization we must remember that it rests on a larger average intelligence, brought directly about by the discovery of the art of printing. There is then a distinct reason, a scientific ground, for the opinion that our present civilization rests upon a surer basis than did those which preceded it, and this we may safely bring forward in the cause of truth. For science is in danger always of being regarded as the enemy of the State, because it tends constantly to modify existing ideas. But if we can show the necessity for a constant modification of our ideas, arising out of our own constitution, then it may be seen to be unreasonable to defame those who follow the search for truth. And it being undoubtedly true, as Locke says, that of all the men we meet with, nine out of ten are what they are, good or evil, useful or not, by their education, we can see how wide reaching the effect of our improved basis of civilization must be upon us as a people, and how important it is to understand the real direction in which it works.

But, indeed, the position I have tried to sustain in this paper lies outside of any criticism of modern education. I have tried simply to show the way in which our modern civilization has grown up, and its real superiority over ancient culture. From this we may rest assured, that science, while it influences, can never be an enemy of the State; and that the danger of the State, as well as other social systems within the State, will lie in the direction of an opposition to scientific truth and the right reason of mankind. But it remains for science to play a distinct part in the discharge of its full duty to the community, by popularizing its discoveries. Doing this, it will insure the stability of the State by increasing the general information of the people.

## FIRST PRINCIPLES OF EDUCATION.\*—II.

BY A. W. GUNDRY, TORONTO.

THE fundamental principle of Mr. Spencer's theory of Education, as we have already said, consists in a special application to that subject of the general principle of evolution, which has guided his fruitful investigations and governed his far-reaching speculations in other and higher fields of thought. It is, to say the least, doubtful how far we shall advance the object which we now have in view, of bringing his work on Education more generally into notice among those who are most concerned in its subject in this country, by making this avowal at the outset. We are only too well aware of the unpleasant, if unreasonable associations which, even at this late date, cling in Canada around both Mr. Spencer's name and the philosophical hypothesis with which it is inseparably connected. Into the merits of such a vast and perilous question as whether the prejudice which undoubtedly exists is justified or unfair, we should not consider this a fit place for entering, even had we less limited space at our command. We would merely suggest that, however strong the prejudice may be in Canada, it has been and will be quite powerless to prevent Mr. Spencer's book exerting a very remarkable influence elsewhere; that however much his work may be neglected here, it is being rapidly sold and eagerly read at this moment in England, as it has been in

the United States ever since its first publication there, and as translations of it have been in most of the countries of Europe.† It is to be hoped, therefore, that Canadian educators will not suffer a mere prejudice against a name to isolate them from the most advanced of their fellow-workers in other quarters of the globe, or to debar them from participation in the results of perhaps the most profound thought, and the most philosophical treatment, which have been brought to bear on the subject of education for many years.

Having in our last paper outlined the first chapter of Mr. Spencer's work, in which he demonstrates that the knowledge of most worth is Science, we will now resume our summary at the second chapter, which deals with Intellectual Education.

Mr. Spencer considers that the common characteristic of all the most prominent improvements in education during the last fifty years, is an increasing conformity to the methods of nature. "We are on the highway," he thinks, "towards the doctrine long ago enunciated by Pestalozzi, that alike in its order and its methods, education must conform to the natural process of mental evolution; that there is a certain sequence in which the faculties spontaneously develop, and a certain kind of knowledge which each

\* "Education: Intellectual, Moral, and Physical." By Herbert Spencer, New York: D. Appleton & Co., 1871.

† The London *Academy*, of Dec. 28th, says that within a couple of months almost all the copies of the cheap edition recently published in England have been sold off, and that a fresh issue is contemplated.

requires during its development; and that it is for us to ascertain this sequence, and supply this knowledge. . . . In education we are finding that success is to be achieved only by rendering our measures subservient to that spontaneous unfolding which all minds go through in their progress to maturity." This principle has never, indeed, been totally ignored; for, without some regard to it, education would be an impossibility. But it has been recognized as a vague generality only, and never acted upon strictly and in detail, as it must be before we can appreciate the full value of its guidance.

The undeniable fact that the Pestalozzian system, although based on this principle, has not fulfilled the promise which it gave at first, must not be considered to reflect discredit on the principle itself. It is to be accounted for to some extent by the dearth of teachers really up to the level of the heterogeneous requirements of so complex a scheme. But the main cause of its comparative failure is found in the consideration that Pestalozzi, while right in his fundamental ideas, was not right in all the applications he made of them, nor in all the plans he deduced from them. Indeed, it is obvious that no method of education, harmonizing with the process of mental evolution, can be fully successful until we have a far more intimate knowledge than we even now possess of the facts going to make up that process. But notwithstanding that we must wait for the establishment of a rational psychology before we can hope for perfection in any method which is based on psychology; yet we may "with the aid of certain guiding principles . . . make empirical approximations towards a perfect scheme." Our author proceeds to specify these principles, and we will briefly indicate them, as far as possible in his own words.

1. In education we should proceed from the simple to the complex; a truth not altogether disregarded, but still not acted upon professedly or consistently. "The mind grows. Like all things that grow it progresses from the homogeneous to the heterogeneous; and a normal training system being an objective counterpart of this subjective process, must exhibit the like progression." Not only in the details, but also in the *ensemble* of education, should we observe this principle; "our teaching should begin with but few subjects at once, and successively adding to these, should finally carry on all subjects abreast."

2. "Our lessons ought to start from the concrete and end in the abstract,"—a repetition of the foregoing in a form made necessary by a general misunderstanding of what is truly simple, and what complex. Generalizations of groups of details simplify the conceptions of those who are *familiar with the details*; but to minds unacquainted with these, such generalizations are not simple, but extremely complex. Yet, by a confusion of two kinds of simplifications teachers commonly make the mistake of forcing such general formulas upon the minds of children in the first instance, before familiarizing them, one by one, with the truths embodied therein. They forget that "only after many of these single truths have been acquired does the generalization ease the memory and help the reason—and that to the child not possessing these single truths it is necessarily a mystery." Properly, "the mind should be introduced to principles through the medium of examples, and so should be led from the particular to the general—from the concrete to the abstract."

3. "The education of the child must accord both in mode and arrangement with the education of

mankind as considered historically ; or in other words, the genesis of knowledge in the individual must follow the same course as the genesis of knowledge in the race." For it follows from the laws of heredity, as illustrated by the transmission of both individual and national traits from ancestors to descendants, that "if there be an order in which the human race has mastered its various kinds of knowledge, there will arise in every child an aptitude to acquire these kinds of knowledge in the same order." While it would, therefore, assist the unfolding of the individual mind to follow this order in our tuition, even were it intrinsically indifferent, we find that it is *not* intrinsically indifferent. The historical sequence has been, speaking broadly, a necessary one, imposed on the race by the relationship between mind and phenomena ; and each child's mind standing "in this same relationship to phenomena," knowledge of them "can be accessible to it only through the same route" as it has been to the race. "Hence in deciding upon the right method of education, an inquiry into the method of civilization will help to guide us."

4. We are led by such an enquiry to this conclusion, among others : that "in each branch of instruction we should proceed from the empirical to the rational." As the race has observed facts before reasoning from them, so in educating the individual mind, every study "should have a purely experimental introduction ; and only after an ample fund of observations has been accumulated, should reasoning begin. As illustrative applications of this rule," Mr. Spencer cites "the modern course of placing grammar, not before language, but after it ; or the ordinary custom of prefacing perspective by practical drawing."

5. As humanity has advanced solely by self-instruction, it is a "second corollary from the foregoing general principle, and one which cannot be too strenuously insisted upon, . . . that in education the process of self-development should be encouraged to the fullest extent. Children should be led to make their own investigations, and to draw their own inferences. They should be *told* as little as possible, and induced to *discover* as much as possible." Whoever has observed the independent activity of a child's mind, on matters within the range of its faculties, will admit that those faculties, "if brought to bear systematically upon any studies *within the same range*, would readily master them without help. This need for perpetual telling is the result of our stupidity, not of the child's. We drag it away from the facts in which it is interested, and which it is actively assimilating of itself ; we put before it facts far too complex for it to understand, and therefore distasteful to it . . . by thus denying the knowledge it craves, and cramming it with knowledge it cannot digest, we produce a morbid state of its faculties, and a consequent disgust for knowledge in general." Whereupon, having smothered the independent power of thought, we, forsooth, smile at the idea of encouraging self-development in a child as absurdly Utopian !

6. "As a final test by which to judge any plan of culture, should come the question,—Does it create a pleasurable excitement in the pupils? . . . for a child's intellectual instincts are more trustworthy than our reasonings. In respect to the knowing faculties, we may confidently trust in the general law, that under normal conditions, healthful action is pleasurable, while action which gives pain is not healthful. . . . Experience is daily shewing with greater clearness

that there is always a method to be found productive of interest—even of delight; and it ever turns out that this is the method proved by all other tests to be the right one."

With the view of exemplifying the application of the foregoing general principles, as well as of making some specific suggestions, Mr. Spencer now passes from the theory of education to notice some points in its practice. He considers that education of some kind should begin from the very cradle, and indicates the course which conformity to a true psychology would dictate in this respect. The earliest impressions the mind is capable of assimilating being such primary sensations as those of light, sound, resistance, etc., and markedly contrasted impressions being the first to be distinguished,—objects and sounds selected with a view to familiarizing the infant with these properties in their various degrees, should be supplied to it in proper order. As the faculties unfold, this rudimentary culture of the senses will naturally merge into object-lessons. The true theory of such lessons, disregard of which accounts for their frequently unsatisfactory results, is based on the principle of encouraging and guiding *independent* observation. The child should not be *shewn* and *told* the properties and qualities of the various objects until it has exhausted all its own powers of observation in discovering what it can concerning them for itself. Nor should object-lessons be confined to the early age, or to the narrow range of things at present regarded as sufficient. They should include the objects of the sea-shore, the fields and the lanes; and should be continued in gradually increasing complexity, until they at last "merge into the investigations of the naturalist and the man of science." Mr. Spencer further illustrates the practical appli-

cation of his educational "first principles," by sketching the outlines of rational methods of teaching drawing and geometry, to which our space will allow of no further allusion. The chapter on Intellectual Education concludes with a reiteration of the two general principles, "alike the most important and the least attended to," that "the process shall be one of self-instruction; and the obverse principle, that the mental action induced by this process shall be throughout intrinsically grateful." In support of the first we have the consideration that knowledge acquired by the exercise of one's own powers, is assimilated with a readiness, retained with a vividness and permanence, and organized and "turned into faculty," with a rapidity as inconceivable as impossible to the passive victim of instruction. Self-help, again, develops the moral qualities of "courage in attacking difficulties, patient concentration of the attention, perseverance through failures. . . . characteristics which after-life specially requires." The correlative principle, "that the method of culture pursued shall be one productive of an intrinsically happy activity," even did it not serve to guide us in the effort to conform to the normal process of evolution, as before explained,—and even if youthful happiness were not in itself a desirable aim,—should yet receive practical recognition on other grounds. Knowledge acquired pleurably and with interest, is fixed more firmly in the memory than that which is regarded with distaste or indifference. The moral consequences of the habitual attitude of mind towards the daily work, are also of great importance. The character is elevated and invigorated by a happy interest in it; while listlessness, apathy, and lack of self-confidence, must inevitably follow if the routine of study is uncon-

genial. Moreover, the influence of the teacher over his pupil, and the pleasantness of the relationship between them, which forms its firmest basis, depend altogether on whether the former is associated in the mind of the latter with daily gratification and delight, or with daily trouble and disgust. Finally, if education be made a process of self-instruction, so adjusted to the healthy evolution of the mind as to result in a pleasurable activity of the expanding faculties, the tendency of the student will be to continue such self-culture when released from superintendence; a freedom he will as certainly avail himself of to abandon the pursuit of knowledge if a false system have associated it in his mind with irksome constraint and distasteful exertion.

With the succeeding chapter, on Moral Education, we must deal very briefly. The main principle which it lays down is based upon that theory of moral discipline which is the discipline of Nature; and in which punishment is not an infliction of artificial penalties disconnected from the offence, but simply its inevitable consequence,—the reaction of organic law upon its transgressor. This impartial and unimpassioned discipline of natural penalties, is that of which Mr. Spencer urges the adoption in education; not loosely, intermitently, and as a theoretical generality; but closely, consistently, and in practical details. Among the superiorities which he considers it to possess over the common practice of artificial punishment, may be noted the following:—

1. Under this discipline, right conceptions of cause and effect are formed. Proper conduct will be best assured when the good and evil consequences of actions are learnt by actual experience, instead of being taken on authority. If, during youth,

parental or tutorial displeasure has been habitually associated in the mind with wrong-doing, as its effect, when this displeasure is no longer feared, the restraint it artificially imposed is, in great measure, removed. The self-constraint which an experience of the natural and essential effects of transgression would have produced, is lacking; and, if learnt at all, must now be attained to after a far severer buffeting from experience than would have been necessary had the true system been adopted from the first. It is from this point of view that we are enabled both to explain and to prevent that "sowing of wild oats," which so often follows a young man's release from parental control; and to understand how it is that the wildest of them are often sown by sons who have at home and at school undergone the strictest forms of the artificial discipline.

2. "Another great advantage of this natural system of discipline is, that it is a system of pure justice; and will be recognized by every child as such. Whoso suffers nothing more than the evil which obviously follows naturally from his own misbehaviour, is much less likely to think himself wrongly treated than if he suffers an evil artificially inflicted on him; and this will be true of children as of men." If a boy who has torn his clothes, be whipped and sent to bed, he will probably regard himself as a much injured mortal, and a spirit of angry rebellion, rather than of repentance, will be the result. But if he be simply required to mend the tear as best he can, or else to wear the injured garment amid the derision of his playmates until he does so; he cannot fail to see that he is suffering the natural consequences of his own carelessness, neither more nor less. He has no grievance to bemoan; his punishment may strike him as terribly hard; but he cannot persuade

himself that it is any thing but just.

3. "Recognizing the justice of the penalties, and receiving those penalties through the working of things, rather than at the hands of an individual," the child's "temper will be less disturbed; while the parent occupying the comparatively passive position of taking care that the natural penalties are felt, will preserve a comparative equanimity. And Fourth. That mutual exasperation being thus in great measure prevented, a much happier, and a more influential state of feeling, will exist between parent and child."

The full exposition of this principle and its corollaries, their application to the graver class of offences, and the chief maxims and rules deducible from them, the reader must seek in Mr. Spencer's work itself. He will find in it, brief as it is, a wealth of wise suggestion and of striking illustration; a deep insight into the psychological and philosophical aspects of the whole question, accompanied by a close and wide-spreading intimacy with its most minute practical details. Here as elsewhere are exemplified the marvellous range of Mr. Spencer's knowledge, and the broad sweep of his keen thought, which at one moment pierces to the root of the deepest secrets of our being, and at the next is occupied in demonstrating the folly of denying a child an adequate supply of sugar-plums. How far this is from being mere desultory restlessness, those will know who have learnt from him to regard all things as interwoven and

interacting, under the control and in the fulfilment of one great law.

The concluding chapter, on Physical Education, we are reluctantly compelled to leave unnoticed for the present; beyond remarking that it enforces recognition of the truth that "the first requisite to success in life, is to be a good animal;" urges that, with this aim in view, we must "conform the regimen of the nursery and the school to the established truths of modern science;" and shows the bearing of the fundamental principles of the Science of Life upon the physical training of childhood and youth.

We trust that there is no necessity for pointing out that the limits of our space, and the wide scope of the work which forms our subject, have necessitated the presentation of its views in the baldest outline; and that it would be obviously unfair to judge of their force, or to pronounce upon their merits, with only this rough sketch in the mind. Our object has been rather to arouse interest than to satisfy it; and to press this book upon the attention of all Canadian educators, as yet unacquainted with it, who have a high conception of the duties, as well as of the dignity and importance, of their vocation. In summarizing the more prominent of its general conclusions with this end in view, we have supposed throughout that any reader who might feel disposed to dispute or resent them, would also be sufficiently interested, or sufficiently cautious, to consult the book itself for the reasonings on which they are based.

## SCHOOL MUSEUMS.

BY DAVID BOYLE, ELORA.

IF it be taken for granted that Natural Science is a proper subject for treatment in the Public School course, the question immediately presents itself, as to the best method by means of which the necessary information may be imparted to the pupil, simultaneously with the carrying on of the educating process. With reference to this point, scientists and educators, almost without exception, occupy common ground, declaring it their opinion that time devoted merely to the memorizing of bald, text-book technicalities, and *viva voce* explanations, even when assisted with elaborate diagrams, is little better than frittered away. To this may be added the scarcely less important argument, that the almost inevitable tendency of such a plan is to disgust young people with the study to so great an extent, that very few of them will think of devoting even the smallest portion of their time to the consideration of biological topics, after the business portion of life has been fully entered upon.

What the spirit of the age demands in this, as in some other fields, is close, direct, personal observation and manipulation. For us, of to-day, it is not enough that this, that, or the other great man, be he saint, seer or scholar, has said so-and-so. What any or all of them have bequeathed to us for our edification may be all right, but it may not be. The Genius of Inquiry, with his crooked wand, directs the movements of the explorer

in every path of knowledge. An individual *ipsi dixit* no longer demands a general amen. The mantle of inspiration has been dropped, and has fallen—nowhere, or everywhere.

In no department of knowledge, during recent years, has the influence of persistent, original investigation been more powerfully felt than in Natural Science, and most assuredly, in none other has so much been done to prove that two and two make four, outside the pale of Mathematics. Despite all that has been effected in the way indicated, ten thousand times more remains to be accomplished. "The harvest indeed is ripe, but the laborers are few." Shall Ontario, with its much vaunted system of education, do nothing to aid the movement? How long will school examination speech-makers continue to set up the pulpit, the bar and the legislature, as the great attainable goals of manhood? Do teachers themselves propose to stand by admiring silently the efforts of workers in the field of Nature, without offering to lend a hand?

To teach Natural Science profitably, as has already been hinted, actual specimens are a prime necessity. This, however, need frighten no one. Hundreds of valuable and interesting objects are procurable within a few minutes walk of nearly every school-room—certainly every rural one—in the Province, and, for the benefit of any who may feel disposed to do even a little towards unlocking Nature's

secrets, it is proposed in what follows to throw out a few suggestions to encourage experiment in the formation of School Museums.

The teacher is, of course, supposed to be in possession of *some* knowledge, in advance of his class—not necessarily very much, but enough to enable him to speak authoritatively. To be in this position, he should have for reference, as well as for study, works bearing on the subjects proposed to be taken up, from as nearly a local point of view as possible. For general perusal books on every department of Natural Science may be had anywhere, but to make “talks” interesting to young people the teacher should be able to speak about things round home. Catalogues of Canadian plants have been published by Dr. Ross, of Toronto, and Prof. Macoun, of Belleville; the former gentleman has also issued a list of our trees. All these contain both common and technical names, and would prove serviceable in naming specimens for an herbarium. Mrs. Traill’s “Wild flowers of Canada,” would serve as a beautiful, though incomplete, adjunct to any one taking up Botany. Ross’ “Birds of Canada” is a cheap hand-book, and gives short descriptions of our common birds, their nests and eggs. A more extensive work is Samuel’s “Birds of New England,” and quite suitable for this Province as a whole. In Entomology, the student should consult Ross’ “Canadian Butterflies;” back numbers of the Canadian Entomological Society’s Reports, and the “Entomologist,” published in London, Ontario, under the editorial management of Mr. W. Saunders. Sir William Logan’s “Geology of Canada” is indispensable to those who propose examining the rocks, minerals and fossils of the country. Should fossils only be the object of study, Nicholson’s “Palæontology of Ontario” will be found invaluable.

Having decided upon a study, no difficulty will be found in enlisting the co-operation of the young people in procuring specimens. Let it be distinctly understood that the choice specimens are to be preserved; that if the trustees furnish a few cases they will become the property of the school, and that every object considered worthy of a place in the cabinet will be labelled with the name of the finder. In the event of the teacher supplying case-room the collection, of course, should become his property. In country schools, there is no reason why a complete set of plants, illustrative of the local flora, should not be found in every section, and it would be somewhat difficult to suggest anything likely to be more interesting, instructive, or truly useful to the sons and daughters of farmers, than a pretty fair knowledge of Botany. Snakes, lizards, frogs, toads, &c., in spirits, should be represented. So far as birds are concerned, it should be borne in mind that a licence is required to enable any one to possess, legally, most of our feathered friends, or their nests and eggs. A sharp lookout should be kept for any relics that may turn up, in the shape of stone weapons, or pottery of the aborigines.

In some respects, villages and towns are at a disadvantage compared with rural sections in making collections, but on the whole they are more favourably situated. A short walk from any school-house in Ontario, outside the cities, will carry one into the country. Not only should the assistance of the pupils in towns be secured, but much may be gathered from the surrounding farms, that is, on the supposition that specimens are not in demand at the rural schools, and it is not likely this will often be the case. Circulars at a trifling cost may be freely made use of in the neighbourhood, stating the kind of objects required, and asking for con-

tributions. Many farmers and their families may by this means be made active co-workers: where the plan has been tried large numbers of desirable specimens have been presented by them. In asking for aid from the surrounding country, it would be well to let it be clearly understood that, should the collection ever assume the ambitious character and importance of a Museum, admission would be free to all, and that visits from country teachers and pupils would be especially encouraged. By-and-by, if the interest is kept up, numerous duplicates of specimens might be collected, and then a system of exchange be resorted to with more pretentious establishments, many of which would gladly give away otherwise unprocurable objects, to get possession of what, in the village or town collection at home, may be of little or no value.

In carrying out a scheme of this kind, if gone into at all extensively, some expense must necessarily be entailed, but it is really surprising how much may be done at a trifling cost. With proper management, in the midst of an appreciative community, and with an intelligent Board of Trustees, one hundred dollars per annum will maintain the collection in a flourishing condition, most of the money going for the supply of cases, payment of freight, postage, and express charges.

To any teacher undertaking such an enterprise—for it is nothing short of that—no remuneration, pecuniarily, need be looked for. It must be “a labour of love.” Even where the people possess more than average good sense there is a disposition to regard the teacher as quite well enough, if not too well, paid for all he may do. His only reward must be the interest he succeeds in awakening amongst his “disciples.” His pleasure must consist in having led them to

enquire for themselves—to take nothing for granted which it is possible to prove. He must remain satisfied with having—and he should not be satisfied till he has—led them to exercise their powers of observation, to form opinions for themselves, to apply analysis in investigation, to generalize their disconnected views, and to pursue truth with unfaltering footsteps, even at the hazard of having to retrace many a years' travel, it may be, in a wrong direction.

Science and Civilization are almost synonymous terms: they are, at any rate, co-relative. The first attempt of the savage to make himself a weapon, or to produce fire, are but the dawning of what may eventually become the highest condition of culture. To aid in the furtherance of scientific pursuits should be the pride of every educator, and it is quite impossible to do this, so far as Natural Science is concerned, more advantageously than by presenting for study and examination the innumerable objects that lie around us in such profusion.

Perhaps the greatest drawback to any attempt in making a collection, will arise from that sense of impermanence that characterizes the position of so many teachers. Few will feel disposed to devote time and labour towards a project the accomplishment of which requires years for anything like fulfilment. The only way to overcome this difficulty, in places where the people desire to possess a Museum, is for the trustees of the school to take the matter in hand allowing successive teachers a small sum for labour and attendance. Just here a very pertinent query suggests itself. If a corporation, at considerable expense, maintains such a collection, to prove not only valuable as a school adjunct, but to be attractive to visitors, both from the town itself and from a dis-

tance, why should not the Legislature aid the undertaking with its hundred per cent. grant, as is done in the case of libraries? Railways, colonization roads, and schemes of drainage, are very well in their way, and no one grudges a reasonable expenditure upon works of the kind, but surely it would not be asking too much, were

we to request from our law-makers at least the same encouragement towards the formation of local Museums as is now extended to the aggregation of the often antiquated books of travel and other uninspiring literature, which find their way into our school libraries, and which so frequently fail in attracting the interest of the young.

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## TRAINING AND TRAINING INSTITUTIONS.

BY J. H. SMITH, INSPECTOR OF PUBLIC SCHOOLS, ANCASTER.

SKILLED labor in every department of mechanical industry is absolutely necessary in order that success may be attained, and though improved machinery be used, yet the hand of the skilled artizan is required, so that the work turned out may meet the requirements of the age, both in regard to quality and usefulness. Manufacturers who are desirous of keeping abreast of the times avail themselves of every improvement, whether it be in machinery or in the employment of competent workmen. No business man would for a moment think of putting an incompetent person in charge of one of the most important departments of his work, nor would he long be successful when in competition with others in the same trade, if he were to use inferior machinery. If then these wise precautions are necessary, in order to provide for the material wants of the community and for success in business, how much greater is the necessity for providing the best and most approved machinery as well as the most cunning and skilful workmen, when the moral and intellectual cul-

ture of the people is the great work to be accomplished.

Under the existing law and regulations no person can become a legally qualified teacher without receiving more or less training in regard to school management, as well as instruction in improved methods of teaching. This provision has been but recently introduced, and the results so far have been most gratifying, but much yet remains to be done before this department of our work will meet with that hearty approval from the public which its importance demands. It is evident, however, that at the present time our schools are supplied with a staff of teachers who have received either by experience in teaching or by attendance at some training institution, a certain amount of preparation for their work. Believing as we do, that trained teachers are a necessary complement to our educational system, and that the surest way to secure good schools is to provide a staff of thoroughly trained and efficient teachers, we purpose briefly discussing the subject of Training and Training Institutions.

By the word *training* we mean bringing up, *disciplining*, or in other words *doing*. Soldiers are trained to act together in large numbers, apprentices are trained in the various handicrafts, and animals are trained to perform a variety of tricks. These results, and they are sometimes wonderful, are accomplished by the frequent repetition of the same act under the eye of a competent instructor. So can the mind be trained to acquire and impart knowledge. Solomon tells us to "train up a child in the way he should go, and when he is old he will not depart from it." Training then seems to be essential, whether it be received in the school-room or by actual experience in life. In fact we have to receive it whether we wish it or not, and the question is simply shall it be done systematically and under the direction of properly qualified persons, or haphazard as in our intercourse with the world. Now if we should chance to visit a garden in the spring time, in all probability we should find the gardener at work among his vines or bushes. Watch how carefully he tills the soil around them, how he enriches it with suitable manure, and if necessary how he waters it, thus causing a luxuriant growth. When this growth has fairly commenced and young branches begin to shoot forth, how careful he is to prune out such as are not necessary for his purpose, and to fasten up such as will produce rich fruit, and grow into beautiful and symmetrical forms. Thus it is in the education of the young: certain habits are formed in childhood which if allowed to grow unrestrained, would mar the whole life. These need to be pruned out, while others that beautify and adorn require to be strengthened and supported. Instruction enriches the mind by furnishing it with knowledge, training enables the mind to use this knowledge for the purposes of life,

while education, the end aimed at, being a life long process, is never fully accomplished. Training when properly done, nurtures, develops, and strengthens all the powers of the mind and body and unites them into one harmonious whole, so that when maturity arrives these young people are capable of acting, thinking and doing for themselves.

That there are erroneous views and wrong conceptions among teachers in regard to education and the means used in obtaining it, every one who has been connected with our High and Public Schools for any length of time must acknowledge. Many persons who hold the responsible position of teacher and who regard themselves as teachers *par excellence*, seem to have no higher ambition than to hear a stated number of lessons daily, or go over a particular portion of some text-book in a humdrum sort of manner, without any special reference to the intellectual culture of the pupils under their charge. Doubtless these lesson-hearers,—for they are unworthy the name of teacher,—when this work is done, work which they look upon as a kind of drudgery for which they are but poorly paid, feel that they have accomplished their purpose and discharged their duty in a satisfactory manner. Such however is not the case, for they have yet to learn the first elements of teaching, and the sooner they set about it or give place to better men the better for themselves and their schools. It is not a pleasant task to find fault or to point out the defects or derelictions of duty, and yet to remove this stigma from what should be a most honourable profession, it is necessary to discuss this matter and lay bare every defect connected therewith. The faithful teacher's work is a glorious one both in its nature and results, and no teacher should be allowed to remain in the profession who does

not, at least in some degree, properly appreciate the responsibilities of the position which he occupies. There is no higher position than that of a successful teacher. Not only is it honourable to those who engage in it, but it is fraught with interests of the greatest moment to those who receive instruction. The future success of the rising generation, their ability to cope with difficulties and to act a manly and honourable part in life, are to a very great extent dependent upon their early education. Nay more, not only their usefulness in the world but their eternal destiny for weal or for woe, is influenced to no small extent by those who have been their teachers in youth. Early impressions are deeply graven in the mind, and if these are evil the whole life is tainted, but if good the future is bright and a career of prosperity is opened out for them, not always in a pecuniary point of view, but in that higher and nobler sphere where wealth is a matter of secondary importance. The grave responsibilities of the position and the important interests at stake should be carefully considered before entering the teaching profession, for none but skilful hands should touch "the chords of that harp whose vibrations are felt in eternity."

Nor are these erroneous views limited to certain members of the teaching profession, they are deeply rooted in the popular mind. Public opinion on this point is not what it should be. Many of the ratepayers who frequently hold the position of trustee, either in our rural schools or in our cities and towns, have very narrow and selfish views on this subject if their words and actions are to be taken as a fair criterion of judgment. It is equally true, however, that there are liberal-minded men on many of our trustee boards who are doing a noble work for education, but it is

still questionable whether the general public sentiment is either broad or liberal in this matter. Judgment is passed upon the teacher's work not always upon its merits, whether it be thorough or not, but upon the number of pupils that are promoted or the number of lessons taught daily. We seem to have entered upon an era of examinations, and our whole educational system is apparently permeated with a kind of mania for them. Intermediate, entrance, and promotion examinations, occupy no inconsiderable amount of the time of both teachers and pupils, and it is a matter for serious consideration whether this part of our work is not overdone. It is obvious to the most cursory observer that examinations when properly used are a powerful instrumentality in the hands of the teacher to test the scholarship of his pupils, and to incite them to greater exertions. But when these become the great motive power, and the energies of teachers are specially devoted to the preparation of candidates for passing these examinations, it is evident that true literary culture must suffer and our schools be made mere hotbeds of cramming. Some years ago the great *desideratum* in schools was the advancement of pupils as rapidly as possible through the various reading books, and the person who succeeded in promoting the largest number into the highest reading class in the shortest space of time had his reputation established as a successful teacher. Very little regard was paid to the style of reading or to a knowledge of the passage read. The other subjects of the programme of studies were either entirely neglected or at best but poorly taught, and anything savoring of literary culture was not thought of except in a few isolated instances. The present rage for examinations is apparently but another phase of this

same principle. It might be wise to follow the old maxim and "make haste slowly."

To remove these erroneous views and foster a healthy public opinion in regard to the great aim of education and the true mission of the teacher is no light task, but this appears certain, that if only those who have been trained and who have proved themselves efficient are allowed to teach, these wrong impressions will gradually disappear, and parents will better appreciate the labours of those to whom they have confided the education of their children. The establishment of County Model Schools and the return of our Normal Schools to their legitimate work of professional training will render material assistance, by giving us a class of teachers who will be educators in the truest sense of the word. It is to these schools that we must look for the dissemination of liberal and enlightened views among the profession, and they will but indifferently fulfil their mission if this result be not attained. If their work is limited to mere instruction in the mechanical routine of the school-room or in methods of teaching, however good and useful these may in themselves be, they will not wield an influence in the community at all commensurate with the expense incurred in supporting them. The idea is rapidly gaining ground that special preparation is as necessary for the work of teaching as it is for that of any other calling or profession, and unless teachers have a high ideal of what their schools should be and are imbued with a noble spirit in regard to their work, our school system will never accomplish the great things expected of it nor become a power for good in the land. Our County Model School system is clearly a step in the right direction. These schools, however, might be rendered much

more effective were certain changes introduced, which the experience of the past two years has rendered apparent. Obviously the present sessions are too short. No Head Master can give the necessary attention to the teachers-in-training during the limited time at his disposal, nor can the teachers-in-training receive that practical experience in teaching which is so essential to their success when placed in charge of any of our schools. As these County Model Schools are at present organized it is necessary to have a head master and two assistants, each as a rule having charge of a department. The head master has to discharge the duties of principal of the school, look after the interests of the pupils under his charge, and withal instruct the teachers-in-training in the various subjects prescribed in the regulations. These duties are neither light nor trifling, and it seems as though some branch of the work must necessarily suffer for want of proper attention. If these regulations were so modified as to allow three teachers with two divisions of pupils, and these pupils so selected as to have representatives from each of the four or five classes taught in our rural schools, the head master would have greater opportunities to instruct the teachers-in-training in methods of teaching and the principles upon which these methods are based. Occasionally these pupils might be so arranged in classes as to illustrate the method of conducting an ordinary rural school with one teacher, and again they might be graded as in schools with two teachers. These points are essential, for the great majority of our young teachers will have to secure their apprenticeship in the country, and if these schools are not to suffer, some instruction in the manner of conducting them is absolutely necessary. Young teachers not unfrequently lack

administrative ability, and apparently do not know how to arrange the work of the school-room, so that while the necessary recitations are being conducted the pupils remaining at their seats may be profitably employed. If the sessions were lengthened and these schools organized on a basis so as to more fully illustrate the best methods of conducting an ordinary country school, they would become more valuable as training institutions and greatly advance the interests of education in our rural sections.

Teachers' Associations, strictly speaking, cannot be considered as training institutions, though they are nevertheless valuable auxiliaries. They are now recognized as a part of our educational system and as such receive pecuniary aid. The interchange of thought and the discussions that arise on various topics from time to time in a well-conducted association, have a tendency to enlarge the views of teachers in regard

to their work and awaken greater interest in the cause of education. Practical subjects while receiving due prominence should not entirely monopolize the time of the convention. Theory as well as practice is required, for all practice is founded on theory, and if theoretical subjects are not discussed, teachers are liable to become imitators instead of active, zealous and independent workers. Let the executive committees of these associations secure the services of a competent man to discuss the principles of education, the growth and development of the mind, the disciplinary value of different branches of study, and other topics relating to the dignity and usefulness of the teacher's calling. These things are necessary to arouse in the minds of teachers a spirit of enthusiasm and a love for their work, without which the best laws and the most effective machinery will prove of little avail in elevating the tone and standing of our schools.

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## THE AIMS OF OUR PUBLIC SCHOOL SYSTEM.

BY SAM'L M'ALLISTER, HEAD MASTER, RYERSON SCHOOL, TORONTO.

**G**OLDSMITH'S Citizen of the World, amongst the many shrewd observations he makes on western civilization says, "Ask an Englishman what nation in the world enjoys most freedom, and he will immediately answer his own. Ask him in what that freedom consists, and he is instantly silent." Lien Chi's Englishman is but a type of the majority of men, who, having neither the time nor the inclination to investigate the soundness of their theoretical opinions, are content to be guided by authority or custom in holding them.

Our public school system has been long enough established to secure settled opinions as to its merits, and these are neither silent nor equivocal. Its excellencies have been proclaimed from the house-top; they were shown forth with somewhat of meretricious splendour, it is true, at the Centennial Exhibition, in Philadelphia; and at the late Paris Exhibition, its glories seem to have dazzled the eyes of even sober beholders, if we may judge by the following extract from the *London Globe* upon the Canadian Exhibits: "A high qualification is re-

quired from the Canadian teacher, who must be prepared to put in practice the theories he is ready to expound. He must have more than a superficial knowledge of electricity, magnetism, galvanism, and light, and he must be able to handle the chemicals and apparatus, and perform the ordinary experiments with the metalloids which are contained in those laboratories which he can buy of the manufacturing company of Toronto, for £2 8s., less than half the sum he would have to pay for a similar thing in England or Europe. Chemistry is considered the keystone to agriculture, metallurgy, and manufacturing; and as farming, mining, and manufacturing constitute the present and future resources of Canada, the laboratories are extensively used, and in a manner calculated to create a desire in the mind of the pupil to go deeper into a study which promises to be so interesting." Surely we have a Barnum amongst us, and we knew it not. Now, without doubt, our school system must be a good one, else we would not find a matter-of-fact, a frugal and by no means wealthy people, expend upwards of three millions of dollars a year in the support of public schools. The people of Ontario are, as a community, too shrewd and too business-like to spend such an enormous sum as this upon popular education, without the fullest assurance that they receive a fair and honest return for their money, and, though the majority of them may be as silent as the Englishman, in showing its peculiar merits, they can at all events point to the character of the material it turns out as a sufficient return for the price they pay.

It may not be out of place to enquire what are the aims of a system so liberally supported, and whose paraphernalia even, won the commendations of our United States neighbours who are never very ready to ac-

knowledge superiority in what does not belong to their selves.

The first and great aim of our public school system is to teach the children of the country the elements of knowledge, in reading, writing, and arithmetic, so well that they may be properly fitted to perform the ordinary duties of this nineteenth century life with satisfaction to themselves, and with benefit to the state.

Reading, which enables us to live and act with the utmost force of our nature in the present, and lays open before us the thoughts and deeds of the mighty ones of the past, is required to be so taught that it may afford not only profit but pleasure in the daily walks of life,—profit, in contributing to bread-winning; pleasure in rendering available that perennial fountain of enjoyment and recreation of our modern life, the endless productions of the printing press; and both profit and pleasure by training the human voice to act with the intellect in giving just and full expression to the printed page, so that those who hear may grasp the thoughts of the writer as firmly as he who reads. It is required to be taught that it may become one of the great avenues to human knowledge, such as Bacon recognizes it to be in his pithy aphorism: Reading maketh a full man.

The aim in teaching writing is, that he who runs may read, and that all who have been a reasonable time under school training may be able to express whatever they wish to say in fair and legible characters, so that, when they go into active life, they may find this acquirement a ready help in the multifarious concerns of whatever calling they may adopt, and a convenient medium of communicating thought when the voice is not available. Of course, it may be made to do greater service, but these, at least, our school system expects it to fulfil.

Reading and writing are so intim-

ately interwoven with all the concerns of life, that no system of instruction would be worthy of a moment's serious consideration that did not make them of the first importance. It was their demands that caused the invention of the printing press, and called into being the post office; and of what avail would such wonders as the electric telegraph be without them?

Our school system, in requiring arithmetic to be taught, responds to another all-pervading want. There are few walks in life in which arithmetical calculations are not needed, and in the vast majority of industrial lives, readiness and accuracy in the performance of the simple rules; are an absolute necessity. It is intended, therefore, that these should receive the greatest amount of attention and care; but the simple rules are not enough for the wants of either the farmer, the mechanic, or the merchant, and hence facility in operations that task the reasoning powers is aimed at. It may be true, as is often asserted, that much of the work scholars are required to do in connection with this subject is of no practical value, and many of the questions submitted for solution are as far from the demands of actual life as some of the problems which the schoolmen were wont long ago to puzzle their brains about. It is true, writers of Arithmetics and examiners in the subject with us are too prone to propound mere conundrums, which can be solved by a little intellectual legerdemain, with little or no aid from the reason.

But "in all labour there is profit," and in a great many far-fetched questions there is wholesome exercise for the mind. It must never be forgotten that Arithmetic in common with all the subjects of our school curriculum, has two values, value as knowledge, and value as discipline. Many problems of little value in themselves

afford such training that the mind engaged on them acquires a facility in dealing with others in actual life that require the exercise of similar powers. All this may be claimed for Arithmetic without going to the absurd extent which some, who ought to know better, have done, of asserting that it affords the best logical training the mind is capable of.

If our school system aimed at nothing further than teaching the children of the country these three subjects in the manner here indicated, it would well merit all the support it receives. Reading, Writing and Arithmetic must ever take precedence as the primary subjects of public school instruction, and from the lowest to the highest classes must have no second place in the teacher's esteem. Whatever else is taught badly, these must be taught well, and if they are not, then, it is time for the country to ground arms and consider whether the war against ignorance is not being waged at too great a cost. So decided is the opinion of English educational authorities on their value, that allowances to schools are regulated by the number of scholars that pass in them. It is no exaggeration to say that boys and girls who leave school well grounded in the three R's have received an education from the country which fairly fits them to begin life.

Much more, however, is sought to be accomplished in our public schools than this. It must never be forgotten that these schools are for the children of the country, not for a particular class, and the curriculum is so framed that a good English education can be secured by an intelligent scholar before the age of fifteen is reached. The aim being to enable him to go on with his intellectual advancement in the High School and the University, if need be, or failing this, to fit him for all the duties of citizenship in a state

that is so essentially democratic as our own. Grammar is taught that the scholar may have some knowledge of the origin and structure of the language, its characteristics as a medium for the expression of thought, and the rules that regulate the use of it in correct speaking and writing. It affords a wholesome discipline to the mind in parsing and analysis, and imparts a desirable facility by means of this discipline in grasping the meaning of anything that is read. The aim in teaching Geography is to familiarize the student with the outward conformation of the globe we live on; its political divisions, the people and other living beings that inhabit it, and the means of wealth of the various nations; above all, to make him master of everything that it is of interest to know about our own country. It is sought to give sound elementary knowledge of the earth and its motions, as a branch of the solar system, and to direct attention to the physical geography, or, as it is more properly styled in England, the physiography of our planet. History is taught not merely to gratify the curiosity for a knowledge of past events, but to bring the experience of ages to bear upon the conduct of each individual life, and to enable our scholars to realize what are their rights and responsibilities as citizens. It is no doubt interesting to know that the *Habeas Corpus* Act was passed by the short Parliament of 1679, in the most disgraceful reign in English annals; but it is not only interesting but important to know that it was passed as a bulwark against the tyranny of rulers, and that it secures fair treatment to the most depraved of criminals. It is of some interest to read of the circumstances that attended William the Third's invasion of England, to displace a dynasty that, as has been well said, never learned anything and never forgot anything; but it is not

only interesting but instructive to contemplate his wise and thoroughly statesmanlike conduct in achieving a bloodless revolution. It no doubt gratifies a natural curiosity to read of the events that occurred in our own province in connection with the rebellion of 1837-8; but these events are principally valuable for the responsible government they brought about. The aim of our school system is not to teach mere "drum and trumpet" history, but history that shall be valuable mainly for the lessons that it teaches: the former is merely the husk, the latter is the kernel within.

In a commercial community like our own, it behoves every one to have proper notions as to the relations between debit and credit, and to be in a position to keep a correct record of the business transactions of every day-life. It is sought to enable our boys to do this, and a little more, in the book-keeping they are taught. Mathematics have a full recognition in the amount of algebra and geometry that is taught, and without for a moment assenting to the extravagant claims made on behalf of these subjects as a means of mental development, it cannot be denied that Euclid affords the best logical training a scholar can have. But there is danger of carrying these studies, together with Arithmetic, which some narrow intellects regard as the Alpha and the Omega of our school course, to excess, and of making of our children what Macaulay calls mathematical blocks. Zeal like this is certainly not according to knowledge, and cannot be too strongly deprecated. It would be a serious defect in our school system if it gave undue prominence to any subject and thus interfered with the symmetrical growth of the child's mind. It is the highest merit of any school course not that it cultivates particular facul-

ties but that it aims at educating them all.

The æsthetic side of our nature is not overlooked, since both music and drawing have a distinct place in our school programme, and if we but follow in the wake of the mother country and the United States, both of which are far ahead of us in the teaching of these subjects, we shall be doing little less than imparting to our scholars a new faculty. Nothing will satisfy the demands of our school system in teaching music short of enabling the pupils of our public schools to sing at sight any simple piece of music placed before them; and in regard to drawing, pupils must be enabled to express their ideas by lines, to arrange figures into symmetrical forms, and to represent objects with tolerable accuracy by means of the pencil, before this subject can be considered as satisfactorily taught. Mere copying is not learning to draw, any more than transcribing a few pages of a good author is learning composition.

It is a recognized duty of the state to guard its people against evils to which many of them may be quite indifferent. Amongst these are the dangers to public health, and it is the aim of our school system to assist the state in this vitally important matter by requiring a knowledge of the laws and conditions of health under the name of Hygiene to be imparted to children in our public schools. It is true many of our teachers have very crude notions on this subject, and are too apt to mistake physiology for hygiene in their school-room work. This is rather their misfortune than their fault, for the subject has only of late received prominence, and no text-book has yet been provided that can be considered as a reliable and sober guide on this important subject. What we need is a book written somewhat after the style of Dr. Mills' ad-

mirable article on School Hygiene in the January number of "The Monthly."

If there is one subject more than another which distinguishes the education of to-day from that of three, two, or even one hundred years ago, it is Natural Science, and so important has it become that no system of instruction from the elementary school to the University can be considered complete without recognizing it in some shape. Our public school system does not ignore it, and this is well, for what can be more important than to familiarize our growing generation with some of the phenomena of the material universe and the laws which regulate them. There is no better means of cultivating the observing powers and no surer charm against the goblins of ignorance and superstition. No department of human knowledge, however, so well exemplifies the old saying "Life is short and Art is long;" it has so many branches all of which have special claims to attention that it is difficult to decide which should engross the attention of our public school teachers. Perhaps our safest plan is to take the views of one who is sufficiently conversant with the subject to speak with authority upon it. Sir John Lubbock, an old and tried advocate of the introduction of Natural Science in English elementary schools, and a man of eminence in more than one branch of it himself, thus expressed himself in a speech delivered in the House of Commons last year in support of its recognition: "In speaking of Science, the Hon. member said he did not wish to ask the House for anything that was abstruse or beyond the powers of a child's comprehension, but simply desired that they should be instructed in the simple every-day phenomena of nature, such as the causes of day and night, heat and cold, summer and winter; the reason why the moon had phases and not the other heaven-

ly bodies; the difference between planets and stars, the causes of eclipses and tides, the composition and ordinary properties of air and water, and the characteristics of soils; explanation of the simpler forces of nature, such as the lever, pulley, wheel, screw and wedge; also the ordinary rules which regulate health and knowledge of commoner objects."

While thus stating what he wanted introduced into English elementary schools, this English member of Parliament made a very lucid statement of what is taught in our own.

But it is not alone, nor even mainly, by putting the subject upon the public school programme that the aim of our public school system can be carried out, but by making it a prominent subject in the qualifications of teachers. Hence, it is to be regretted that our educational authorities have seen fit to make Natural Philosophy and Chemistry optional subjects in the non-professional examinations of second-class teachers. Doubtless this has been done as a matter of expediency to accommodate the work of training these teachers to the High-School programme, but this only shows that the entrusting of this work to High-Schools is not an unmixed benefit. However useful the alternative subjects, Latin, French, or German, may be to the students themselves, there is no doubt as to whether these or the natural science groups will be most useful in the school-room. It is true that the latter occupies a good deal of the students' time during their three months' professional training, but the work in the Normal School would be much more thorough if it were a completion of work begun in the Public School, and continued in the High-School. Let us hope that such considerations of expediency will be the exception, and not the rule, in managing our educational affairs: had the founders of

our school system been guided by them it would not be the glory it is to-day. The training of the young is far too important a matter to be controlled by the exigencies of the hour.

We have thus pointed out, in some detail, the aims of our school system in providing mental training for the rising generation, and it must be conceded that, so far as they go, they include all that is necessary for a liberal English education.

Mental training, however, is not all that our children need to become good men and women. It has been well said that the ability to read, write, and cypher, is no guarantee that the person who possesses these accomplishments will not steal. When the state pays a large sum for education it has a right to expect that it will have to pay a proportionately small sum for the prevention and punishment of crime. If this is not the case, then, in supporting education, it is paying too dear for its whistle. The gigantic robberies that have marked the last quarter of a century prove that no criminals are more dangerous than the educated ones; and it seems as if the community by training such as these were nourishing the serpent that will one day sting it. Is there no method by which the sting may be withdrawn before it becomes dangerous? The chief hope of doing this lies in the moral training the child is subject to at home and at school. Our concern is with the latter. A school is a state in miniature; children have there to exercise the self-restraint, in both the playground and the school-room, they must show as men and women, they are there taught the rights of property not only private but public, they have to learn to show a proper regard for the opinions and feelings of others. Truthfulness and honesty in word and deed are expected to be inculcated

by both precept and example. They are made to feel that the infringement of a moral law as well as a physical one brings its punishment, that in fact "the way of transgressors is hard." Subordination and respect for authority are as much at the foundation of government of the school as of the state. Cleanliness, punctuality, regularity, and promptness, in the performances of duties, are expected to be made habits.

It will thus be seen that the aims of our public school system though extensive, are thoroughly practical, and as being for the highest interests of the state, are quite worthy of all the support it receives, if they are properly carried out.

There are two points, however, that will have to be attended to before this system can be considered as fulfilling all that may be reasonably expected of it. No place of elementary instruction would be worthy of the name that did not make the preparation of children for the occupations of life its first consideration. Our own must be conceded this merit so far as our boys are concerned, but only in a very limited degree for our girls,—indeed it fails to anticipate some of their most wide-spread needs. By far the large majority of the girls of our public schools become wives and mothers, and in many cases they enter upon their duties of household management without adequate, or with absolutely no preparation, save what they may receive at home. They have thus all to learn, and there is no more fertile cause of domestic misery than this ignorance on the part of a wife. Many do not know how to cook the simplest articles of food so as to make the most of them; and how many are there who are utterly ignorant of cutting out the simplest garment, and of properly sewing it even when it is cut out? We have the name Domestic Economy among our list of school subjects, but

it is merely a name; if the subject is taught at all it is taught in the most perfunctory manner. This defect can only be remedied by our following the example of England, in requiring that the elements of household management, economy in the purchase and in the methods of cooking ordinary articles of food, the simplest plans of cutting out and making children's garments, shall be taught our girls as a part of their ordinary school work. These may seem homely subjects to introduce into the school room, but they are necessary before our school system can be considered as doing as much to start the girl in life as it does for the boy.

There is one more defect that merits our attention. Ample provision is made for those children who desire to go to school, but none for those who are unwilling, or whose parents or guardians are utterly indifferent to their future welfare, and keep them without schooling. We thus have an Arab population springing up in our midst, children growing to maturity without any regard for law and order, and whose only education is that of the street with its evil associates. Did the baleful consequences resulting from the neglect of this class fall only upon themselves they would be fit subjects for the exercise of private philanthropy, but not for any care or expenditure on the part of the state; but the fact that they are the great feeders of the class that fill our jails is a sufficient reason for directing attention to them. Shall our school system take hold of them and by a course of industrial, mixed with ordinary public school training, prepare them to be honest bread winners and wealth producers, or shall it ignore them and let the country have the expense of them as criminals, or at the best as drones? Those who have to pay taxes for the education of the children of the country have a right

to expect that all these will be educated: if they are not, and those who are neglected are found afterwards to prey upon the community, endangering both life and property and costing much more as jail-birds than as scholars in an industrial School, we need not be surprised if our school system be pointed to as a failure. It is true the necessity for industrial schools has been recognized by the local Legislature, in the passage of an Industrial School Act, but this has remained a dead letter hitherto, and is likely to remain so unless the government offers to assist liberally any corporation that is willing to undertake to provide industrial as well as ordinary school training for the neglected children of our cities and towns. It should go farther than this, however: it would be quite within its province, and consistent with its duties, to establish a Central Industrial School, as it has already established a Central Prison. More cogent economic reasons can be given for the state undertaking such an institution than for providing as it does, refuges for the deaf, dumb, and blind, and an asylum for idiots. The classes that fill these institutions are harmless, while many of those who would benefit by an industrial

school grow up to prey upon us both in and out of prison. So long as any of our children may remain uneducated, our school system cannot be considered a perfect one, and the sooner we follow the example of England, by inaugurating a thorough system of compulsion, supplemented by institutions for neglected, destitute, and vagrant children, such as have been indicated, the more shall we have to show for our money.

It is yet too soon to say with confidence how far our system is a successful one, by its effect on the nation's welfare. Besides, however perfect may be its aims, much of its good results will depend upon the appliances that are employed, and it is no part of the business of the present paper to deal with these. Enough has been said to show that, if its affairs are properly administered by those who exist for that sole purpose, it is fitted to meet most of the imperative demands of modern life. If the same wisdom is shown in perfecting and fostering it in the future as has been displayed in founding and organizing it in the past, Canadians will be able to stand forth amongst the foremost nations of the world as an educated people.

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EDUCATION is one of the greatest objects of the age, and most important, not only because it is the noblest in itself, but because it is the means of complete development of our common nature, and a due discharge of the duties of life in their bearing on the future destiny of the race. The fruits of education are so attractive that we are often tempted to force them prematurely, without sufficient tillage, and thus lose sight of the true object of education, which consists much more in the development of the intellect than in the mere putting in of superficial knowledge, and cramming. Hence our necessity of grounding in the rudiments of knowledge, and

thoroughness in all that is done. Knowledge thus got never dies; knowledge got otherwise never lives. Again, it has struck me whether there is not a fear of our making, through our very facilities of teaching, the acquisition of knowledge too easy for the pupils. For it is from the meeting and mastering of difficulties that intellectual strength grows and increases, just as physical exercise develops physical strength. May I venture to suggest the importance of giving special attention to the subject of Domestic Economy, which properly lies at the root of the highest life of every true woman.—*H. R. H. the Princess Louise to the Ladies' Educational Association of Montreal.*

## CUI BONO?

BY J. E. WELLS, M.A., PRINCIPAL, CANADIAN LITERARY INSTITUTE,  
WOODSTOCK.

WHAT earnest teacher, in these degenerate days, has not from time to time had his righteous soul vexed with this impertinent little query? It meets him at every turn in the higher walks of his profession, coming often like a cold douche upon the kindling fires of professional enthusiasm. Blandly put by cautious parents, sceptically repeated by matter-of-fact trustees, perpetually reiterated by grumbling rate-payers, flung out, *sotto voce*, in the midst of a charming demonstration or a profound disquisition, by some phlegmatic pupil, how often has it well nigh driven him to abandon his chosen work in disgust, and leave the education of the young in the hands of hirelings, willing to degrade the noble profession of mind-culture to the low level of a "Bread-and-Butter Science." True, the question in itself is well enough. It is not only pregnant with profound meaning, but venerable by reason of classical associations. Alas, that in the ignoble rush and crush of this feverish century it should be no longer uttered in the dignified accents of a philosophy seeking only to employ the noblest powers for high and immortal uses, or even in the anguished tones of a crushed and bleeding spirit, crying out for light from the border-land of despair, but rather in the piping notes of the Mammon worshipper, or with the sneering inflection of the Positivist.

But however the teacher who holds lofty views in respect to the dignity of his calling may, in his sublimer

moods, be disposed to quarrel with the narrow utilitarianism which seems to him so incompatible with the highest educational work, he is eventually forced to admit that the question, WHAT GOOD? is notwithstanding a perfectly natural and proper one. Utility is after all at the very root of all culture, even the highest. Education can have no other *raison d'être*. All educators are, of necessity, utilitarians, so far as their professional work is concerned. The only ground of difference, a very broad one we admit, is in the last analysis as to the kind of utility they have in view. When we are once agreed in respect to the true nature of education, or in other words the one ultimate aim to be kept in view in all educational work, there would seem to be scarcely room left for very wide differences of opinion in respect to methods.

It is not the object of this paper to discuss the vexed question of the true end of higher education, so much as to inquire whether there may not be found a harmonizing principle underlying the various and apparently conflicting theories. May it not be that they are not only not contradictory, but when broadly and wisely interpreted, not even necessarily incompatible? The highest goal of all progress, social, political, or religious, is unity in diversity. May not such an unity be the best attainable, nay the best possible, outcome of all the apparently conflicting educational theories of the present day?

No true worker in any sphere can be without a well considered theory as the guiding principle of his industry. And certainly no teacher who appreciates the dignity of his calling, and who would do good and honest and fruitful work, can afford to be without one. First principles of some kind he must have. And these must be in some sense the outcome of his own thinking; he must have asked himself and have found at least a provisional answer, and one for which he is able to give a reason to another asker, such questions as the following:

Is the true aim of my profession to aid my pupils in acquiring knowledge?

Or is it to give preliminary preparation for some specific business or profession?

Or is it to develop mind-force, to aid in the attainment of a certain amount of disciplined brain-power irrespective altogether of any specific work in which that power may afterwards be made available?

Or is it something better and nobler than all these, to enlarge and strengthen all the powers of the soul for their own sake, not for that of any ulterior end? In other words, is the man to be regarded, with Sir William Hamilton, as "an end unto himself?" Are his own perfection and happiness "to constitute the goal of his activity to which he tends and ought to tend," and to which it is the true work of education to aid him to tend?

It is manifest that the efforts of the teacher are likely to be modified and his methods largely shaped in accordance with the solution he finds to such questions as the above. He who regards the knowledge gained as the essential thing will be naturally, though, as may presently appear, not logically, impelled to aim above everything "to cram in facts." He who is willing to accept it as his work to carry his pupil over one stage of preparation for some busi-

ness or professional life-work, will be in danger of finding himself so "cabined, cribbed, confined" by the narrowness of his own aims and those of his pupil as to be utterly unable to do effectively even that comparatively petty task. The teacher, again, who regards himself as a master of the science of mental gymnastics, pure and simple, who makes it his one great end to develop what he regards as intellectual power, will be no less liable to error in another direction. He will be in danger of committing the great, and, in these days, common mistake in regard to both physical and mental culture, of over-training. Sheer strength is not the highest or most admirable quality in either body or mind. If gained at the sacrifice of activity, suppleness, and versatility, it may produce only an awkward, cumbrous giant. In the intellectual no less than in the physical sphere, the words of Horace are applicable: "Force without judgment sinks under its own weight." Most observers have probably come sometimes into contact with minds in which memory, reflection, the logical faculty, and the power of intense and prolonged attention have been so cultivated that the features of any subject of inquiry related to these faculties are seized with the grasp of a cyclops, and yet there is an utter lack of all freshness, vivacity, and elasticity. There is no glorifying of common things by the shaping power of the imagination, or by the bright and varied hues thrown over them by a lively fancy; and there is no eye or ear for the beauties and harmonies that lie beyond and above the commonplace and reveal their presence only to a keener sensibility. No matter how delicious the viands set before such a mind, the sweet juices are lost and the flavour destroyed by the rough handling to which they are subjected before reaching the palate.

Nature, it is true, has much to do with the turning out of such venerable dryasdusts, but her hand is often forced and the finest effects of her better designs marred and lost, as the result of a one-sided and mistaken application of the theory of education in question.

Nor is even the adoption of the well-sounding and attractive Hamiltonian principle without its dangers. The hobby, unless skilfully managed, is pretty sure to carry its rider far from the beaten tracks of practical every-day life into remote by-paths and solitary places. To regard each individual man as an end unto himself, and to aim at developing his mental faculties for his own sake and apart from all relations to his fellows, is probably to misunderstand the philosopher's reasoning, and is certainly to fall into an error which is easily made, and which possesses special attractions for a certain class of minds. To develop, in their due proportion and to their fullest extent, all the faculties of the inner man, is certainly a noble aim for the educationist. But men are related and mutually dependent beings, and no theory of education can be a correct one which does not constantly recognize this relationship and dependence, and modify its aims accordingly. Else the legitimate product of the system is the harmless but practically useless visionary.

But are these one-sided and imperfect results the legitimate and necessary products of the respective theories we have been considering? Let us see whether after all they may not be shown to be logically related and bound together, when rightly understood, by one broad, unifying principle underlying them all.

What for instance is the character of knowledge which is the ultimate goal set up by the first theory? To make it in any sense synonymous with

the learning and remembering of facts would be a narrow and suicidal view, such as could be held by no intelligent teacher. Facts are but the raw material of knowledge. Knowledge is the ability to explain facts, to refer them to underlying causes, or to arrange them in harmony with uniform and comprehensive laws. The true knowledge which is the food of the mind, that which it craves with an earnestness which refuses to be denied, is the knowledge of principles and laws and causes. And were it not so, were the possession of the largest possible stock of items the highest knowledge and the best education, it would still follow that the only successful method of attaining this would be the scientific method. The countless items gathered from all the various fields open to observation and experience must be culled and classified and bound into bundles on scientific principles. Else the available space of the mental storehouse must become quickly overcrowded with the heterogeneous and disorderly mass. But classification and generalization involve the exercise of the highest mental faculties. To use these faculties as they must be used, in order to lay broad and deep the foundations of real knowledge, is to develop brain-power in a manner that can hardly fail to satisfy the demands of the most extreme adherents of the discipline theory.

Take again the narrowest and least satisfactory of all educational aims,—we can hardly dignify it with the name of "theory,"—that which regards simply the necessities of some special business or profession. Interpreted in its lowest sense, which makes pecuniary success the test of fitness, this view of the functions of the educator is too low and small to be worth defending. And yet, even from this point of view, how many disastrous "failures" and "financial crises"

might have been escaped, had the preparatory training of the operators been broader and higher. A thorough grounding in the principles of economic science, a better insight into the nature of social and political and moral duties and obligations, and the enlargement of sympathy and of public spirit, by a wider range of reading and study, would often go far to counteract that exclusive subjection to one dominant idea and aim, which hurries so many on the headlong race to financial and moral ruin.

But if we take a higher view of what constitutes preparation for any specific life-work, if we embrace in our idea of fitness the ability to appreciate and to discharge all the obligations to individuals, to society, and to the state, which arise out of the relations which the contemplated position involves, we find ourselves obliged to include both general culture and general knowledge to an extent limited only by the dimensions those obligations assume to our individual eyes. I am, of course, far from attributing this largeness of view to the majority of those teachers who, consciously or unconsciously, act upon the theory under discussion, in the discharge of their professional duties. That they ought to interpret their theory thus widely, in order to make it worthy of the dignity of their profession, and to fulfil the obligations to society and the state arising out of their own relations to each, seems clear to the most commonplace thinking. But certainly, it must be admitted, that only by virtue of so broad an interpretation can this special view of the functions of the educator be brought fully within the scope of the common principle I am trying to apply.

It would occupy too much space, and is probably unnecessary to go on and try to show how each of the other educational theories referred to can be brought within the range of the

same unifying process. The course of thought will readily suggest itself as I proceed to show that all these theories, however apparently diverse in themselves, are forced in practice to adapt themselves to one and the same method. There is practically but one method in education. The real work must in every case be performed by the pupil himself. All that the teacher can do is to prescribe the course and aid the student in his efforts to follow it. To this, all will assent. Is the intelligent teacher's aim to inform the mind of his pupil with useful knowledge? He can but place the means of acquiring that knowledge within easy reach and say to him, "I cannot give you this knowledge. It can be made yours only by your own toil. Exert yourself to grasp it. Put forth your best efforts, exercise all your mental powers, patiently, energetically, perseveringly, and you will gain the prize; not otherwise." Is his aim to fit his pupil for some professional, or other work? Still is he forced to say "I can give you no preparation or fitness. I can but show you how to acquire it. The rest must be your own. Nature has given you the conditions of success in your untrained powers. Voluntary and prolonged exertion of these powers in the direction I point out, is the only possible means whereby you can reach the end you have in view." The same train of remark obviously applies with, if possible, increased force to either of the other theories under consideration. The two conditions of mental, as of physical, strength and growth, are food and exercise. And the food can be taken and assimilated, the exercise performed with vigour and effect, by no one but the individual to be benefited himself. It matters not whether the aim be the narrowest and most selfish, or the broadest and loftiest, imaginable. The humblest, as well as the highest faculties can be brought

up to their utmost, or to any desired, pitch of development, whether for the noblest or the most ignoble uses, only by dint of the voluntary, and continuous exercise of those very faculties, in the discharge of their own proper functions.

This course of remark is too trite and too obvious to need the support of argument. *Cui Bono?* Whither does it lead? To this one important point that *there is, after all, but one method in Education.* This method all are obliged to use and in all cases. For practical purposes, then, it is scarcely necessary to discuss, much less to quarrel, about abstract theories.

The reader who assents to the train of thought up to this point will readily admit that the great practical questions in education, for utilitarians of all classes, are resolvable into these two:—What subjects and courses of study are best adapted to supply the mental needs, or to strengthen and develop the mental faculties, of the particular student?

What means and motives can the requisite faithfulness, and thoroughness on the part of the pupil, in doing the work which he must do for himself, be best secured?

The question of courses of study is a large and complicated one, far too large and complicated to be discussed in the present paper. This, however, can hardly be too strongly insisted upon, that for any and all educational purposes a broad and comprehensive range is indispensable to the highest success. The tendency to one-sidedness is one of the chief dangers to which our Collegiate systems are just now exposed. Whether for knowledge, or culture, or character, the too exclusive pursuit of special lines of study cannot but be cramping and harmful. Those essayists who from time to time contend, often in a style marked in every sentence with the indefinable precision

and polish which are one of the first fruits of classical studies, that the time spent at College in reading a few of the masterpieces of the ancient orators, poet- and historians in their own inimitable languages, is wasted, seem no less short sighted than ungrateful. To say nothing of the disciplinary value of a study which in a manner compels the student to master the best thoughts and closest arguments of intellects well nigh peerless, and to say nothing of the intrinsic value of the classical writings as sources of knowledge of the past, both directly in themselves and indirectly through the agency of comparative philology, so long as we are dependent upon language for the expression and preservation of our ideas, and so long as language and thought continue to act and react upon each other, clear thinking alone producing precise expression and the means of precise expression being indispensable to clear thinking, so long shall we be unable to dispense with the study of the almost perfect models afforded us in the Greek and Roman classics.

Again, to illustrate the same point from the positive instead of the negative side. Nothing would seem much easier than to demonstrate the utter insufficiency of any one study, or class of studies, to accomplish the end which any worthy theory of education has in view. Take, for instance, Natural Science, which seems more in favour just now with an influential class of thinkers than any other. As an invaluable stimulator of thought, a fosterer of high intelligence and a source of much useful knowledge, and as an indispensable means of cultivating a very important class of faculties, Science unquestionably merits a place in the front rank of educational agencies. It may well be doubted whether it has even yet received the recognition and appreciation in our High-Schools, Collegiate Institutes, and Universities, which

a wiser estimate of its true value would give it. But when we are asked to accept it as "the be all and the end all" of liberal culture, we may well demur, even though the demand be backed by the authoritative name of Herbert Spencer. True, the demand is shorn of half its unreasonableness when, as in the work in which this claim is made, and which was reviewed by a writer in the last number of this Magazine, the domain of Science is so extended as to take in by far the largest segment of the whole circle of liberal studies. When Science is lauded by such an author as the mother of all valuable knowledge and all healthful discipline, we are not surprised to find that the Science in question includes not only such studies as Geology, Physiology, Chemistry, &c., which are usually classed under that head, but also Poetry and general Literature, the Fine Arts, Morality, and Religion. Of course the word is etymologically the equivalent of knowledge. But when taken in this sense, the statement that Science is the knowledge which is of most worth becomes a mere truism, almost an identical proposition, and is scarcely worth uttering. In fact we are unable to see how the study of History, or Language, or pure Mathematics, or Metaphysics, or of any thing else within the scope of the human intellect can be omitted. But take the word Science in its usual restricted sense, and it would be easy to show that, valuable as it admittedly is in its own sphere, it utterly fails to meet the broad and high demands of either the knowledge or the discipline theory. In regard to the former, it undoubtedly reveals very much that is of great practical utility and proves itself in a thousand ways the benefactor of the race. But when we turn to it for the higher and real knowledge which the human soul craves with an insatiable hunger,

when we ask for real explanation, for true causes, the oracle is dumb. We ask bread, we receive a stone. We long to enter the adytum of the great temple of Nature and gain some insight into the profound mysteries in which being, and life, and thought, and feeling are enshrouded, and the mocking priestess points us to the outer courts, where vast masses of the phenomena which awaken this longing are stacked in orderly and classified array. We pass over our brainful of mysteries for explanation and we receive back the same mysteries, only now in neat packages and homogeneous bundles, carefully ticketed and labelled with long names; as if the intellect hungry for explanation could be put off with mere classification, or cheated into accepting poor little "hows" as satisfactory answers to its "whys" and "whences." True it will be vehemently alleged that our "whys" and "whences" are treated by our great mother but as idle impertinences which she never condescends to notice. But whether this be so or not, it is as clearly beyond the sphere of Science to determine, as it is beyond her power to explain, on any principle she can consistently recognize, the origin of a great demand in the soul for which no supply is found in the environment. Thus in any case Science is unable either to satisfy the higher claims of the intellect in respect to knowledge, or to prove that it cannot be satisfied.

Want of space forbids the attempt to show in like manner that Science, in its narrower acceptance, fails to afford the means of high and complete mental discipline. Suffice it to say that this can be done by no course of study which fails, in obedience to the deepest sense of the motto "know thyself," to turn the mental gaze inward and thence upward. Those who have been taught carefully to study the phenomena of the inner as well

as of the outer world, know full well that there are more strange things in heaven and earth, and the soul of man, than are dreamed of in the one-sided philosophy of the positivist. And no mind can attain the symmetry and equipoise of thorough culture, under a system which ignores the needs of any large class of its capacities or powers.

To sum up in a word, it is more than questionable whether the demands of higher education can be adequately met by any curriculum of study too narrow to embrace the fundamentals of all the great departments recognized in our best Universities. Each of these departments is to a great extent *sui generis*, in regard to both the knowledge and the discipline it imparts. From any high point of view it is certainly better, it certainly makes an abler, broader, and wiser man to know something of everything than everything of something. The knowledge must, of course, be real, not superficial. The man of one idea, or one set of ideas, is not simply a bore. He is by reason of arrested and one-sided development a mental monstrosity. Whatever his acquisitions in his specialty, cannot fairly be called either learned or cultivated. Broad and ever-widening as are the fields of knowledge within reach of human footsteps, it is still possible, within the limits of a reasonable Collegiate course, to gain so much knowledge of their general outlines and salient features, that one can go forth prepared to some extent to comprehend and to sympathize with the views and aims, and modes of thinking of his fellows, in all their varied pursuits. Nothing less should satisfy the ambition of the true educator.

But all this, as we have seen, involves toil, hard, earnest, prolonged toil, on the part of the learner. This rugged path is Nature's own highway. She provides no easy or royal road to

knowledge and mental power, and she accepts no proxies. How then shall the young mind, not yet so inured to toil as to find it pleasure, and not fully prepared to appreciate the reward which is still in the dim distance, be spurred on in the race? Some strong and constant force is evidently necessary. Where is this force to be found?

Many will be ready to answer "Nature has provided it in the irresistible tendency to activity and in the insatiable curiosity, the strong love of knowledge, she has implanted in the mind. These are undoubtedly the best of all motives to steady and stimulate the brain-worker at all stages of progress. The most skilful teacher is he who knows best how to take hold of these, and afford full scope for their operation. What true educator of children does not delight to study the play of soul—light and shade over the face of the child student, as he struggles for the solution of some tough problem, or the mastery of some uncomprehended thought. How delightful to watch the brow darken and contract, and the eye grow dim with unrewarded effort, and then to see the shade flit off and the flash and the gleam which tell of conquest and triumph succeed! There can, I think, be little doubt that were these forces intelligently comprehended and used from infancy upwards, there would in the great majority of cases be needed no other incentive to mental effort at any period than the delight of the mental exercise itself, the sense of growing power and knowledge, and the joy of hard won victory. But the great difficulty in the majority of cases is, that the faculties with which the teacher has to deal have lain dormant until their elasticity is gone, and exercise has become difficult and painful, while the innate love of knowledge has become feeble and torpid through want of its proper sustenance; and,

worse than all, very often been turned to gall by the influence of bitter associations. But I must not prolong this paper by discussing the thousand and one ways in which the skilful educator will in these cases bring up his auxiliary forces by enlisting self-love, stimulating ambition, provoking emulation, rewarding success. One broad principle may safely be laid down. The true teacher, who brings both intellect and heart to his work, I care not whether he be found in the parish school house or the College lecture room, will make it his aim to see that every learner has real mental work to do, as difficult as he is capable of doing well, and that he has a motive for doing that work, a motive that must be first lawful and right in itself; secondly, strong enough, if possible, to be effective, and thirdly, the very highest and best in kind, which can, under the conditions, be brought to bear.

An important question, closely connected with this phase of the subject, is that which was discussed by Mr. Purslow in the last number of this Magazine, under the heading "The Effect of Examinations on School Culture." With much that was urged in that article every teacher must agree. I may perhaps venture, without seeming to be controversial, to question whether the writer of that article has traced the glaring and admitted evils of which he treats, to their true source. If, as has been shown, there can be but one method in education, if all real educational work must be done by the pupil himself in the voluntary exertion of his own powers, and if the teacher's taste is simply to mark out the course and guide and urge on the learners in it, it follows as a corollary that the judicious teacher will devise and constantly apply efficient tests, to enable him to know whether the student's work is being faithfully and intelligently performed. To neg-

lect this is to leave a very important part of a teacher's or professor's work undone. This manifestly means examinations of some kind, oral or written. But all teachers will agree that no oral test can be compared, in respect to precision and reliability, with a written one. The pen is really the great instrument of education. It compels clearness and precision, it holds up to ridicule the meaningless farrago of words, which, if well-sounding, may often cheat even a well-practised ear, with their semblance of sense. The examination is then the teacher's great and most reliable means of testing the reality of his pupil's progress.

Again, if, as all will probably admit, it is desirable and wise, in any well-considered system of education to have landmarks, at different stages of progress, or, in other words, if it is desirable and necessary to prescribe certain mental qualifications and attainments, as the conditions of admission to certain offices, or honours, it follows that here again the examination affords the only available test. That it is absolutely reliable no one will claim. Enough that it is indispensable, in the absence of some better test which is yet to be discovered.

What, now, are the great evils connected with these necessary tests of progress? They promote cramming rather than culture. But what is cramming? Is it necessarily and intrinsically bad? That depends upon the kind. If to cram, is to stuff the memory with a mass of unconnected and indigested facts, if it is to let "committing" supersede thinking and to substitute rote for reason, then cramming is doubtless bad, irredeemably bad. If, on the other hand, to cram is to require the student to review rapidly the text book or course of lectures which he has carefully followed in detail, so as now to grasp and bind together in one compact and symmetrical whole the fundamental

facts and principles; or if it is to require him occasionally to summon all his intellectual forces for one great and not unduly prolonged effort, an effort adapted to strengthen the will, and to inure every faculty to endurance and subordination, then cramming is not necessarily bad. His after life, if it is worth living, will often put him thus upon his mettle.

The cramming that is "evil, only evil, and that continually," and that is therefore to be deprecated, appears to me to be the result of two causes, neither of which is a necessary adjunct of Examinations.

The first of these is to be found in the character of the questions put. The preparation of Examination questions is a work requiring the broadest culture and the soundest judgment. The examiner should have no pet questions, no favourite hobbies and, may I not add, no petty vanity capable of the faintest gratification from "catching" or puzzling the student. It is, I hold, quite within the power of the Examiner to so frame his questions as utterly to discourage any cramming in the bad sense, by rendering it useless and hopeless. It is in his power to beget the conviction that the student who has mastered the subject by grasping and making his own its broad truths and underlying principles, cannot fail, and no other can succeed. It would be easy, but I fear presumptuous, to select illustrations, both of success and of failure, in this fundamental matter, from the published examination papers of our public institutions, from the University downward. It is pleasing to note a gradual improvement in the character of the papers set in various quarters, though it is worthy of careful inquiry, whether there may not still be much room for improvement. The admirable expedient of varying, as far as practicable, authors and subjects from year to year, cannot

fail to be very helpful in the right direction.

The other and still more fruitful source of bad cramming is to be found in the insufficiency of the time usually allotted for preparation for the examinations at the various stages. This has its origin to a large extent in circumstances inseparable from the conditions of life in a comparatively new and by no means wealthy country. Many, whose earlier years have been mainly and necessarily devoted to manual toil, set to work after reaching manhood or womanhood, to fit themselves for professional pursuits, or to gratify the thirst for knowledge which has hitherto been as a consuming fire in their bones. Their ambition and resolve, and frequently their ardour and perseverance, are beyond all praise. But they evidently set out in the race under very unfavourable conditions for rapid progress, and, too often, feel themselves compelled by want of both time and means to cover the course in the shortest possible space. The policy is no doubt unwise, as even in these cases one, or at most two additional years, would generally make all the difference between a hasty half-superficial and wholly unsatisfactory training, accompanied too often with permanent injury to health, and a thorough, deliberate digestive mastery of the subjects undertaken, with precious margins for general reading and culture.

But the evil of undue haste is by no means confined to self-dependent students of mature years. The same feverish rush is no less painfully manifest in the case of the great majority of the younger pupils in our High-Schools, Collegiate Institutes, and Colleges, even when both time and means are ample for a deliberate course. This is due largely to the injudicious impatience of thoughtless parents, and largely to the restless spirit of the age and country infecting

the youth themselves. But I venture to ask whether it may not be still more largely due to the system of *payment by results*, in a manner compelling the teacher to "pass" the largest possible number of pupils, irrespective of other and better considerations. I must not occupy space with a discussion of the merits or demerits of this system in other respects. In this direction its effects upon health, upon enjoyment, upon true culture, are too often to be deplored.

If there is any truth or value in the foregoing hints this moral at least may be derived, that it is the duty as well as the interest of Examiners and Teachers of all grades, to aid by improved methods, by precept, by influence, and by securing where needed, corrected legislation in checking the evil tendencies complained of, and in perfecting the Educational System of Canada, until it shall become a model for all young nations, and a fruitful source of true culture and sound learning.

I NEED hardly assure you of the very great interest with which I take this opportunity of learning by conversation with you the manner and means by which you undertake the arduous, responsible, and important labours devolving on the teachers and students of a great Normal school. You observe that I come from a country long famous for the heed given to the teaching of the whole youth of the land, and as you are aware the parish schools of Scotland have been the instruments by which training has been given to men who have in every part of the world left their mark, and been an honour to the system founded of old by the wisdom of its Parliament. An equal love of perfecting to the utmost the educational facilities given to the people has led to the introduction in that kingdom of the most stringent measures, and of a heavy local taxation which is ungrudgingly and cheerfully borne to ensure that no child shall go untaught, and that none shall be taught anywhere but in a good building where he or she shall have as much pure air to refresh the body as sound instruction for the mind. The position given to the teacher has always been a high one. Indeed, I have often heard him called the most powerful person in the parish. And, gentle-

men, it is right that those who fill the responsible positions to which the students here present aspire should have all the authority which a well recognized position can give, for they are to take their places in the world as the commissioners of the army of civilization, and the peaceable and honourable leaders of the force which by industry, culture, learning and training is to advance the intellectual progress and the material prosperity of their country. You will have to deal with a long succession of men who come here to learn how to teach, and these gentlemen, will see as they pass under their instruction a yet larger number who, in time, will represent the manhood and power of our nation upon this continent. I shall only be able to watch your progress and theirs for a brief period, but I hope I shall be able to show the interest I take in your success, and I shall in after years not cease to follow with the fullest and warmest sympathy, the progress of the great cause of education, and the effect produced by your efforts and labours on the welfare and greatness of the Canadian Dominion."—*His Excellency the Governor General to the Students of the Normal School, Ottawa.*

## CONTRIBUTORS' DEPARTMENT.

THE NECESSARY LIMITS OF  
CONTROVERSY.

WE have received a temperate and well conceived letter, signed "Canadian Catholic," on the subject of the "Reply of the Nineteenth Century," a paper which appeared in our last number. The writer takes objection to the course we pursued in inserting this article, while at the same time, by the footnote attached to it, we "all but precluded response." Besides this, he alleges that the matter contained in that article is calculated to affect the many Catholics who take an interest in educational matters; and this being so, we feel it a duty which we owe to our correspondent and to our readers generally, to explain the position we take in the matter.

In the first place, it is not within our province to meddle with questions of doctrine or theology. Questions of morals may be occasionally treated of, with due caution, even in a non-sectarian periodical; for the same system of moral teaching underlies almost all sects, and the differences that do exist are rather in the methods and degrees of enforcing moral discipline, than in the root-principles from which that discipline is evolved. The real difficulty does not come in until we approach the battle-field of history. It is in history that all parties seek for weapons with which to support their own cause, and to defeat their opponents. It is to the interest of both parties alike, that every possible light should be thrown upon past events, and that no discussion on the subject should be stopped without valid reasons. Moreover, when we approach the consideration of any historical event, we must remind a "Canadian Catholic," that religious party-lines cease to be drawn with the rigour and precision that obtains when polemics are on the *tapis*. There are several

well-known doctrines, to deny or to attack which, in a non-sectarian magazine, would be an outrage upon every member of the Church that held those doctrines.

But to pronounce an opinion upon a matter of history, such as the gradual decadence of the temporal power of the See of Rome, does not necessarily offend every Catholic, neither does it follow that, because a man is offended thereby, he must be a Catholic.

On such a question parties divide, as it were, in a different plane of cleavage; political and national sympathies enter largely into the elements that form an opinion, and many a staunch Protestant would prefer to see the Papal States intact, whilst as good Catholics have rejoiced to see His Holiness confined to the exercise of a vast spiritual power, and have foretold, from that very circumstance, an increase of his influence and authority over the world at large.

It is in this distinction that we consider the *nodus* of the difficulty must be sought and unravelled. Any topic, the mooted of which is offensive, *per se*, to a man who belongs to any religious body, simply on account of his belonging to that body, should not be tolerated in a magazine of this nature. Any topic as to which men of all shades of belief may rank themselves on either side, should be held permissible. And we cannot conceal from ourselves the fact, that such topics *do* exist, and that the liveliest interest is felt in them. To say that such "burning-topics" as the past history of education, which was for many years identical with the history of our correspondent's Church, are not to be handled at all in our pages, would be to debar our readers from information which they will naturally expect to receive from us. Details of bygone historical events, especially of an educational or social

nature, will, we hope, form the text upon which our correspondents, of all shades of opinion, will hereafter contribute many a pleasant paper to our pages. To prevent the magazine from falling into too narrow a groove, by merely treating of professional educational matters, some such papers are imperatively needed; and we hope a "Canadian Catholic" will not scruple to take us at our word, and test our impartiality by sending us a contribution on a cognate subject.

We have used the expression "burning topic," and that will be in itself sufficient to remind our contributors that such subjects must be handled with caution. The article of F. R., having been written in reply to an aggressive series of papers, no doubt shows somewhat of that eagerness to defeat an adversary which is inseparable from controversy. It is for this very reason that we desire to avoid controversy, and should prefer it if papers of this description were entirely independent of each other, and not written with the view of replying to or confuting a previous writer.

Our explanation has taken longer than we anticipated, but it is as well, at the outset, to define clearly the position which we intend to take, in order to avoid misapprehensions in the future.—EDITOR, C. E. M.

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## THE SCHOOL OF PRACTICAL SCIENCE.

THE prospectus for the second session of the School of Practical Science, to begin on the 1st of October next, has just been issued. The lectures are to be open to both "regular" and "occasional" students. Regular students are those who purpose to take a three years' course for the Diploma of the School in Engineering, Chemistry, or Assaying and Mining Geology. The fees are \$30 for the first session; \$40 for the second; and \$50 for the third. Occasional students are admitted to any of the courses of instruction on payment of fees varying from \$10 to \$50 per course. Students taking a practical course can attend the lectures on

the same subject free of charge. The courses open to occasional students are: *Engineering*, including Drawing, Surveying and Levelling, Geodesy and Practical Astronomy, Applied Mechanics, and the Principles of Mechanism; *Chemistry*, both General and Applied, including practical instruction in the Preparation of Chemical Compounds, Qualitative Analysis, Quantitative Analysis, Elementary Practical Chemistry, Physiological Chemistry, and Chemistry in relation to Hygiene and Forensic Medicine; *Mineralogy and Geology*, including practical courses in Blowpipe Practice, Blowpipe Analysis and Determinative Mineralogy, Assaying, and Mining Geology; *Biology*, including practical courses in Biology, Vertebrate Anatomy, and Animal Histology; and *Mathematics and Natural Philosophy*. The Physical Laboratory will be ready for the admission of students at the commencement of the session of 1879-80, and will be furnished with a large collection of instruments of precision for testing the laws of Dynamics, Sound, Light, and Heat.

There is, then, every prospect that at the commencement of the session in October next, the Province will at last be in possession of an institution where the latest results of modern science can be taught in a manner worthy of the importance of the subject. This is a matter for congratulation, and it is to be hoped that the number of students will be such as to make the institution a thorough practical success. In the meantime, and with a view to further that desirable object, I would venture to make a suggestion. With all respect to the able Principal of the School, it seems to me that a mistake has been made in doing away with the evening classes which proved so attractive when the School was located in the Mechanics' Institute. It is the custom, I believe, to have evening classes in similar institutions in England, such as the London School of Mines. Presumably the School in this city has been established for the convenience, not of its Professors, but of the public, with whose money it has been built and equipped. It will hardly be denied, then, that it should be so conducted as to be of the widest possible

usefulness; nor will it be denied, I think, that its usefulness will be greatly increased by having evening classes in addition to those held during the day. Many persons whose time is fully occupied during the day, would be glad to pay even larger fees than those charged to day-scholars, in order to get a sound practical knowledge of one or more branches of science by attending classes two or three evenings a week. The fees could form an addition to the salary of the Professors who gave the additional time and labour. It would be easy to arrange the proposed classes so as not to be burdensome on any one of the Professors. As an experiment to begin with, the classes might be held on only the first three nights of the week. On Monday evening there could be a class in Physics; on Tuesday one in Chemistry; and on Wednesday one in Biology, with practical courses in each. Two hours might be profitably spent on each evening,—one with the lectures, and the other with the practical courses. In this way no Professor would be called upon to give up more of his time than one night a week. Surely there ought not to be any difficulty in carrying out this suggestion.

J.

### EXAMINATIONS IN GEOMETRY.

MR. EDITOR, I write for information. Has there been any agreement among Examiners, or rule established by those in authority, to govern students in *writing* and *demonstrating* propositions in Geometry, at our various examinations? I have made diligent enquiries in many directions but found little satisfaction. Some would have every word written in full, even to *Quod erat demonstrandum*; while others give a list of symbols, saying, these you shall use and no more; but why these and no more does not appear. I am informed that no examination passes without a discussion among examiners upon this question. The general rule seems to be, "use no algebraic symbols;" but who is to draw the line and tell us what symbols are algebraic and what geometric? May we go as far as Hamblin Smith goes? If his mode

is accepted in examinations for certificates will it also be accepted in Toronto University?

Another, and yet more important question, arises in regard to demonstrations. Must Euclid be followed in all cases? or may we follow Hamblin Smith? If we deviate as far from Euclid as Smith, may we not go yet further and write *any* logical demonstration? The importance of the first question will be evident from a comparison of the length of the following:—

*Euclid*—Let the straight line  $E F$ , which falls upon the two straight lines  $A B$ ,  $C D$ , make the exterior angle  $E G B$  equal to the interior and opposite angle  $G H D$ , upon the same side of the line  $E F$ ; or make the two interior angles  $B G H$ ,  $G H D$ , on the same side together equal to two right angles. Then  $A B$  shall be parallel to  $C D$ .

Because the angle  $E G B$  is equal to the angle  $G H D$ , (Hyp), and the angle  $E G B$  is equal to the angle  $A G H$  (I—15), therefore the angle  $A G H$  is equal to the angle  $G H D$ ; (ax. 1) and they are alternate angles, therefore  $A B$  is parallel to  $C D$  (I—27.)

*H. S.* Let the st. line  $E F$ , falling on st. lines  $A B$ ,  $C D$ , make  $L E G B$  = corresponding  $L s G H D$ , or  $L s B G H$ ,  $G H D$  together = two rt.  $L s$ , then in either case,  $A B$  must be  $\parallel$  to  $C D$ .  $\therefore L E G B$  is given =  $L G H D$ , (Hyp) and  $L E G B$  is known to be =  $L A G H$ , (I. 15)  $\therefore L A G H = L G H D$ , and these are alternate  $L s$ ;  $\therefore A B$  is  $\parallel$  to  $C D$ . (I. 27.)

At a glance any one will see that at least one third of the time is saved by the last mode, a consideration of great importance in competitive examinations. The importance of the second question will appear from a comparison of the two methods of demonstrating the fifth proposition B. I., as in Pott's Euclid and Smith's Geometry. Hoping for light; and apologizing for all this space, yet thinking the questions worthy of it, I am, yours truly,

TEACHER.

[We would like to hear from Mathematical Masters on this subject, which is one, as our correspondent indicates, upon which there is a variety of opinion.—Math. Ed., C.E.M.]

## ARTS DEPARTMENT.

## EXAMINATION PAPERS AND SOLUTIONS.

[NOTE.—We publish the remaining papers set at the December Examinations for Second-class Teachers and Intermediate, with Solutions to the Arithmetic, Algebra, Euclid and Natural Philosophy papers. A number of selected questions in Algebra, kindly sent us by a correspondent, will be found in the department, the solutions to which will be given next month.—ARCH. MACMURCHY, MATH. EDITOR, C.E.M.]

## BOOK-KEEPING.

1. Define Bills Payable, Interest, Draft, Days of Grace.
2. What is a Trial Balance? When the Dr. and Cr. columns are equal are the Ledger accounts necessarily correct? Give reason for your answer.
3. Define Cash Account, Stock Account, Loss and Gain Account.
4. Give John Brown's Journal entries for the following:—May 1st, 1876. John Brown's Ledger shows the following Resources and Liabilities:—Real Estate, \$1,000; Mdse. on hand, \$600; Bank account shows balance to his credit, \$200; He holds a note against James Muir to the amount of \$250; John Smith's account shows a balance of \$600 in favour of John Smith. His Blotter contains the following entries:—  
2nd—Paid, for rent, \$120; and sold mdse., for cash, \$80. 3rd Sold George Wilson \$1,000 worth of mdse., and received in payment cheque on bank \$600, cash \$100, balance to remain on account. 4th—Bought mdse. from A. B., and gave him cheque on Bank in full for \$500. 5th—Paid John Smith cash, on account, \$450. 6th—Brown received George Wilson's note at 3 mos. for the balance of Wilson's account, and deposited the note in the Bank. 8th—Drew from the Bank, cash, \$800, with which bought mdse., \$200, lent A. Jones \$100 of it, and with balance bought a note against John Smith, face of note \$550.

5. Write out the cheque received from Wilson on the 3rd, and the note given by Wilson on the 6th, making the note negotiable.

6. Post the following accounts in the above (4)—Mdse., Cash, George Wilson.

## ALGEBRA.

The following questions in Algebra selected from various sources, will furnish good exercise to candidates for First Class Certificates and University Matriculation Honours. Solutions will be given in a future number.—W. J. ROBERTSON, B.A., *Coll. Inst., St. Catharines.*

1. If  $2a=y+z$ ,  $2b=z+x$ ,  $2c=x+y$ , find value of  $2a^2b^2+2b^2c^2+2a^2c^2-a^4-b^4-c^4$  in terms of  $x, y, z$ , and express  $(x+y+z)(xy+yz+zx) - xyz$  in terms of  $a, b, c$ .

2. Prove that  $(a^2+b^2+c^2)^3+2(bc+ca+ab)^3-3(a^2+b^2+c^2)(ab+bc+ca)^2=(a^3+b^3+c^3-3abc)^2$ .

3. If  $\frac{1}{b} + \frac{1}{c} = \frac{4}{a}$ , shew that  $(a+b-c)^3+2(b+c-a)^3+(c+a-b)^3=2(b+c)^3$ .

4. Find the numerical value of  $\frac{c}{b} \cdot \frac{\sqrt{a} + \sqrt{c}}{\sqrt{a} - \sqrt{c}}$  when  $a(b-c)^2 - c(b+c)^2 = 0$ .

5. If  $x+c$  be the H.C.M. of  $x^2+ax+b$ , and  $x^2+a_1x+b_1$  shew their L.C.M. will be  $x^3+(a+a_1-c)x^2+(aa_1-c^2)x+(a-c)(a_1-c)$ .

6. What value of  $y$  will make  $(2y^2+y)x^2 + (11y-z)x+4$  and  $2(y^3+y^2)x^3+(11y^2-2y)x^2+(y^2+5y)x+5y-1$  commensurable?

7. Shew that  $x^4+px^3+qx^2+rx-s^2$ , can be resolved into rational quadratic factors, if  $s^2 = \frac{r^2}{p^2-4q}$ .

8. If the equation  $x^2+px+q=0$ , have equal roots, shew that the equation  $ax^2+px+(a+b)x+q(a+2b)=0$ , has one of them, and find the other.

9. Eliminate  $x, y, z$ , from the equations

$$\left. \begin{aligned} x^2(y+z) &= a^3 \\ y^2(x+z) &= b^3 \\ z^2(x+y) &= c^3 \\ xyz &= abc \end{aligned} \right\}$$

10. Eliminate  $x$  between the equations

$$x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = m; \quad x^3 - \frac{1}{x^3} - 3\left(x - \frac{1}{x}\right) = n.$$

11. Shew that if  $x^2+py^2+qz^2$  is exactly divisible by  $x^2(ay+bz)x+abyz$ , then

$$\frac{p}{a^2} + \frac{q}{b^2} + 1 = 0.$$

12. If  $a, b, c$  are in Harmonic Progression. prove  $a^2+c^2 > 2b^2$ .

13. Sum to infinity  $1^2x+2^2x^2+3^2x^3+4^2x^4$ , and hence find the sum of

$$1^2 - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \dots$$

14. The difference between the  $(n-1)$ th and  $n$ th terms of an H.P. is  $\frac{1}{an^2+bn+c}$ , find the relation between  $a, b$  and  $c$ .

15. Shew that the sum of the products of  $n$  quantities  $c, c^2, c^3$ , etc., taken  $m$ , and  $m$  together is

$$c^{\frac{m(m+1)}{2}} \times \frac{(c^n-1)(c^{n-1}-1)\dots(c^{n-m+1}-1)}{(c-1)(c^2-1)\dots(c^m-1)}$$

16. There are  $(p+q)$  numbers,  $a, b, c$ , of which  $p$  are even and  $q$  odd. Shew that the sum of the products taken 3 and 3 to-

gether of the quantities  $(-1)^a, (-1)^b, (-1)^c$  is  $\frac{1}{2}$  of  $\{(q-p)^3 - 3(q^2-p^2) + 2(q-p)\}$

17. If  $(1+x)^n = 1 + A_1x + A_2x^2 + A_3x^3$  &c., and  $(1+x)^{-n} = 1 + B_1x + B_2x^2 + B_3x^3$  &c., shew that  $A_3 + A_2B_1 + A_1B_2 + B_3 = 0$ .

#### ARITHMETIC SOLUTIONS.—DEC. 1878.

1. Book-work. £7 7s. 7d.

2. Book-work. 121, 13728.

3. Book-work.  $224 \times \frac{1}{4} = 32$  lbs. of chicory;  $\therefore 192$  lbs. of coffee. Again,  $192 \times \frac{1}{6} = 32\frac{2}{3}$  lbs.;  $\therefore 38\frac{2}{3}$  lbs. —  $32 = 6\frac{2}{3}$  lbs. of chicory to be added.

4.  $5 \times 3\frac{3}{4} = 18\frac{3}{4}$  ft. in bottom;  $5 \times 2\frac{1}{2} \times 2 = 7\frac{1}{2}$  ft. in sides;  $3\frac{3}{4} \times 2\frac{1}{2} \times 2 = 18\frac{3}{4}$  ft. in ends;  $\therefore$  total area of inside  $44\frac{3}{4}$  ft. =  $5\frac{1}{4}$  yds. at 90c. a yd. = \$5 $\frac{1}{4}$ . Ans.

5. '0025168+; '341246+. For *contractea* method, see Robinson's or Brooke Smith's Arithmetic.

6. A note for \$730 drawn at 90 days at 8%, will be worth 90 days hence, \$744.40.

If discounted 45 days before maturity, its present value at 10% will be \$744.40 + \$7 $\frac{3}{4}$  or \$734 $\frac{4}{8}$ . Ans. (\$7 $\frac{3}{4}$  is P. W. of \$1 due 45 days hence @ 10%).

7. \$(52-4) = \$48 P. W.  $\therefore$  \$4 int. on \$48, or int.  $\frac{1}{4}$  or  $\frac{1}{2}$  of principal for 8 months. Again, \$(75-5) = \$70 P. W.  $\therefore$  \$5 int. on \$70 or  $\frac{5}{7}$  or  $\frac{1}{4}$  of principal for unknown time.  $\therefore$  time will be  $8 \times \frac{1}{4} = 2$  or  $6\frac{1}{2}$  months.

8.  $28c. \times \frac{115}{100} = 32\frac{1}{2}c.$  selling price of 1st kind to gain 15%;  $42c. \times \frac{120}{100} = 50\frac{2}{5}c.$  selling price of 2nd kind to gain 20%. But average price 35c.  $\therefore$  gain 1st kind  $(35 - 32\frac{1}{2}) = 2\frac{1}{2}c.$  a lb., and  $50\frac{2}{5} - 35 = 15\frac{2}{5}c.$  a lb. loss on 2nd kind. To gain 1c. we will have to take  $\frac{5}{4}$  lb. 1st.; and to lose 1c.  $\frac{5}{7}$  lb. of 2nd;  $\therefore$  mix in proportion of  $\frac{5}{4}$  of 1st to  $\frac{5}{7}$  of 2nd, or 11:2.

9.  $4 \times 3 \times \frac{3}{4} = 9$  c. ft. Again,  $2700 \times 3 \times 2\frac{1}{2} \times .004 \times \frac{1}{2} = 6\frac{3}{4}$  c. ft.  $\therefore$  loss  $(9 - 6\frac{3}{4})$  c. ft. =  $2\frac{1}{4}$  c. ft., or 25%. Ans.

ALGEBRA SOLUTIONS.

1. (b)  $(\frac{1}{2}x-y)^2 - (x-\frac{1}{2}y)^2$  is exactly divisible by  $(\frac{1}{2}x-y) - (x-\frac{1}{2}y)$  or  $-\frac{1}{2}(x+y)$ ;  $\therefore$  exactly divisible by  $x+y$ . Or, put  $x+y=0$ , write  $x$  for  $-y$  in the expression  $(\frac{1}{2}x-y)^2 - (x-\frac{1}{2}y)^2$  and the result is  $=0$   $\therefore x+y$  is a factor.

2. (a) Book-work.

3. (a).  $(a+b)^4 + (a-b)^4 - 2(a^2-b^2)^2 = \{(a+b)^2\}^2 + \{(a-b)^2\}^2 - 2(a+b)^2(a-b)^2 = \{(a+b)^2 - (a-b)^2\}^2 = 16a^2b^2$ .

(b).  $\{(a+c+b)(a+c-b)\} \{(a-c+b)(-a-c+b)\} = \{(a+c)^2 - b^2\} \{b^2 - (a-c)^2\} = \{(a^2+c^2+2ac-b^2)(b^2-a^2-c^2+2ac)\}$ . But  $c^2 = a^2 + b^2$ . Substituting and simplifying we get  $(2ac \times 2a^2)(2ac - 2a^2) = 4a^2c^2 - 4a^4$ . Substituting as above, the expression becomes  $4a^2(a^2+b^2) - 4a^4 = 4a^2b^2$ .

4. Book-work. (b).  $\frac{b}{8a}$ .

5. Let  $x$  equal rate per hour of "City,"  $y =$  rate per hour of "Rothsay."  $\frac{35}{x} + \frac{35}{y} = 5\frac{1}{2}(1)$

$\frac{42}{x} + \frac{42}{y-1} = 6\frac{1}{2}$ . Eliminate  $x$  by multiplication, resulting  $=n$  will be  $y(y-1) = 210$ , solving,  $y = 15$  or  $-14$ . Substitute positive value in (1) and  $x$  is found to be 12.

6. (a). Book-work. (b).  $4\sqrt{3}$ . (c).  $5\sqrt{7}$ .

(d).  $a^{\frac{3}{2}} - b^{\frac{3}{2}}$ . (e).  $x - x^{\frac{1}{2}}y^{\frac{1}{2}} + y$ .

7. (1).  $x = \frac{a}{3}$ ,  $y = \frac{a}{4}$ .

(2). After transposing add 28 to each side of the  $=n$  so as to get a quadratic in the quantity under the radical sign, a very common expedient. Solving in the usual way,  $x = 4$  or  $-9$ , or  $\frac{5}{2} \pm \sqrt{-51}$ .

8. Let  $a =$  middle number : then  $(x-1)(x)(x+1) = 45x$

$$x^2 - 1 = 48$$

$$x^2 = 49$$

$$x = \pm 7 \therefore \text{Nos. } 6, 7, 8, \text{ or } -8,$$

$$-7, -6.$$

9. (a).  $a(x-a)(x-b) = a \left\{ x^2 - (a+b)x + ab \right\}$ . But  $a+b = -\frac{b}{a}$  and  $ab = -\frac{c}{a}$

$\therefore a \left\{ x^2 - (a+b)x + ab \right\} = a \left\{ x^2 + \frac{b}{a}x - \frac{c}{a} \right\} = ax^2 + bx + c = 0$ . (See Theory of Quadratics.)

(b).  $(2a^2 - 2ab)x + ab - b^2 = 0 \therefore x = -\frac{b}{2a}$

-. But when roots are  $=l$   $b^2 = 4ac$  and roots of  $ax^2 + bx + c = 0$ , become each  $-\frac{b}{2a}$  (See Theory of Quadratics).

10.  $\frac{m}{x} = \frac{n}{y} = k \therefore m = kx, n = ky$ .

Substitute these values in  $\frac{m^2}{a^2} + \frac{n^2}{b^2}$ , and expression becomes  $\frac{k^2x^2}{a^2} + \frac{k^2y^2}{b^2} = k^2$

$\left( \frac{x^2}{a^2} + \frac{y^2}{b^2} \right) = k^2$ .

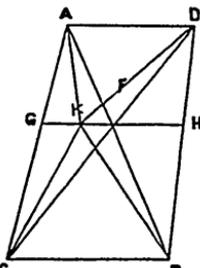
Also  $\frac{m^2 + n^2}{x^2 + y^2} = \frac{k^2 + k^2y^2}{n^2 + y^2} = k^2 \therefore$  equality is proved since each expression  $= k^2$ .

EUCLID SOLUTIONS.

2. (a)  $120^\circ$ . (b)  $72^\circ$ .

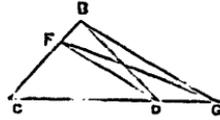
8. ABC being the given  $\Delta$ , draw a straight line through A parallel to BC. Bisect BC in D, draw DE at right angles to BC. Join BE, EC. BEC is the required  $\Delta$ .

9. Easily seen  $\Delta AFC = \Delta BFD$ . If F be not the middle point, let K be. Join KA, KC, KB, KD. Then  $\Delta AGK = \Delta DHK$ , also  $\Delta GKC = \Delta BKH$ .  $\therefore \Delta AKC = \Delta DKB$ . Now  $\Delta AKC$  is  $< \Delta AFC$  or  $\Delta DFB$ . Hence  $\Delta DKB$  is  $< \Delta DFB$ , which is absurd.  $\therefore K$



is not the middle point, and in same way any other point but F may be shewn not to be the middle point.  $\therefore$  F is the middle point.

10. Join DF, through B draw BG parallel to FD, meeting CD produced in G. Join FG. Then  $\triangle FCG$  is required  $\triangle c$ . For  $\triangle BFD = \triangle FDG$ , add  $\triangle FCD$  to each.  $\therefore$  &c.



11. Common deduction follows immediately after dropping  $a \perp r$  on the remaining side by Euc. Bk. II. Props. 12 and 13.

#### NATURAL PHILOSOPHY SOLUTIONS.

1. Constructing a  $\triangle$  whose sides are parallel to the three given forces (weight, reaction of plane and tension), we find that these sides are as  $\sqrt{3} : 1 : 1$ , i.e.,

$\frac{100}{\sqrt{3}} = \frac{T}{1} = \frac{R}{1}$  : from which T and R can be found.

2. The centre of gravity is at distances of  $4\frac{1}{2}$  and  $5\frac{1}{2}$  from the supports. Take moments about one of the supports, we have

$150 \times 4\frac{1}{2} = 10 \times P$ , or  $P = 67\frac{1}{2}$ ;  $\therefore$  the pressure on the other =  $82\frac{1}{2}$ .

3. If  $w$  be weight of plank and  $a$  and  $b$  distances of centre of gravity from bench, we have  $200b = a \times w$ .  $120(b+2) = (a-2)w$ .  $60(b+4) = (a-4)w$ , or  $w = 360$  lbs.

4. For force exerted by the horse in pounds we have  $\frac{1250 \times 18}{150} = 150$ .

5. Height of tube = 15 30 in., area of base of vessel = 15 9 sq. in.;  $\therefore$  pressure on bottom of vessel in ozs. =  $15 \frac{9 \times 30}{1728} \times 1000 = 156\frac{1}{4}$ .

weight of water = 15 pressure on table = 27 c. in. in tube + 27 c. in. in vessel;  $\therefore$  pressure on table in ozs. =  $\frac{54}{1728} \times 1000 = 31\frac{1}{4}$ .

6. Let  $x$  = height of atmosphere in ft.; pressure of air on sq. ft. in ozs. =  $1.2916 \times x$ . And pressure of column of mercury 30 in. in height, on sq. ft. =  $\frac{30}{12} \times 13.596 \times 1000$  ozs., and therefore  $1.2916x = \frac{30}{12} \times 13.596 \times 1000$ , or  $x = 26.316$  ft.

## TEACHERS' ASSOCIATIONS.

### CHRONICLE OF THE MONTH.

WEST HURON TEACHERS' ASSOCIATION. —The above Association of Teachers held their regular half-yearly meeting in the Central School, Exeter, on Friday and Saturday, January 24th and 25th. The attendance was large and the greatest interest and enthusiasm were manifested throughout the meeting. A considerable portion of the time was taken up by Dr. McLellan, who gave many useful hints and much valuable instruction on the method of Teaching, Reading, Arithmetic and Algebra. In Algebra, particularly, his unique method of factoring, and his short and simple solutions

of difficult problems were much admired. On the evening of Friday he delivered his popular lecture on "The Future of Canada," to a large and highly appreciative audience.

Inspector Miller, as representative to the Provincial Association, gave an interesting and detailed report of the last meeting of that body, after which he took up the subject of military drill in connection with school work, pointing out the many benefits arising from a regular course of calisthenics and physical training. The subject was made practical by the teachers adjourning to a large vacant room and going through a

number of movements under the direction of Mr. Miller.

Mr. H. J. Strang, B.A., of Goderich, dealt in a very interesting and instructive manner with the difficulties analysis and parsing presented to him. Miss Speer ably illustrated her method of teaching Canadian History to a class of beginners, and Mr. Gregory treated Physical Geography in a similarly able manner. Mr. S. P. Halls, in a very lucid manner discussed the method of applying the principles of the Triangle of Forces to the solution of problems in Natural Philosophy. A resolution was subsequently passed conveying the thanks of the Association to Dr. McLellan for his able lecture; and a motion, expressive of the value of military drill, was also made by the meeting, and unanimously agreed to.

W. R. MILLER, *Secretary*.

**RUSSELL COUNTY TEACHERS' ASSOCIATION.**—The semi-annual meeting of this Association took place in Duncanville, on January 9th and 10th. After the formal business was despatched, Mr. Hill, of Bearbrook, read a paper on "The Introduction of Grammar to Junior Classes." After some discussion on this subject, Mr. W. R. Riddell, B.A., LL.B., &c., Mathematical Master, Ottawa Normal School, addressed the Association on "The Introduction of Algebra to Classes, and the Treatment of Simple Rules." In the afternoon, Mr. Riddell, by special request, showed his method of teaching Synthetic Division, and of contracting Multiplication. After the discussion of these topics and many questions being asked and answered, he addressed the Association on "How to interest Pupils in the Study of Arithmetic." The Society determined the time and place of next meeting, and adjourned.

A public entertainment was held in the Temperance Hall in the evening, which was largely attended by the citizens of Duncanville and vicinity. Mr. Riddell delivered a popular lecture on "The Philosophy of Dreaming," which was well received. Several Dialogues, Recitations, and Songs followed, interspersed by music.

On Saturday, the morning was taken up by papers from Mr. J. McMillan, B.A., of the Ottawa Collegiate Institute, and Mr. John Munro, Principal of the St. George's Ward School. Mr. McMillan had for his subject, the "Discussion of some difficult words in Parsing," and his remarks brought on a lively and interesting debate on several points. Mr. Munro showed practically "How to manage a Fourth Class in Teaching Reading." He had to stand the fire of a multiplicity of questions, all of an essentially practical character, which he answered to the satisfaction of the audience. At the afternoon session, Mr. Riddell took up "How to Teach Fractions," and Mr. A. Smirle, Principal Central School, E. Ottawa, "The Use of the Blackboard," both of which subjects were discussed by many members of the Association. After votes of thanks to the visiting gentlemen, the Association adjourned, well pleased with the success of the Institute.

A pleasing feature in connection with the meeting was the large proportion of visitors not engaged in teaching who attended and took an interest in the work going on.

**THE NORFOLK TEACHERS' ASSOCIATION** met on 17th and 18th January, at Simcoe, eighty teachers being in attendance and a deep interest being manifested. The subjects discussed were Grammar (Mr. Cron leading), English Literature (Mr. Ferguson), History (Mr. Wm. H. Smith), Algebra (Mr. Merchand), and Writing (Mr. G. McIntosh.)

On Friday evening a public meeting was held, at which Rev. Mr. Alexander lectured on "the Lady of the Lake" and a visit to the Trossachs. Richard Lewis, Esq., of Toronto, gave several dramatic readings.

On Saturday Mr. Lewis lectured on Reading and Elocution for over four hours, giving a most masterly and exhaustive exposition of the subject. Officers 1879: President, Horatio A. Courtland; Vice President, W. H. Smith; Secretary, Rev. G. Grant, B.A.; Committee of Management, Messrs. Parsons, Chapman, Knowles, Weston and Dennis.

## CONTEMPORARY LITERATURE.

ANNUAL REPORT OF THE PUBLIC AND HIGH, ALSO OF THE NORMAL AND MODEL, SCHOOLS OF THE PROVINCE OF ONTARIO FOR THE YEAR 1877, WITH APPENDICES. By the Minister of Education. Printed by order of the Legislative Assembly. Toronto: Hunter, Rose & Co.

The Report of the Minister of Education for 1877, is before us, and as we look over it we can realize something of Rip Van Winkle's feelings on waking up after his long sleep. A number of documents appear in it that had passed from our remembrance, and others obtrude themselves which, for their faults, we had willingly forgotten. It is greatly to be regretted that a report so valuable to the public should appear a year after its date. Might not the Minister, by the infusion of increased energy into his subordinates, and by a little extra exertion on his own part, get his Report out for the previous year before the end of the session of the Legislature in the succeeding one? Surely if in England the Report on Elementary Education for Great Britain for one year can appear in the following June, we, who are supposed to be not quite so slow-going, might have ours, for a population not one-twentieth the size, out by the middle of March. At any rate, we see no great necessity, save as a matter of official etiquette, for holding back the Report—presuming it has long ere now been ready—until the House meets. It is not so clear that its members are those most interested in its returns, and therefore they are not entitled to any excess of courtesy. Perhaps public interest in Parliamentary Blue books would be greater, and to the advantage of the subjects whereof they treat, if the traditional etiquette that withholds them from the public eye until their facts are stale, gave place to the consideration of the public interest and the public service. What motive of political expediency

may be concealed in refusing to accept common sense suggestions in this matter, we are not, of course, careful to answer. But to the report:—

The number of scholars attending the public schools, in 1877, was 499,860, being only 323 in excess of that of the previous year; though the school population, that is, children between the ages of 5 and 16 years, showed a decrease of 7,445. In 1876 there was an *increase* of school population of 1,167, and an increase of the total attending school of 16,296. This contrast is further increased in the returns of those not attending any school; in 1876 there were 9,260, while in 1877, the number swells up to 15,074, though during this period we are told the school population decreased 7,445: Surely some explanation is needed to make these returns intelligible; or are they untrustworthy?

The average daily attendance was 44 per cent., an increase of one per cent. upon the previous year. It is far from satisfactory to know, however, that only 44 out of every 100 children received the full benefit of our public school system. The evils of irregularity of attendance, which this lamentable state of things implies, are so forcibly pointed out in the Report of the Inspector for South Hastings, that we cannot do better than quote his words:—

“To remedy this great evil in our Schools calls forth the serious attention of every parent and ratepayer, for it neutralizes the benefits to be derived from the best arrangements, and the labours of the best Teachers. A child may attend School, yet so irregularly, or at intervals so far apart, that it will be fortunate if at the end of the year he knows as much as at the commencement.”

The total expenditure for the year was \$3,073,489; this is almost double what it was

ten years previous when the school attendance was 401,643, or more than three-fourths of what it is now; so that with one-fourth more scholars, double the amount of money is expended—a somewhat significant fact!

There were 5,140 schools, giving employment to 6,468 teachers, of whom there were 400 more females than males. The increase of teachers for the year was 283; and, since the increase of scholars was but 323, we come to the pleasing conclusion that there are fewer scholars for each teacher to manage—and a step towards a consummation devoutly to be wished.

In 1876, teachers of the Methodist denomination took the lead in numbers, but they were slightly outstripped by the Presbyterians in the following year. It is worthy of remark that out of 812 Roman Catholic teachers 478 are employed in the Public Schools, the remainder working in their own Separate Schools.

In regard to certificates, 250 teachers hold first-class provincial, 1,304 hold second-class, and 3,026 hold new County Board third class. These are exclusive of old County Board certificates which are yearly decreasing. With such a preponderance of third class teachers it behoves our educational authorities to use their utmost wisdom in improving and extending the means provided for their training. It is gratifying to find that the financial position of the teacher is improving, since there is an increase of \$200,000 upon the salaries for the year. The average salary of male teachers in cities was \$735, in towns \$583, and in counties \$379; of female teachers in the same, \$307, \$269, and \$260 respectively; this shows an average increase for male teachers of \$14, and for female teachers of \$12. It is odd to find, however, that while the highest salary paid in towns is \$1,100; in cities it is only \$1,000.

The number of High Schools and Collegiate Institutes in the Province is 104, with 9,229 scholars, who are taught by 280 teachers at an average salary of \$756, or an increase of \$23 upon the previous year. Twenty-seven of these schools charge a quarterly fee ranging from 25 cents to \$5—the remainder are free. The total expenditure was \$343,710,

being at the rate of \$37.10 per pupil; the cost per pupil in the Public Schools being \$6.25.

In the High Schools there were 33 pupils to each teacher, in the Public Schools there were 76. We are unable from the official tables to say what the average attendance in the High Schools was, nor are there any details as to salary to enable us to state what was the highest and lowest salary paid; but any defects in these are amply compensated for by the able and judicious report of the High School Inspectors, from which we gather that the average attendance for 1877 was 56 per cent. of those entered on the registers. Did our space permit, we would gladly deal with this report in greater detail, but we content ourselves by quoting the following suggestion in reference to our National University; which, to some extent, runs parallel to a few remarks we ventured in all friendliness to make in regard to this Institution in another place.

“We hold further that, as the matriculation examinations of the University of Toronto practically determine to a great extent the work of the High Schools, and as a national university does not exist for itself alone, but for the educational interests of the community that supports it, the curriculum for these examinations should be so framed as to encourage in the High Schools the study of those subjects which the general interests of the community require to be taught there. Chemistry, we maintain, is one of these subjects, and we desire to place on record our conviction that the Senate of the Provincial University in ignoring its claims as a subject for matriculation in arts, when they last revised their curriculum, adopted a policy directly injurious to higher and secondary, and indirectly injurious to primary education.”

The Report of the Normal Schools contains ample information as to the number of students, the locality they come from, etc., but nothing of the cost of these institutions apart from the Model Schools. After a good deal of search we found that the attendance at the Normal and Provincial Model Schools was 900; their cost was \$43,166.34, being at the rate of \$48 per pupil. This

makes a model school scholar cost more than seven times as much as a scholar in the public schools.

There is a great unanimity in the Public School Inspectors' reports upon the good results that have followed the establishment of County Teachers' Associations, and County Model Schools; upon the evils of irregular attendance; and the frequent change of teachers. A very decided opinion is expressed in favour of Township Boards, and in the thoroughly business-like conference of Inspectors upon the establishment of schools in outlying districts, presided over by the Deputy Minister, Dr. Hodgins, at Belleville, these gentlemen took time by the forelock and made "a strong recommendation in favour of the establishment of Township Boards in the Townships of unorganized districts"—a wise and timely recommendation.

In no inspectorate do we find that the modicum of four months' compulsory attendance at school, as provided for by the law, is enforced. This is a piece of fancy legislation of which we have too much on our statute book. Yet in several of the Inspectors' reports attention is called to the number of children who would be benefitted by a wholesome system of compulsion.

The intelligence, public spirit, and unselfish interest manifested by the Inspectors in these reports warmly commend them to trustees and to the public, both of whom, we fear, are but too little aware of the arduous and disinterested character of their work.

The report of the Sub-examiners on the intermediate examination of July last, is valuable, and did our space permit we could not serve High and Public School Teachers better than by giving it *in extenso* in our columns. They state that Arithmetic and Grammar showed the best results, English Composition, we regret to say, the worst. Attention is called to the necessity of using throughout a proposition of Euclid letters corresponding with those in the diagram. The employment of Roman capitals in the diagrams is recommended, and that of numerals deprecated. It is recommended to begin the statement, construction, and demon-

stration as new paragraphs. They ask "Should any corrections made by the candidate on the spelling paper be allowed?" They report that too little attention is paid to the *kind* and *connection* of the clauses in grammatical analysis—"a branch of the subject which affords by far the greatest mental discipline;" and they might have added—Culture.

In the business-like report on the County Model Schools, we observe that a number of these schools are yet in charge of Principals whose qualifications are below those required by the Regulations. This is inevitable owing to the circumstances attending their inception. It is properly pointed out that the great aim of these schools is "to enable the students to obtain practical knowledge of the art of teaching, and of the ability to govern a school." We regret exceedingly to find that the most prevalent faults on the part of the Teachers-in-training, are neglect in preparing the lessons they have to teach, and sluggishness in conducting them. These are at the root of most of the bad teaching throughout the Province, and we trust that no effort will be spared on the part of both the Inspector and Principals of these schools by both precept and example to eradicate them. A difficulty has been found by the Principals in securing sufficient time to devote to the special instruction of the students. This can only be successfully overcome by leaving them free to give their attention not to a single class, but to all the classes in the school, and the technical training of these young people can then be easily sandwiched in.

We have thus put before our readers, in such detail as our space would allow, the most interesting items of the Minister's Report. They show conclusively the importance the people of Ontario attach to the education of the youth of the country. When we look back we cannot but admire the wise forethought and executive ability of him who made it possible to accomplish the results shown by this Report—the venerable Chief Superintendent who was so long at the head of the Department. When we look forward, we can as little refrain from echoing the Hon.

Mr. Crooks' patriotic wish, to which he gave expression from his seat in the House: "That no person should ever be found to mar the harmony of our Educational Institutions, by making political capital out of them." There will always be some who will grumble at their cost, and perhaps not a few who will care more to cavil at, than to aid, their administration, but the high-minded, devoted Minister, who seeks the true weal of the great trust committed to him, heedless of party advantages and party clamour, will find public sympathy always ranged on his side into whatever pitfalls political knavery may lead him to stumble.

MILTON'S PARADISE LOST, (Books I. & II.) by John Seath, B. A., Principal, Collegiate Institute, St. Catharines. Second Edition. Toronto: Copp, Clark & Co., 1879.

LONGER ENGLISH POEMS, by J. W. Hales, M.A. London: Macmillan & Co., 1878.

The two books now under review both belong to the same class of School Classics and profess to furnish the same kind of information and material for the guidance of the student of English Literature.

In both alike the grammar and the style of composition of the authors treated of are elaborately dissected, their figures of speech, their rhythm, their modes of expression discussed and analyzed, their recondite allusions explained, parallel passages collocated, and the derivation of all important words given with considerable detail.

Upon the whole we do not think that Canada need be at all ashamed of Mr. Seath's work as compared with the more ambitious, but perhaps less carefully executed, work of the English Professor. In fact, while we shall have occasion to point out many slips, and, to our mind, erroneous conclusions in Mr. Hale's book, we are constrained to say that a close perusal of the above edition of Milton has resulted in our failing to discover in it more than a few points deserving of adverse criticism.

In the first place Mr. Seath gives us in his introduction a clearly written account of Milton's life and of his great prose and poeti-

cal works, followed by an extremely useful and well selected series of extracts from the principal criticisms which have appeared from time to time from the pens of different great authors upon the subject of Milton's genius and especially as this was displayed in his great poem, the "Paradise Lost." To this succeeds some preliminary notes on the origin, scheme and scansion of the poem—the first two books of which are then given (interleaved for the greater convenience of the student.) The rest of the volume is occupied by the notes, to which we will at once turn our attention. In the first place, we hardly think there was any necessity to explain the word "that" in the line, "of that forbidden tree whose mortal fruit, &c." as meaning "the well known." Such a construction appears unnecessary, since Milton goes on to describe the tree fully as "that whose mortal fruit brought Death into the world." The fact appears to be that no other sense was intended to be conveyed than would have passed by the words "the forbidden tree," and that the word "that" was preferred on account of its fuller sound and the greater power which it has in linking the parts of the line, both in sense and scansion, into one harmonious whole.

Perhaps the greatest and most besetting fault that commentators have to avoid is the tendency that undoubtedly exists to explain and elucidate what is already sufficiently clear. We can best illustrate our meaning by remarking how unnecessary it was to comment upon line 224 by the statement that the "vale" where Satan had lain prostrate on the Lake of Fire, "is not supposed to have become a permanent depression." Surely Mr. Seath can hardly ever have come across a boy so perversely ingenious as to imagine such a thing for a moment!

We must also differ from Mr. Seath in the question of the preference that should be given between the two constructions of the celebrated line in which the East is described as showering "on its Kings barbaric pearl and gold." After giving all due weight to the arguments he adduces, we must say that to our mind the epithet "barbaric" applies to the Kings, and not to the "pearl and gold."

In the first place, although gold jewellery might well have been called by the Greeks "barbaric," inasmuch as it would show its strange origin by the style of the workmanship bestowed upon it, yet there is no authority as far as we are aware for gold, *as gold*, being called "barbaric," and in the nature of things it would not be so called, inasmuch as all the gold used in Greece was imported, so that if any of it was called barbaric, so must it all have been. As to the argument based upon the position of the Cæsural pause, we can only remark that what Mr. Seath calls monotonous is to our ears an appropriate and harmonious repetition of a stately cadence, fitting well with the regal and stately object that is being described. We might mention one or two more similar instances (as at line 636 B. II., where *close-sailing* should be read "close-hauled," or "close to the wind," not "sailing close together,") but it is unnecessary for us to do so. It would be difficult to convey higher praise to Mr. Seath than that which is implied in the fact that a search sufficiently careful to detect such trivial and doubtful shortcomings as these, has not resulted in the detecting of a single error of importance.

We cannot say as much for Mr. Hales' work. It contains several inaccuracies that might have been easily avoided. While going out of his way to point out that Dr. Johnson was in error as to the date of Gray's birth, he himself mis-states the date of Gray's death, which took place on the 30th, not the 20th of July, 1771.\* Both the date of Goldsmith's birth and the date of his death are given incorrectly. The first should be the 10th, not the 29th November, 1728, and the latter should be the 4th of April not the 25th of March, 1774. Our author is again in error in regard to the year of Dryden's death, which is given as 1700, instead of 1701.

The following criticisms appear to us to be the reverse of elucidations, and had better be altered in the next edition. In Spencer's "Prothalamion," the river is supposed to bid its waves not to wet the feathers of the two

\* Mitford's "Life of Gray," p. 59, "Memoirs of H. Cary," vol. I., p. 223.

white swans "least (*i.e.* lest) they might soyle their fayre plumes." Surely this is so simple that a child might read it, and what need is there to bring in a long rigmarole about "soiling their fair plumes in the *least* degree?"

Commenting on the second line of Milton's "Hymn on the Nativity," we are told that we should rather say "whereon" than "wherein." But the phrase taken in full is as follows: "This is the month and this the happy morn wherein, &c." Now, wherein is clearly applicable to the word month, whilst whereon would only be fitted for use in connection with "the morn," so that our editor had better have left this point alone. On page 244 we notice two blunders. In a well-known quotation from the "Merchant of Venice," a word is omitted utterly ruining both the sense and the harmony of the passage. Immediately below it we are told that the older English writers used the perfect infinitive to express an unaccomplished purpose. This is intended to explain the phrase, "Such strains as *would have won* the ear of Pluto." But it is not necessary to point out that the perfect infinitive alone conveys no such notion. In the above instance it is the word "would" that implies the doubt of attainment, and in the parallel passages quoted in the text the place of "would" is supplied by the verbs "purposed," "thought" and "trusted" to have done so and so. The explanation of the word "grain" on p. 246 is incomplete, as not distinguishing or indeed so much as mentioning the expression "grain of wood." In remarking on *Il Penseroso*, we are told that the "studious cloysters' pale" probably refers to St. Pauls' cloisters, although they were pulled down half a century before Milton was born, and that the "high embowered roof" of the cathedral probably refers to old St. Pauls' or Westminster Abbey.

Surely all this is very unnecessary guessing. Milton if he thought of any particular cloisters, probably thought of one of the colleges of Cambridge; and Ely or a dozen other cathedrals would have come to his recollection quite as quickly as St. Pauls'.

Before leaving Milton we must protest

against the strained and unnatural meaning forced upon the opening passage in "Lycidas." We must suppose forsooth that Milton opened that impassioned dirge by obtruding himself upon the reader, and that the beautiful lines in which he bewails the "bitter constraint and sad occasion dear" that forces him to forestall the wonted time and pluck the ivy and myrtle in memory of his friends, refer to his having determined to write no more poetry for some time to come and to a breach of that determination caused by his loving regrets for Lycidas. Milton felt too deeply the inner laws of poetry, and had far too intense feelings, to commence a dirge with an apology for himself. It is of Lycidas he sings, not of Milton. Laurels and myrtles may not be funereal emblems, but what of that? they are appropriately enough gathered for the funeral of a poet. Lastly, when we consider that the poem was written in the autumn, we can see clearly that the phrase, "I come . . . to shatter your leaves before the mellowing year" has a direct and natural meaning, and that the construction which would turn the "mellowing year" into some period when, and not till when, Milton might, could, should or would, have written poetry, is unnatural and unnecessary.

In speaking of Goldsmith, the epithet "wandering Po" applies not to its floods, as Mr. Hales tells us, but to its shifting course and varying beds and channels. In commenting on St. Agnes' Eve, it is misleading to say that Madeline really wakes at line 330. She has been awake some stanzas before that, which is more than we can say for the editor. Had he said that at line 330 she first realizes that she is awake, we should have agreed with him.

We have not mentioned half the blurs we intended to point out, and we are glad to be able to finish with a word of praise for the useful index at the end, which might, however, have been made a little fuller.

THE EDUCATIONAL CIRCULAR, (No. 8.)  
Fredericton, N. B., Printed for the Education Department, by Barnes & Co., 1879.

This semi-annual of the Chief Superintendent of Education of New Brunswick—

Dr. Theodore H. Rand—seems somewhat to correspond to the Report of the Minister of Education for Ontario as an official communication on the subject of Education and a statistical hand-book of the Provincial Grants. Besides the official notices of the Department, lists of the teachers, and other statistical matter, the half-yearly Examination papers are given on the various subjects of school management and work. But the main features of the Circular are those that record the proceedings at the Teachers' Institutes throughout the Province, and of the Educational Institute at its annual meeting at Fredericton last August. These are given in considerable detail; many of the papers read at the gatherings being printed *in extenso* in the Circular. Most of these are characterized by vigour of thought and elegance of diction, which, with evident enthusiasm in their composition, makes them pleasant and instructive reading. All of them display ability, and indicate a degree of interest in the work of the teacher which must have a stimulating effect upon education in the Province. It may not be amiss if we quote some of the subjects of these papers; and the Circular itself might with advantage be consulted by those wishing to prepare themselves to address Institutes in our own Province, or to communicate papers on topics kindred to teachers' work. In the Educational Institute proceedings, the papers given at length, are "How to study Literature," by Prof. Harrison, LL. D., of the Provincial University; and "A Course of Instruction," by Principal Crockett, of the Normal School. Those in the proceedings of the Teachers' Institutes, in the various Inspectoral Districts, are "The Necessity and Means of elevating the Teaching Profession," by Mr. W. G. Gaunce; "Physical Culture," by Miss Smith; "Inducements to study and the means of Culture," by Mr. P. Girdwood; "School Management," by Mr. Thos. O'Reilly; "Natural Science as a part of School Education," by Mr. G. A. Hay; and "The Teaching of Composition in our Elementary Schools," by Mr. R. S. Nicholson.

**PRACTICAL HINTS ON CLASS MANAGEMENT.** By James Saunders. London and Edinburgh: Thomas Laurie; Toronto: James Campbell & Son.

Text-books in pedagogics are, in general, unutterably dull, prosy, and full of platitudes. If you wade through one you probably find little to object to, except that the writer has made his book as uninteresting as a sermon and as gloomy as a funeral. Mr. Saunders deserves praise for having tried to say what he has to say in an interesting manner, and he has succeeded very fairly. Though by no means a master of style, he has what the phrenologists call the bump of human nature tolerably well developed. His native shrewdness, and a certain originality that he has, likewise, stand him in good stead. Many of the headings of his chapters are decidedly attractive, as for example, "On Roundabout Teaching," "On Dealing with Angry Mothers," On the whole the book is pithy and pointed.

The work is intended for pupil-teachers, and is remarkably practical in its character. It would suit our third-class teachers far better than Currie's Common School Education which is at present prescribed for their use, because it is shorter, more interesting, and written to warn beginners off the rocks and shoals on which they are apt to make shipwreck. The following extract will give a fair idea of the mode of treatment adopted:

"Many young teachers, especially in Sunday Schools, are satisfied with teaching a tithe or a moiety of their children. Some rest contented if, out of the whole class, one solitary boy condescends to favour them with an occasional glance and a casual answer, bestowed much as a half-penny is thrown at a beggar. Now, do not, I pray you, be humiliated in this way. Teach *all* your children; and insist on every one giving you his undivided attention. A good preacher will rivet the eyes even of the choir. Remember that the whole of your flock require supervision; and those most of all in the background or on the outskirts.

"Some teachers are adepts in the art of 'how not to do it.' Their senses are as dull as those of an inspector of nuisances, or a policeman when going past a foul slaughter house or a gambling tavern."

**EXERCISES IN ARITHMETIC.**—By A. MacMurchy, M.A., Canadian author of Smith and MacMurchy's Arithmetic for Canadian Schools. Toronto: Copp, Clark & Co.

This neat and handy volume of exercises is intended to help the student in acquiring a more thoroughly independent knowledge of Arithmetic than the mode of treating the subject necessarily adopted in a text book renders possible without largely increasing its bulk. The problems which are carefully graduated in difficulty, are divided into sets of twelve each, and cover exhaustively the ground to be traversed by both juniors and seniors. The collection will be found extremely useful not only for High School entrants and junior Public School classes, but for Honour University Examinations. While the common types are fully represented, there are a large number of examples of an unusual character—a feature which cannot fail to recommend this volume to the profession. Some of the Examination papers set by the Department are inserted, apparently in deference to the prevailing fashion, though by his moderate use of this lately invented mode of book-making, the author shows his knowledge of the true function of a teacher and the proper place of examinations in our system of education. It is peculiarly refreshing after the surfeit every one has had of disquisitions learned and otherwise on the "Unitary Method," to come across a Canadian work of the merit of the one before us, in which the author does not consider it incumbent upon him to ring the changes on this last specific for mental inaptitude. It is too generally lost sight of, we fear, that our schools are intended to afford besides mental discipline, preparation for the duties of actual life that is absolutely necessary in a country like ours. As Prof. Goldwin Smith lately remarked in a communication to the *Mail*, "our system of Public Instruction would probably be better for revision with a view of giving a more practical character to the instruction." His remarks apply with special force to the case before us. In this new-fangled love for the people's logic, the practical value of the rule and formula is in danger of being overlooked.

Smith and MacMurphy's Text Book in Arithmetic assigns to both rule and analysis their proper places in the study of this science. The author of the Exercises with a just estimate of his reputation, has not thought it necessary, we note, to state the exact amount of originality he has infused into his collection. It will not be out of place, however, for the reviewer to mention that in this respect as well as in others, his volume will gain by comparison with similar productions.

We are not in a position to assure teachers that the use of this collection of problems will insure the passing of their pupils at the Departmental Examinations, but we can truthfully recommend it as an excellent help to acquiring a thorough knowledge of what, apart from its examinational value, is justly held to be a very important subject. We need only add, in brief, that the work is what we should have expected from a scholar and teacher of Mr. MacMurphy's well-known ability and excellence.

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THE STUDENT'S ALGEBRA, by the Right Reverend John William Colenso, D.D., Lord Bishop of Natal. Toronto: James Campbell & Son, 1879.

In former editions, part I. of Colenso's Algebra embraced the elementary rules, Equations, Progressions, &c., and the Bi-

nominal Theorem. To this has been added the Multinomial Theorem, Logarithms and the Exponential Theorem, Continued Fractions, Indeterminate Coefficients, &c.

Besides this, abbreviated methods of extracting square and cube roots, and a method of evaluating vanishing fractions have been inserted; the chapters on Quadratic Equations, Indeterminate Equations, and Progressions have been considerably extended; Inequalities have been introduced; and Permutations and Combinations, the Binomial Theorem and Notation have been more fully treated.

Oxford and Cambridge University "Local Examination Papers" with solutions or answers have also been appended, the whole forming a handy little volume of 370 pages, edited with the author's sanction, by the Rev. John Hunter, M.A.

The proofs are concise and to the point, the explanations brief, clear and full, the exercises not too numerous, yet selected with due regard to range and variety. The student is thus at once led to pin his attention on the essential facts as he proceeds, and is enabled to retain the subject as a whole in his grasp when he has finished the volume.

As a text-book for candidates for first and second-class certificates and for students preparing for University Matriculation examinations we can recommend none more suitable.

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## EDITORIAL NOTES.

### TOPICS OF THE TIME.

THE determination of at least one house in the Canadian Book Trade to make hay while the sun shines, is having a disastrous effect upon the country booksellers, who, in various sections of the Province, are crying out against the evil of over-production in native school-book literature and the uncertainty that prevails as to what are and what are not "authorized text-books." The Brockville *Monitor* of the 3rd ult., devotes

two columns of its issue to a statement of the evils which the trade of that section suffers from in consequence of the many changes that have of late taken place in the school-books authorized for use in the province, and which entail serious loss upon the booksellers, as well as upon the parents of children attending school. But the complaint of the *Monitor* is not so much against the changes and additions in the list of authorized books made by the Minister of Education, as against the alleged unscrupu-

lous action of the Toronto wholesale houses in pushing their publications into the hands of teachers and the trade as *authorized* text-books without respect to the truth of the statement, and in utter disregard of honour and fair dealing. A further charge, and one more particularly directed against a certain favoured house in the Toronto trade, is that, availing itself of special sources of information—how acquired, it is not known—it makes announcement of changes about to be made in the lists, and hereupon proceeds to cajole the profession into introducing, and the booksellers into purchasing, quantities of books which, perhaps, never become authorized, or are almost instantly superseded by some other edition having the approval of the Department. A vicious state of things in connection with these trade monopolies and rivalries is said to exist, and the publishing houses of the city, unless seriously calumniated, possess no enviable reputation. The vocabulary of phrases which the *Monitor* makes use of to characterize the acts of the trade in this matter is no mild or limited one; and a reign of corruption and imposition is said to have begun "which if not checked in time will lead to a hurricane by-and-by." For the nonce, in perusing the article, we had almost persuaded ourselves that we had taken up an American journal, and that what was narrated of the doings of publishing houses in our midst was surely descriptive of the keen and often crafty rivalry of some enterprising firm in the trade on the other side of the lines. The control of a school journal, too, with all that is implied among our American cousins in having "an organ in the interest of the house," figures also in the *Monitor's* indictment of the Toronto book houses, and gives verisimilitude to the supposed sketch of American trade tactics. The "metamorphosing of teachers into agents for its circulation," and "its ready-made medium of indirect pressure upon the profession" in pushing the wares of the house owning it, with other injury to the cause of education and of morals, are further commented upon as evils of alarming import. But besides all the trade manipulation and chicanery which the *Moni-*

tor seems to have reason for denouncing, a grave charge is made against the Minister of Education, though absolving him personally from intent to do wrong. Says the *Monitor*: "But unfortunately for the good name of the minister, and for the well-being of the public interests, he has lent himself unquestionably too much, from causes already indicated, to the views of some publishing houses in Toronto and their satellites, whose principal object is to make money, no matter how the thing is done." This charge is unsubstantiated by any statement of facts, though if what is said by the Brockville journal about the minister being "jockeyed and ridden too much by some of the unscrupulous Toronto firms" be true, we should think it possible that, though quite guiltless himself, the sanction of the Department has been gained for acts interestedly done by others, and from no motive of the public good. If the charges of the *Monitor* in this matter have even a modicum of truth, there would seem to be further appropriateness in our comments of last month upon the necessity for rigorous impartiality in the work of the Advisory Committee upon text-books. That any favouritism should be shown by those who aid the Minister in the work of selecting and approving the text-books for use, is a reprehensible act, and any betrayal of the secrets of the Central Committee room that would give improper advantage to a house in the trade, is a gross breach of trust. But it is to be hoped that there is no reason to doubt that those composing the Advisory Committee of the Minister are gentlemen, notwithstanding the infraction of the code of propriety and official conduct which was morally brought home to some of its members last winter. In the public interest, however, the Minister would do well to take note of such causes of complaint as those the *Monitor* makes public, and, by giving a considerate ear to representations made honestly and with presumed reliableness by those interested in, or affected by, the acts of his department, he will acquit himself well of the high trusts committed to him, and faithfully serve the great cause he officially represents. But the prime remedy for the evils complained of seems to be in

giving effect to the circular on school text-books issued by the Department on the 7th September last, which will be found in our issue for January. If attention be given to that announcement, and care taken by the Public School Inspectors that its provisions are carried out, the trouble will at least be largely mitigated. Coupled with this, as the *Monitor* suggests, official lists should from time to time be issued of the books authorized for use in the schools; and it would be well to indicate in some special manner the additions and substitutions made in the interval between the issues of the lists. Neither the trade nor the local school authorities, it is proper at any rate to say, should be left to find out what are the authorized books from the publishers interested in their manufacture and sale; and it should be the duty of the Inspectors of Schools, if the operations of the trade cannot be characterized by honour as well as by enterprise, to hedge the institutions under their supervision from the imposition, in this matter, of either self-interest, or easy morals.

WITH the beginning of the year educational work starts upon a new career under the fostering care of that part of our school government devised for local administration—the Boards of School Trustees. The heat and turmoil of elections are over, and keen or sluggish as may have been the interest awakened in the contests, we trust that good men have everywhere been returned. That this has been the case, while party wire-pulling has its meshes over the office of school trustee as over everything else, is perhaps too much to expect. We are a much governed people, and the evil deity of politics has in this machinery of our school law a fine opportunity to assert itself, and to govern the boards as the boards again govern the schools. That it takes due advantage of the opportunity but too often is the fact, and that too, with the shout of party and the triumph of augmented power. But with whatever zest politics takes hold of this added sphere of influence, and to its encroachments we fear education only too feebly resigns itself, we trust that the new year brings to our

school boards that high motive in their work that will subordinate all other influences to those that are effective only to the best and lasting interests of the schools. It is no age of high emotion, nor is it marked by any great degree of earnestness or fervour, but if any interests of the community call for intensity of feeling and impulsiveness of ardour in contributing to its highest welfare, that interest is the cause of education and with it the efficiency of the schools. To take a liberal view of the educational wants of a town, and to maintain and extend the machinery of school work, is the urgent demand of the time; and no aspect of civic life is more pleasing, or fraught with greater blessing, than the resolute endeavour of a community to broaden and deepen the foundations of the educational fabric in its midst. Looking at the liberal provision made by the legislature of the country to promote education, and the elaborate and far-reaching machinery of its operation in Ontario, a stranger would say that we are in earnest in this work, and doubtless we are. But there are many impediments to our success, chiefly in our working along the dead lines of regulation method, and in the deep trenches of a routine-system, while we should rather be throwing forward our outposts and extending the column of attack along the upper plain of progress and over the mounds of circumlocution and red-tape. In some respects, government control of education is a check rather than a gain to its progress, and the machinery necessary to its working too often chokes off the impulse to active and enthusiastic local effort. We rely too much upon what the Department may do for education. In many quarters, however, individual vitality and a hearty civic spirit give impetus to the work which the paternal system is apt to dull and enfeeble. And it is here that local school boards should find their true and proper work, to reinforce the department machinery with increased vigour and effect, and to impart that vitality to its work which will carry it on to triumph and success. Realizing this function, and zealously intent on working it out, there should be a hearty and interested co-operation with the teacher, and that cor-

diality of relationship that would incite him to and encourage him in his work. He should always feel sure of his support and ever recruit his strength and his ardour in the face of men kindly appreciative of his labours, and uniformly friendly to himself. In such a spirit, and with such aims, school trustees should come to their new year's duties, and in this way they will best serve the local interests with which they are entrusted, and most satisfactorily advance the general cause of school work.

And as we write there seems to be occasion to urge Trustees to be faithful in another duty, viz.: jealously to guard the power past legislation has given them in making efficient provision for the maintenance of the schools. In the Ontario Legislature, the Minister of Education, we see, is about to introduce a measure imposing some restriction upon their rights, and empowering town and city councils to control, in some proposed degree, the levies made upon them for school purposes. We need hardly say that this is a menacing danger which Trustees should instantly seek through their representatives to avert, for no measure is more vital to the weal of education than that secured by the late Chief Superintendent, which is sought now to be modified or impaired by the Act of the Minister.

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THE *Montreal Gazette* of the 7th ult. does THE MONTHLY the honour of devoting a leader, under the caption of "Comparisons," to the subject of an editorial note in our last issue—The state of English Primary Education in the Province of Quebec. While emphatically endorsing our remarks, and urging upon the Protestant School Commissioners the necessity of giving the matter attention, our contemporary, however, takes exception to a circumstance we incidentally referred to—the sharp contrast between the zeal and enterprise which, in so marked a degree, characterized the efforts of the Ontario Education Department in representing at the Paris Exposition the machinery and exhibits of its work, and the poverty of the

exhibit and lesser interest evinced, in the display of the Quebec Bureau. The *Gazette*, in support of its position, points to the equally distinguished honours accorded to the Educational Commissioners of Quebec as were accorded to those of the Ontario Department. It also refers to the recognition of the literary and official industry of the former Chief Superintendent of the Province which secured for that gentleman the insertion of his review of "Canada's Educational System," in Dr. Schmid's Great German Encyclopædia.

Our answer to our contemporary is a very brief one,—that we are very far from desiring to rob either Quebec, or Quebec Educationists, of the honours due to them. Our reference to the subject taken exception to was, as we have said, a very incidental one; and, as a fact, was but a re-echo of what French Educationists themselves had remarked upon, viz.: the recognition and success of the Ontario educational exhibit, and the reverse of this, in the case of the representation of Quebec. In this, however, the Quebec Province is not culpable, and we by no means meant to say so. It would have been a churlish and ungenerous thing had it been our intention to lay any stress upon the contrast. That was not a matter that concerned us. The Province in whatever representation it did make, is entitled to its meed of praise. Unfortunately for Quebec, that of Ontario was of such proportions as almost to eclipse it, and this fact, we fear, must go unchallenged, notwithstanding our contemporary's patriotic desire to spice the truth a little with fiction.

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#### EDUCATIONAL MATTERS ABROAD.

ACCORDING to *Nature*, a very strong memorial against the retention of Greek as a subject for all honour candidates has been presented to Cambridge University. Whether this is the beginning of a really influential movement against the preponderance of classical studies in our systems of Education or not, we scarcely know; but if only another random shot into the camp of the classicists, and even without much seeming

effect, we are glad that it has been fired. Time, and the powerful auxiliary of science and those other practical studies that seek to win place by the side of the classics, will ultimately tell in diminishing its hitherto imperious claims. We are no indiscriminate enemy of classical culture, but surely the day has come when the educational value of a classical course should be appraised with some regard to studies that as imperatively call for recognition. That the classics have hitherto usurped a place in the curricula of our schools far beyond, we will not say their traditional importance, but that of their practical value, and even as a discipline for the mind, few will now deny. This has long been conceded by the best classical men in England, and it has also been admitted that to the monopoly of this study much of the humiliating ignorance of other important subjects which should have engaged the attention of youth is owing. Here in Canada, at any rate, and in a utilitarian age like the present, sound sense in this matter should prevail, and classical studies, especially for honours, be regulated by some sense of their practical benefit in the after life of the student. Utility, and not the aim of the pedant, should be the object sought after, though in urging this we have full regard to the desirability of retaining a classical and purely literary training in our systems of education, but in some just relation to the other acquirements and studies necessary to make up the well-informed man.

FROM "Whitaker's Almanac" for 1879, a publication that each year increases our admiration of the talent and industry manifested in its compilation, we extract some items of interest concerning the London School Board and the statistics of its work. The Board is composed of fifty elective members (representing the ten districts into which the city is divided), drawn from the ranks of the professional and wealthy-leisured class of the metropolis—some of whom are ladies. Its officers, who take the management of the various bureaux of finance, statistics, school management, industrial schools, school building, etc., are ten in number, and their sa-

larities range from \$1,500 to \$5,000. There are five Inspectors who receive salaries varying from \$1,500 to \$2,250; besides Chief Instructors in singing, drill, and needle-work; an Instructor for the deaf and dumb, and a Kindergarten Instructress. The year's expenditure of the Board, ending March 1878, exceeded five millions dollars, of which sum one and a half million was paid as salary to Teachers; a like sum for the erection of, and addition to, schools; and \$700,000 for the purchase of building sites. From the Almanac we transcribe the following further facts:—

From the establishment of the Board in November, 1870, up to October 29th, 1878, accommodation in permanent schools had been provided for 163,935 children. In addition to this, schools with accommodation for 91,691 are in process of erection, or will be provided in the course of the next two years. At Lady Day last [the Half-Yearly Report for Michaelmas is not yet published] there were upon the rolls of the Board Schools (including certain schools transferred, and temporary schools), 188,092 children. The staff of teachers comprised 2,378 adult teachers, and 1,751 pupil teachers and candidates. The fees charged by the Board range from 1d. to 9d.; the number of school places provided at 1d. being, according to a recent return, 45,933; 91,191 at 2d.; 36,335 at 3d.; 8,225 at 4d.; 2,859 at 6d., and only 87 at 9d. The charges are determined solely by what is believed to be the ability of the parents, and to avoid needless class distinctions they are made uniform in each school. When the census of all the schools in London was taken in 1871, whether efficient or non-efficient, the total number of children on the roll was 320,143. The number of children now upon the roll of efficient schools alone is 447,382; in other words, the roll of efficient schools alone is greater by 127,239 than the total roll of all schools whatever in the beginning of 1871. The number of children sent to industrial schools at the instance of the Board, up to Michaelmas, 1878, was 4,364. In addition, 4,118 other cases had been inquired into by the Industrial Schools Committee, and referred to various voluntary agencies, etc., to be dealt with. The receipts for the year 1878-79 amount to £506,306, which is at the rate of 5'15d. in the pound.

DR. LYON PLAYFAIR, who showed a great interest in educational matters during his visit to this country last year, intends to in-

roduce a bill on Scholastic Registration into the Imperial Parliament at the coming session. He proposes by it to create a Public Register of teachers, and to forbid, under a penalty, any unregistered person to engage in the work of teaching. The persons to be placed upon the register are (1) Graduates of the English Universities; (2) Members of the College of Preceptors (a body that furnishes a considerable number of teachers to the private schools of the country); (3) Teachers holding the certificate of the Education Department; and (4) *Bona fide* teachers in intermediate schools at the time of the passing of the Act. The machinery by which the Act is to be put in operation is an Educational Council, consisting of representatives of the Universities of Oxford, Cambridge, and London; of the College of Preceptors, and nominees of the Crown, to be eventually replaced by representatives chosen by the registered teachers.

#### BRIEFS ON NEW BOOKS.

A VERY useful little volume comes to us from the publishing house of Messrs. Davis, Bardeen & Co., of Syracuse, N. Y., entitled *The School Room Guide*. The work is compiled by Mr. E. V. DeGraff, M. A., and embodies the instruction given by the author at Teachers' Institutes in New York and other states, and is especially intended to assist public school teachers in the practical work of the school room. The author seems to be very familiar with the various methods employed by teachers in school management and work, and the profession will doubtless find much that is suggestive in the book. From the same publishers we have a neat booklet, forming No. 1 of their "School Room Classics," the subject of which is "Unconscious Tuition," from the eloquent pen of the Right Rev. Dr. Huntingdon, Bishop of Central New York.

*The Right use of Books*: a lecture by Prof. W. P. Atkinson. *Reading as a Fine Art*: translated from the French of M. Ernest Legouve. Boston: Roberts Brothers. These little volumes preserve in dainty form treasures of thought on the subjects of which

they treat. In these days of intellectual dissipation in the reading habits of the people, no greater service can be done the community than in directing and guiding thought in regard to sound methods of study and the selection of good reading matter. Books are too often taken up *pour passer le temps*, without reference either to what may be gained from them, or to their influence on the mind and character of the reader. Prof. Atkinson's thoughtful words will be a revelation to those who make such acquaintance with literature. The important subject Mr. Legouve treats of should insure perusal for his brief sketch. Good reading is not usually a strong point in our schools. It may be said of our youth what M. Legouve said of the pupils in the primary schools of Paris, that "they read as if their vocal chords had no strength, and their sentences neither periods nor commas."

*Adams' Synchronological Chart of History*. Toronto: Herger & Co. This unique and pictorial compendium of history should find a place in all our schools where the value of imparting information through the eye is recognized, and the benefit of possessing a pictured representation of historical events, intelligently and accurately displayed, is acknowledged. There have been many devices hitherto published, in the form of chronological charts, trees of history, etc., which have attempted at a single view to represent the stream of time, with its varying scenes of incident and change. We have seen nothing, however, so complete, and we should say, satisfactory, as this mammoth panoramic chart of the Hon. S. C. Adams. It would take a whole number of this Magazine to enumerate its features and describe its attractions. We will simply say of it, however, that it should be seen by our educators, and its method tested, and we make bold to say that it will be found a substantial aid to the teaching of history, and an entertaining and attractive object of interest in the school room. The size of the chart is 22 feet by 30 inches, and can be had either in portfolio for the library or in a frame with rollers for the wall. The prices range from \$13 to \$25 with a special discount to schools.