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TO ADVERTISERS.

The SCHOOL JOURNAL is now the best medium in the Dominion of Canada for reaching Teachers and Trustees. As a proof of the rapid increase of its circulation ~~17~~ 1100 NEW SUBSCRIBERS were received from Nova Scotia in January, and 550 FROM NEW BRUNSWICK in February.

NEW SCHOOL REGULATIONS.

The new regulations issued by the Education Department for Ontario will be found to be very important. Those relating to certificates will undoubtedly prove most interesting to teachers. During the past three years considerable influence has been brought to bear on the Department, through Teachers' Associations and otherwise, with the view of securing the division of the work required for First class Certificates into groups. It was proposed generally to have three departments—English, Mathematics, and Science—and that a student should be required to pass on only one of them each year. The Minister of Education has not accepted this suggestion, but has made a change which will, it is to be hoped, secure the benefit of the proposed plan without any of the evil consequences which might have followed it.

It was urged that to require teachers to pass on the whole work at once compelled them to cram. Now, if it was possible to cram in preparing the whole course, how much more easy it would be to cram a part of it. The proposed plan did not recommend any increase of the work in each department, and therefore would not widen the knowledge of the teacher in relation to any of them. It is true that in some cases the work might have been done more thoroughly, but as the facilities for cramming would have been increased by the diminution of the amount to be crammed, there is no doubt that more of it would have been done, and done too by many who had not the courage to attempt even to cram the course of study as it formerly stood. Subdivision of the work and a partial pass system then would have increased the number of First Class certificates, but at the expense of a decrease in the culture of their holders.

The plan adopted by the Minister of Education will commend itself to those who are willing to see the standard of education maintained at a proper height. It will please those who demand breadth of culture, because every one must pass an examination on every subject on the programme and show a fair knowledge of it before obtaining a First C. Those who desire depth as well as breadth of culture will be satisfied by

a perusal of our work to be done in the two departments whose programmes we published in October. The new regulations, in fact, aim to secure "something of everything and everything of something." The non-professional side of the First Class teacher's work seems to be admirably arranged. We cannot say so much for the professional. We hope to see a course laid down for the First Class course in Ontario similar to those already published in the JOURNAL, which are adopted in New Brunswick and Pennsylvania.

The regulation relating to the Intermediate Examination may not prove so pleasing to all, as those for First Class certificates. It must be remembered, however, that the demand for the change has been made from several parts of the province. We do not understand the regulations to do away with the present Third Class, examination but to establish an additional kind of Third class certificates which will probably be valid throughout the province. Second Class teachers will simply be required to take a higher per centage on the same papers. The grouping of the subjects remains unchanged. The Model School regulations connecting the local inspectors more closely with these institutions are judicious. In fact if it were possible the Inspectors should deliver most of the lectures on methods in the County Model Schools, as they could in this way most easily and successfully guide the teaching in the schools under their charge. With reference to the inspection of the Normal Schools, it has long been a matter of surprise to many that the Minister of Education did not in some way supervise more closely the work done in these institutions. Certainly no schools in the province receive so large a share per school of the public money. The teaching of the province is moulded, or should be, by the Normal Schools, and it is therefore a question of most vital consequence that the Minister of Education should know that the best methods of teaching are being adopted in them. The fountains must be pure if the streams are to be beneficial. There is another aspect of the case, too, which seems to justify the course of the Minister. It is certainly of the highest importance that there should be harmony in the methods taught in the Normal Schools. It is not desirable that *right* in one should be *wrong* in the other. If the "word" system of teaching reading be the best in one, it seems strange that the "phonic" should be approved in the other. This will serve as an illustration of what may occur in relation to other subjects.

LONDON SCHOOL BOARD. (ENG.)

The establishment in 1871 of the London School Board and other School Boards in England marked a most important era in English school legislation. It was indeed a "new departure" as unexpected as it was memorable in the social science movements in England.

The growing convictions of English educationists, which were awakened about the time of the Great Exhibition, in 1851 deepened into a profound feeling after the Paris Exhibition of 1867, that the state of "masterly inactivity" and general ignorance must be put an end to. It was then demonstrated that "something must be done" to provide for the general and systematic education of the masses of the English people. The system of eleemosynary grants and denominational schools was found to be the merest pretence of a substitute for a system of national education. English statesmen were, therefore, compelled by their own convictions, no less than by the force of enlightened public opinion, to take vigorous steps to place the education of the people upon a comprehensive and thoroughly efficient footing. The questions of local school rates and of local administrative school boards had therefore to be discussed. And discussed they were with a vigour and thoroughness which finally resulted in their incorporation in the proposed School Bill as a necessary part of the new educational machinery of the nation.

We shall not enter further into the question of English local legislation on this matter, but shall confine our remarks to an illustration or two of the practical results of that legislation in London.

In this connection we just notice the fact that in the same year that these great educational changes took place in England, our own Legislature, following Dr. Ryerson's wise counsels, adopted those features of our present educational system which have given such an impetus to its growth and stability. We refer to the incorporation in our school law of the principle of free schools with its complement of compulsory education—to the system of uniform examinations for teachers' certificates; and in High Schools, to the appointment of skilled educationists as County Inspectors of schools—to the establishment of Examining Boards of experienced and duly qualified men, and to the establishment of Collegiate Institutes and the improvement in the standard and status of High Schools.

From a printed "Statement" just issued by Sir Charles Reed, Chairman of the London School Board, on its reassembling for business, we learn the magnitude of the work entrusted to the Board. It has under its jurisdiction three-quarters of a million of children of school age—a large number of whom are of course privately and otherwise educated. It has school accommodation for nearly half a million of pupils. The average attendance at the schools, out of nearly 450,000 enrolled children, is a little over 350,000.

As to the progress in this direction since 1871, Sir Charles says that the Board has wiped out the reproach that more than a quarter of a million of children were growing up in ignorance and neglect; that school provision has increased 80 per cent., and the attendance more than 100 per cent. As to the neglected children, he says: "While in all England and Wales 79½ per cent. of the children were examined last year in the three lower 'Standards,' the per centage of the London Board Schools was 83.14—showing that four out of every five of our scholars are on the lowest rounds of the ladder." This, he says, would not be the case but for the great proportion of untaught children who are gathered in by the action of the visitors.

In brief it may be stated that while the Board has nominally to provide school accommodation for nearly 750,000 school children, it has now accommodation for 460,138. It is making arrangements this year to increase this accommodation up to 550,400. In a few years ample accommodation for the swarming thousands will be provided by the Board. The increase of school population averages about 25,000 per annum. The Board has, therefore, a gigantic work before it.

HINTS FROM THE LONDON SCHOOL BOARD.

In the October "Statement" of Sir Charles Reed, on the re-assembling of the London School Board, we gather a few practical hints. 1. He gives a common instance of short-sightedness in building small school houses. In the case he mentions, "the building was originally planned for 1000 children, but owing to strong local opposition it was built for 580. Subsequently the Board had to go twice to the Department for power to enlarge it—at a very much larger cost than would have been required upon the original plans and estimates."

2. In regard to the cost of sites, he mentions that no sooner is it known that a site is required in a given district than prices rise accordingly. In one case £3,065 was claimed for a site, which was obtained by arbitration for £883. Delay, he says, has the inevitable result of raising obstacles and raising prices.

3. Sir Charles declares that it is the duty of the Board to build substantial schools, designed to last. Where space is no object, a school should be built all in one story. In that case there is no need of deep foundations or specially thick walls—thus promoting economy.

4. As to the teaching staff, the rule of the Board is to provide a Head Teacher for the first thirty scholars in average attendance, an Adult Assistant for sixty, and a Pupil Teacher, or Candidate, for thirty each.

5. In regard to subjects of instruction in schools, Sir Charles says:—"The idea may well be combated that Board schools "should confine themselves to giving instruction in Reading, Writing and Arithmetic. To go to the extent proposed by "some of our critics would be the height of folly. Departments "for infants without singing, for girls without sewing, and for "boys without drawing, would be dreary indeed. Subjects such "as these impart greater life to the school teaching, and facilitate it without adding materially to the cost. Drawing is important in all the industries of life, and it is in the interest "of the people that it should be taught. So, too, of object "lessons, and of lessons in the elementary facts of nature. It "is astonishing to find intelligent persons objecting, even in "Parliament, to a modicum of instruction in domestic economy "and Animal Physiology, when the slightest enquiry would "show them how direct is their bearing on the laws of health, "the sources of disease, and the practical details of household "management."

—We have received a letter complaining of injustice in the departmental regulation granting professional second class certificates to those teachers who taught three years before

August, 1877, without requiring them to attend the Normal School. Our correspondent holds that experience since 1877 has been quite as developing as before that time. This is quite true. The question is not one of the comparative values of experience at different times or to different persons, however. The reason for fixing the date August, 1877, was, that at that time the regulations requiring all second class candidates to attend a Normal School were first issued. Before that time three years' experience was regarded as equivalent to a professional second class course in a Normal School, and it would be manifestly unfair to those who had accepted the former regulations in good faith, and had fulfilled the departmental requirements for the professional part of their second class certificates, to require them to do the same work over again another way. New regulations should not be retroactive.

—It may be of interest to those who are watching the "Spelling Reform" agitation, to learn that the *Chicago Tribune* has put in use the following reformatory rules in orthography: Omit *ue* in *demagog*, *catalog*, *synagog*, and other words ending in "logue" and "gogue." Omit the superfluous *me* in *programme*, making it *program*. Omit the second *m* in *dilemma* (*dilema*). Omit the superfluous *te* in *cigaret*, *etiquet*, *parquet*, *coquet*, and all similar words. Spell definite in all its forms without the final *e*, thus: *definit-ly-ness*, *indefinit-ly-ness*. Omit final *e* in *hypocrite*, *favourite*; also *opposit-ly-ness* and *apposit-ly-ness*. In words ending in "lessness," drop one *s* from "less," viz.: *carelessness*, *thanklessness*. Omit the fourth *s* in *assassin* (*assasin*) and other forms of the word. Change *ph* to *f* in *fantom*, *fantasm*, and all other forms of the word; also in *fonetic-sal*, *fonograf*, *orthografy*, *alfabet*, *digraf*, *difthong*. The *Utica Observer* has accepted some of these changes. It is by inserting the "thin end of the wedge" in this manner that the desirable changes are liable to be brought about.

—Dr. Hodgins, Deputy Minister of Education, has been lately urging the importance of having the physical sciences taught in schools, at some of the Teachers' Associations.

Contributions and Correspondence.

THREE DANGERS.

BY CHAS. CLARKSON, M.A., SEAFORTH.

No reasonable person can deny that vast advances in educational machinery and methods have been made during the last twenty-five years. We are in the midst of a further stage of growth and development. New ideas are being presented and pushed into practice, and old ones worked up into new combinations. We now teach the dumb to speak articulately; we save one or two of what Thring properly calls "the mighty ten years," by improved methods of teaching the written language; we have achieved the free school system; we have accumulated the experience derived from many educational experiments; we have made much gratifying progress in many directions. We have got hold of some good ideas. Is there not some danger that we shall be sorely tempted to ride some of these as hobbies to the death? Does not the history

of educational effort tend to repeat itself? Bell and Lancaster's monitorial system had some good points; it was overdone and abandoned altogether. Pestalozzi conceived some good ideas, but in practice he ran into great extremes and made painful failures. Will similar results arise in Canada?

OVER-DRILL, we believe, is one of the dangers to which young teachers are especially exposed now-a-days. Discipline is a fine thing, a very necessary thing; but it is not everything, nor even the chief thing. Many teachers are guilty of thus putting the part for the whole. It is absolutely necessary to run the machinery of the school, but let us by all means run it at the minimum expenditure of power, and economize our forces for real work. We believe thoroughly in good discipline, but entirely disapprove of the system of carrying rigid discipline to minute details, converting the pupil into a mere automaton, robbing him largely of his individuality, and tending to cramp rather than to expand his growing powers. An immense amount of valuable time is often frittered away in the vain attempt to make all children exactly alike, to do everything in exactly the same manner. Let us remember that drill is only one of the means employed to secure the ultimate object—that it is a means and not an end.

The education of the senses is another point of danger. This idea is now almost at the top of its bent. It has been written up, lectured up, talked up, until its advocates now present it with the air of certain triumph. It is a very good idea to develop as early and as perfectly as possible the portals of experience. But we must not be carried off by a single dominant thought. Education is many-sided; the human being to be educated is exceedingly complex. Kindergartens have their sphere, but their advocates may as well spare themselves the trouble of proving too much. The study of natural objects can only supply a certain kind and a particular amount of training. Sensations are not knowledge after all, but only the crass material through the medium of which the mind arrives at knowledge. Besides, a vast amount of our knowledge must be received on testimony very different from that of sensation, and it is just as well not to expect impossible results from a mere sharpening of the senses. Young teachers are liable to be carried off bodily on this hobby, and to imagine that it will secure the most important part of education. Let us try to grasp its proper relation as a part of the whole, and avoid exalting it into a region to which no Froebel ever can really elevate it. The principle of educational symmetry and proportion must not be violated even by the advocates of an excellent improvement.

Teachers' Conventions carry their own peculiar danger. Close observers state that many of the best qualified members rarely participate in discussions. Much of the debates in some counties is composed of crude notions vaguely expressed, and tending to the rankest educational heresies. Young, inexperienced teachers, or sometimes even those of maturer years, launch boldly out into intangible abstractions, glittering generalities, or grandiloquent nonsense. Many conventions waste their time in wrangling over petty details—"My method of teaching grammar," "My short method of computing interest," etc.,

etc., *usque ad nauseam*. This is surely the essence of pedantry. Can we not succeed in having great general principles clearly presented, well illustrated by a few good examples, and left for every man to work out in detail in his individual fashion? One way to secure this is to employ leaders to introduce topics and give direction to the current of discussion. It would be better policy we believe to have fewer subjects than at present is fashionable, to have them led off by men of known ability, and to devote a length of time to the discussion sufficient to allow the younger members to grasp the main ideas, and to allow all sides of the question to be glanced at. Where set papers are hurriedly read, raw recruits to the profession put forward with their immature notions, too many abstract and non-practical subjects on the programme, etc., the every-day life and history of the school neglected, the highest benefits will not accrue. It may require a few more years' experience to teach us the most efficient means of managing our convention. Already great improvement is manifest, and the general principles of good teaching, the actual result of experience in school management and discipline, are securing more attention than the lever, "equational impossibilities," and the like. Much valuable time might be economized if the presiding officer enforced a little more strictly the common rules of order. To stick to the question under consideration, to address only the chairman, and to speak a limited number of times on the same topic, should be more carefully observed than at present. The danger lies in putting long-winded vagaries and the chimeras of theorists in the place of common sense and the actual facts or real experience. The remedy, we fancy, lies in giving more utility to the business of the convention by securing well-qualified leaders to direct the discussions. The number of subjects at any one convention ought also to be somewhat more limited. When the programme is over crowded, we run the risk of "grasping at the stars and sticking in the mud."

MORAL CULTURE AN ESSENTIAL FACTOR IN PUBLIC EDUCATION.

*An Address delivered before the Ontario Teachers' Association,
Toronto, August 14th, 1879.*

BY THE REV. D. H. MACVICAR, LL.D., S.L.P., PRINCIPAL PRESBYTERIAN COLLEGE, MONTREAL.

Great moral principles are freely discussed everywhere—in our nurseries and primary schools, in our parlours and social gatherings, in our warehouses and workshops, as well as in our courts of law, colleges, and legislative assemblies. Subtle points of casuistry and questions of right and wrong, of duty, what ought and what ought not to be are constantly canvassed; and unfortunately very many persons dogmatise and pronounce upon them blindly without having received any systematic or scientific instruction. Surely this natural and universal disposition to deal with ethical subjects should not be ignored by the educator, or treated as a secondary and unimportant matter.

I propose, therefore, to urge certain reasons in this paper why a knowledge of the fundamental facts and principles of ethical science, and of their practical application in every-day life, should be made an essential factor in public education. I do not say the

sum, or chief part of education, but only an essential factor in it. This appears to me to be demanded:

I. In order to secure a fair and symmetrical development of man's entire nature, and to avoid a one-sided and pernicious education.

To make this fully apparent, it is necessary to indicate in outline what should be aimed at in education. I do not mean by this, however, a discussion of details as to methods of instruction, branches of study, the age at which certain of these should be taken up, the extent to which they should be prosecuted in our Public or High Schools, and the measure of information to be imparted to pupils at various stages regarding the multitude of subjects which now claim attention. It is sufficient for the purpose of my argument to point out generally the sort of training which is required, or the directions our educational efforts should take in order to secure the well-balanced and harmonious growth of man. I take it that no one can doubt that this should be the practical issue of our work. The common sense of mankind demands this. The broad test which it applies to any system, whatever amount of machinery and show and red-tape it may possess, is, what sort of men and women does it produce? And, in the long run, it treats with well-merited contempt and scorn all fine theories which fail in this respect. To secure the highest style of man, therefore,—the man who is not weak, or capricious, or unreliable, who is not an incubus or a firebrand in society, but is fit to take his place and discharge his duties in relation to God and his fellow-creatures, it is self-evident that we cannot neglect the training of any part of his nature—we require to draw out in a legitimate manner all the grand possibilities of that nature. Hence we must provide for the culture of the senses, the culture of our physical organs as mechanical instruments of the mind, the culture of our mental powers, and the culture of our moral nature—the last accompanying and interpenetrating all that is done in the other directions. Let us look at these separately.

(a) *The culture of the senses.*—It is only recently that attention has been given to this as specially vital to education. A quarter of a century ago physiologists and metaphysicians generally treated with scorn what they denominated the ravings of phrenology. In their opinion it was the sheerest nonsense to attempt to explain mental phenomena and to guide the work of education by reference to the brain. A distinguished man who now holds a position of high trust and responsibility in this city was then my fellow-student, and used to tell me with great glee and triumph that phrenologists were ignorant fools because they placed bumps, upon the brain as organs of mentality where there are actually depressions and empty cavities in the skull. My metaphysical friends of that period, whether as books or as living oracles, were not much more respectful to this line of investigation.

But the educational world moves. Now, you can hardly take up any school manual which is not decorated with pictures of the brain, and the learned authors, from Dr. Carpenter downwards, tell you all about the weight, and shape, and size and density of the brain—its convolutions, ganglionic centres, and the rest. They trace it from its first stages of development through infancy, childhood, manhood and old age—they even venture, with surprising minuteness of detail, to connect with its different stages of growth the appropriate parts of the great programme of modern studies, and to indicate how it is to be treated, fed and disciplined, from its early pulpy plastic state until it becomes the shrivelled occupant of a hard and barren old skull. Well, there is truth in all this, although we may, in the meantime, take some of it *cum grano salis*—as not altogether infallible gospel. At any rate I have no time or need to argue with these enthusiasts. For my present purpose a general statement made by Tyndall is sufficient, as bringing

out the fact that each of the senses has its own specific function which cannot be transferred to another, and should therefore receive appropriate culture. He says: "Different nerves are appropriated to the transmission of different kinds of molecular motion. The nerves of taste, for example, are not competent to transmit sonorous vibrations. For this latter a special nerve is necessary, which passes from the brain into one of the cavities of the ear, and there spreads out into a multitude of filaments. It is the motion imparted to this, the *auditory nerve*, which in the brain is translated into sound."

This statement contains enough—perhaps a little too much. It seems to accord one function to the brain which certainly does not belong to it. If it ascribes the mental act of translation to the brain it is a mistake. It is not the *brain* which translates the motion into sound, but the *mind*, to which the brain and the nerves are auxiliary. The senses give no knowledge any more than the living tissues of a plant possess that function. They are merely servants, reporters, to the mind, without which they are useless and destitute of all intelligence. They are related at the one end to the outer world, and at the other to the mind; and it makes all the difference imaginable what sort of mind is placed at the inner end of these nerves, and what sort of treatment or culture they have received. The brain of an ox or an ass may, and does, translate motion into sound in Tyndall's sense. The ear of the rabbit or the stag is far quicker than the ear of man; but it needs the *mind* of a man and of an accomplished musician related to the *auditory nerve* to translate the vibrations of a grand orchestra into all the thrilling effects of melody and harmony. Hence the necessity of training, of educating, this sense. And what is true of this is true of all the rest. It may seem strange to some—even after all that has been written in this direction—but it is nevertheless true, that boys and girls, men and women, literally require to be taught to see, and hear, and feel, and taste, and smell correctly. According to the Kindergarten system of education, founded by Frederick Froebel, this sort of culture of the senses is made to precede all other elementary training so as to prepare the child for higher forms of instruction. This is so far well. But I see no valid reason for limiting such culture to childhood. On the contrary, it should be extended by appropriate methods over the student's entire career, and beyond the time when he takes leave of his *alma mater* to the end of his life. Many weighty reasons might be urged in favor of this course. Suffice it to say, that the manipulations of the natural sciences as well as the refinements of literature and art demand this delicate and accurate culture of the senses. How otherwise, for example, can the beneficent marvels and triumphs of surgery be accomplished? It is only the man whose eye, and hand, and sense of touch have been most carefully and minutely educated for years that can be entrusted with operations involving the life, or the life-long happiness or misery of his fellow-creatures. And it seems superfluous to say that such training is fundamental to the fine arts,—that Architecture, Sculpture, Painting, Music and Poetry are impossible upon any other condition. It is vain to dream of genius taking its place. Men of the highest talent and genius cannot dispense with it. Their success is dependent upon it. Every observant student of Tennyson, for example, must have noticed to what an exquisite degree he has cultivated his ear. Hence the music of his lines from first to last—those that mean little and those that mean much—is perfect. This ear-culture has not made him a poet. *Poeta nascitur, non fit*; but his case shows with superlative force that the training of the senses, the teaching of the ear to hear and the eye to see, is fundamental—stands at the very threshold of the highest education; and that, as one of Tennyson's admirers has well remarked, "the intensest sense of natural beauty—whether of color, or

form, or sound, or imagery, or thought—needs culture, and the poet who neglects thus to train his ear is as unfair to his genius as a painter would be who did not study drawing and the harmony of colors."

(b) *The culture of our physical organs as mechanical instruments of the mind*—only a few words on this point. It is now well understood that in order to secure the health and growth and beauty of the human frame—and these are grand ends to aim at—we must supply the right sort and right measure of food and rest and exercise. It is not possible here to prescribe the form or manner in which this is to be done, or to lay out the work to be accomplished in this respect in our homes and school-rooms and shops. I merely affirm in a general way that just as each one of the senses requires separate culture, so the hand, the foot, and every organ of the body should be trained for its proper functions, and that physical exercises and activities in the school-room, the gymnasium, the play-ground, and workshop should be made to contribute to the attainment of firmness and strength and skill in the use of our organs, and this skill should be treasured up and rendered permanent as well as available at any moment in the form of settled mechanical habits.

Our system of education recognizes this doctrine and provides some facilities for carrying it out. Hence we have gymnastic exercises, calisthenics, and object lessons to a limited extent—but these are not enough. They afford but partial scope for the development of the senses and bodily organs. Our appliances and arrangements for physical training, generally speaking, are by no means complete. Its necessity and utility are very inadequately appreciated by many parents and even directors of schools. It is therefore neglected or treated with contempt. Hence incompetency in many instances for the duties of life, feebleness and deformity of the body, discomfort, disease, and death are frequently the issues. We need a vast extension and practical improvement upon the means and methods employed for the strengthening of the physique of our boys and girls, and men and women; and the morality of the land, let me say in passing, would be greatly improved by this means, for certain secret vices are checked and banished by the cultivation of manly physical vigour. But I am not despondent or despairing in this connection. I look with hope and gladness to the spirit of the age, which demands that theoretical knowledge, the speculations and abstractions of philosophers are no longer to reign supreme in education. The tangible, the visible, the products of men's hands are justly forcing themselves upon attention and gaining ready acceptance in our practical age; and we are destined to see far more of this in future. The training of the hand, of the whole frame, for the toils which it is to undergo in life will yet become much more closely related than at this moment to the work of the school-room. Children will be trained, not for genteel indolence, but for healthy and remunerative activity. The raw materials of the industrial arts may yet be put into the hands of pupils now deemed too delicate or refined to touch them, that they may learn their nature and history and be practically trained in the methods of preparing them for man's use. We are doing a little, and are destined to do far more in this direction, by our agricultural colleges, schools of applied science, schools of cookery and technology, with their workshops and other appliances attached to them. And when we have attained to the right standard of this sort of physical training—this culture which makes all the organs of the body skilful instruments in working out the grand purposes of the intellect and the heart, then the material resources of our country will speedily become available as inexhaustible storehouses of national wealth and prosperity—we shall be moving in the direction of a practical solution of the great ethical problems

of modern times in relation to labour and capital, strikes and trades unions, and the invasion of the Chinaman—we shall purify our homes and the moral atmosphere of the land by banishing physical incapacity, indolence and mock-gentility and all the immoral amusements and other means now employed by multitudes to displace honest toil and kill time, and we shall convince such that downright hard work is at once respectable, delightful, and useful.

So much for the grand factor of physical culture and the manner in which ethical principles fit into it. Now for another point.

(c) *The culture of our mental powers.* In this connection I have time only to indicate two vital points without extended elaboration. *First*—I wish to protest, however briefly, against the growing feeling that having trained our *sensor* and *motor* organs—our physical nature—we have done all that is needed. On the contrary, I allege that we are not wholly animal in origin and constitution—that we are not all body—that the phenomena with which education is concerned are largely and chiefly spiritual. The evidence of this is incontrovertible. There are fundamental facts of our nature which cannot be accounted for on the supposition that we are all body and nothing more, and hence this hypothesis is untenable. We cannot, for example, account for the *indestructible feeling of unity* which is inseparable from the consciousness of personality. Such unity in no sense belongs to matter, for we know that by the application of sufficient force, in the form of heat, for instance, the particles of matter can be rent asunder, or different bodies may be fused into one. But such disintegration or fusion of the soul—the ego—is unthinkable. Consciousness rebels against it.

We cannot account for *personal identity* from the physical side of our nature or body-wise. Thus, we know that we are related daily to an infinite variety of subjective phenomena. We hope, we fear, we love, we hate, we enter into elaborate mathematical calculations and far-reaching processes of discursive thought. We change our relations to the whole universe every moment. Our views, opinions, and convictions change—our bodies change from infancy to old age, but *we* are the same—the conscious ego is identical from first to last. This is not a property of our animal nature, but of the spirit that is in man.

We cannot account for *will force* on the materialistic theory. This is thoroughly unlike anything found within the whole domain of *physical force*. Physical forces act with unvarying and unchangeable regularity. They move in ruts out of which they cannot lift themselves. But here is a force of infinite versatility—capable of acting in all directions—capable of opposing, directing, and overmastering physical forces—enough, were there nothing more revealed by consciousness, to save us from the folly of denying the existence of spirit.

And surely it is self-evident that the *properties of spirit and matter are not identical*. Thought, feeling, volition, moral sensibilities—these are properties of mind, but they cannot be aggregated into size, and weight, and colour—properties of matter. Our consciousness—the veracity of which we dare not question—in every indivisible act separates self from not-self. So sings the Poet Laureate:

“The baby, new to earth and sky,
What time his tender palm is pressed
Against the circle of his breast,
Has never thought that this is I.

“But as he grows he gathers much,
And learns the use of I and me,
And finds I am not what I see,
And other than the things I touch.

“So rounds he to a separate mind,
From whence clear memory may begin,
And thro’ the frame that holds him in
His isolation grows defined.”

We thus make sure of the two factors of our being—self and not-

self; and we do so in the interests of moral science, whose very basis is cut away if we fail to distinguish between body and mind.

Second—I wish in connection with the culture of our mental faculties to emphasize the need of preserving the proper balance of harmony among them—their regular or evenly development. This is not always attended to. There is an unreasonable pressure often laid upon the memory, for example—it is loaded and urged on like a beast of burden, to the neglect and injury of other faculties; or the imagination and feelings are so stimulated as to overpower the conscience and the will. In either case injury is done. The vice of cramming is encouraged; and this is an evil which deserves the strongest reprobation, because it perverts and distorts the child's powers, inflates him with a foolish conceit should he prove successful, or disgusts him with study in case of failure, and often saps the very foundations of health, and, what is worse, of morals, by the practical dishonesty which it fosters. Experienced teachers understand how all this happens. We all know how the body suffers—what weakness and unutterable agonies it passes through by having several sorts of indigestible food crammed into the stomach; and this is only a feeble type, a shadow, of the irreparable mischief done to the mind by persistent cramming. It is aside from my purpose to indicate the forms in which this vice is active, and the extent to which it frustrates the work of schools and college; but I may say in passing that as things are, pretty strong temptations present themselves to yield to its power. The haste to be rich, and hence the feverish wish of parents and senior pupils to abbreviate the period of school attendance and to enter business—the haste to rush and crowd into the learned professions—our pompous courses of study with thousands of pages in several languages to be read, a multitude of subjects to be mastered and academic degrees and honours to be gained all in five or six years—the fact that public sentiment offers a sort of premium in the form of special laudations to institutions which turn out in the shortest time the greatest amount of work thus done to order—all these things are so many potent temptations to indulge in cramming, to set aside the true philosophy of education and to ignore the symmetrical development of the senses, the physical frame and the mental powers upon which I insist.

(d) *The culture of our moral nature.* A few sentences on this point will complete my brief outline of what is to be aimed at by the educator. It may be granted without discussion that there is an immutable and eternal distinction between right and wrong; that the basis or standard of right is to be found, not in the feeling of self-love, the sense of utility, the impulse of benevolence, or in any of the changing phenomena of the human mind, but only in the divine nature—and that nature revealed in the record of creation and the written word.

It may be further conceded that there is an innate faculty or power in man which recognizes the distinction between right and wrong and discerns the moral quality of actions. This is the precise function of conscience. As a recent writer expresses it: “Conscience is the innate moral sensorium of the personality for differentiating right and wrong, good and evil.” Furthermore, all creatures endowed with the faculty of moral discernment are, by the very condition of their being, under law to the Creator as their Moral Governor; it is inconceivable that creatures should be brought into existence under any condition than that of loving subjection to the Creator; and they are also related to one another by an infinite variety of moral obligations in the great fabric of society, and capable of forming an indefinite number of moral habits, both vicious and virtuous.

Now then, without extending these statements, or anticipating what is to be advanced in another connection, enough has been said to make it apparent that a fair treatment of man's nature, an

honest endeavour to develop all his powers, demands no small amount of moral culture. Educate man up to the proper point, make him what he should be, give all the powers and functions of his nature fair play, and his conscience and moral sentiments cannot be overlooked. This is the precise point of my argument; and I believe that sound philosophy and history may be confidently appealed to in support of this position. I know that history is not an infallible guide in the definition of education, because civilized races are constantly outgrowing the highest attainments of the past, and therefore it is unwise to bind us simply to what has been. What, a few centuries ago, was a crime to predict as scientifically probable or possible, it is now insanity to deny. And so the curriculum of study in coming centuries will discard, I have no doubt, a good deal upon which we expend our energies, and include not a little of which we have scarcely dreamed. Still, making these allowances, history teaches, with an emphasis and a force which we cannot disregard, this lesson, viz.: the absolute necessity for a symmetrical and harmonious development of man's nature such as we have indicated under the four points just mentioned, and at the same time the danger and folly of a narrow and one-sided education.

Almost innumerable examples of such folly might be cited from the historic past. Take only two or three well-known instances. And these instances, I ask you to observe, bring out the fact that most pernicious one-sidedness has occurred by one thought, and then another,—one ruling principle, and then another,—one view of man's nature, relations, and destiny, and then another being made unduly prominent or supreme, to the exclusion of all other considerations.

Thus, in ancient Egypt all culture was carefully and strongly stamped with a religious character, almost to the exclusion of everything else. Educational efforts were limited and controlled by the mythological ceremonies and absurdities of a swarming priesthood.

The Chinese have moved in a single groove for centuries. Intellectual activity has been made to flow almost entirely in one narrow channel. They have been ruled and trained by the single principle of veneration for ancestry. Children have been taught little else than unquestioning submission to parents, and citizens servile subjection to the head of the Empire. This has been the alpha and omega of their education.

In India the tyrannical law of caste has from the very earliest antiquity rendered education limited, partial, one-sided. Without multiplying examples from the distant past, let me ask for what are these nations distinguished? Or what is the outcome of their education? Do they now, after centuries and centuries of such training, lead the van of invention and discovery, and stand foremost as founding and fostering institutions for the amelioration of man's misery and the elevation of his entire nature? Do we look up to them as having achieved true freedom, and as enduring examples of social, political, commercial and scientific progress? Have they risen to the same lofty plane of thought and purity as the Anglo-Saxon nations with their broad and symmetrical culture? Assuredly not. They are appalling monuments of intellectual and moral stagnation. They could not escape being so, because the unavoidable limitations of a partial and one-sided training veto and crush out of existence all true progress. And it matters not that the ruling thought in such training may be counted harmless, or even good and devout; if allowed to become unduly dominant, to usurp the place of other essential modes of thought, to close the door of truth on any side, to suspend or paralyze any of the functions of man's nature, it is dangerous and injurious. We have a striking and incontrovertible example of this in our own day and in our own country. Here it is expressed in the words of the dis-

tinguished Joseph Cook. In a recent lecture on Canada he says: "On the fertile banks of the lower St. Lawrence we have a French population living in a state of prolonged childhood under Romanism—ignorant, industrious, social, but not progressive. Lower Canada is a part of France unreformed by the revolution of 1792. The Romish Church of Louis XIV. yet collects its tithes on the eastern St. Lawrence." And Joseph Cook significantly adds as explaining this state of things—this intellectual stagnation for centuries—"the Jesuit is active there." Yes, and his system of education is one-sided, unsymmetrical and unnatural in the last degree, and hence its outcome.

But the history of this same French people in their own country furnishes a far more startling and unique example of the ruin that may be brought about by a one-sided education whose ruling principle or dominant aim is thoroughly bad—in which, not an ignorant or pious superstition, not a good thought misplaced, but a false and immoral principle is made supreme. When the proper equilibrium, the symmetrical unity of man's constitution, the coordination of his faculties, of his beliefs and opinions, are overthrown by such a dominant principle the results are most disastrous.

We all know what happened in France when the sensualistic philosophy, with its denial of the existence of spirit and perversion of all pure morality, was fully developed from germs furnished by two eminent Englishmen—Hobbes and Locke. The dominant materialist principle of the system was readily favored by Voltaire, who, though no philosopher, was prophetic enough in spirit to see how it would serve his own purposes, and hence he used his satirical pen to promote its success as against the antagonistic philosophy of DesCartes and Leibnitz. Condillac, with unlimited dogmatism and exquisite beauty of style, lent his powerful support to the same principle. Helvetius developed it with a will, and, with an outspokenness which far surpassed that of his predecessors, promulgated views the grossness of which it is almost impossible to exaggerate. His literary executor, St. Lambert, tried to cover the hideousness of his doctrines with the garb of decency, but this only intensified the evil. The sensualistic principle prevailed. The doctrine of no spirit, and hence no God, no hereafter, and man nothing more than a bundle of organized sensibilities, compelled by the fatality of his constitution to shun pain and seek pleasure in every form, was fully accepted. With man's moral nature thus thoroughly perverted and depraved by a persistent course of one-sided and pernicious training, it was easy, under the guidance of St. Lambert and kindred spirits, to bring in all the horrors of the reign of terror, when by public enactment God was proclaimed a non-entity, and hence Divine worship and the Sabbath were abolished—the goddess of reason was openly enthroned and adored—the marriage law was annulled, and multitudes of bastards were born annually, and the prisons were thronged by innocent men and women who fell victims to the remorseless periodical slaughters of the guillotine; all this, and much more, as the undeniable issue of a one-sided education which systematically and persistently ignored the spiritual and moral functions and relations of man. It seems to me, therefore, that the analysis of man's constitution as indicating the training it requires, and the testimony of history as recording the experience of the past, make it abundantly evident that moral culture should be an essential and prominent factor in public education. I argue this:

II. From the fact that it is clear, even from the most cursory view, that the science of ethics embraces the discussion of great and vital questions which affect the weal of society and the progress of man.

You may convince yourselves of this by the study of almost any of the systems of antiquity or of modern times. I do not mean, of course, that you may accept these indiscriminately as equally safe

and true, but only that any one of them, however faulty, may serve by the very statement of the subjects it touches to show the truth of the proposition just enunciated. Here, for example, is the wide range of topics embraced under the title of "Christian Ethics," in a work just issued at Heidelberg by the well-known Dr. Lango. I use a condensed *vidimus*, prepared by Professor Lacroix. The Dr. begins with a critical introduction in which he gives the "History of Ethics"—both Protestant and Catholic—from the revival of learning to the present time. Then follows: *Part First*.—Principles. (1) Ontological Principles: (a) Of Personality; (b) Of Spirit, (c) Of Nature, (2) Soteriological Principles: (3) Organic Principles. *Part Second*.—Duties: (1) Duty in general; (2) The moral law, (3) The moral purpose; (4) The moral action. *Part Third*.—The virtues: (1) Vice; (2) Virtue in process of genesis; (3) Christian virtue realized. *Part Fourth*.—Goods: (1) The moral good; (2) Evil, (3) The hierarchy of goods; (4) The goods in their historic development.

Now, whatever you may think of this distribution of Christian ethics, whether you approve or condemn it, you cannot deny that it includes a vast array of questions which cannot be ignored or even lightly treated in our national system of education, because they lie at the very foundations of society; and our citizens, if left ignorant of them, cannot rightly fill their places in the great social compact. Society, let us remember, is not founded upon mathematics—pure or applied—or upon geology, or chemistry, or astronomy, or upon any of the sciences which bulk so largely in our programme of modern learning, and which I have no wish to depreciate but upon grand moral principles. The framework of society is neither set up nor held together by brute force, nor solely by the products of the intellect. Steam and electricity, the outcome of all the sciences, intellectual achievements of every sort, have their own rightful place, but let us not forget that we are drawn together and aggregated as families, cities, communities, nations, through our moral natures, and that we can become pure and great only by the proper recognition of our relations to God and to one another.

I know that these views may be felt to involve the acceptance of the Bible by the nation. Be it so. That is precisely my intention; and I am not afraid or ashamed to acknowledge before the wisest philosophers that I decline to accept as a fountain of instruction and the ultimatum in morals, pagan guesses and rubbish, while I have access to the Word of the Maker of our bodies and the Father of our spirits. I know that the Bible contains the highest philosophy and the purest morals—that the life and lessons of Jesus are the clearest exhibition, the very incarnation, of the morality we need in our schools and in the whole community. And I have yet to learn that our civil and educational institutions can exist without the Bible. Our civil law, our criminal law, our Sabbath law, our marriage law—the great bulwark of domestic and social purity and happiness—our laws against blasphemy and perjury, are all drawn from the Bible; and we use an act of religious worship—would that it were devoutly used—in the form of an oath, as the very bond of society and the means of ascertaining truth and enacting justice in all our courts of law. Why should it be thought surprising then by any one? and why should any intelligent citizen be found to hesitate about the fact that true moral culture—the culture that has contributed so largely to make our empire what it is—demands the free use of the Bible? Has it not already woven itself into every line of our purest literature, and every principle of our science, and every fibre of our national life and history? So that it is only by being untrue to ourselves, to our history and to our God that we can deny it this place in future. But having said this much, I refuse to be branded on this account as a narrow bigot

and the enemy of science and progress. I am the humble friend and advocate of all true sciences—eager to see the door of truth thrown wide open on every side—willing for the freest, fullest, and most profound investigation into God's works without the slightest shadow of fear of his being thereby convicted of error, ignorance, or fraud—willing, as one has well expressed it, to have all men doubt the false, if the doubt be pursued to the overthrow of the false—and to have them even doubt the true that has come to them through tradition or bad education, if the doubt be pursued to the establishment of the true. But I am unwilling to accept a pagan, inaccurate, unreliable guide in morals when I have a perfect one at hand—unwilling to have the nation in any measure let go its firm hold upon the living Word, or renounce its public confidence in the great bulwark of its life and liberty and glory. In the words of an English writer: "I look upon the present age as rich in the elements of a glorious future; but every one of these elements may subserve an overwhelming catastrophe. The great need of our age is steering power. The traditional respect for superiors was a superstition; it is right that it should have passed away. But in its place we must have a true respect for real superiors, or the nation must come to shipwreck. The fading faith in religion was, in a large measure, a superstitious belief in a corrupt Christianity; it is right that it should have passed away. But in its place we must have a real belief in a pure Christianity, or every man in the nation must come to shipwreck. Faith in men, love to men, respect for men—faith in God, love to God, reverence for God—who will supply these to the world? Let these abound, and then

" Make knowledge circle with the winds;
But let her herald, Reverence, fly
Before her to whatever sky
Bear seed of men and growth of minds."

Let us now take another step in this argument. I press for a proper recognition of ethical training in our public education—

III. Because this is specially needed to meet the present wants of our country. What are these? It cannot be denied that we have abundant material resources. Our country is broad and rich enough in this respect. We have also a goodly modicum of talent—of mental outfit—whatever our cousins across the line or our grandfathers across the Atlantic may think about us. The ranks of the learned professions are well filled, and we are never lacking in young recruits aspiring for distinction and power. In theology, law and medicine we make a respectable appearance, and the different sciences find among us earnest votaries and a few names of world-wide reputation. And if we do not stand in the first rank in literature, we have at least shown some skill and enterprise in it, and even the fine arts begin to show signs of growth and progress on our soil. Our schools, especially in this great Province of Ontario, are well organized and equipped on the whole, and carried on by a band of earnest and enthusiastic workers. We are slowly rising to fill no unimportant place in the great family of civilized nations; and what we need now for still greater national strength and progress are certain things in the moral category. Shall I say a higher sense of honour among all classes, including our public men, and a supreme regard for truthfulness? It is easily seen that shortcomings in these respects must touch and deteriorate our national life at every point—they will influence our domestic relations and public transactions—affect our buying and selling, the entire trade and traffic of the country—they must appear in the witness box tainting our judicial processes and perverting the decisions of our courts—they will pervade our daily literature and render almost worthless, and even pernicious in many instances, the utterances of the press. And is it not a lamentable fact, as recently declared by a leading statesman of Ontario, that in order to get an approximately correct view of the doings and utterances of any

public man you must read the accounts given by the papers which favour him and the papers which oppose him? And even then you may fail to reach the truth.

Now, it is in the power of our schools and institutions of learning as well as of our teachers of all sorts, to brand with deserved infamy this detestable vice of lying, and to stamp it out of fashion, if not out of existence, by calling it by its right name and making it bear its proper burden of dishonour and disgrace, and by holding up constantly before our youth a pure standard of truthfulness and integrity. This is what is needed to bring back business to a safe and healthy state, and the only sort of National Policy that can ensure permanent prosperity. We hear much of the *hard times* through which we are passing, but we are slow to take in the thought that *hard dealing* must bring on hard times in the most productive and highly favoured countries under heaven. If men will have double prices for their goods, and oblige their cloaks to lie in selling them—if they will force on trade far beyond the wants of the country by unlawful competition and an unhealthy system of commercial travellers—if they will buy and sell on credit with no rational prospects of meeting their obligations—if young men will rush into business without capital and float it upon accommodation paper, and set up domestic establishments the very first year surpassing, or at least equalling in grandeur and extravagance those of persons who have made their fortunes—if wealthy men, eager to become more so, will found superfluous banks and then press hard upon each other while encouraging reckless commercial adventurers—if men will make up their minds to overreach, and cheat and lie in business, there is no difficulty in seeing how hard times must inevitably overtake them. And the remedy is to be sought in persistent, universal, thorough moral culture. The vices hinted at are not to be cured in a few months or years. They grow slowly and they die hard. Great, tall, rank plants of iniquity do not grow up like Jonah's gourd in a single night. Giant swindlers undergo a long and hard process of education in secret and public which is not easily undone; and when a multitude of them infest a country it may require a generation or even more to drive them out, and there must be many a crash and painful exposure in business and in public life before they disappear. It is manifest that the true way of dealing with these evils, in so far as they affect us, is to teach and preach and speak and work against them. They will not disappear by being left alone. Silence respecting them is criminal. The feeble compromising policy which finds it convenient and easy to do nothing, or to wink at moral delinquency, is both unsafe and unmanly. And I am not sure that those specially entrusted on one day out of seven with the work of public instruction in morals are in this respect entirely blameless. Froude, the historian, justly complains that he has not been well treated in this respect during a long period of devout church-going. His words are: "Many a hundred sermons have I heard in England; many a dissertation on the mysteries of faith, on the Divine mission of the clergy, on apostolic succession, on bishops and justification, and the theory of good works and verbal inspiration, and the efficacy of the sacraments; but never, during these thirty wonderful years, never one, that I can recollect, on common honesty—on those primitive commandments, "Thou shalt not lie," and "Thou shalt not steal."

Probably his experience is not unique. It cannot be so if we may judge from the number of rogues still at large in spite of the business carried on by our police and our prisons. The pulpit is doubtless to blame; but we need far more than sermons on these questions. We need to go down to the roots of the evil, and to permeate our whole educational system with ethical training. We need ten thousand daily lessons in our school-rooms and in our homes on the elements of morals, on the principles of truth, and

right, and law, and purity, and frugality, and self-control, and general government; and we need to have these lessons not only formulated and printed in a manual authorized by the Minister of Education, but also taught by men and women who have their hearts in the work, and whose lives are illustrations of what they teach living epistles known and read of all men. This is what is needed in order to preserve untarnished the national honor and glory which we have received as a rich heritage from the past, and in order to make strong and lasting the foundations of the mighty empire of teeming millions destined to extend northward from our grand St. Lawrence. And as we try to consolidate more and more our wide spread provinces, and to fuse into strong and loving unity our heterogeneous populations, and to bind all in undying loyalty to the best of sovereigns, as we plant our institutions over the enormous territories of the North-west, and along the valley of the Saskatchewan, and are not ashamed to call Canada our country and our home, let us see to it that reverence for truth and right reign supreme; then

Self-reverence, self-knowledge, self-control,
These three alone lead life to sovereign power.
Yet not for power (power of herself
Would come uncalled for), but to live by law,
Acting the law we live by without fear;
And because right is right, to follow right
Were wisdom in scorn of consequences.

THE LADIES' COLLEGE.

MR. EDITOR,—The position which the Ladies' College occupies in this country and the work it aims at accomplishing do not appear to be well understood by some zealous promoters of public education. If one may judge from the occasional references made to such institutions in papers read at school conventions and published in the JOURNAL, they seem to be regarded by some prominent teachers as in some way antagonistic to the National schools.

From what one may gather from these utterances, an opinion seems to prevail in some quarters that the National system should embrace the entire education of the Dominion, comprising schools of every kind and grade, from the infant school up to the University. It may be excusable, therefore, in those who hold this opinion that they should be somewhat intolerant of whatever seems to thwart its realization, and consequently of the Ladies' Colleges which have of late sprung up in Canada. It is, however, possible that if these gentlemen knew a little more about the Ladies' College, its work and its aspirations, they would look on it with a more kindly feeling than they seem to do, and welcome it as an important auxiliary and complement of our National system.

The Ladies' College is the result of a long-felt want in Canada. Parents of adequate means felt that something more was needed for the education of their daughters than could be obtained at the ordinary schools, and gladly welcomed the appearance of these institutions. To say that they originated in a prejudice against what is called the co-education of the sexes, is an entire mistake. Few of the gentlemen who had invested capital in them had any opinion one way or other, good or bad, on the question; or if any of them had an opinion by which they were influenced, it was an intelligent one founded on observation and experience and by no means to be called a prejudice.

While this is the case, if, however, the question be raised, it will doubtless be determined in favor of the Colleges by a large and influential section of the parentage of Canada. It is no uncommon thing to hear parents say that necessity and not choice constrains them to permit their grown daughters to attend the public schools in which both sexes are educated together.

The writer has had considerable personal acquaintance with both methods under the most favorable conditions; and while recognizing some advantages in the united system, he is still of opinion that the best results for both boys and girls are only possible in a separate system of education. Of whatever value his judgment may be it is certainly not a prejudice, but one founded on ample evidence, experience and reflection.

Up to a certain age no great inconvenience may be apprehended from educating both boys and girls in the same school,

but beyond a certain age, and that by no means an advanced one, the inexpediency to say the least, of such a system is extensively felt. To say that it improves both, is to assert what requires proof. It may in some degree mitigate the rudeness of the boy, but it by no means enhances the delicacy or refinement of the girl. A wise and watchful teacher may do a great deal, by skillful arrangements and rules, to keep the relationship correct; but, do the best he can, he cannot altogether prevent much that is objectionable.

It is not a question of ability on the part of the girls intellectually to compete with boys in any department of study—the ability is readily conceded. The difference comes out when we take into account their physical powers. If an average group of boys be taken, and a similar one of girls, it will be found that the advantage, in the long run, in the matter of study, will fall to the boys. When the mental and physical elements in each case are correlated, as they ought to be, it is obvious that the girls have not an equal chance in the educational race when pitted against the boys, and are far more likely to be injured in health, it may be irreparably, by protracted mental strain. While the female mind lacks nothing of faculty or capacity as compared with the male, it must yet be said that it has not as the agent of its power the same robust physical frame.

It comes thus to be a question of total nature and not of mind only; what suits the nature of the one is not equally good for that of the other. There are doubtless exceptional cases, in which some girls are, in every respect, equal to some boys; but in all ages and countries such instances have been exceptional: it is so now, and will likely be so to the end. To meet such exceptions it is only just that the secondary schools and university colleges, with all their privileges, honors and prizes, should be as free to the girls as to the boys. The difference of the two sexes, however, suggests, if it does not demand, a separate treatment and training for each, especially in the more advanced stages of education when the difference reaches a maximum.

The same conclusion seems to follow when we take into account the different positions in life which the two are respectively to occupy. The higher education of boys has in view not simply a liberal culture, but specially a preparation for some one or other of the learned professions, such as the teacher, clergyman, lawyer or physician. For these ends the University and High School curricula are purposely adapted, and are the stepping stones to a position which secures subsistence and promises wealth and honor. But to the girl these professions are, for the most part, forbidden. Why should she, therefore, be required to pursue courses of study which offer little or no reward, and are not adapted to her special wants? Her proper sphere is social and family life; not, however, the narrow domestic life sometimes assigned her, but one that is wider far, and touches a great variety of human interests. For these ends a wider range of acquirement and accomplishment is needful than that which any special profession demands. To meet this want the lady requires a college for herself, in which such liberal learning as is requisite for the highest mental culture is provided, and such æsthetic accomplishments as shall refine as well as inform. The Ladies' College provides these things, and claims further that only such an institution can adequately supply them. In working up to its ideal, the College has no doubt to contend with many adverse influences. It was begun in inexperience, and its best friends often failed to form a just estimate of its proper place and aims; often too they blundered its management, and by injudicious meddling marred its operations and retarded its progress. But most colleges at their outset have these things to endure. Time and experience will cure them, as it has already largely done in Canada.

It is cheering to the promoters of Ladies' Colleges to note the growing sympathy of parents with their method of separate instruction. It is also gratifying to find that the great advance which has been made in female education, during the last thirty years, is distinctly marked by the rise of Ladies' Colleges in all the best educated countries of Europe and America. Although in some places national colleges are offering their privileges and rewards to women, yet, withal, there appears no tendency to an increase in the co-education of the sexes—the almost universal form of this advance is that of the Ladies' College. It is so in Cambridge with its Newnham and Girton Colleges, in Oxford, with its Somerville; in Edinburgh, with its richly endowed and prosperous "Merchants Colleges;" and in Glasgow and Dublin it is the same. In the United States, even, where united education finds most favor, the colleges in which both sexes are taught together are not to be compared either as to number or attendance with those that have lately sprung up exclusively for ladies.

So far yet the Ladies' Colleges have had a fair share of public recognition. They have given an education otherwise unattainable to hundreds of young ladies, and their graduates may be found in every part of the country commending their respective alumnæ to the rising generation. Were these colleges only on a par with the colleges for boys their success would very soon be obvious to the most inveterate of their opponents.

The friends of the Ladies' Colleges have no jealous feeling at the growth and improvement of the secondary schools; on the contrary, they are well pleased to see them becoming what they ought to be, and that they are equally open to girls as to boys. They are not rivals of the colleges; each has its own place. The one cannot do the work or fill the place of the other. If they stimulate to a healthy emulation they will help each other. In those branches which they teach in common, the best Ladies' Colleges are fully abreast of the best High Schools. They have as highly qualified teachers, as good text books, and, if not so unreasonably frequent, as thorough examinations.

The Ladies' College has besides a curriculum in advance of the High School and commensurate with that of the University. It leads its students into the highest departments of philosophy, literature, natural sciences, music and painting. They are debarred from no branch of learning, are reckoned equal to the mastery of any, have means and opportunities of study which suit them, and are free from the distractions inseparable from any system of co-education.

The Ladies' College further provides that which is not, in the measure required, expected from either the Secondary Schools or National Colleges, namely, those refined and refining accomplishments which are an essential part of the true lady's education, and without which the best literary culture loses much of its value in social life. Some reproach may perhaps be associated with the term "accomplishments" in connection with the education of ladies, from the circumstance that little else used to be taught in ladies' schools. True as this may be, it is nevertheless also true that accomplishments cannot be dispensed with in the education of ladies, and will often be preferred to the solid acquirements when these can only be secured by the sacrifice of the other. It is the merit of the college that it offers a liberal share of both; each is made to minister to the other, neither is dissociated from the other: the college that neglects either cannot justify its own existence.

The Ladies' Colleges are also Christian institutions, and to this special characteristic they attach the highest importance. They are all directly connected with and under the guardianship of one or other of the Christian Churches of the land. The Bible is one of their text books; its leading truths are freely taught and its precepts enjoined. While disavowing anything that can be called sectarian, and freely admitting all to their privileges, they are yet distinctively Christian Colleges. This feature has a peculiar value in the estimation of most parents. It is felt to be the best safeguard for the welfare of their daughters, and a vital element in the formation of their characters.

The culture which the College thus provides leaves nothing needful or desirable out of account or to chance; its deliberate aim is the harmonious development of every power of mind and grace of character.

That shortcomings may be discovered by critical eyes in the means used to attain these ends is not surprising. It requires no great acuteness to observe these in all our schools, high and low, public and private. But it should be remembered that the College is but in its infancy, and that time is needful to mature and perfect its plans. Most of the flourishing Colleges of this country, as well as of other lands, have taken decades of years to reach their present efficiency. Unfriendly critics who take offence at the Ladies' College should bear in mind that the Schools and Colleges which they represent, and for which they make such lofty claims, were but lately much poorer affairs than any Ladies' College in Canada has ever been. Not so long ago it was only here and there that a High School could be found worthy of the name. We are all glad that there has been a great change for the better. Even our admired University Colleges were, scarcely a generation since, very poor seats of learning, and we might in those days have carped and sneered with some show of reason at these humble handmaids of letters. But wise and generous men do not act in such ways; discerning in them the germs of noble institutions which if cherished would become the glory of our country, they rather lend a helping hand to raise them to their present eminence. In view of these things, and of others that might easily be noted, it is scarcely con-

siderate or courteous of eminent teachers in public school conventions to speak unkindly of the Ladies' Colleges. They have been erected at great cost by the liberality of public-spirited gentlemen, who take a deep interest in the promotion of National as well as private education. They ask no money from the public purse, and might reasonably expect some little encouragement from professional teachers instead of those ungracious cavillings in which some are wont to indulge.

The Ladies' College will nevertheless pursue its onward career, satisfied that it meets a great national want, and that in due time, in spite of all hindrances, it will be acknowledged and honored as a power for good in the higher Christian education of the daughters of the Dominion.

I am, yours, etc.,

A. F. KEMP, M.A., LL.D.,
Principal Ottawa Ladies' College.

October 21st, 1879.

To the Editor of the Canada School Journal.

SIR,—I have been much interested by the thoughtful article in the September number, by J. H. Stewart, M.A., on the Subjunctive Mood. His remarks on the curious idiom by which hypotheses and their consequences, belonging to the potency, are expressed by the aid of past tenses, are very acute. I would, however, suggest this little modification. Instead of saying that "the speaker mentally transfers himself forward to the future," I should say that "the speaker mentally transfers the events referred to back into the past." It comes to much the same thing in the end, but I think the latter way of putting the matter falls in most simply with the actual idioms. Thus, if you wished to translate into Greek such a sentence as 'If he were here (now) I should see him (now),' you would use a phrase with the plain, direct Indicative Mood in the past imperfect tense, and running literally: "If he *was* here I *was seeing* him." Here there can be no question about the speaker transferring himself mentally to the future, because the whole sentence—hypothesis and consequence—refers to the present. But he does transfer the events or facts contemplated back into the past. On similar principles it is that the French made their conditional mood, "je donnerais (*I should give*) is literally 'je donner avais,' 'I had to give,' just as the future 'je donnerai' is 'je donner ai,' 'I have to give.'

Also with regard to hypotheses like "if the prisoner is guilty, he deserves to be punished," there is no occasion for bringing in the consideration of the prisoner's guilt; this man has no doubt, and consequently he uses the indicative, because the same word will be used if he goes on to say: "If the prisoner is innocent, the witnesses have perjured themselves." We cannot treat each alteration as a matter of which we have no doubt. The indicative is used because the suppositions (with their consequences) have reference to what is actually the fact, one way or the other, though we do not know (or express ourselves as if we did not know) which alternative is in accord with the facts. It is important to distinguish 'having referred to facts,' from 'being in accord with facts.' The former decides the use of the mood, whether the latter holds good or not.

Allow me, however, to thank Mr. Stewart for his able remarks. "O! Si Sic omnes!" I hardly know how you fare out in Canada; but there is a dreadful quantity of thick-headedness on this side of the Atlantic. Yours faithfully,

C. P. MASON.

Mathematical Department.

Communications intended for this part of the JOURNAL should be on separate sheets, written on only one side, and properly paged to prevent mistakes. They must be received on or before the 20th of the month to secure notice in the succeeding issue, and must be accompanied by the correspondents' names and addresses.

SOME PROPOSITIONS IN EUCLID, BK. II., BY SHORT METHODS.

Those propositions of Euclid, Book II., which, when expressed algebraically, are identities, may, with the exception of Prop. I., be established by using no other figure than the divided line, and yet by methods strictly Euclidean. In fact, they flow naturally from Prop. I. just as the corresponding algebraical identities flow naturally from the Distributive Law of Algebra, to which Prop. I. corresponds.

We suppose Prop. I. established by the ordinary method.

Prop. II. $\overline{A} \quad \overline{C} \quad \overline{B}$. We may speak here of the divided line AB and the undivided line AB . Then by Prop. I. the rectangle contained by the undivided line AB and the divided line AB is equal to the rectangles contained by the undivided line AB and the segments AC , CB ; i.e., the square on AB is equal to the rectangles AB , AC and AB , BC .

Prop. III. We have here the divided line AB and the undivided line AC , and by Prop. I. the rectangle AC , AB is equal to the rectangles AC , AC and AC , CB ; i.e., the rectangle AC , AB is equal to the square on AC together with the rectangle AC , CB .

Prop. IV. By Prop. II. the square on AB is equal to the rectangles AB , AC and AB , BC . But by Prop. III. the rectangle AB , AC is equal to the square on AC together with the rectangle AC , CB , and by the same prop. the rectangle AB , BC is equal to the square on BC together with the rectangle AC , CB . Therefore the square on AB is equal to the squares on AC , CB together with twice the rectangle AC , CB .

Prop. V. $\overline{A} \quad \overline{C} \quad \overline{D} \quad \overline{B}$. By Prop. IV. the square on CB is equal to the squares on CD , DB with the rectangles CD , DB and CD , DB . But by Prop. III. the rectangle CD , DB with the square on DB is equal to the rectangle CB , BD , i.e., to the rectangle AC , DB ; and this rectangle AC , DB with the other rectangle CD , DB is by Prop. I. equal to the rectangle AD , DB . Hence the square on CB is equal to the square on CD with the rectangle AD , DB .

Prop. VI. $\overline{A} \quad \overline{C} \quad \overline{B} \quad \overline{D}$. By Prop. IV. the square on CD is equal to the square on CB , the rectangle CB , BD , the rectangle CB , BD and the square on BD . But the rectangle CB , BD is equal to the rectangle AC , BD . And the rectangle CB , BD with the square on BD is by Prop. III. equal to the rectangle CD , DB . And by Prop. I., the rectangles AC , BD and CD , DB are together equal to the rectangle AD , DB . Therefore the square on CD is equal to the square on CB with the rectangle AD , DB .

Prop. VII. $\overline{A} \quad \overline{C} \quad \overline{B}$. By Prop. IV. the square on AB is equal to the square on AC , twice the rectangle AC , CB and the square on CB . To each add the square on CB . Then the squares on AB , BC are equal to the square on AC , twice the rectangle AC , CB and twice the square on CB . But the rectangle AC , CB , with the square on CB , is by Prop. III. equal to the rectangle AB , BC . Therefore the squares on AB , BC are equal to the square on AC and twice the rectangle AB , BC .

Prop. IX. $\overline{A} \quad \overline{C} \quad \overline{D} \quad \overline{B}$. By Prop. IV. the square on AD is equal to the squares on AC , CD with twice the rectangle AC , CD . To each add the square on DB . Then the squares on AD , DB are equal to the squares on AC , CD , DB with twice the rectangle AC , CD . But twice the rectangle AC , CD is equal to twice the rectangle BC , CD , and this together with the square on DB is by Prop. VII. equal to the squares on BC , CD , i.e., to the squares on AC , CD . Therefore the squares on AD , DB are together double the squares on AC , CD .

Prop. X. $\overline{A} \quad \overline{C} \quad \overline{B} \quad \overline{D}$. The proof of Prop. IX. applies word for word to Prop. X.

In favor of the ordinary methods of establishing these propositions it may perhaps be said that they furnish us with exercises in geometrical proof and with a knowledge of the equality of certain parts of certain figures, and that they afford the advantage of dealing more immediately with the magnitudes themselves rather than with their names. On the contrary, it must be admitted that geometrical principles should be established by the clearest and most direct methods possible, and that it is an easy matter and the best plan to furnish whatever exercises on these principles

may be necessary, as we do in arithmetic and algebra. Certainly the usual way of arriving at the above propositions would correspond to making the figure of and proving, say, the 47th of Book I. every time we wished to use it, or, to use a more direct illustration, to establishing or illustrating the distributive law of algebra every time we wished to apply it.

University of Toronto.

ANNUAL EXAMINATIONS, JUNE, 1879.

JUNIOR MATRICULATION.

MATHEMATICS.

Pass Paper.

Examiner: F. HAYTER, B.A.

1. Define the Greatest Common Measure and Least Common Multiple of any-number of quantities. How is the L. C. M. of a number of fractions found?

Add together $\frac{13}{42}, \frac{59}{63}, \frac{88}{121}, \frac{3}{70}, \frac{91}{110}, \frac{91}{264}$.

2. Prove the rule for the conversion of a circulating decimal into a vulgar fraction, using a numerical example.

3. Distinguish between interest and discount, and shew that if P, I, D , be respectively the principal sum, and the interest and discount upon it for any given time.

$$\frac{1}{D} = \frac{1}{I} + \frac{1}{P}$$

4. A person has an income derived from £9360, which was originally invested in the Four per cents at 96. If he now sells out at 94, and invests one half of the proceeds in Railway Stock at 82½, which pays a dividend of 3 per cent., and the other half in Bank Stock at 164½, paying 8½ per cent. dividend, what difference will he find in his income?

5. Simplify

(i) $\frac{2^{n+1} - 2 \times 2^n}{2^{n+2} \times 4}$ (ii) $\frac{x^2 + (\frac{a}{b} + \frac{b}{a})xy + y^2}{x^2 + (\frac{a}{b} - \frac{b}{a})xy - y^2}$

(iii) $\frac{\frac{a^2+b^2}{b} - a}{\frac{1}{b} - \frac{1}{a}} \times \frac{a^2-b^2}{a^2+b^2} \times (\frac{a+b}{a-b} + \frac{a-b}{a+b}) \times (\frac{a}{a+b} + \frac{b}{a-b})$

6. Divide $6x^6 - 4x^4 - 19x^3 + 23x^2 - 13x + 3$ by $3x^2 - 2x + 1$, (i) in full; (ii) by Horner's method.

7. Prove the rule for finding the G. C. M. of two quantities.

Find the G. C. M. of $(x^3 + x^2y - 3xy^2 + y^3)$ and $(x^3 + 3x^2y + xy^2 - y^3)$.

8. Solve

(i) $\frac{3-x}{2+x} - \frac{2-z}{2+x} + \frac{1-r}{1+x} = 1$. (ii) $x^2 + 4.8x + 2.87 = 0$.

(iii) $\sqrt{2+1} - (2^{\frac{1}{2}} - 1)^{-1} = 0$.

9. Extract the square root of $32+10\sqrt{7}$.

10. Solve

(i) $\begin{cases} x+y = a \\ x^2+y^2 = 14x^2y^2 \end{cases}$ (ii) $\begin{cases} \frac{(x+y)^2}{a^2} + \frac{(x-y)^2}{b^2} = 8 \\ x^2+y^2 = 2(a^2+b^2) \end{cases}$

(iii) $\begin{cases} (x+y)(x^3+y^3) = 1216 \\ x^2+xy+y^2 = 49 \end{cases}$ (iv) $\begin{cases} x^2yz = a \\ y^2zx = b \\ z^2xy = c \end{cases}$

11. If a side of any triangle be produced, the exterior angle is equal to the two interior and opposite angles; and the three interior angles of every triangle are together equal to two right angles.

The difference of the angles at the base of any triangle is double the angle contained by a line drawn from the vertex perpendicular to the base, and another bisecting the angle at the vertex.

12. To describe a parallelogram that shall be equal to a given triangle, and have one of its angles equal to a given rectilineal angle.

13. The opposite angles of any quadrilateral figure inscribed in a circle are together equal to two right angles.

If two opposite sides of a quadrilateral figure inscribed in a circle be equal, prove that the other two are parallel.

RESULTS.

1. Book work.

2. Book work.

3. $Prt = I, \frac{Prt}{1+rt} = D; \therefore \frac{I}{1 + \frac{P}{P}} = D, \text{ or } \frac{1}{D} = \frac{1}{I} + \frac{1}{P}$.

4. £5. 5. (1) $\frac{7}{8}$. (2) $\frac{(ax+by)(bx+ay)}{(ax-by)(bx+ay)} = \frac{ax+by}{ax-by}$.

(3) $2a \frac{(a^2+b^2)^2}{(a^2-b^2)^2}$. 6. $2x^3 - 7x + 8$. 7. Book work. $x^2 + 2xy - y^2$.

8. (1) 0 or $-2 \pm \sqrt{-1}$. (2) -5 or -4.3 . (3) Equation reduces to $2^{\frac{1}{2}}(1+2^{\frac{1}{2}}) = 2^{\frac{1}{2}}(1+2^{\frac{1}{2}})$, or $x = 2$. 9. $5 + \sqrt{7}$.

10. (1) From 2nd equation $x^4 + 2x^2y^2 + y^4 = 16x^2y^2; \therefore x^2 + y^2 = \pm 4xy =$, from eq. 1, $a^2 - 2xy, \therefore xy = \frac{a^2}{6}$, or $-\frac{a^2}{2}$; and

substitute for either x and y in 1. (2) From 1st eq., $8a^2b^2 + 2xy(a^2 - b^2) = (x^2 + y^2)(a^2 + b^2) = 2(a^2 + b^2)^2$ by 2nd eq.; $\therefore xy = a^2 - b^2$, and \therefore by 2nd equation, $x + y = \pm 2a$, and \therefore by 1st eq., $x - y = \pm 2b$, &c. (3) Dividing 1st eq. by 2nd, $x^2 + 2xy + y^2 = \frac{1}{2} \frac{a^2}{b^2}$, then by 2nd eq., $xy = -\frac{1}{2} \frac{a^2}{b^2}$, and \therefore by 2nd, $x^2 - 2xy + y^2 = \frac{5}{2} \frac{a^2}{b^2}$; $\therefore x + y = \pm \frac{a}{b} \sqrt{19}$, $x - y = \pm \frac{a}{b} \sqrt{1489}$, &c. (4) Multiplying the equations $x^4y^2z^4 = abc$, or $xyz = \sqrt[4]{abc}$, \therefore from first equation $x = \sqrt[4]{\frac{a^3}{bc}}$, &c.

11. Let ABC be the triangle, AD perpendicular to BC , and AE bisecting BAC . Then $B - C = AEC - AED = EAD + ADE - AED = 2EAD + AED - AED = 2EAD$.

18. Let $ABCD$ be the quad., having $AB = DC$. Then because the arcs on which they stand are equal angle $ADB =$ angle DBC ; $\therefore AD$ is parallel to BC .

ALGEBRA.

HONORS.

Examiner—A. K. BLACKDAR, B.A.

1. Define a fraction, and prove that

$$\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$$

Simplify

$$\frac{1}{1-a} - \frac{1}{1-b} \times \frac{1}{1-b} - \frac{1}{1-c} \times \frac{1}{1-c} \times \frac{1}{1-c} - \frac{1}{1-a}$$

2. Describe methods of finding the G.C.M. of two algebraical quantities.

Show that $(a-b)(b-c)(c-a)$ is the G. C. M. of $(a+b)(a-b)^2 + (b+c)(b-c)^2 + (c+a)(c-a)^2$ and $(a-b)(a^2+b^2) + (b-c)(b^2+c^2) + (c-a)(c^2+a^2)$.

Find also the least common multiple of these two quantities.

3. Find the square root and the fourth root of $x + x^{-1} - 4\sqrt{-1}(x^2 - x^{-2}) - 6$.

If $x^4 + 2ax^3 + bx^2 + 2cx + d$ is a complete square, prove that $a = \frac{c}{\sqrt{d}} = \frac{b - 2\sqrt{d}}{a}$.

4. Find the roots of the equation $ax^2 + bx + c = 0$.

What do the roots become when (1) $a = 0$; (2) $c = 0$; (3) $a = 0$ and $b = 0$?

Prove that a quadratic equation can have only two roots.

5. Solve the equations

(1) $\sqrt{2x} + \sqrt{3x} = \sqrt{5}$.

(2) $\{(x+l)^2 - a^2\} \{(x+l)^2 - b^2\} = \{(x+m)^2 - a^2\} \times \{(x+m)^2 - b^2\}$

(3) $\frac{1}{x-3} + \frac{8}{x+15} + \frac{1}{x+9} - \frac{5}{x+9} = 0$.

(4) $\left. \begin{aligned} \frac{1}{x} + \frac{1}{z} &= \frac{2}{y} \\ x + z &= \frac{1}{4y} \\ x^2 - 2yz &= \frac{1}{12} \end{aligned} \right\}$

6. Find the sum of n terms of an arithmetical series, having given the first term and the common difference.

Find the sum of 82 terms of the A. P. whose 5th term is 20, and whose 21st term is 15.

7. Define a harmonic series, and show how to insert m harmonic means between a and b .

If $a, 2b$, and c be in H. P. then will $a+c, a$, and $a-b$, be in G. P., and also will $c+a, c$, and $c-b$.

8. Find the number of combinations of n things taken r at a time, and prove that it is the same as the number of combinations of n things taken $n-r$ at a time.

Prove that the number of combinations of $2n$ things taken n at a time is

$$2^n \frac{1 \cdot 3 \cdot 5 \dots (2n-1)}{1 \cdot 2 \cdot 3 \dots n}$$

9. Assuming the truth of the Binomial Theorem when the index is a whole number, prove it when the index is a positive fraction.

Write down the fifth term of $(2^3 - 2)^{-n}$.

Prove that

$$\sqrt[3]{\frac{1}{6}} = \frac{1}{2} + \frac{1}{8 \cdot 2^3} + \frac{1 \cdot 4}{1 \cdot 2} \cdot \frac{1}{8^2 \cdot 2^5} + \frac{1 \cdot 4 \cdot 7}{1 \cdot 2 \cdot 3} \cdot \frac{1}{8^3 \cdot 2^7} + \dots$$

10. Sum the series

(1) $\frac{1}{\sqrt{1}} - \frac{1}{8} + \frac{\sqrt{2}}{9} - \frac{2}{27} + \dots$ to infinity.

(2) $3 + 6 + 11 + 20 + 37 + \dots$ to n terms.

RESULTS.

1. Book work. First fraction equals ab ; then evidently others must equal bc and ca ; \therefore ans. is $a^2b^2c^2$.

2. Having shown that $(a-b)(b-c)(c-a)$ is factor of both expressions, from symmetry and the dimensions it may be seen at once that $a+b+c$ is the other literal factor of the first expression. Thence $2(a+b+c)(a-b)(b-c)(c-a)$ is the first expression, and $-(a-b)(b-c)(c-a)$ is the second. Hence G. C. M. is evident, and L. C. M. is first expression.

3. Expression equals $(x^2 - x^{-1})^2 - 2 \times 2\sqrt{-1}(x^2 - x^{-1}) + (2\sqrt{-1})^2$, sq. rt. of which is $x^2 - x^{-1} - 2\sqrt{-1}$; this equals $(x^2)^2 - 2\sqrt{-1}(x^2 + \sqrt{-1})^2$, sq. rt. of which is $x^2 - x^{-1} - \sqrt{-1}$.

Let it be the square of $x^2 + kx + l$. Square this and equate coeffs. Then $2k = 2a, k^2 + 2l = b, 2kl = 2c, l^2 = d$, whence results are obtained.

4. Book work.

5. (1). $x^2 = \frac{\sqrt{5}}{\sqrt{2} + \sqrt{3}}, x = \frac{5}{5 + 2\sqrt{6}}$. (2). Put equation into form $(x+l)^2 - (x+m)^2 = (a^2 + b^2)\{(x+l)^2 - (x+m)^2\}$, $\therefore x+l = \pm(x+m)$, which shows that $x = \frac{-l-m}{2}$, or that if $l = m$, x may have any value. The other

values of x are obtained from $(x+l)^2 + (x+m)^2 = a^2 + b^2$. (3). $x = -\frac{1}{2}$. Coeffs. of x^2, x^3 vanishing, other values of x are infinite. (4). From first two $xz = \frac{1}{2}$; then from 2nd and 3rd, $8x^2y = 2x - y, 12x^3 = x + 8y$; adding $4x^2(8x+2y) = 8x + 2y$, or $x = \pm \frac{1}{2}$, &c.

6. $20 = a + 4d, 15 = a + 20d; \therefore d = -\frac{1}{4}, a = 21\frac{1}{4}$. Hence sum is 525.

7. $\frac{1}{a} - \frac{1}{2b} = \frac{1}{2b} - \frac{1}{c}, \therefore ac - ab - bc = 0$, or $ac - ab - bc + a^2 = a^2$, or $a = \sqrt{(a+c)(a-b)}$. Similarly with other part.

8. No. is $\frac{|2n}{n} \frac{|n}{n} = \frac{(2n-1)(2n-3)\dots 1 \times 2n(2n-2)\dots 2}{|n \cdot |n} = \frac{2n-1 \dots 8 \cdot 1 \times 2^n |n}{|n \cdot |n} = 2^n \frac{1 \cdot 3 \cdot 5 \dots 2n-1}{1 \cdot 2 \cdot 3 \dots n}$.

9. (1) $\frac{n(n+1)(n+2)(n+3)}{|4} 2^{-3n-12} \cdot 2^4$.

(2). $\sqrt[3]{1} = 6^{-1} = (2^3 - 2)^{-1} = 2^{-1} + \frac{1}{2} 2^{-4} + \frac{1 \cdot 4}{2} 2^{-7} \cdot 2^2 + \dots$, = given series.

10. (1) $a = \frac{1}{\sqrt{2}}, r = -\frac{\sqrt{2}}{8}, \therefore$ sum ad. inf. = $\frac{1}{\frac{\sqrt{2}}{1 + \frac{\sqrt{2}}{8}}}$

$\frac{8}{2 + 3\sqrt{2}}$.

(2) This is the sum of the two series $1 + 2 + 3 + 4 + 5 + \dots$ and $2 + 4 + 8 + 16 + 32 + \dots$. Hence sum to n terms = $(2+n-1)$

$\frac{n}{2} + 2 \frac{2^n - 1}{2 - 1} = \frac{n \cdot n + 1}{2} + 2(2^n - 1)$.

We are asked for solutions of the following:

1. No. 9, page 47, Kirkland's Statics. A figure will make it evident that if the legs be perpendicular to the floor (supposed horizontal) the direction of the weight is equidistant from the reactions of the floor on the legs, and therefore the pressures on the legs are equal, but that if the legs be not perpendicular to the floor (if, for example, they be perpendicular to the plane of the table), the direction of the weight is nearer the pressures on the short legs, and that the pressures on the short legs will be the greater.

2. If the opposite sides of a quadrilateral be produced to meet, what is the condition that the bisectors of the angles so formed shall be perpendicular.

Let $ABCD$ be the quadrilateral; let AB, CD produced meet in E , and BD, AC produced meet in F ; let EO, FO be the bisectors of the angles AEC, AFB respectively. Then $D-A = AEC + AFB$; $\therefore \frac{1}{2}(D-A) = OED + OFD$. Also $180^\circ - D = DEF + DFE$. Therefore $180^\circ - D + \frac{1}{2}(D-A) = OEF + OFE$, and the necessary and sufficient condition that EOF shall be a right angle is that $180^\circ - D + \frac{1}{2}(D-A)$ shall equal 90° , or $A + D = 180^\circ$.

3. Determine the path of a ray of light that after reflection at two mirrors it may return to the same point.

Let O be the point and AB, AC the mirrors, AB being that on which the light first falls. Draw OD perpendicular to AC , and produce it to E , so that DE is equal to OD . From E draw EF perpendicular to AB , and produce EF to G , so that FG is equal to EF . Then OG is the direction in which the ray must start. For light towards G will be reflected towards E , and being intercepted in its course to E will pass to O .

4. ABC is an equilateral triangle, and D a point in it. $DB = 47, DA = 60, DC = 68$. What method would you employ to find the area by mensuration?

Construct a triangle DEF , whose sides DE, EF, FD , are 68, 60 and 47 respectively. On DF describe an equilateral triangle GDF . Join GE and on it describe the equilateral triangle HGE . Then, because $GD = GF$, and $GE = GH$, and angle $FGE =$ angle DGH ;

therefore $DI = FE$, and therefore $IIGE$ is an equilateral triangle equal to ABC . The numerical values of GD, DF, FG, DE, EF are known. From E and G draw EK, GL perpendicular to DF . Then by 13th of Euc. Bk. II., EK, GL, FK and DL may be calculated. Then KL being known, we have $GE = \sqrt{(KL)^2 + (EK + GL)^2}$. Thus knowing a side of the equilateral triangle we have its area.

5. A tree AB , 100 ft. long, standing on a declivity, is broken at C , the top doubles over and touches a point E lower than C , so that $AE = 50$, and AD drawn at right angles to AC to meet CE in D , is 80. Find the lengths of AC and CE .

We shall suppose the numbers given above to be 10, 5 and 8 respectively. Let $AC = x$, then $CE = 100 - x$. Draw EF perpendicular to CA to meet it produced in F . Then $CD = \sqrt{9+x^2}$; $\therefore EF = \frac{10-x}{\sqrt{9+x^2}}$ of 8; $\therefore AF = \sqrt{25 + \frac{(10-x)^2}{9+x^2}}$ of 9. Then by 12th

of Euc., Bk. II., $(10-x)^2 = x^2 + 25 + 2x \sqrt{25 + \frac{(10-x)^2}{9+x^2}}$ of 9,

a biquadratic for finding x . We are informed that $x = 3.1842$, i.e., $AC = 31.842$, and $\therefore CE = 68.158$. Our readers may endeavour to find a solution by which the biquadratic is avoided.

Practical Department.

LONG OR BUGLE U.

THEODORE H. RAND, D.C.L., CHIEF SUPERINTENDENT OF NEW BRUNSWICK.

Here is an extract from a recent number of the *Canadian Illustrated News*, which is of interest to teachers:—

“Ninety-five out of every hundred Northerners will say institute, instead of institute, dooty instead of duty—a perfect rhyme to the word beauty. They will call new and news noo and noos—a perfect rhyme to pew and pews, and so on through the dozens and hundreds of similar words. Not a dictionary in the English language authorizes this. In student and stupid the “u” has the same sound as in cupid, and they should not be pronounced stoo-dent and stoo-pid, as so many teachers are in the habit of sounding them. If it is a vulgarism to call a door a doah—as we all admit—isn't it as much of a vulgarism to call a newspaper a noospaper? When *Punch* wishes to burlesque the pronunciation of servants, it makes them call the duke the dook, the tutor the tootor, and a tube a toob. You never find the best Northern speakers, such as Wendell Phillips, Chas. Sumner, George William Curtis, Emerson, Holmes, and men of that class saying noo for new, or Toosday for Tuesday, avenoo for avenue, or calling a dupe a doop. It is a fault that a Southerner also never falls into, nor a Canadian either.”

“Nor a Canadian either!” The readers of the *JOURNAL* who reside in Quebec and Ontario may skip what follows, but I can vouch for it that the suggestions I have to offer are quite as worthy the attention of teachers in the Maritime Provinces as of the “Northerners” so pointedly referred to by the *News*. In the speech of most of the people of the Maritime Provinces the “vicious u” “does dooty” on all occasions. One does not hear, however, as one often does in some other parts of Canada, so much as a whisper of “jewks,” and “chunes” and “chubes.” It is possible, therefore, that some teachers in Ontario or Quebec may recognize familiar acquaintances among the examples which follow. As in spelling so in pronunciation, it is the forms in which mistakes occur to which the attention of the pupil should be specially directed. The following memoranda will enable teachers whose pupils fail to use the “bugle u” on all proper occasions, and are given to toot-ing or chute-ing, intelligently to “drill out the wrong and drill in the right:”—

$\left. \begin{matrix} u, \\ eu, \\ *ew, \\ ieu, \\ ieu, \end{matrix} \right\} = \text{you or yu,}$

I. The long U is commonly pronounced correctly in all words in which it, or its equivalent diphthong, is preceded by b, c, f, g, h, m, p, v, or y.

EXAMPLES:—Bugle, tribune, Cube, excuse, skew; Fume, few, foud; Gewgaw; Hne, how; Mute, mow; Pure, pow; View; Yew. Also in words beginning with long u.—Use, ewo.

Observe that in these words the long u, or its diphthong, is correctly pronounced as yu, e. g. bugle = byu-gle, not boogle; cube = cyube, not coob; mute = myute, not moot; hne = hyue, not hoo.

II. But long U is commonly mispronounced in all words in which it, or its equivalent, is preceded by d, n, s, or t.

EXAMPLES.

1. Long u preceded by d:—Duke, dupe, duty, dutiful, due, dew, during, durable, duration, endure, adduce, educe, induce, reduce, seduce, adieu, bedow, subdue, e. g.:

	MISPRONOUNCED.	INSERT y BEFORE u AND PRONOUNCE THUS:	
Duty,	dooty or tjewty.	-yu-ty,	dya-ty, Duty.
Due, } Dew, }	doo or jew.	-yue,	dyue, Due.
		-yew,	dyew, Dew.
Duke,	dook or jewk.	-yuko,	dyuko, Duke.
Endure,	endoor or enjewr,	-yure,	-dyure, Enduro.
Adieu,	adoo or ajew.	-yieu,	-dyien, Adieu.

2. Long u preceded by n:—Nude, numeral, numerate, numeration, numerous, innumerable, nuisance, nutrition, avenue, neuter, neutral, neuralgia, new, news, newspaper, renew, newt, e. g.:

	MISPRONOUNCED.	INSERT y BEFORE u AND PRONOUNCE THUS:	
Nude,	nood,	-yude,	nyude, Nude.
Neuter,	nooter,	-yen ter,	nyeu-ter, Neuter.
New,	noo,	-yew,	nyew, New.

3. Long u preceded by s:—Sue, suet, pursue, pursuit, suit, suitably, suitor, assume, presume, superfine, superficial, superintend, superstition, supervise, e. g.:

	MISPRONOUNCED.	INSERT y BEFORE u AND PRONOUNCE THUS:	
Sue,	soo or t shu,	-yue,	syue, Sue.
Assume,	-soom or -shume,	-yume,	-syume, Assume.
Superfine,	sooper- or shuper-	-yuper-	syuper- Superfioe

4. Long u preceded by t:—Tune, tuneful, attune, tube, tubular, tuberoso, tumult, tumor, tumid, tulip, tunic, tutor, tuition, Tuesday, institute, institution, obtuse, constitute, constitution, constitutional, restitution, costume, stew, steward, Stuart, Stewart, student, studios, stupid, stupor, -tude as in magnitude, multitude, fortitude, solitude, e. g.:

	MISPRONOUNCED.	INSERT y BEFORE u AND PRONOUNCE THUS:	
Tune,	toon or tchune.	-yune,	tyune, Tune.
Tube,	toob or chube	-yube,	tyube, Tube.
Institute,	-toot or -chute.	-yute,	-tyute, Insti-tute.
Costume,	-toom or -chume	-yume,	-tyume, Costume.
Stew,	stoo or -stehu.	-yew,	-tyew, Stew.
-tude,	-tood or chude.	-yude,	-tyude, -tude.

REMARKS.—The long sound of u preceded by l is between that of oo in room and yu, approaching the latter more closely than the former; plume, fume, flute, lute, lure, allude, lewd, lurid, revolution, conclude, conclusion, allusion, clue, blow, clue, clew

The long sound of u preceded by r in the syllable is that of oo in room; true, truth, rue, rule, cruel, gruel, imbrue, brow, dre.

* Except in *sew, shew, strew, blew, clew* and *sewer*.
† In these latter pronunciations the long sound of u is correctly given, but the sound of the preceding consonant is improperly changed. S has the sound of sh before u in *sure*, (and in some words ending in *-sure*), and in *sugar, sumach, and sensual*.

MISTAKES IN SCHOOL MANAGEMENT.

NO. I.—BY JAMES HUGHES.

IT IS A MISTAKE TO NEGLECT THE DETAILS OF SCHOOL MANAGEMENT. What are regarded by many as “minor points” unworthy of attention, in reality form the distinction between a well-managed and a poorly-conducted school. Minor points they may be, but the mistake consists in regarding them as therefore unimportant. J. R. Blakiston, one of the most thoughtful of Her Majesty’s Inspectors of Schools in England, says: “The least gifted may take heart when he bethinks him that success in school management

depends mainly on watchful and unremitting attention to little details, and on conscientiously grappling with every difficulty as it arises." Without system no management can be complete, and in this case the paradoxical rule, the lesser includes the greater, is the correct one.

He who is careful in the details of school management will, in nearly all cases, attend carefully to those of larger scope. He who attends to the "minor" matters will not need to attend to so many weighty matters, because they will not turn up. The principle of "take care of the pence and the pounds will take care of themselves" applies in school management. There can be no doubt that uniform attention to particulars in connection with the deportment of the pupils in the yard, in line, and in the schoolroom, is a most valuable disciplinary agent in forming their character. Habits are formed which will do much to decide the degree of success to which the pupils will attain when they become men and women.

Among the "minor" matters to which it is of vital importance to attend are the following :

1. *Lining the pupils at the close of all recesses and marching them in regular order to their schoolrooms.* This should be done in a uniform manner, and without haste, pushing or any disorder. For lining, a walk a single plank in width may be laid down for each class if the whole yard is not planked.

2. *Pupils should be taught to stand and walk with the head erect, shoulders well back, hands at the sides, and eyes to the front.* The habit of walking with the hands behind, while it keeps the shoulders back, unfits the pupils for walking properly on the street, in the drawing room, or in the ranks as soldiers.

It is wrong to tell pupils "to walk on their toes." This is very often done by young teachers in order to prevent noise. In fact, School Boards sometimes give directions in their rules to have pupils walk in this way. It is not right to do so: (1) because it makes pupils hobble; (2) because it leads to the turning in of the toes in an awkward manner; and (3) because it prevents an easy and elegant gait in walking. Pupils can walk naturally without making any noise, and they should be compelled to do so.

3. *They should be taught how to go up and down stairs.* Most pupils go up or down three steps while they ought to go but one. Two or three lines can walk on a proper school stairway side by side, and thus no time will be lost by a steady uniform step. Rapidity of step is, however, by no means the worst evil in the walking of pupils on a staircase. It will take a great deal of care and watchfulness to secure proper lightness of step. Pupils are always inclined to stamp when marching in time on a floor, or in any place where they can make a good deal of noise. They step as though striking snow from their heels in winter. They must be trained to hold the feet with the muscles of their lower extremities and place them gently in their proper positions, instead of allowing them to drop like inanimate weights.

4. *They should be made to stand up to answer questions, or read.* Common politeness would require this. The change from the sitting posture will be of great physical advantage to the pupils. The vocal organs have freer play when the pupil is standing than while sitting. Standing up should be done promptly. The pupil should not roll up or grope up.

5. *They should be taught to hold the book in the left hand when standing to read.* "Book in left hand, right foot slightly drawn back," is the uniform rule given by authorities for the position of a reader. If the book is held in both hands, it is usually brought much too close to the eyes, and the tendency is to round the shoulders.

6. *All work should be kept far enough from the eye.* Near-sightedness is frightfully on the increase. Statistics carefully made in

Europe and America show that while only a fractional percentage of children are afflicted with myopia when they enter school, about 60 per cent. of those who leave it at eighteen are more or less affected by it. This is a startling statement, and ought to cause every humane teacher to consider carefully what he can do to avert such a dreadful result. He can at least try to have plenty of light admitted to the schoolroom, only from the left side of the pupils, or from left and rear, and never from the front. He can also by constant watchfulness insist that the eyes should be kept far enough from slates, reading books, copy books, &c.

7. *If pupils are brought out in classes, they should stand in line, not lean against the wall, or on desks, &c.* In fact whenever a pupil stands up in school he should stand on both feet and avoid leaning.

8. *The passing of copy books, pens, &c., should be done in a precise and orderly manner.* Writing books should be collected by being passed along the rows from side to side, and taken up by one monitor after they have been passed. He should turn the piles on the several desks "end for end," so that he can place them readily on again when required. They should always be handed from pupil to pupil in the same order, so that they might be passed with every eye in the room blindfolded, and yet each pupil receive his own book with unerring certainty.

9. *Habits of neatness, cleanliness and punctuality should be insisted on.* These may do more for the pupils than the mere knowledge imparted in school.

IT IS A MISTAKE TO OMIT YARD SUPERVISION. Pupils who are not controlled in the yard are not easily managed in the school room. If children learn evil habits or hear impure or profane language at school, they do so chiefly during the recesses. The presence of the teacher in the playground should restrain what is wrong without in any way checking the interest in healthful sports and innocent recreation. Rough games which interfere with the comfort of those not engaged in them, or endanger the limbs of those who are playing, would not be indulged in under the eye of the teacher. Without marching up and down with the air of a soldier on guard, he prevents wanton destruction of school property, or intentional injury to clothing, such as kicking of hats, and secures due attention to propriety of language and courtesy of manner.

IT IS A MISTAKE FOR THE TEACHER TO HOLD HIMSELF ALOOF FROM HIS PUPILS WHILE THEY ARE PLAYING.—The presence of the teacher in the yard should have a double effect: it should repress the evil and develop the good. The child never reveals his whole nature as he does when playing. His physical, mental, and moral powers are all then called into vigorous exercise. Professor Payne says: "But has the instinct for play no deeper significance? Is it appointed by the Supreme Being merely to fill up time?—merely to form an occasion for fruitless exercise?—merely to end in itself? No! I see now that it is the constituted means for the unfolding of all the child's powers. It is through play that he learns the use of his limbs, of all his bodily organs, and with this use gains health and strength. Through play he comes to know the external world, the physical qualities of the objects which surround him, their motions, action, and reaction upon each other, and the relation of these phenomena to himself; a knowledge which forms the basis of that which will be his permanent stock for life. Through play, involving associateship and combined action, he begins to recognize moral relations, to feel that he cannot live for himself alone, that he is a member of a community, whose rights he must acknowledge if his own are to be acknowledged. In and through play, moreover, he learns to contrive means for securing his ends; to invent, construct, discover, investigate, to bring by imagination the remote near, and,

further, to translate the language of facts into the language of words, to learn the conventionalities of his mother-tongue. Play, then, I see, is the means by which the entire being of the child develops and grows into power, and, therefore, does not end in itself."

Dr. Harris says: "There is a great deal of talk about utilizing play, but play, strictly as play, should not be utilized; there should be room for the spontaneous play of the child, with no restraint whatever."

The teacher who fails to recognize these facts and make the most of them never becomes acquainted with his pupils thoroughly, and fails to obtain his most natural and most complete control over them. In every situation except in the playground there is some portion of the child's nature veiled. How important then that, instead of checking the playful spirit of innocent and healthful childhood, the teacher should have sufficient sympathy for it to develop it and turn it into right channels. What true dignity there is, too, in the playing of the full-grown man with the head of an adult and the heart and spirit of a boy! How different is this genuine article from the enamelled variety which cannot bend without cracking, and exposing the coarser or weaker material beneath. The teacher who cannot play with his pupils without "putting on the brakes" is to be pitied. One of the most valid reasons for not placing large boys in the charge of a lady teacher is, that she cannot as a rule take part in their games and exercises.

IT IS A MISTAKE TO BE CONTINUALLY REPRESSING THE ACTIVITIES OF CHILDHOOD.—There are three classes of educators. One dams up the fountains of the free tendencies of childhood, and turns the stagnant waters back upon the child life, so that they drown it out; another goes to the other extreme, and says, let Dame Nature have her way unrestrained, let childhood unfold itself. He lets the waters flow freely enough, but they unfortunately have a natural tendency to flow in improper directions. Like real water, they flow "down hill," and far too frequently transform what might have been a fertile valley into a marsh. The proper method recognizes the necessity of a full development of the natural faculties and the free exercise of them, but it gives them direction without seeming to do so. It selects the channel in which the stream should flow, and inclines each little rill of character in that direction, so that as the stream flows onward it gains more breadth and depth and momentum, until it becomes a mighty river, bearing upon its bosom freights of blessing toward the great sea of life.

Some teachers are horrified if pupils laugh in the schoolroom. The discipline that cannot stand a good laugh frequently is unnatural and unsound. Giggling and tittering should be forbidden as unbecoming, but a genuine hearty laugh indulged in by both teacher and pupils for a proper reason may be repeated often with the best results even to the discipline of the school.

IT IS A MISTAKE TO ALLOW PUPILS TO BE FREQUENTLY TROUBLESOME WITHOUT NOTIFYING THEIR PARENTS.—It is an axiom that parents and teachers should work in harmony. So far as possible and judicious, the school discipline should correspond to that of the home. The teacher should respect the rights and opinions of the parents, and they in turn should sustain the authority of the teacher. These desirable ends can only be secured by some system of communication between the parties concerned.

There are always in a school a few pupils who, without being guilty of any offences of a very serious character, give the teacher a vast amount of trouble. No other class of pupils cause so much worry and annoyance as these, and after a time it usually becomes necessary to take decided action and suspend the offender, or administer a severe punishment of some kind. The punishment, whether by suspension or otherwise, is of course much too great

for the last act of wrongdoing. The transgression is merely "the last straw that breaks the camel's back," the penalty "covers a multitude of sins." The parent of the offending child makes enquiry as to the cause of the extreme punishment, and receives from his own child or from others, if he asks them, a statement of the last offence only. He naturally concludes that the teacher is unreasonably severe, if not excessively unjust; and unfortunately in too many cases he expresses his opinions in an emphatic manner in the presence of his child. Sometimes indeed he makes known his sentiments in a highly *dramatic* manner before the whole school. In either case the result must be a loss of respect for the teacher on the part of his pupils. Nor can the parent be blamed for the difficulty, unless he has been promptly and faithfully notified of the previous wrongdoings of his child, as they accumulated. It is well that these notifications should be on paper, and that they should be returned to the teacher signed by the parent, and kept for reference when necessary. If the pupil is old enough, it is best that he should write the note according to directions given by the teacher. This will save time for the teacher, and have a good effect on the pupil. Of course in most cases such a note should be signed by the teacher, not the pupil. Occasionally the communication may be from the child himself.

IT IS A MISTAKE TO STAND TOO NEAR THE CLASS.—In a well-appointed school the teacher has a platform about a foot high, extending across the end of the room, from which he teaches. This will give him a position from which he will be able to see every pupil. If he leaves it and moves close to the front row of pupils he cannot take in the whole class with a single steady glance. Those nearest to him will be unseen by him, and they will moreover be unable to see him. The results are loss of control by the teacher, and loss of teaching by the pupils, as no pupils can listen long with profit to a teacher at whom they cannot look.

Whether in the school-room or in the yard, *the teacher should always take such a position as will enable him to see every pupil at the same time.* He should retain this position without fail when "lining" or "drilling" in the yard.

THE LITTLE ONES.

"What shall I do with the little ones?" is the exclamation of nearly every young teacher, at the close of the second week's work. We promptly answer, "Keep them busy." "How?" is the universal response. "How can I furnish a variety of profitable employment for those restless 'little ones,' whose restlessness it would be a sin to repress, but which requires almost the wisdom of a Solomon to direct and control?" This is the point of failure or success in primary instruction, and the one on which teachers, young and old, fail oftener than succeed. To give our brief paper a practical turn, we will avoid generalities, and name a few things which the "little ones" can do profitably in the school-room.

READING.

1. Print on slate letters copied from the blackboard, to be read as a class exercise.
2. Print on slate words copied from blackboard.
3. Print on slate letters copied from a text-book.
4. Print on slate words copied from a text-book.
5. Print on slate sentences copied from a text-book.
6. Print on paper, with pencil, letters, words, or sentences, from the blackboard or text-book.

SPELLING.

1. Arrange columns of words on slate, each word of which contains a certain number of letters only, as two, three, four, five, etc., copied from a text-book, to be read as a class exercise.

2. Arrange columns of words, each containing words commencing only with a certain letter, as *b, c*, etc., to be read in the same manner.

8. Arrange columns of words, each containing words ending with a certain final letter only, as *e, y, r*, etc.

4. Arrange columns of words, each containing only a certain vowel letter, as *a, e, i, o*, etc.

5. Arrange columns of words, each containing only one syllable

6. Arrange columns of words, each containing only two syllables, three syllables, etc.

7. Arrange a column of words, each to contain only words commencing with capital letters.

NUMBERS.

There has been an opinion quite prevalent that numbers can be best taught without a text-book. This may be true when the text-book contains but little beside definitions, rules, and principles; yet a text-book constructed on the principle of providing ample work for the restless "little ones" will save a teacher many days of annoyance, and materially aid in the pupil's present and future progress. The following are a few of the exercises which can be given to a class of beginners:

1. Copy figures from blackboard on slate.
2. Copy figures from text-book on slate.
8. Copy figures from text-book on blackboard.
4. Arrange groups of corn-grains to correspond to the unit value of figure, as 1, 6, 8, etc.
5. Arrange groups, strokes, to correspond to the unit value of figures.
6. Arrange, on slates, tables in addition copied from blackboard, thus:

$1+3=4$	$5+2=7$
$4+2=?$	$8+2=?$
$0+2=?$ etc.	$2+4=?$ etc.

To be computed by the pupils, and read as a class exercise.

7. The pupils to copy and complete tables on slates from a text-book, to be read as a class exercise.

8. The pupils to copy and complete on blackboard from text-book, in the same manner.

The teacher should vary the exercises in all primary instruction, as the child tires of sameness. Such subjects only should be given as come within the mental understanding of the child, and the greatest possible variety of methods of presentation should be employed.—*The Teacher*.

KEEPING AFTER SCHOOL.

There are few schools where this is not practised as a punishment; it is believed to be necessary.* But is it? Once flogging in the navy was deemed necessary; nay, it was once thought that flogging in the schools was a necessary part of the exercises. Why has this changed? Now, it will not do for the teacher to say there must be some punishment, or the school discipline will run down. What, after all, has the teacher to depend on to maintain order; I mean the real basis? Is it in him or is it in the pupil? Evidently it must be in the latter. Then let the teacher as fast as possible lean on his pupil to maintain order and not on himself. Let us illustrate.

John Smith was employed to teach in a private school where thirty boys were assigned to him. He learned that he could not punish, and that he must keep good order and make the boys happy too. Having been bred in a public school he was at a loss what to do. He kept a boy after school, and was surprised to hear him say as he departed: "I need not have stayed if I had not a mind

to; because my mother wrote a note to have me come home as soon as school was out."

Here was a queer state of things. The teacher elicited that the boy stayed because he felt it would be "bad for a new teacher to be treated just in this way." In other words, he had been actuated by the noblest motives towards him personally.

The next day he said to the boys: "Boys, try and not be kept after school; I want to take a walk to-night, as I am very tired from teaching at night. You know how you feel yourselves." This answered a good purpose. But one night a boy was kept, and the teacher was surprised to hear the lad say, "Mr. Smith, you need not stay; I can recite to one of the other teachers; one always stays with some boys. You go and take a walk."

"No," said Mr. Smith, "you can go with me and we will talk over the lesson."

Afterwards he appointed all boys who wished, to assemble a half hour earlier in the morning; the understanding was that that department should not stay after school under any consideration. By assiduous labor the habit was broken up, for it was but a habit.

The only resource for the teacher is in his pupils. Can he develop in them such a respect for him, for themselves, for the school, that they will strive not to be kept in? Of course this will be easier with those who are grown up than with the younger ones; but the younger should not be kept in. The great rule is to do all the work you can, get your pupils to do all they can, and then cheerfully dismiss them.—*New York School Journal*.

ADVANTAGES OF DRAWING.

PROF. J. V. MONTGOMERY.

I. EDUCATIONAL.

1. *It trains the hand and sharpens the vision.*—The hand, in the first attempts at drawing, makes only zigzag lines, but by repeated effort it becomes almost as accurate in its free movements as if guided by ruler and compass.

The eye is required to examine carefully all the parts of an object designed to be drawn, to judge of lengths, directions, and spaces, of relations and proportions, and then to compare the prawning in progress with the object itself and decide upon the accuracy of the work. As picture after picture is made, the eye becomes more accurate and catches more quickly all the salient points of an object, seeing it more fully in all its parts and relations. From examining accurately for the purpose of reproducing in a picture, there grows up the habit of observation, that will not pass by any object in nature or art without a critical examination of it in all its detail of light and shade. The eye is trained to see things, and to see everything.

2. *It furnishes excellent exercise for conception, memory, and the imagination.*—Drawing contemplates not only the work of copying objects as they are seen in nature and in art, but also in representing all the properties of the individual of a class, combining them in one picture which shall resemble not any one object, but shall be the highest type of the whole class. It teaches the pupil to draw not only the particular object, but also the typical object. A course of drawing, then, it is evident, would tend to beget a habit of generalization, and thus the conception be largely exercised and developed.

The person who practises drawing finds it necessary to carry in his mind forms which, when presented, could not, owing to circumstances, be copied. Pupils in a course of instruction, in order to prepare them for such exigencies, are required to draw frequently from memory, and thus this faculty receives abundant exercise.

Again: the adept in drawing is not satisfied with mere copying, but aims at new creations. Calling his imagination into active and constant exercise, he brings out new designs for all kinds of manufacture, new figures for carpets, wall papers, calicoes, etc. He studies works of art, the masterpieces of the art world, not only for the pleasure they give him in their contemplation, but also for the useful hints he may receive for his own work; enters the field of criticism, and learns to distinguish the good from the bad, to know the excellences and defects of a work of art. A course of instruction in drawing, to be comprehensive, must give constant exercise to the imagination, by requiring work in original designing from the very first. The pupil is led to invent new figures—forms very simple at first, but becoming more intricate as he advances. He criticises his own work; he criticises the work of his fellow-pupils, till, in the end, he becomes competent to judge a work of art. Thus, by the culture given his imagination in a course of instruction in drawing, he can be introduced into the arcana of art, and be led to revel in all its beauties.

3. *It develops the public taste.*—If pupils were to take a course in drawing, beginning at the very first entrance into school, and continuing throughout, their taste in matters of art would not only be cultivated, but, what is of more account, would be made exceedingly quick and active—quick to discern beauty in all the adornments of art, and to suggest or devise something new, more beautiful or more appropriate in furniture, gas-fittings, carpets, curtains, table-ware in clay, glass, or silver, in the decorations of various objects, such as railway cars, steamboats, public buildings, watches, jewelry, products of the loom and foundry, etc. Taste, as any other power, if it receive attention early in life, will be more likely to show itself with more power in after years; for want of this early attention so many men and women seem to lack in taste altogether. Persons who, from such a course in drawing, enter the workshops, will be able to exercise more taste in their work, and to gratify their own more cultivated feelings—will be led to make improvements in artistic forms and adornments of their products, and will not only meet the wants of an improved public taste, but will aid in giving it still further cultivation. Drawing in our schools now means, for the next generation, no mere daubs on parlor walls, no tumble-down fences about our houses, but beauty and taste everywhere and in everything.

4. *It exerts a beneficial influence in relation to other studies.*—Drawing trains people to see correctly. Reading well depends upon the quick apprehension of the forms of words as presented to the eye. It follows, therefore, that if a child learns to draw, he will learn more rapidly to read well than he otherwise would. As drawing trains also the memory of form in general, and the intellectual part of the process of spelling is in great measure an effort to recall the form of the written word, it follows that the study of drawing will greatly aid a pupil in acquiring the ability to spell well.

Penmanship is largely if not altogether indebted to "seeing" and "manual execution," both of which are secured through drawing. In mathematics something more is needed than a mastery of logic and methods; neatness and precision in the solution of problems are also desirable, and these can be secured through practice in drawing. In no other way can so thorough a knowledge of local geography be acquired as through the agency of drawing. Knowledge thus gained is more permanent. Drawing also offers the most efficient of all aids to instruction in natural history and natural science.

5. *It economizes time.*—Drawing, by training to closer habits of observation, enables pupils to master other subjects with much greater ease and rapidity; hence, in these, it will save all the time it will demand for itself.

6. *It develops the faculty of order.*—The systematic drill which drawing affords is a most excellent means for securing the general development of the faculty of order. Frederick the Great used to recognize his soldiers long after they had left the army by the good order of their houses. A teacher of drawing might recognize his pupils in the same way. An instance is known of a boy who had attended school where he had been obliged to learn, among other things, the greatest neatness in writing and drawing, who brought about, on his return home, a most beneficial reform in the external life of his father's entire family by the vigor with which he opposed any lack of cleanliness and order.

7. *It makes artistic workmen.*—A man who can form a beautiful vase or pitcher, chair or table, is an artistic workman. It is equally true that the man who cannot make beautiful things is not an artist. If a workman wishes to rise above his fellow-workmen by superior skill, we know of no readier or quicker way than by studying the laws of beauty; this subject must be pursued until he can distinguish between the beautiful and the ugly, the graceful and the ill-shaped, the refined and the coarse. The laws of beauty can only be learned through the study of nature and art. It is knowledge, and knowledge alone, that will enable any one to form an accurate judgment in respect to the beauty or want of beauty in an object.

Where artist and artisan are combined in one and the same person, we find the cheapest and best labor.

8. *It induces a more healthy physical condition.*—It affords, by its very attractions, an agreeable change from studies or labors of a more irksome or fatiguing character. It refreshes the mind, and through the mind induces a more healthy physical condition. Drawing, also, by inculcating a sense of neatness and order, will also stimulate more or less the sense of cleanliness, and thus conduce to the health of the body.

9. *Drawing is the Language of Industry.*—There is no department of art, science, or industry where drawing is not called into requisition, for by its aid facts and ideas are expressed which could not otherwise be understood. It can be truthfully said that anything that is well made is made from a drawing.

10. *It has also a moral and religious value which is far from being contemptible.*—A young person who has learned drawing will find both employment and amusement to fill up time that would otherwise be idled away or spent in a hurtful manner. In his study of nature for models, he will to a great degree be led to contemplate with admiration and love the author of the beauty and wisdom revealed to him at every step. Parents who have acquired some skill in drawing will find in it a means of discipline to interest and amuse their children, and to engage them in a delightful pastime.

II.—INDUSTRIAL.

1. *It creates more beautiful art objects.*—With this increase in the number of beautiful objects will come a corresponding improvement in the popular taste and a consequent increase in their demand and value, thus benefiting the art industries of the country.

2. *It fills manufacturing establishments and workshops with skilled workmen.*—If our manufacturing establishments and workshops are filled with educated workmen, their efficiency will be increased thirty-three per cent. A skilled artisan will take a working drawing and make the thing required at once, while unskilled workmen must have everything explained very minutely before attempting to construct the thing which the draft calls for, thus taking from the number of working hours not only his own time, but also that of the superintendent or foreman. Educated artisans are the cheapest and best.

Our manufactories being filled with skilled artistic workmen give a better population. It is better, because it is more prosperous, has more money to spend in the procurement of all that is essen-

tial to the comfort and happiness of life. Churches, schools, farmers, gardeners—all share in the prosperity of the educated, thrifty artisan. If the city of Worcester, Massachusetts, full as it is of skilled workmen of all kinds, is compared with a city where manufactured articles are crude, the difference will be found to be most striking.

3. *It will enable American manufacturers and persons engaged in other industrial pursuits not only to hold the home market, but to compete successfully for superiority in foreign markets.*—Good material and cheapness have characterized American products for many years. Add to these features beauty of form and decoration, and America will not only hold the home market, but will be enabled to compete successfully in foreign markets for industrial supremacy.

4. *It will place a premium on skill and taste.*—In all our manufacturing establishments and workshops, the educated artisan not only receives the highest salary, but occupies the most responsible positions. Artistic workmen command the best positions; hence their skill and taste are at a premium.

5. *It will add to the wealth of the individual, the nation, and the world.*—The educated workman receives higher wages than the uneducated; the former, then, is in a position to save money, while the latter is not. Whenever a nation is able to make art products so beautiful that the exports of manufactured goods exceed in value the imports, it enriches itself.

This value does not depend alone on the quantity of goods, but on the amount of labor, skill, invention and artistic thought and taste expended on their production. One cause of the rich returns which Switzerland and France have gathered from the wealth of other people is, that they export a minimum of bulk and material with a maximum of skilled labor, artistic invention and cultured taste.

III.—PRACTICAL.

Instruction and practice in Industrial drawing will be of practical benefit to those engaged in professions, in arts, and in handicrafts.—*Pennsylvania School Journal.*

EFFECTS OF SCHOOL-LIFE UPON THE SIGHT.

The principles to be observed for the preservation of the sight are, of course, the same in the case of children as of adults, and in school-work as in other occupations; but the greater necessity for carefully observing these principles at the time when the body, as well as the mind, is rapidly developing, and their very general neglect at this critical period, may justify a more detailed reference to them, even at the expense of some repetition. The increased demand that the exigencies or the fashion of the times make upon the eyes as well as upon the brains of children, and the increased numbers that are yearly brought within the influence of school-life by the compulsory laws of governments or of public opinion, should be accompanied by a corresponding increase in the use of all the alleviations and precautions that science and humanity can suggest. School-life is essentially an unnatural one; school-training is necessarily an artificial process, and unless it is conducted under rational and favorable conditions, universal education can never be an unmixed universal blessing. M. Javal, of Paris, in a recent essay on the Physiology of Reading, says, "The necessity of reading with an increased assiduity, and at a more and more tender age, print whose fineness has been increasing from generation, has resulted in generalizing myopia to such a degree, that if means of precaution are not taken this defect will end by affecting the whole human species."

The cramming for "exhibitions," and what Professor Huxley calls the "abomination of desolation" of competitive examina-

tions, prizes, etc., that goad on children of various strength and capacity to tasks that the brightest and strongest are hardly equal to, are responsible for much injury of mind and body as well as of sight; and the "higher education" that is now so earnestly demanded for the gentler sex, is too often dearly bought at the expense of shattered constitutions and unstrung nerves. But if these things must be, in the name of humanity and justice let them be surrounded by all the checks that can lessen their power for evil.

A matter of much importance, and one that is very generally neglected, is the air that children breathe in school. The carelessness or ignorance of public officials, or the narrowest possible considerations of economy, very often huddle an excessive number of children of the poorer class into small and ill-ventilated public schools; but this class are by no means the only sufferers, as the greater proportion of private schools are held in houses not intended for the purpose, and parents who give every care to the surroundings of their children at home, often seem strangely indifferent to the fact that they may spend many hours of the day, with twenty or thirty others, in a close and superheated little room that was built, perhaps, for five or six people to dine in. This is a fruitful source of income to the family physician, and now and then brings a case of weak sight, from debility and nervous exhaustion, to the office of the ophthalmic surgeon.

As the sense of sight is the chief medium of education, it is hardly possible to over-estimate the importance of feeling assured that its organ is in proper working order, and that whatever defects nature may have left in it have been, so far as possible, remedied by art. Though great advance has of late years been made in this direction, much still remains to be done, and many children, in the critical period of school life, labor under disadvantages that a little care and attention might easily remove.

The case of children with long-sight is particularly liable to be misunderstood, because their stronger power of accommodation,—their greater ability to change the focus of the eye by increasing the convexity of the lens,—enables them to mask a degree of this defect that would manifest itself in after-life by an absolute inability to read, or even by dimness of distant vision. It will be remembered that the axis of the long-sighted eye is too short and it has been explained how the optical defect of this malformation may be neutralized by a corresponding shortening of the focal distance—bringing the focus forward by increasing the convexity of the lens. What we are concerned with here is the fact that in childhood the soft lens admits of a much higher degree of this change of form, and makes it possible to see, and to see distinctly, in spite of the defect. This, however, is accomplished by muscular strain, and demands a certain amount—sometimes a very considerable amount, depending upon the degree of the defect—of physical and mental effort. Such a child may be said to be "weighted" in the race with his classmates; he may be able, by virtue of superior strength or greater pluck, to keep up with the rest, or even to take the lead; or he may break down before the end of the race is reached. He seeks a bright light to get the sharpest possible image of the print, and may get on well enough in the morning, when he is fresh and vigorous, and light is abundant, but suffers most in the latter part of the day, when the light grows dim, and he is more or less fatigued. A bright light assists him, too, by contracting the pupil, and thus excluding the outer rays of the cone of light which make the most confusion in the retinal image. He sometimes learns to increase this effect at night by holding the light between his eyes and the book.

A dislike of books sometimes originates in the extra effort required to read them, and an appearance of stupidity or inattention

may have the same physical cause. Support is given to this view of the case by the fact that the difficulty of distinct vision varies decidedly at different times, not so much with moral moods as with variations in mental and physical vigor.

As has already been explained, four-fifths of the cases of internal squint are the result of hypermetropia, or long-sight, and this great deformity, which is increased by use of the eyes, may generally be prevented, and sometimes cured, by proper and timely correction of the optical defect.

The eyes of children with this defect are usually "weak," and become watery and bloodshot after prolonged use. The edges of the lids are often thickened and red. Finally, the constant strain, excessive even for distant vision and painfully so for near, is a frequent cause of headache and other nervous symptoms.

In astigmatism the difficulties are still greater, and, in high grades, cannot be, even temporarily, entirely overcome. Even with the greatest amount of strain, vision is never quite distinct. Professional men of middle age, who have all their lifetime been at work with books without correction of this defect, are heard to say, when provided at last with cylindrical glasses, "this is the first time I have ever seen print distinctly."

Children with long-sight, or astigmatism, often struggle on for years under painful disadvantages, until they finally break down utterly, and an oculist is consulted to decide whether they had better give up school. Of course, they need glasses, and are old enough to wear them if they are old enough to study. They may not be becoming, but neither are headache, bloodshot eyes, wrinkled eyebrows, half-closed lids, or a squint—any or all of which may be the only alternatives, so far as personal appearance is concerned, to say nothing of the importance of continuing their education with comfort and safety. Many people of a conservative turn of mind are greatly shocked at the degeneracy of the times, and the multiplicity and officiousness of eye-doctors, when they see a child with spectacles; ignoring the fact that such children, in the good old times when they themselves were young, were compelled to give up study altogether, or to struggle painfully and irregularly for a partial education.

As might have been expected from what has gone before, the most frequent of the injurious effects that follow tension of the eyes prolonged unduly, or under unfavorable circumstances, is short-sight. The highest authority upon this subject, Prof. Donders, of Utrecht, says: "The distribution of near-sightedness, chiefly in the cultivated ranks, points directly to its principal cause—tension of the eyes for near objects. Respecting this fact there can be no doubt.

"Three factors may here come under observation: 1st, pressure of the muscles upon the eyeball in strong convergence of the visual axes; 2nd, increased pressure of the fluids, resulting from accumulation of blood in the eyes in the stooping position; 3rd, congestive processes in the eye which, tending to softening, give rise to extension of the membranes. Now, in connection with the causes mentioned, the injurious effect of fine work is, by imperfect illumination, still more increased.

"To this it is to be ascribed that in schools where, by bad light, the pupils read bad print, or write with pale ink, the foundation of near-sightedness is mainly laid, which, in fact, is usually developed in these years."

These causes may not only increase to excess a slight degree of short-sight or develop an hereditary predisposition to the defect, but may produce it in an eye originally perfect. It has been positively established by careful and extensive statistics that short-sight is most frequently, if not almost exclusively, developed during school-life. This is due partly to the fact that the eye during the period of its growth is more liable to change of form, and partly

to the fact that children have a much stronger power of accommodation than adults, and therefore hold objects much closer to the eyes; but, to a greater extent, it is due to preventable causes that are too often overlooked by parents and teachers.

The dangers to be avoided are: a too prolonged tension of the eyes, concentration of the sight upon objects too near, and straining of the external muscles of the eyeball by a position of the book or paper unfavorable to their free and natural movement.

It is important in all cases, and particularly if a tendency to short-sight is known to exist, not to urge or to allow children to keep the eyes fixed upon the book too long without intermission; this is not an imaginary danger, when a certain task is to be accomplished in a given time. No form of punishment that involves this kind of strain should ever be adopted.

The book or paper should never be closer to the eyes than ten or twelve inches, and if there is short-sight enough to prevent the letters from being distinct at this distance, it is usually better to wear proper glasses in studying. The print should, of course, be large enough and clear enough to be seen with ease at a much greater distance, and it is important that pale ink should not be used in writing.

Reducing the size of print has much the same effect as diminishing the amount of light, as the smaller the print the more light necessary to make it distinct, and the closer it is brought to the eye. This is appreciated at the commencement of old-sight, when fine print can be read only in a bright light, because the loss of accommodating power prevents us from compensating for the smallness of the type by bringing it closer to the eyes. Children are able to do this, but they do it at the expense of a strain that may inflict permanent injury upon the eyes. Printers' type, particularly for school-books, is a bad thing to economize in.

The cause that most frequently necessitates a too near approach of the book is a defect in the amount or direction of the light. Dr. Cohn, whose statistics of the examination of more than ten thousand school children in Germany have already been referred to, found that "the narrower the street in which the school was built, the higher the opposite buildings, and the lower the story occupied by the class, the greater was the number of near-sighted children;" he also found that, while in the village schools the proportion of near-sighted pupils was only 1.4 in a hundred, in the city schools it was 11.4 per cent.

It is impossible to establish any general and uniform measure for the proportionate size of windows, as so much depends upon the point of the compass from which the light comes, and, particularly, upon the character and the proximity of surrounding buildings; but it should always be remembered that an excess of light is easily controlled, while a deficiency is an irremediable defect. Dr. Cohn, in a recent publication, maintains that a school-room cannot have too much light, and recommends the very large proportion of a square foot of window-glass for every square foot of floor, and says that less than about half this proportion should never in any case be allowed. Some other authorities consider the proportion of thirty to one hundred usually sufficient.

The direction of the light is scarcely less important than the amount. Much discomfort may be caused by shadows thrown upon the book or paper by the shoulders, head, or hand, but the most injurious direction for light to come from is that directly in front. Such a light not only causes a close approach to the desk, by bending over to shade the eyes from the glare by the brow or perhaps by the hand, or turning of the head to one side, which brings one eye nearer to the work than the other, but the dazzling has a directly irritable effect upon the retina and conjunctiva. It is extremely annoying to the strongest eyes, and is intolerable to persons whose eyes are weak or unduly sensitive.

There is rarely any excuse for this mistake, as it is nearly always possible to place the desks or seats in such positions as to avoid it; but it is still not uncommon to see class-rooms or study-rooms, even in buildings erected specially for school purposes, in which the only comfortable and safe pair of eyes is the teacher's. The conditions to be observed are simple enough: the room should be oblong, and should be lighted by high windows in one of the long sides, and the rows of desks should be parallel to the short sides, and should face so that the light may come from the left. A large square room, with windows on two or more sides, can never be properly lighted.

In erecting a building for school purposes, it involves little or no additional expense to provide windows of sufficient size, and in utilizing a house built for other purposes it is usually possible to enlarge the windows if necessary. The majority of school-houses are, at best, not models of architectural beauty; and, at any rate, this is a matter of secondary consideration where such grave practical interests are involved. Further, it should be remembered that "there is an architecture for schools as well as an architecture for palaces. One is not less worthy of study than the other, and we are at fault in taste as well as in hygiene if we forget that here real beauty consists, above all things in the perfect adaptation of a building to its uses." In some Austrian and Swiss schools the plan has been adopted of fixing shades at the bottom of the windows, so that they may be unrolled upwards instead of downwards. By this arrangement, when light is excessive, it can be modified by excluding the portion that is less useful and agreeable, and admitting only that which comes from above. Light striking below the top of the desk can reach it only by reflection, and is uncertain and confusing.

At night, a number of desks cannot be lighted to advantage by any one source of light, however brilliant. The same rule as to direction should of course be observed as in the daytime. Liebreich recommends the use of reflectors, and suggests that they might be so arranged as to act, at the same time, as ventilators. The vitiation of the atmosphere by the combustion of a number of lamps or gas-jets is not to be lightly considered. Ground-glass globes are condemned by all authorities as unsuitable for school purposes. The very property that makes them useful for the general lighting up of a room, that of diffusion, unfits them for this use.

The size and form of the desk, and its relation to the seat, are not without their effect upon the welfare of the eyes. To use desks and seats of the same pattern and size for a large number of children of all ages, is not more rational than the system of distribution of army clothing, by which, as Dickens complained, all the tall soldiers got the short pantaloons and the short soldiers got the long ones. If a child is uncomfortably seated, he is pretty sure to lean forward on the desk, thus bringing his eyes too close to their work, and, at the same time, overfilling their blood-vessels by gravitation.

As the muscles of the back become fatigued by sitting long in a constrained position, the tendency is to bend over more and more, and this faulty position, at first assumed for temporary relief, becomes, by frequent repetition, a confirmed habit, and may end in permanent deformity. Thus a relation is established between short-sight and spinal curvature, and either may promote or increase the other.

Another affection of the eyes that may result from improper arrangements for study, is that known to ophthalmic surgeons as "muscular asthenopia," a disturbance of the harmonious action of the muscles that move the eyes and direct them both to the same point of the book or paper. An excessive convergence to an object too close cannot be maintained without injurious strain, and

a direction of the axes of vision upwards or sidewise demands an unnatural, and therefore fatiguing, combination of muscular actions. It will be readily understood how the positions often assumed by children at school must necessitate one or even all of these conditions.

According to Liebreich, the most common and important defects in school furniture are the following:

"1. Want of, or unsuitable backs.

"2. Too great a distance between the seat and the desk.

"3. Disproportion, generally too great a distance, between the height of the seat and that of the desk.

"4. Wrong form and slope of the desk."

Illustrations of model desks and seats, proposed by Liebreich for remedying these defects, may be found in his lectures on school-life.

"The back ought to be straight, and consist of a piece of wood only three inches broad. If this is fixed at a proper height, viz., close above the hips, it supports the loins sufficiently to make it easy and comfortable for even the most delicate children to sit perfectly upright. The seat ought to be broad enough to support almost the whole length of the thigh, and the height of the seat such as to allow the sole of the foot, in its natural position, to rest on a foot-board. The edge of the desk must be perpendicularly above that of the seat, and just high enough to allow the elbow to rest upon it, without displacing the shoulder."

A flat desk promotes a stooping position, with its attendant evils of close sight and gravitation of blood to the eyes, and, besides, does not permit the direction of vision most favorable to the natural and most easy movement of the eyeballs. An inclination of forty or forty-five degrees is considered the best for reading, as, when the body is erect, the eyes are downwards and forwards; this brings the page about at right angles with the line of vision. This slope would be too steep for writing, and an angle of about twenty degrees is recommended. The inclination of the desk may be changed by a very simple mechanism.

Still more serious considerations (which it would be out of place to discuss here) are involved in this question of the construction of desks and seats. A distinguished orthopædic surgeon, Eulenberg, has stated that ninety per cent. of curvatures of the spine, not induced by local disease, are developed during school-life; and a number of high authorities have testified to the sad effects that crooked and stooping positions at school may have upon the heart and lungs and abdominal organs as well as upon the spine and the sight.

Notes and News.

ONTARIO.

Mr. R. Lewis, Head Master of the Dufferin School, Toronto, has been appointed teacher of elocution in Knox College.

Seaforth High School is doing good work under the energetic and able Principal, Mr. Chas. Clarkson, B.A. At the last intermediate examination five students succeeded in passing. The attendance has increased from 50 to 73. Although the school has been in existence only about a year, it has been found necessary to employ an assistant and two monitors to aid Mr. Clarkson.

During the last month the Listowel Public School had 473 pupils on its roll, with an average attendance of 368.

The following is the attendance recorded at the Ottawa public schools for the month of September:—Total average attendance, 1,568; total on roll, 1,977; average regularity, 79 per cent.

Mr. Beer has been re-appointed principal of the Perth public schools.

The Perth public schools have received a present from Mr. Matheson of a fine collection of minerals made by Dr. Wilson, now of Edinburgh.

Dr. Herbert Bayne, of Halifax, has been appointed Professor of Chemistry in the Royal Military College, Kingston.

Inspector Boyle's report of London Public Schools for September showed the total number of pupils entered for the month to have been 2,753, with an average attendance of 2,096.

SENIOR MATRICULATION, UNIVERSITY OF TORONTO.—The following scholarships have been awarded upon the results of the examination just concluded:—Scholar in classics, Harris, E. J.; in mathematics, Francis, D.; general proficiency, Malloy, C. W.

Mr. O'Hagan, Principal of the Belleville Separate School, has been appointed a member of the Board of Examiners for the County by the Minister of Education.

The Bruce Teachers' Association passed a resolution in opposition to allowing teachers to have the option of taking the Latin or Science groups at examinations for certificates.

Perth High School has been advanced to the rank of a Collegiate Institute. The following staff of teachers has been engaged for the ensuing year at the salaries named: F. L. Mitchell, Rector of the Collegiate Institute, one thousand dollars; E. L. Currie, classical master, seven hundred dollars; J. H. Stewart, English master, seven hundred dollars.

Mr. Jarvis has been elected chairman of the Board of Trustees in Stratford.

At the last meeting of the East Middlesex Teachers' Association the following resolutions were passed:

On motion of Mr. Johnson, seconded by Mr. J. W. Hodgins, it was resolved that in the opinion of this Association, three years' teaching is not equivalent to professional training, and that such teachers should be required to attend the Normal School.

The Committee on "Uniform Promotion Examinations" submitted their report, which was taken up *seriatim*, and adopted as follows:—

1st. That such examinations would be very beneficial to the schools of the inspectorate, tending to stimulate both teachers and pupils, secure uniformity of classification, and increase the interest of parents and guardians in the school, &c.

2nd. That they should be held twice in each year, in the months of April and November.

3rd. That the questions be prepared by a committee appointed by the Association for such examination.

4th. That the questions, with the number of marks allowed for each, the time-table, and instructions for conducting the examination, be sent to each teacher, who will conduct the examination, examine the papers of his own pupils, promoting as he sees fit, and forwarding the result of the examination to the inspector.

5th. That the expenses of the examination be borne by this Association. A very animated discussion arose on the reading of the several clauses, which showed the interest taken by the teachers in the work mentioned.

In order that the large expense connected with the work of such an undertaking may be lightened as much as possible, it was resolved that an electric pen be procured for the Association, giving the Library Committee, at the same time, power to act in the matter.

QUEBEC.

At the recent competitive examinations in McGill College, Montreal, the following scholarships and exhibitions were awarded to the undermentioned students and candidates for entrance:

I. SCHOLARSHIPS (TENABLE FOR TWO YEARS).

Third Year. Mathematical Scholarships—Wm. A. Ferguson, \$125 yearly; donor, W. C. Macdonald, Esq. Natural Science Scholarships—Henry Ami, \$125 yearly; donor, W. C. Macdonald, Esq. Classical and Modern Language Scholarship—A. Falconer, \$125 yearly; donor, W. C. Macdonald, Esq. Classical and Modern Language Scholarships—John W. Tucker, \$125 yearly; donor, W. C. Macdonald, Esq.

II. EXHIBITIONS.

Second Year.—H. I. Hague, Upper Canada College, \$125 yearly; donor, W. C. Macdonald, Esq. H. A. Lafleur, High School, Montreal, \$125 yearly; donor, W. C. Macdonald, Esq. Henry Fry, High School, Quebec, \$100 yearly; founder, Mrs. Redpath.

First Year.—John D. Cameron, Huntingdon Academy, \$125 yearly; donor, W. C. Macdonald Esq. W. Hunter, Hamilton Collegiate Institute, \$125 yearly; donor, W. C. Macdonald Esq. J. G. W. Brown, Prince of Wales College, Charlottetown, P.E.I., \$100 yearly; donors, the Government.

The inconveniences arising from the dead-lock in the Government, affecting so seriously the educational and other interests of this Province, still continue, but it is to be hoped that the dif-

ficulty will very soon be got over now in one way or another, and governmental affairs resume their normal state once more.

The circumstance of greatest interest in an educational point of view during the past month was the meeting, in the city of Quebec, of the sixteenth Annual Convention of the Provincial Protestant Teachers' Association. The sessions of the Association held on 16th, 17th and 18th of October, were in the hall of Morris College, except on the evening of the last day, when the meeting was in the Music Hall, as, owing to the great numbers of teachers present, and the lively interest felt in the proceedings by the public, the Morris College Hall was found too small. Notwithstanding certain *contretemps*, such as the long detention by fog of the Montreal boat with 150 teachers on board, and the somewhat defective arrangements for their accommodation in the city, the numbers present being unusually large, the convention was a great success. An excellent spirit pervaded its meetings; much interest was awakened in the too much neglected cause of education; many papers, ably written, on important educational subjects were read and discussed, in some instances at considerable length; school books, school maps, globes of ingenious construction, and school apparatus and appliances of different kinds were exhibited by various publishers, and examined by the Teachers. It was a pleasing and must have been also an instructive time for them, especially in listening to the able speeches and papers of men of such culture and large experience in everything pertaining to education in all its branches as Principals Dawson and McVicar; the Hon. G. Ouimet, Superintendent of Public Instruction; Professor Robins, &c. Dr. Miles, of the Department of Public Instruction, President of the Association for the past year, occupied the chair at the different sessions of the Association. The following is a list of papers read, with their authors: Mr. Masters, of the Coaticook Academy, "On the Teaching of Primary Arithmetic;" Mr. School Inspector Hubbard, "On School Discipline;" Mr. Parkins, of Sherbrooke Academy, "On the Teachers' difficulties and the Study of the Classics;" the Rev. Canon Norman, of Montreal, "On Higher Education." Mr. Juvet explained the beautiful and ingenious globe invented by himself, illustrating clearly the diurnal motion of the earth, its true position, the difference of time, &c. Rev. Mr. Rioux, "On Rewards in Schools;" Mr. McGregor, of Huntingdon Academy, "On the Course of Study in County Academies;" Professor Murray, of the Montreal High School, "On English Etymology;" Mr. Thomas, of Waterloo Academy, "On the Moral Support extended to Teachers;" Mr. Fletcher, Quebec, "On Oral Teaching;" Rev. Mr. Rexford, of Montreal High School, "On a plea for reform in the District School System of the Eastern Townships;" the Hon. G. Ouimet, Superintendent of Public Instruction, an address in French on "Education;" Professor Robins, Montreal, "On Object Lessons;" Miss Luttrell, of the Royal Arthur School, Montreal, "On Female Teachers;" Mr. Taylor, Quebec, "On Phonography;" Inspector McLaughlin, "On reform in the District School System of the Eastern Townships;" Mr. Arnold, of Montreal, "On forty years' experience as a Teacher in Canada;" Principal McVicar, Montreal, "On the Teacher in his Study and in the Class Room;" Principal Dawson, of McGill University, "On Retrospects and Anticipations."

It is impossible in such an article as this to give even a short synopsis of the different papers read; but as most of them, if not all, will be published, they will doubtless appear in future numbers of the JOURNAL either *in extenso*, or such portions as may be considered most valuable.

Dr. Miles' address as President was "On the Superannuation of Teachers."

The Rev. Principal McVicar, of Montreal, was unanimously elected President of the Association for the ensuing year; Mr. F. Hicks was re-elected Secretary, and Professor McGregor, Treasurer.

The Convention meets next year in Montreal.

On motion of Principal McVicar, seconded by Mr. Bell, it was unanimously resolved that the Government should be memorialized to frame an Act for the amendment of the School Law, to provide that the taxes collected from joint stock companies should in future be divided among the Catholic and Protestant School Boards in proportion to the amount of stock held by Protestant and Catholic stockholders in the school district, instead of on the basis of the population of each, as heretofore.

NEW BRUNSWICK.

As announced last month, the Albert County Teachers' Institute held its second annual meeting at Hillsborough on the 2nd and

3rd of October. After an address by the retiring President, A. Wells, Esq., High Sheriff, and the enrolment of new members, the officers were elected for the current year. These are: George Smith, B.A., President; Chipman Bishop, Vice-President; Nathaniel Duffey, Secretary-Treasurer; J. W. Bishop and Joshua Thompson, members of committee. In the course of the four sessions the following papers were read and their subjects discussed: "Method of Teaching Geography," by Mr. C. Bishop; "Arithmetic," by the same gentleman; "Reading," by Mr. J. Thompson; "The Importance of School Libraries," by Mr. George Smith, the President. There was also a discussion on the management of miscellaneous schools, in which no new solution of the difficulties was brought out. At the closing session much amusement and some instruction was got out of the question box. The Institute passed a resolution of sorrow and sympathy in reference to the death of Chas. S. Gilbert, B.A., of Alma. A public lecture by the Chief Superintendent had been announced for the evening of the 2nd, but to the great disappointment of all concerned, Dr. Rand was unable to be present. It seems that he had telegraphed to the County Inspector, saying that his official duties would prevent his leaving Fredericton, but the Inspector having left home did not receive the despatch. Nobody at the Institute thought of telegraphing to ascertain the cause of Dr. Rand's non-appearance. Suspense and chagrin were the prevailing feelings among the teachers; and the audience that assembled to hear a lecture on education was handed over to the good people who usually hold a prayer-meeting in the house on that evening. While such an unexpectedly devotional assembly no doubt received benefit from the sacred services, it seems somewhat strange that the officers of the Institute did not, when it became evident that Dr. Rand was not coming, make some arrangements to utilize the public gathering for the promotion of their work by addresses, discussions, or otherwise.

Simultaneously with the above, the teachers of Northumberland County were holding their third annual meeting at Newcastle, with an attendance of nearly sixty. C. S. Ramsay, Esq., the County Inspector, was again chosen President, and Messrs. Hutchison and Oakes were re-elected to the offices of Vice-President and Secretary. Messrs. F. A. McCully, B.A., and Donald McIntosh were elected additional members of the Committee of Management. Principal Crocket, of the Provincial Normal School, was present at all the sessions, adding much to the interest and profit of the discussions. He also delivered a public lecture on "Popular Education" on the first evening. The following subjects were brought before the Institute and discussed: (1) The reduction of denominate numbers—paper by Miss Williston. (2) A lesson on Length, by Miss M. Haviland; (3) Wormell's Modern Geometry, Chap. III., introduced by Mr. D. McIntosh; (4) Physical Geography—paper by Mr. Robert Moir; (5) Penmanship and how to teach it—paper by Mr. C. M. Hutchison; (6) A lesson on Form, by Miss Celia Alexander; (7) Elementary Algebra—papers by Mr. McCull and Mr. Jas. N. Wathen; (8) Elementary Philosophy—papers by Mr. J. B. Oakes, B.A., and Mr. D. McIntosh; (9) Grammatical Analysis and Parsing; (10) Familiar conversation on several practical topics; (11) Question Box. A committee was appointed to procure chemical apparatus for the use of the Institute. Before the close of the meeting the usual votes of thanks were passed.

The recent disastrous fire at Shediac fortunately did not touch the fine new school-house erected there last year.

At Buctouche, on the other hand, another fine new school-house, of two departments, was totally destroyed by the fearful tornado in August. The schools are at work again, however, in rented rooms,—largely through the energy and determination of Mr. Barnes, the Principal, to whom great credit is due.

The Board of School Trustees of St. John has found it necessary to adopt measures with a view to reducing expenses, on account of the present financial condition of the city. By transfers and massing of pupils, on the basis of about 56 pupils to a department, nearly twenty departments will be discontinued from the 1st of November, and consequently, as many teachers will lose their positions. This will effect a saving of some \$8,000 or \$9,000 in salaries and expenses. If the grading is carefully managed, these changes may not seriously diminish the efficiency of the schools. But the scheme of retrenchment also includes a reduction of salaries of all teachers and officers employed, to the extent of ten per cent. on salaries not exceeding \$500, and twenty per cent. on those above that amount. This will no doubt bear somewhat hardly on many, but there seems to be no help for it. The whole reduction which

the Board expects to make amounts to about \$12,000 a year. After the 1st of May, when the rents expire, there may be further retrenchment in the item of expenses. The Board has adopted these measures as a matter of urgent necessity under existing circumstances. In Fredericton also there will be some reduction of expenses in the public schools after the 1st of November.

NOVA SCOTIA.

A Teachers' Association under Provincial regulations was organized and held at Amherst on the 30th and 31st ult. Cumberland has followed Kings in availing herself of the advantages offered by these regulations. The teaching staff of the County was numerously represented, and the proceedings spirited and interesting. Next month's Notes will contain a full report.

The press of the Province, both religious and secular, displays a singular unanimity in approving of the appointments recently made to the Professorships of the Normal School. Dr. Hall, of Boston University, and for years a teacher in the Public Schools of the Province, brings to the English mastership the reputation not only of an accomplished scholar, but of an exceptionally efficient and magnetic teacher. Mr. Eaton, the newly appointed Professor of Mathematics and Science, is a graduate of Harvard, and has had even more experience than Dr. Hall in Public School work. The Normal School and Province will undoubtedly reap great benefit from his scientific attainments and enthusiasm, more than once referred to in these notes.

J. T. Mellish, Esq., A.M., has been appointed by the Halifax City Board of School Commissioners to the Mathematical Professorship in the High School, rendered vacant by the resignation of Dr. Bayne.

The October number of the *Journal of Education* contains a partial revision of the authorized list of text books. The revision extends only to texts in Mathematics and Science. The Council has met the wishes of the great majority of the Teachers of the Province in placing on the prescribed list Hamblin Smith's Arithmetic and Geometry. In the above subjects Nova Scotia has now a series of texts unsurpassed for unity, simplicity and adaptation to the wants of schools, and at the same time fully in keeping with modern progress.

The *Journal of Education* also contains a list of the successful candidates for Teachers' licenses at the Annual Examination in July. The total number is in the vicinity of 300. We have not been informed as to the exact number of candidates examined, but judge there were about 1,000. It is clear many candidates still apply far in advance of their qualifications.

Teachers' Associations.

The publishers of the JOURNAL will be obliged to Inspectors and Secretaries of Teachers' Associations if they will send for publication programmes of meetings to be held, and brief accounts of meetings held.

WATERLOO COUNTY.—The teachers of Waterloo County met in convention Friday morning, Sept. 5th, at 9.30 o'clock Mr. Alexander, the President, in the chair. Several communications were then read, after which Mr. W. Linton read a carefully prepared essay on "Relation between Parents and Teachers." Mr. G. D. Lewis then gave the Association a lesson on "English History." This subject was afterwards discussed by Messrs. Suddaby, Bingeman, Sharman and Chapman. Messrs. Alexander and Chapman having been appointed delegates to the last Ontario Teachers' Convention, presented their reports. Previous to adjournment for dinner the President announced that Mrs. Stanton had kindly consented to have her kindergarten school in operation on Saturday, at 11 o'clock a.m., for the purpose of allowing the teachers an opportunity of visiting it. The Association again met at 2 p.m., the President in the chair. Mr. S. S. Herner read an essay descriptive of a State Convention of teachers in Illinois, which he had the pleasure of attending during the recent vacation. This proved very interesting to the Association. Mr. W. F. Chapman read an essay on "Incentives to Study," which provoked some discussion. A motion was passed locating the Teachers' Professional Library at Berlin, and appointing Mr. Oberholtzer librarian for the first year, as he kindly offered to provide room for the library and to act as librarian. At this stage Prof. Young, of Toronto, entered the room, and was enthusiastically received by the Association. Mr. G. A. Chase, M.A., not being able to be present, sent a carefully prepared essay on "English Literature," which was read by the secretary. By request, Professor Young criticized the essay in a very able manner, agreeing with the writer. The Association then adjourned till 9 a.m. on Saturday. Friday evening Prof. Young delivered in the Town Hall a lecture on "Psychology in its relation to Education." The lecture was very able and instructive, and at the close the

lecturer received a hearty vote of thanks. Mr. A. F. McLean took up the subject of Vulgar Fractions, and treated it in a thoroughly practical manner. Then followed the selection of subjects for next promotion examination. The subjects selected were Reading Writing, Arithmetic, Grammar, Composition, Geography, Spelling, History—the Brunswick period—and Algebra and Geometry for those in the sixth class.

C. B. LINTON, Sec.

HALIBURTON.—The first meeting of the Teachers' Association for the County of Haliburton was held at Minden on the 26th and 27th of September last. The convention was certainly a success. After the delivery of the Inspector's able address the following officers were elected: Dr. Chas. D. Curry, B.A., I.P.S., President; Wm. Smith, Vice-President; E. J. Unger, Secretary-Treasurer; Committee, Miss Nellie Unger and Messrs. Angus, Dudley, Houston and Reid. The preliminary business being disposed of, Mr. W. Leith introduced the subject of "Elementary Arithmetic," which was handled in a masterly manner by Mr. J. S. R. Angus followed with an excellent paper on "Teaching Reading to Junior Classes." This closed the first day's work. On Saturday Mr. C. J. Unger took up the subject of "Algebraic Factoring." Mr. J. E. Hicks next gave his method of school management. Mr. J. D. Reid then introduced the subject of "Geography." Mr. T. T. Grimmett's exposition of his plan of teaching analysis closed the practical work of the Association. The Association then adjourned, to meet in Haliburton on the second Thursday and Friday in February.

E. J. UNGER, Secretary.

LINCOLN.—This Association held its regular half-yearly meeting at the St. Catharines Central School on the 24th and 25th of October. Geo. W. Ross, Esq., M.P., conducted a Teachers' Institute, the first afternoon taking up School Routine and Arithmetic. In the evening he delivered an able address on "Popular Education" to a large audience in the City Hall. The Collegiate Institute Literary Society gave several choice musical selections during the evening. On the second day Mr. James Hughes, P. S. I. of Toronto, conducted a Teachers' Institute on Writing, History and Drawing. In the afternoon he gave a very interesting lecture on the Kindergarten. On the first day of the Association a resolution was passed condemning Smith & McMurphy's Elementary Arithmetic, and expressing the desirability of having a more suitable work authorized in its stead for use in the public schools,—a work which should contain a great variety of practical examples and a large number of them; a copy of the resolution to be sent to the Minister of Education.

W. F. RITZENHOUSE, Secretary.

NORTH PERTH.—The semi-annual meeting of this Association will be held in the new High School, Stratford, on Thursday, Friday and Saturday, the 30th and 31st of October, and 1st of November, commencing each day at 9 a.m. PROGRAMME.—Thursday forenoon—Dr. McLellan, Mathematical subjects. Afternoon—Rev. J. E. Croley, M.A., The Moral Element in Education. The Association will attend the opening of the High School by Rev. Dr. Ryerson, late Chief Superintendent of Education, at 3 p.m. Evening—Public meeting, at which addresses will be delivered by Rev. Dr. Ryerson, Dr. McLellan, G. W. Ross, Esq., and others. Friday forenoon—G. W. Ross, Esq., Inspector of Public Schools, School routine, recitations, methods of teaching—illustrated by Model School class. Afternoon—J. M. H. Harrison, A.M., Professor of Elocution, &c., Elocutionary instruction. Evening. An entertainment of readings and recitations by Professor Harrison. Saturday forenoon—R. A. Coleman, B.A., Physical Science as an Educator. H. Dickenson—Common Proofs of the Earth's Sphericity examined. W. Alexander, Promotion Examinations and Text-books.

B. ROTHWELL, President.

H. DICKENSON, Secretary.

EAST VICTORIA.—A Teachers' Convention will be held in the Centro Ward School House, Lindsay, commencing on Friday, the 7th November, at 10 o'clock a.m. PROGRAMME.—Friday, 10 to 10.20 a.m., Opening Address, by Mr. R. L. Dobson, President. 10.20 to 11, Geometry, by Mr. J. D. McMurphy. 11 to 11.30, Arithmetic, with class, by Mr. John Elliott; 11.30 to 12, Music, with class, by Miss Peplow; 2 to 2.40 p.m., Algebra, by Mr. Wm. Wood, Fenelon Falls, 2.40 to 3.20, Arithmetic, with class, by Mr. J. H. McPaul, 3.20 to 4.30, Phonic Reading, by Mr. J. Hughes, Inspector, Toronto; 8 to 8.30, p.m., Lecture on Kindergarten, by Mr. J. Hughes, Inspector, Toronto, 8.30 to 9, Lecture on Use of the Study of History, by Rev. Dr. Smithott. Saturday—9 to 9.40 a.m., Prosody, with class, by Mr. J. H. Knight, Inspector. 9.40 to 10.20, Fourth Book Literature, by Mr. J. Braden, Peterboro', 10.20 to 11, Grammar, with class, by Miss Hunter, Lindsay; 11 to 12, Debate "Should Music form a part of Public School Work?" by Messrs. Knight and Dobson.

R. L. DOBSON, President.

J. H. McPAUL, Secretary.

No. 2, LEEDS.—The next meeting of the Teachers' Association for District No. 2, Leeds, will be held at Farmersville, Thursday and Friday, November 13 and 14th. PROGRAMME.—Thursday, 9 a.m. Business meeting. Roll call of members. Election of officers. Second and Third Class Arithmetic Papers, Messrs. Eyre and Wheery. Arithmetic, Miss Beatty. School reports from teachers. Difficulties met with, and how overcome. Question-drawer. 1.30 p.m., Reading to Juniors, Miss Fulton and Mr. Sheldon. Penmanship, Mr. Rowat. Pronunciation, Mr. Rowman. Grey's Memoria Technica, R. Kinney. Physical Geography, Prof. Macoun. 7.30, p.m., Lecture by Prof. Macoun, the North-West. Friday—9 a.m. Grammar, Messrs. Eaton and Mott. Algebra, Second and Third Class Papers, Messrs. Rowat and Curtis. Elocution, Prof. Lewis. Class Questioning, Mr. Burko. 1.30 p.m., Object Lessons, Mr. Stone. Botany, Prof. Macoun. Elocution, Prof. Lewis. Essay, Mr. Cornell. Chemistry, the Misses Bullard and Miss Karley. Reports from delegates. 7.30, p.m., Readings by Prof. Lewis.

R. KINNEY, Cor. Sec.

A. BOWERMAN, M.A., President.

WENTWORTH.—The regular half-yearly meeting of this Association will be held in the Collegiate Institute, Hamilton, on Friday and Saturday, the 24th

and 25th of October. PROGRAMME.—Friday, forenoon session, 10 to 11 a.m., Routine business, 11 to 12, Reports of committees. Afternoon session, 1.30 to 2 p.m., President's Address, George Dickson, M.A.; 2 to 3, English Elocution, T. C. L. Armstrong, M.A.; 3 to 4, History and How to Teach it, Rev. Alex. Burns, LL.D.; 4 to 4.30, Practical Botany, E. A. Stevens. Evening session, 8 p.m., Lecture, "Some relations of Psychology to Education," Rev. Geo. P. Young, M.A. Saturday, forenoon session, 9 to 10 a.m., Commercial Contracts, W. M. Sutherland, B.A.; 10 to 11, Physical Geography, Rev. W. P. Wright, M.A.; 11 to 1, Question Drawer. Teachers will please send questions for the "Drawer" to J. H. Smith, P. S. Inspector, Ancaster, before the meeting of the Association. Friday will be considered a visiting day. All teachers are expected to attend.

J. H. SMITH, P. S. Inspector.

GEO. DICKSON, President.

FRON ENAC.—Thursday, Nov. 6th. 11 a.m., Business meeting; 1.30 to 2.30, p.m., How to Teach History, Mr. Summerby; 2.30 to 3, A few plain facts, Mr. Bole, 3 to 4, English Literature, J. M. Buchan, M.A.; 4 to 5, Contractions in Arithmetical Operations, Prof. Dupuis; 7.30, Public Lecture—"Poetry and Politics"—J. M. Buchan, Esq., M.A. Friday, Nov. 7th, 9 to 9.45, a.m., Education in Ontario, Miss Woollard; 9.45 to 10.30, Some subjects discussed at the last meeting of the Ontario Teachers' Association, Mr. Benstridge, 10.30 to 11, Composition, Mr. Metcalfe, 11 to 12, English Grammar, J. M. Buchan, M.A., 1.30 to 2.15, How to teach the First Book, Mr. McIntyre.

ELGIN.—The next semi-annual meeting of the Elgin Teachers' Association will be held at the High School buildings on Friday and Saturday, 7th and 8th November. PROGRAMME.—Friday, A. M.: 10-11, Business Meeting; 11-12, Reading—N. W. Ford. P. M.: 1.30-2.30, Music—Rev. J. F. Paradis. 2.30-3.00, Writing—S. C. Williams, 3.00-3.30, Object Lesson—Miss Jennie Baldwin; 3.30-3.40, Chemistry—H. L. Rice. Evening Session.—7.30, Lecture—G. W. Ross, M. P., Model School Inspector. Saturday.—A. M. 9.00-10, Arithmetic (fractions)—N. M. Campbell; 10-11, School Management—W. P. Killachy; 11-12, Grammar—S. C. Woodworth. The proceedings will be interspersed with music. In order to make the work more practical, classes will be provided in the subjects of Reading, Object Lesson, Arithmetic, and School Management. N. M. CAMPBELL, President; THOMAS LETCH, Cor. Sec. St. Thomas, October 24th, 1879.

REVIEWS.

AMERICAN HEALTH PRIMERS. Philadelphia: Lindsay & Blakiston. Toronto: Hart & Rawlinson. 50c. "Eyesight and How to take care for it." This is No. 4 of the series, and the most important yet issued for teachers. No question is perhaps of greater importance to both teachers and pupils than how to preserve the sight. It is a startling fact that over 60 per cent. of the pupils who leave school at 16 years of age are near-sighted.

The November ATLANTIC has several important articles. Perhaps the one which will attract most attention among thoughtful people is "The Prospect of a Moral Interregnum," by Goldwin Smith, who predicts a period of laxity and license in consequence of the alienation between religion and the scientific thought of the time. Col. Geo. E. Waring, Jr., writes a curiously interesting account of "The Waldenses of To-day." A skilful writer, whose name is withheld, discusses with great force and interest "Our Military Past and Future." The author of Massy Sprague's Daughter" contributes "Sister Mary's Story," which is certainly one of the best magazine stories recently printed. Jennie Young writes of "The Ceramic Art in America;" "From the Missionary" is concluded. "Englishwomen in Recent Literature," "Mysterious Disappearances," and "Late Books of Travel," though anonymous, are thoroughly interesting. Richard Grant White discusses "Assorted Americanisms" as heartily and freshly as if it were a wholly new topic. The Contributors' Club abounds in bright things, and a chapter of "Recent Literature" concludes a very good Atlantic.

APPLETON'S JOURNAL is chiefly devoted to the two excellent novels, "The Seamy Side," by Besant and Rice; and "Vivian the Beauty," by Mrs. Edwards. It also contains good articles on "Antwerp;" "Spiritual Christians in Eastern Russia;" "Otway;" and "Two Men of Letters, Lever and Gaultier."

BLACKWOOD'S MAGAZINE. "Reuta" is advanced by a large instalment; there is also a short tale, "A Deadly Foul;" the Greek play, "Ion," is carefully analyzed; and several other articles are given of an instructive character.

THE CONTEMPORARY REVIEW. This contains nine articles, each of which is worthy of being published by itself. The most interesting are "India and Afghanistan," "Critical Idealism in France," "The Supreme God in Indo-European Mythology" and "The Moral Limits of Beneficial Commerce."

THE NORTH AMERICAN REVIEW. This Review for November will be mainly interesting on account of the very full presentation of "The Other Side of the Woman Question," which contains the views of Julia Ward Howe, T. Wentworth Higginson, Lucy Stone, Mrs. Stanton and Wendell Phillips.

THE PRIMITIVE METHODIST MAGAZINE is well worthy of patronage by any one desiring a well-conducted religious journal. Published by John Dickenson, Sutton St., London, Eng.

THE JOURNAL OF SPECULATIVE PHILOSOPHY is edited by Dr. Harris, Superintendent of Schools, St. Louis. It is the best, indeed the only metaphysical journal published in America. Those interested would do well to send for a specimen number.

HARPER'S MONTHLY. This is the time for subscribing for next year, and any one who wishes one containing choice stories, and delightful descriptive articles relating to travel, art, society, &c., can do no better than subscribe for Harper's. The Editor's Drawer, and Science, History and Literature Departments are very full.