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# The Educational Journal.

Consolidating "THE EDUCATIONAL WEEKLY" and "THE CANADA SCHOOL JOURNAL."

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## The Educational Journal.

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J. E. WELLS, M.A. *Editor.*  
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## Editorial Notes.

WE publish by request in this issue the paper on the Bible in Schools, which was written for the Welland County Teachers' Association, by Rev. John Mordy, M.A., and read by Rev. John Young before that body. In our next we shall have an article presenting the other side of the question, by Mr. W. Doig, of Kippen, which was read at the East Huron Teachers' Association.

THE Board of Governors of McMaster University are about to expend \$36,000 in building and apparatus in connection with Woodstock College, the aim being to perfect its arrangements in every respect for doing the work of a school of the highest class for boys. The course will be specially adapted for those who propose to carry their school education no further. The ladies' department of the Woodstock College is to be discontinued, or rather transferred to Toronto, where, through the liberality of Mrs. McMaster, the governors are enabled to establish at once a ladies' college of a high order.

IN another column will be found some interesting notes of a kind that we are always glad to receive. Our correspondent jots down and reports some ideas in regard to text-books and kindred matters which he heard circulating amongst the teachers at the West Lambton Association. We wish other friends of the JOURNAL would do us, and the cause of education, the same service. It would be helpful to all concerned to know more about the opinions of practical teachers in regard to such matters. Many useful hints would thus be conveyed to various quarters in which they might do good.

WE are indebted to the Kincardine Reporter for an excellent report of the West Bruce Teachers' Association. The report was just of the right kind, giving clear and full analyses of the papers and addresses and synopses of the discussions, but was too lengthy to be republished as a report. At the same time we were unwilling to deprive our readers of the benefit of the excellent treatment of the various subjects; hence, we have transferred several of the fuller synopses to the department of "School-Room Methods." We do not think we could have found more practical and profitable suggestions anywhere for the teaching of the subjects dealt with. We are sure the papers will be read with interest.

THE following queries are put by the *American Teacher* to its readers. It may not harm some of the readers of the JOURNAL to put similar ones to themselves:

"Are you finishing your school year with that 'very worst boy' in your class, still in a degenerate state? Are you willing to assume the responsibility of your year's work with him? Have you done as you intended doing, and did you intend doing anything with him other than tolerate him? Are you willing to have this boy's next teacher judge of your humanizing influence by his deportment? As between yourself and your conscience, are you glad of what you have done and thoroughly satisfied with your work? Can you look on it as exemplified to him and say 'it is good'?"

THE experiment of making attendance at religious services voluntary which was commenced at Harvard two years ago, has been justified by the results. Though the attendance is perhaps not quite so large, the religious interest is manifestly greater than under the compulsory system. This is, no doubt, mainly because greater pains have been taken than ever before to make the exercises interesting and profitable. They have been conducted by a succession of able men, and the topics treated of have been of living, practical interest. Rev. D. N. Beach, of Cambridge, who has an article on the subject in the current *Andover Review*, reaches the sage conclusion, "The way to get university students to chapel is not to compel but to draw them." The same principle will hold, we fancy, in reference to all classes of worshippers.

THE blackboard is one of the indispensables in every class-room, for teacher and pupil. If we were required to pronounce upon the efficiency of a teacher, whom we did not know, by some mechanical test, we should be inclined to make that test the extent to which the blackboard was used by himself and by his pupils. But working at the perpendicular board is tiresome especially for little hands and arms. In some places the boards are fitted to run in grooves like window sashes, and like them balanced by weights. The plan is excellent. Not only can the board be adjusted to the height of the child, but for child or adult it can be raised or lowered so as to keep the portion of it which one is using at the moment at the right height. By all means insist upon having first-class blackboard surface in your school and plenty of it.

It is announced that arrangements have been made by which the Guelph Agricultural College becomes affiliated with Toronto University, and degrees will be granted to the students who pass the necessary examination in a curriculum provided by Toronto. If this arrangement can be carried out without detriment to the free and thoroughly practical and experimental character of the education imparted at Guelph, it may prove highly beneficial to the province. Whatever tends in any way to enhance the dignity of agriculture, horticulture, and related pursuits, in the eyes of the young people of Canada, and to induce a larger number to devote themselves to such pursuits, will do much good. These occupations are, in our view, at least equally honorable with the professions of law and medicine, and equally worthy of being taken under the wing of the University.

"I HAVE taught my note-book through and do not know what to do next," said a teacher to a superintendent who was visiting the school. An exchange, mentioning the incident, draws a picture which, it says, is from real life, of the teacher standing before the class day after day, going through her note-book, and giving lesson after lesson just as they had been given in the Normal School in which she was trained, imitating as well as she could the very looks and gestures of her favorite teacher. We should be sorry to believe there are many amongst our readers who can make no better use of methods given them as illustrations. Sample methods and lessons are excellent as illustrations, but when used as models for exact imitation they become snares and clogs. Every teacher worthy the vocation will have his or her own methods and will never let them become stereotyped.

THE annual convention of the Ontario Teachers' Association is to be held in the Public Hall of the Education Department, Toronto, on Tuesday, Wednesday, and Thursday, August 14th, 15th, and 16th. The programme of exercises promises a meeting of more than ordinary interest. The subjects chosen for the papers and addresses in the different sections are living, practical questions, while the names of the various speakers and writers afford ample guarantee that the treatment will be thoughtful and scholarly. We have been glad to note in the reports of the Teachers' Associations some evidences of increasing interest in the provincial meeting, and some indications of a purpose to make it more thoroughly representative than hitherto. There should be a very full attendance, not only of delegates, but of all interested in educational work. Certificates entitling the holders to return tickets at reduced rates will be issued to all who wish to attend. These certificates may be obtained, *previous to the commencement of the journey*, from the Secretary, Robert W. Doan, 216 Carleton street, Toronto.

AN interesting point came up for discussion in connection with Mr. Powell's paper on

"Surface Measure," at the West Bruce Teachers' Association. We do not know whether many of our readers will agree with the view ascribed to one of Mr. Powell's critics, that it is not necessary that a pupil should understand everything he is required to learn. That view was very common thirty or forty years ago. For our own part we quite concur with Mr. Powell. Requiring a child to commit to memory what he cannot understand, is very like giving him food which he is unable to digest. Of course the analogy fails if pressed too far, inasmuch as the child may afterwards understand and assimilate the mental pabulum. But the objections to such a method of teaching are, to our mind, overwhelming. It deprives the pupil of the pleasure of learning, which is the natural stimulus to mental exertion and its best reward. It makes his lesson a dry and irksome task. It fosters an unintelligent mental habit, which must greatly retard development. Worst of all, from the educationist's point of view, there is absolutely no education in the process, save of the one faculty of memory. But surely the work of the teacher is to educate, not to cram.

THE Teachers' Guild of Great Britain and Ireland seems to be quite successful in its operation. The Fourth Annual Meeting was held a few weeks since under the presidency of Rev. Canon Percival, in the Westminster Town Hall, London. The *Christian World* thus summarizes the proceedings:

Dr. Percival, in opening, said the progress of the Guild since its registration in 1885 had been such as to justify their hopes of its becoming an influential and permanent institution. They aimed at improving the status of the teacher and the efficiency of the teaching staff; these were national objects, and to achieve them their very first business was to organize. Sir Philip Magnus moved the adoption of the report, which referred in very satisfied terms to the results of the year's working, and recorded a present membership of about 2,700, the proportion of men among the new members being much larger than in former years. He spoke of the Technical Instruction Bill now before Parliament as in nearly every respect desirable and of importance to their Guild, as bearing upon the interests of teachers by the new and more intimate connection it would establish between primary and secondary education; it would certainly provide for higher and scientific training by giving increased power to the School Boards or some other local bodies to assist these objects out of the rates. Miss Emily Davies, in seconding, strongly advocated thrift on the part of teachers; she urged them to begin saving as early as possible, and to secure an annuity to begin, say, at the age of fifty. There should be a more equitable distribution of endowments between the boys' and girls schools, and then women's salaries might be made more adequate in many cases than at present. There was not an excess, she maintained, in the supply of really properly-trained teachers. The Very Rev. Dr. Graham urged the necessity of teachers being submitted both to a test of knowledge, and to a test of ability to impart the knowledge. Mrs. Bryant, D.Sc., regretted the indiscriminate crowding into the profession of persons unfitted in every way for it.

## Educational Thought.

To be forever seeing when your boy yields to a temptation, and never discovering when he resists one, is the surest way to promote the faults, and discourage the virtues.—*Lyman Abbott.*

WHAT our schools should aim to accomplish is not to store the memory with numerous facts about this or that subject, but to develop the reasoning powers; to train the pupil to think; to stimulate to independence of thought; in short to make him a thinking rational human being, that he may understand and successfully develop *himself* and so fit himself for a useful member of society.—*Supt. F. C. Morse, Portsmouth, N.H.*

THE notion that education—book knowledge and the discipline of the school—is useful mainly to those who practice a "liberal profession," is an old one, a relic of the class time when class, like caste, built division walls in society. Mr. Horace Mann, probably as good authority as can be quoted, says, that "throughout the whole range of mechanical industry the well educated operative did more work, did it better, wasted less, used his allotted portion of machinery to more advantage and more profit, earned more money, commanded more confidence, rose faster, rose higher, from lower to the more advanced positions of employment, than did the uneducated operative." This summary was not merely the opinion of Mr. Mann, but was the result of careful statistical compilation and accurate observation.—*Exchange.*

I HAVE been watching the careers of young men by the thousand in this busy city for over thirty years, and I find that the chief difference between the successful and the failures lies in the single element of *staying power*. Permanent success is oftener won by holding on than by sudden dash, however brilliant. The easily discouraged who are pushed back by a straw, are all the time dropping to the rear—to perish or be carried along on the stretcher of Charity. They who understand and practice Abraham Lincoln's homely maxim of "pegging away," have achieved the solidest success. It was the honest boast of an eminent New Yorker that the first dollar he ever earned was for hammering down paving-stones in the street, and that went to the captain of the sloop who brought him a penniless youth to the city. Oliver Wendell Holmes' couplet describes in a rather coarse and carnal fashion what is vital Christian grace:—

"Stick to your aim; the mongrel's hold may slip,  
But crowbars can't unloose the mastiff's grip."  
—*Rev. Dr. L. T. Cuyler, in N. Y. Independent.*

LECTURING in Nicholson street United Presbyterian church, Edinburgh, on "The Philosophy of Education," Professor Blackie said that the usual idea of education implied that children were empty and wanted filling, but that they were no more empty than the seed that was put into the ground. Education did not consist in giving people knowledge, but in drawing out the full and complete men. \* \* \* The first thing they had to do in educating children was to let them observe, and not put their books and miserable grammars before them. In the present age books had taken the place of men. If in education they did not make better men, and more harmonious men, they missed the mark. Without that, the more knowing and clever they were the more they were like the devil. After quoting and endorsing what Goethe said of moral culture, Professor Blackie contended that there should be in every school a biography of great men belonging to the country. Another great feature in moral culture was song. It was a great mistake to look upon music as an amusement or recreation. Songs stirred the whole man; they did not merely drill the brain, but they made the blood warm. They could cherish no bad passion when under the influence of song. Jealousy, spite, envy, grumbling, all disappeared when a man sang a good song. The æsthetic in man's nature should be cultivated, and the school-room walls ought to be covered with very beautiful forms. They should put beautiful things before the children and let them look at and feed upon them.

*Special Papers.*

## THE BIBLE IN PUBLIC SCHOOLS.\*

BY REV. JOHN MORDY, M.A.

EVERY person who intelligently studies the subject, the Bible in Public Schools, must be specially impressed with two convictions: 1st, the tremendous importance of the subject; and 2nd, the extreme difficulty of securing the desired end. To realize the importance of the Bible in the Public Schools, we must remember that every scholar possesses a three-fold nature; a physical, which he enjoys in common with the brutes; a mental, which is higher than the physical; and the religious (in which we include the moral and spiritual) which is higher than either of the former; and the aim of every true system of education is to develop each of those natures and all of them simultaneously in such a way that no one will get an unfair advantage over the other. A true system of education must aim not only at the development of the mind, but of the whole character, and every power which it possesses.

An individual whose physical nature is thoroughly developed, to the utter neglect of the mental and religious, is only a healthy animal in human form, claiming all the attention of a man, but possessing only the characteristics of the brute. Let his mental faculties as well as his animal nature, be fully developed, while his religious is still neglected, and you have only made him more dangerous to society, as an increase of knowledge means a vast increase of power, with no means of directing it to benevolent purpose. This has been illustrated in the lives of heathen poets and artists who, though masters in their own spheres, were at the same time monsters of vice and iniquity. But let the religious nature—using the term religious according to the Bible sense of the word to include the moral and spiritual—let the religious nature be cultivated along with the other two, and it will direct the constantly increasing power of the scholar to a useful end; and make all things work together for good, not only to himself but to the community in which he lives. Let the person's religious nature be cultivated, to the neglect of the mind, and you have a first-class bigot who always imagines himself infallibly right, but has no brains by which to discover his delusion. In his fiery zeal he may talk much about salvation, but has no intelligent idea in what it consists. He can alarm others by crying fire! fire! but he cannot tell where. My argument is that in order to keep the man properly balanced, his whole nature must be developed simultaneously. While we aim like the ancient Greeks, at securing the greatest possible strength, flexibility, and beauty of body, combined with the highest development of all the mental faculties; we must not forget that it is of infinitely more importance that the scholar be brought under the influence of that knowledge which maketh wise unto salvation. "What shall it profit a man if he gain the whole world and lose his own soul?" As in a fine piece of music you must not only have all the parts, but all the parts equally balanced, so to neglect the lower part of a man's nature is to impair the higher, while to neglect the higher is to render the lower self-destructive. Were it possible for the arms, legs, and head of a person to grow to the proportions of a giant, while his trunk remained the size of that of a dwarf, you would have a curious monster presenting to the physical eye pretty much the same appearance as a man with a well developed body and mind with an utterly neglected heart presents to the moral sense of a Christian. Let us look for a moment how this plan of keeping the three-fold nature of the scholar in perfect equilibrium was kept in view in the education of the ideal man, Jesus Christ. We read in Luke ii, 52, "And Jesus increased in wisdom and stature, and in favor with God and man." Here you will notice that the progressive development was simultaneous in body, mind, and spirit. If time would permit we could show that the education of the great men in Biblical and secular history approaches most nearly to this model. Moses, David, Daniel, and Paul, each began with religious

instruction and continued this, while each acquired all the learning of the country and time in which he lived.

Let me assume then, what I cannot here stop to prove, that the Bible is an inspired book, the only infallible rule of faith and manners, and it must be admitted that the only way in which the highest part of man's nature can be cultivated, is by making the Bible his constant companion from the cradle to the grave, a "lamp to his feet and a light to his path." But how can this be done unless he takes it with him to the public school, where most young people get nearly all their mental education? Let any other branch of study be neglected in the public school, and it is, in nine cases out of ten, neglected for life. A school can as well afford to be without maps and blackboards as without a Bible. "All Scripture is given by inspiration of God, and is profitable for doctrine, for reproof, for correction, for instruction in righteousness, that the man of God may be perfect, thoroughly furnished unto all good works." Suppose the teacher wishes to illustrate to a class the grandeur of some noble ambition, how can he do it so effectually as by placing before their youthful minds the inspiring example of some of the noblest characters who have ever trodden this earth, and whose foot-prints may be seen in the Sacred Scriptures. If the teacher must reprove, how can he do it so gently and yet so powerfully as by a reference to the Word of God? Where will the teacher find such wonderful illustrations of the consequences of virtue and vice, such powerful motives to shun the evil and cleave to the good as in the Bible?

## THE BIBLE AS A MEANS OF MENTAL TRAINING,

but simply as a means of mental improvement and equipment for the work of life. What book will compare with the Bible? As a matter of common intelligence how important to be intimately acquainted with the one infallible book which is read in over three hundred different languages and by all the most intelligent people in the world? How can we read other books or newspapers intelligently unless we have a fair knowledge of that one book from which all able authors are quoting? If the scholar is designed some day to become an author himself, and his style of writing is to be largely formed from his reading, where will he find such lofty imagery, such beautiful thoughts and expressive language as in the inspired Word of God? No matter what fields of knowledge he desires to explore, he will find this the great centre of truth from which all other branches radiate. If the scholar is to become a lawyer his best foundation is the Bible. If he is to be a doctor he ought to study the hygienic principles given to the Jews in the book of Leviticus and other parts of the Bible. If he is to be a politician the life and times of Moses are indispensable. If a business man, the Proverbs of Solomon will be his armory. If a historian, he will find that the children of Israel came in contact with the Egyptians, Philistines, Syrians, Assyrians, Medes, Persians, Greeks, and Romans, all the great nations of antiquity; and that the Christian Church came in contact with modern nations at the time when these nations had attained their highest development in arts, science, and a religion of a heathen kind; so that while sailing down the stream of Bible history and Church history, he can stop at intervals and take a look at each of the great nations at the very time when the historian is most anxious to see them. The Bible is the great river of truth which we would do well to spend our whole lives exploring. Some have time only to make a hurried trip down the middle of the stream, stopping for a moment to gaze on sacred spots like Sinai and Calvary, while they pass; while others spend nearly all the time sailing up and down this celestial stream, and find that all the branches of human knowledge are but so many tributaries, pouring into this great river which seems to broaden and deepen until it spreads out into the effulgent glory of eternal day.

2nd. The difficulty in securing thorough Biblical instruction in the public schools. The importance of securing a thorough training in the Bible will readily be admitted, especially when we compare the strength of mind and force of character manifested by those who have been trained in schools in Scotland and some parts of England, where the Bible is regularly taught, with the mental and moral imbecility of those who have grown up in

comparative ignorance of the sacred writings; but when we attempt to introduce it as a regular part of the teaching work of the school, we are beset with many difficulties.

1st. We are told that there is no time to spend on the Bible. To this we reply that, if the scholar cannot overtake everything, let him take a fair share of the most important things first, and having secured the essentials, let him take up the accomplishments as opportunity is afforded. A man might as well plead that his time was so taken up putting carpets on the floor and arranging pictures around the walls of his house, that he had no time to put a roof on it, or that as his money was all spent in buying candies and toys for his children he could not afford to get them food and clothing.

2nd. But another will say that if it be of such importance, let the parents and churches attend to it, and leave the public schools free to devote all their time to other branches. But to do this, we answer, is to allow a very large proportion of the scholars to grow up without any knowledge of the Bible; for there is a large proportion of young people who have no connection with any church, and whose parents have neither the desire nor the ability to teach them. Moreover, we affirm, that for the school to hand over a very important part of its work to the churches, argues imperfection in the school system. Certain churches or parents might teach arithmetic or any other branch, but a perfect school will aim at seeing that all its work is done, and not risk any part of it to any other agency which experience teaches is not to be depended upon.

3rd. Others will assert that if ministers of the Gospel really believe that it is so important to have the Bible taught in the public schools, they ought to avail themselves of the privilege now accorded them by law, of giving religious instructions to the scholars belonging to their own church, after four o'clock. But I think that all who understand the question will admit that no man with common sense would attempt to keep a number of reluctant prisoners after the other scholars have been dismissed. Such an arrangement would convert Bible study into a punishment and the unfortunate minister into the hateful man who inflicts it. But if it be said that any School Board has the power to grant any clergyman any other hour agreed upon, we answer that this does not better the case much; for it still compels the clergyman to limit his instructions to the scholars of his own church, and this necessitates the bringing into the public schools the sectarian walls which separate the different churches, showing to the scholars only the most offensive side of our religion, and while there might be a dispute as to what denomination certain children really belonged; there would be others connected with no church, who would get no attention. Besides, when the teachers are maintained at the public expense, why should any department of the work be dependent upon the voluntary efforts of others who may neither have the ability nor inclination to engage in it? I believe that the very best use which can be made of the Bible in public schools under the present system, is that which is made of it in this school in Niagara Falls. The Scripture lessons are read according to the regulation, important texts are written on the blackboard, memorized by the scholars, and illustrated in the lives of Christian teachers. The ministers visit the school regularly, and give such advice to both teachers and scholars, as they are able to impart, without saying a word about their church connections. The atmosphere of the school is decidedly Christian, and even if the law remains as it is, the Bible will remain a wonderful instrument for doing good in the school.

Before closing this paper, I must throw out my own little theory, and if time will not permit me to defend it, I must leave my helpless offspring to the tender mercies of the critic, trusting to his robust constitution to enable him to endure the rough handling which he may receive.

## MY OWN OPINION.

My own opinion is that the Bible should be the subject of examination for every promotion of every scholar from the day he enters the public school till he graduates from the university, the examinations growing more and more difficult to suit the increasing acquisitions of the scholar as he passes

\* Read before the Welland Teachers' Association.

from the lower to the higher grades, to the High school, and thence to the University. I would have the teacher begin with the very smallest scholars, by telling them a Bible story in exactly the same style as the teacher in a kindergarten amuses her children every now and then with a story. These stories could be reviewed occasionally, asking the children questions and encouraging them to ask questions and make remarks. As soon as they could read sufficiently well I would have them prepare as a lesson every week one of the stories in the book itself. As they pass into the larger classes I would have them read more, and get one of the scholars every now and then to tell the story, allowing the others to assist him or supplement his knowledge, as the case required. I would have in every room an exercise in reading, questioning, and story-telling every week, and I would make this count in their favor at every examination for promotion, in order to encourage both teacher and scholars to do their work faithfully. Subjects which do not count at examinations will never get much attention from either teacher or pupils, and a subject which gets little attention and brings no credit will soon fall into contempt. Were this plan carried on every scholar's Biblical knowledge would be continually broadening and deepening, becoming more extensive and more accurate, and every certificate would imply that the possessor had a knowledge of the Bible corresponding to his knowledge of other subjects. Time will permit me to anticipate only two objections which may be raised against the use of the Bible which I have proposed.

1st. The children would lose their reverence for the sacred scriptures by becoming so thoroughly acquainted with them. "Familiarity breeds contempt." To this we answer that this proverb is true mostly amongst the ignorant, and the whole object of the school is to dispel ignorance. As a matter of fact, those who treat the Bible with contempt are those who are deplorably ignorant of its contents. In all my experience I have never met a man who was thoroughly acquainted with the Bible and did not respect it; while the great body of those in ignorance of it show a corresponding want of respect.

2nd. The second objection is, that if teachers were entrusted with instructing their scholars in the Bible, they might abuse their position to make proselytes to their own denomination. To this we answer, that the Bible is no more sectarian than the multiplication table or Hume's History of England. Theological controversy would be no part of his work, and no teacher with common sense would bring it into his school. There is no position on earth which may not be abused. We have all heard of cases in which magistrates, judges, jurymen, members of parliament and other officials, have prostituted their positions by making them subservient to personal ends, but the law assumes that officials of all kinds are honorable; and I am quite sure that teachers will compare favorably with any other class of public officers in the Dominion; and should there arise occasionally a teacher whose sectarian zeal would be too strong for his common sense and professional honor, he would soon be detected and hurled from the position which he had disgraced; and all the people would say—Amen.

And now my remarks on the subject are done, but I am reluctant to sit down without directing your thoughts to the great central figure in the Bible, the Lord Jesus Christ, who is the truth. What the key-stone is to the arch, what the centre is to the circle, what the sun is to the solar system, that the Lord Jesus Christ is to the great system of truth. Remove the key-stone and the beautiful arch becomes a pile of disorderly rubbish, remove the centre and you distort and destroy the whole circle, remove the sun and all the planets will rush into confusion; in like manner remove Christ from the great system of truth and all is chaos and confusion. In the pursuit of knowledge you will find Him to be the way, the truth, and the life, the Fountain of all wisdom, and the Light of the world. My earnest prayer is that every teacher may find Him and so commend Him to his scholars that every school in our land may become like a city set on a hill which cannot be hid.

THE best way to comprehend is to do. What we learn the most thoroughly is what we learn to some extent by ourselves.—*Kant.*

## School-Room Methods.

### ACCENT AND EMPHASIS.

#### PRIMARY DIVISION.

HAVE you any pupils who find it difficult to get the *accent* in the right place, even when they know the syllable on which it belongs? If you have, try exercises similar to the following:—

*First read the numbers, afterwards the words:—*

Two Syllables.	{ 1, 2' ; 1, 2' ; 1, 2' ; re-turn' ; in-fer' ; fi-nance' ; 1' 2 ; 1' 2 ; 1' 2 ; dis'tinct ; doc'ile ; dra'ma ;
Three Syllables.	{ 1', 2, 3 ; 1', 2, 3 ; dec'-o-rous ; der'-o-gate ; 1, 2, 3 ; 1, 2', 3 ; de-fal'-cate ; de-ca'-dence ; 1, 2, 3' ; 1, 2, 3' ; ov-er-throw ; in-ter-fer' ;
Four Syllables.	{ 1', 2, 3, 4 ; dep'-re-ca-tive ; 1', 2, 3, 4 ; der'-i-va-tion ; 1, 2', 3, 4 ; 1, 2', 3, 4 ; en-co'-mi-um ; e-ma'-ci-ate ; 1, 2, 3', 4 ; em-en-da'-tion ; 1, 2, 3', 4 ; de-pri-va'-tion.

In giving pupils the power to place emphasis where it belongs—where they *will*, I have found this method to succeed admirably:

*Read the same sentence consecutively, placing the emphasis as indicated by italics.*

1. Some pupils study their lessons carefully.
2. Some *pupils* study their lessons carefully.
3. Some pupils *study* their lessons carefully.
4. Some pupils study *their* lessons carefully.
5. Some pupils study their lessons *carefully*.

For beginners I would use very short sentences, and select them of course from the reading-lesson.

1. I saw the man.
2. I *saw* the man.
3. I saw *the* man.
4. I saw the *man*.

—H. H., School Council.

### CANADIAN HISTORY.

BY WM. ARNOTT.

THE teacher should be guided by his surroundings. Different teachers will achieve success by different methods. Young teachers usually try too much. The young mind can only comprehend facts within certain limits. Beyond these limits progress is slow. Leading facts should be presented in a clear and strong light. He would begin with the discovery of America, dividing the subject into three parts, preparation, voyage, and landing. He would discuss the matter with the pupils, get their opinions and correct their mistakes. The map should be constantly referred to, and the places pointed out. He would require the pupils to write a synopsis of each lesson. He would contrast French and British progress in the colonies, enquire the causes of the great success of the English. He would make about three lessons of French rule in Canada. He would pay special attention to the capture of Quebec by the English in 1759, and the various changes that followed. The American war of independence, the Canadian rebellion, responsible government, Confederation Act, the N.-W. Rebellion, and the construction of the C. P. Railway should be carefully studied, and where possible simple illustrations should be given. The idea of responsible government should be illustrated by familiar examples, such as the child is responsible to the parent, the pupil to the teacher, the committee to the club, the trustees to the section, the council to the township, etc. He would develop Confederation Act by several illustrations in making bargains of various kinds. He would make what use he could of the text book, though in his opinion it was not of much value. Familiar talks and discussions should be frequent. He could say very little in favor of taking notes. He regarded it as a waste of time. There should be constant repetition to achieve success.

### TEACHING LITERATURE.

BY N. ROBERTSON, B.A.

A SELECTION, "Excelsior," by Longfellow, was written out in full on the blackboard. The piece was examined as a whole to discover the leading idea, which was found to be aspiration. The scenery, or background, was then examined, and the time and place noticed. The poet's method in arranging accumulated difficulties was clearly illustrated, and the appropriateness of the motto, "Excelsior," shown. The plan taken by the author to work in a description of the hero, his energy, his determination, was discovered by a close examination of the several parts. The various devices of the author to enhance difficulties, work in the laws of association, and turn to account the picturesque, were illustrated. The appropriateness and beauty of—shades of night, Alpine village, snow and ice, falchion, clarion, happy homes, spectral glaciers, maiden said, weary head, awful avalanche, peasant's last good-night, startled air, etc., were well and fully shown. The keynote struck in the first line was observed to pervade the entire poem. The feeling of aspiration found in the first six stanzas, was shown to become one of awe in the seventh. The plan and motives of the poet in making the change were clearly set forth. The changes in scenery, language and tone were rendered evident by close inspection. The breaks in the poem and the opportunities given by them for the play of the imagination were shown to be in many respects decided advantages. Defects in language, scenery, metaphor, etc., were carefully handled. Passages from other authors, dealing with similar events and surroundings, were freely quoted, and the similarities and differences noticed and supported or condemned.

### TEACHING SURFACE MEASURE.

BY F. C. POWELL.

DOES it pay to adopt improved methods? Most teachers would admit that it does pay. Yet many in practice fall back into old and condemned ways. Many things discourage teachers in introducing new ideas. The inducements to teach mechanically are only overcome by men and women of high moral principles. He always condemned "cramming"—in fact he regarded it as part of his mission to condemn it. He hated it as a student; he hated it as a teacher; he hated it as a parent. Too many teachers are satisfied with results. Results should be secured by proper methods. Fundamental principles should be realized by pupils. They should get clear and definite conceptions of them. The great aim of the teacher should be to compel pupils to think. There must be a practical realization of facts or there is no true education. Much difficulty is found in getting pupils to master surface measure. This is due chiefly to defective methods in first lessons. The subject should be taken up in the second part of first book. The pupils should be given numerous exercises in the arranging of balls on the numeral frame. The frame was used to illustrate the plans that should be adopted. The balls should be placed in the form of squares, oblongs, etc. These exercises should be followed by others of the same kind, using dots on the board or slates. Then square inches cut from cardboard or thin pine board should be treated in the same way. These exercises should be continued until the pupils have a clear conception of the laws of arrangement. With very little explanation they will discover that the number of balls, dots, beans, square inches, etc., in one row multiplied by the number of rows will give the total number in each case. They will also discover that the total number of balls, etc., divided by the number in one row will give the number of rows. The following rules should be deduced:—To find the area: Multiply the number of square units in one row by the number of rows. To find one side: Divide the number of square units in the area by the number in one row. Long and square measures should be combined. The pupils should be supplied with rulers and required to draw diagrams neatly on their slates. They should also be required to find the area of prepared cards and boards. The advanced classes should be given scale exercises representing large surfaces by small ones. The physical facts connected with surface measure should be carefully impressed.

## Question Drawer.

REFER to their botanical orders, genera, etc.:—the plum, pear, orange, pumpkin, cucumber, carrot. (III. Class Teachers Examination, 1887.)—F. B.

[Consult the words in any good dictionary.]

I WISH to assure you of the great benefit your paper, the EDUCATIONAL JOURNAL, is to teachers situated as I am. I teach in an out of the way place, and seldom get within speaking distance of a fellow teacher.

1. Would you kindly suggest other papers that would prove helpful to such as I?

2. I ask your own and your readers' opinions on the following circumstances:—This spring I required the boys to make a neat pile of the wood and pick up sticks lying about in the school yard during recess. The first day they all worked heartily, but the second day I noticed one boy who hung back, and when ordered to work he said his parents said he was to pile no more wood. Should I have compelled him to work? Do you think parents have any cause to interfere in a case like that?—E. C.

[1. Amongst our many excellent exchanges it would be invidious to particularize. Note those from which we quote most freely. 2. In our opinion the parents were wrong and foolish, but you did well not to insist. Probably you had no right to compel. Tact and influence are much better than orders in such matters. We would request but not require in any doubtful case, and, in fact, as far as possible in all cases.]

KINDLY inform me if there will be required for third class candidates for 1888 any practical work in Botany. Will they be required to classify and describe some Canadian plant?—W. J. S.

Yes, no doubt they will.]

I WOULD like to know the extent of the work to be gone over for Entrance Examinations in Literature, etc.—M. M.

[Write to the Secretary of the Education Department. We have not space to repeat particulars in the JOURNAL.]

Is Monday, July 2nd, a legal public school holiday?—W. A.

[Yes.]

WILL Canadian History be on the Entrance Examination for July, 1888, as a bonus, or will it not?—C. M.

[Canadian History is required from all candidates for entrance.]

1. WHICH is more correct, I was talking with her, or I was talking to her.

2. I have not seen him for a long time, or, I have not seen him in a long time.

3. Educationist, or educationalist. We noticed the latter in a last week's EDUCATIONAL JOURNAL?—N. M.

[1. The ideas conveyed are different. "To her" implies that she was a silent listener; "with her," that she took part in the conversation. 2. *In*, in the sense of *within*, seems more accurate. The other might imply, that you might have seen him for, i.e. during a short time. 3. *Educationist*. If the other form was used editorially in this JOURNAL, it was a printer's error.

SUPPOSE a school be closed for two weeks on account of sickness of pupils, does the section add on the average attendance of the preceding week for such term?—T. E.

[Certainly not, we should think, but find no regulation affecting the case. Apply to Inspector, or the Education Department, for instructions.]

ARE drawing, reading, all of English History, all of Greek and Roman History, and writing, required

for candidates trying second class examinations next July?—SUBSCRIBER.

Drawing, reading and writing are not mentioned having been, we suppose, already taken in third class examination. The requirements in history are:—English History (including Colonial History): from William III. to George III., inclusive; Roman: from the commencement of the second Punic War to the death of Augustus; Greek: from the Persian to the Peloponnesian Wars—both inclusive.

1. To whom should I apply for information regarding the qualifications required to enter upon the practice of law in Ontario and British Columbia?

2. What is the course of study required of Civil Engineers in Canada?

3. Are there colleges in Canada and the United States which give thorough training in the science of electricity and its application to the various enterprises in which electricity is now used? If so kindly give names of such.—J. G. R.

[The Registrar of Toronto University will probably give you the information asked, or refer you to those who can.]

IF an Inspector prepare a programme of studies for public schools, which does not agree with the regulations or programme we find on the public school registers throughout the Province, which is a teacher to follow? Can the Inspector enforce a performance of the work in accordance with his programme? In it the second class work comprises the tables of Canadian money, avoirdupois weight, and liquid, dry, and time tables. The third class work is extended to comprise fractions, etc.—SUBSCRIBER.

[The Inspector has a right to advise, but we do not think he has power to deviate in any way from the authorized programme. It is scarcely likely, however, that any Inspector would either be ignorant of his prerogatives, or would go beyond his authority. If the difference is serious you had better consult the Department.]

1. Is there now such a thing as "visiting days" for teachers? If not, when were they abolished?

2. Is phonography to be a subject in which candidates for second or third class certificates will be allowed to have an opportunity of writing in July, 1888? If not can anything be done to induce the Department to recognize those schools in which it is being taught and the pupils who attain proficiency therein, or to remove the subject from our curriculum as superfluous?—A. B.

[1. We are not aware that there are any "visiting days" unless fixed by visitors themselves. 2. Apply to Department.]

REPLY to a question in previous issue. The Queen's maiden name or surname is Witter. Authority: "The Royal Historiographer."

W. F. MOORE, Cookstown.

Answer to J. H. P.

[The following would be grammatically correct: "Upon the examination of your Account Current for the quarter ending—errors as shown below were discovered. There is, therefore, due the Department a balance of \$—, which sum you will please deposit in bank on receipt of this notice." Of course other forms might be equally correct, and possibly more concise.]

1. WOULD a teacher holding a Second Class Professional Certificate for Ontario be allowed to teach in Manitoba and the N.-W. Territories without examination?

2. Are the schools denominational in the places mentioned?

3. Which of the following subjects would have to be studied for the First Class Certificate examination (Ontario): Geometrical and harmonical progression, permutations, combinations, intermediate equations, series?—W. M.

[1. He would require a license from the Board of Education of the Province or Territories. Prob-

ably the Ontario certificate would aid in securing such license. 2. Yes. 3. We cannot find any specification. A general knowledge of arithmetic is required.]

1. WHAT subjects will be studied and what textbooks used in the Normal schools for first term of 1888?

2. What is meant by "The phantom with the beckoning hand" (l. 4, page 340) High School Reader?

3. What is meant by "The gaunt and taciturn host" at bottom of page 404, H. S. Reader?—S.

[1. Refer to circular. If you have not one apply to Education Department. 2. The fiction of an earlier date abounds with legends in which the hero is lured on to prosperity or destruction by a beckoning phantom. We see no reason to suppose the poet had any specific myth in mind. The love of fame or adventure which impels the youth is poetically the phantom going before him and beckoning him onwards. 3. The "gaunt and taciturn host" is the keeper of the inn in the secluded spot at the end of the dangerous journey. He stands at the door to welcome the survivors. Such word-pictures are always more graphic when they present a definite individual outline. The allusion is, no doubt, to the hospices in the Alps, or other mountain regions, where the monks, worn by fasting and vigils, are ever on the watch to succor weary wayfarers.]

1. COULD you send me the marked pronunciation of "Yosemite" Valley, "Montreal," "Quinte," "Caribbean," "Newfoundland"?

2. How would you teach the combined sounds of "th" in words like "that" and "this"?

3. Could you tell me rate per mile on the C. P. R., also on G. T. R.?

[1. Yo-sém-è-te; Mont-re-ál; Kwin'-te; Car-ib-bé-an; Nu'-found-ian'd, or Nu-foun'd-land. (The former, with accent on last syllable is, we believe, the local pronunciation and that which prevails in the Maritime Provinces; the latter is usual in Ontario and the United States.) 2. There is no combination of sounds in *th*. The sound is simple, though expressed by a digraph. For mode of expressing the two simple sounds see any good grammar or dictionary. 3. Three cents per mile is the maximum. There are many special reductions.]

1. Is it the intention of the Education Department to publish a "Public School Hygiene"?

2. At present what text-book on Hygiene are public school teachers supposed to use in teaching on that subject?—SUBSCRIBER.

[1. We cannot say. 2. The temperance text-book contains a good deal of instruction in Hygiene, and is, we believe, the only work on that subject prescribed for use as a text-book in the public schools. The Manual of Hygiene is prescribed for the training institutes, and it is expected, no doubt, that teachers will apply and enforce the principles there learned, as opportunity offers, in the public schools. See editorial.]

1. WHY did the poet write "Half thy heart we consecrate," in Grey's Bard; i.e., show the force and aptness of "consecrate."

2. What is meant by the expression. "Crimson and carmine are doublets."

3. Coleridge writes in fifth paragraph, sixth essay, of "The Friend." "In both cases an unnatural conjunction that recalls the old fable of Love and Death taking each the arrows of the other by mistake." What is the fable of Love and Death?—SUBSCRIBER.

[1. *Consecrate*, in the not unusual sense of devoting to a deity. To consecrate "half of his heart," that is his beloved wife, to fate, was simply to devote her to death. Eleanor of Castile died a few years after the conquest of Wales. 2. *Doublets* are two or more words really the same in meaning, but differing in form. They have usually the same derivation but have entered the English through different channels, and perhaps at different times. Compare *guard*, *ward*, etc. 3. The general tenor of the fable is indicated in the passage. Perhaps some reader can favor us with specific reference.]

*Educational Meetings.*

## SOUTH HASTINGS TEACHERS' ASSOCIATION.

THE regular semi-annual meeting of this Association was held in the High school building, Belleville, Thursday and Friday, May 17th and 18th, J. Johnston, I.P.S., president, occupied the chair.

Mr. Gerow, of Shannonville, gave an address on the subject of "School Discipline," and the objects to be attained by it. Mr. Jennings, of Trenton, explained his method of teaching English and Canadian History to pupils preparing for entrance into the high school.

Mr. P. W. Fairman, delegate to the Provincial Association, gave an excellent summary of the doings of that body.

In the afternoon, the president introduced Mr. W. Houston, M.A., who addressed the Association on the subject of "Grammar," which he considers affords the most perfect material for intellectual development in the whole curriculum of school studies.

A recitation, entitled the "Life Boat," by J. N. Brown, was well received.

Mr. Black, of Phillipston, explained how he teaches "Arithmetic to Junior Classes"; after which, Mr. W. R. Carmichael gave a fine rendering of "The Welsh Classic." Mr. Houston followed with English Philology, and showed how easily this subject may be made interesting to third and fourth classes. He expressed his conviction that, as in grammar and rhetoric, text books should be in the hands of the teacher only.

A fine audience greeted Mr. Houston as he delivered a lecture on "Industrial Education," in the Opera House. Mayor Wilson occupied the chair.

On Friday morning, Mr. Houston resumed his series of discourses, by taking up the subject of "Rhetoric." This was followed by "Composition," by Mr. Houston, in which he gave some valuable hints on teaching this subject.

The next subject was, "Some Weak Points in Teaching and Management of Our Schools—Notes from the Inspector's Note Book," by J. Johnston, I.P.S. In teaching reading to junior classes, use the blackboard freely; keep a list of the words taught, and require pupils to enunciate distinctly; in arithmetic be sure they understand each step taken, and are able to explain it; constantly review, maintain good order, and have thorough supervision over the pupils in the yard, teach to encourage thought. Mr. Houston followed by explaining how he would proceed to teach "Literature."

On motion of Mr. Cole, of Deseronto, seconded by Dr. Wright, head master of the Belleville High School, a hearty vote of thanks was tendered Mr. Houston for his very instructive addresses.

The Association then elected the officers for the ensuing year with the following result:—President, J. Johnston, I.P.S.; Vice-President, O. S. Hicks; Secretary-Treasurer, S. A. Gardner; Committee, J. W. Dafeo, W. Jennings, P. W. Fairman, L. E. Staples, Mr. Bartlett, Mr. Gerow, and Mr. Cole; Delegate, J. W. Nanamy.

## WEST LAMBTON TEACHERS' ASSOCIATION.

THE regular yearly meeting of the West Lambton Teachers' Association was held in the Petrolea Public School, on Thursday and Friday, May 17th and 18th. There was a fair attendance of teachers, about eighty being present, and the papers read and addresses given were generally of a practical character. Mr. Hugh Beaton, President, occupied the chair. John Brebner, P.S.I., opened the meeting by reading a portion of Scripture and by prayer.

The Secretary read a communication from the Ottawa Teachers' Association referring to the advisability of making the Ontario Teachers' Association representative; this communication was also referred to the Committee on Election of Officers.

The programme was begun by Miss Annie Bax exhibiting her method of teaching reading to a second class, having a class present. After questioning the class to get them to understand what they were reading about, she proceeded to drill

them, first having them read simultaneously, and then individually. A thorough drill was given, in which both teacher and class acquitted themselves well.

After a short discussion the association adjourned to meet at 2 p.m.

In the afternoon Mr. S. Warwick took up the subject of School Methods. Beginning with methods in discipline, he proceeded to methods in teaching, indicating how he would teach geography, history, literature, etc. He gave special prominence to the desirability of arousing in pupils a love for good literature.

Miss Annie Dibb gave a recitation in good style, which was well received by the association.

Mr. John Brebner then read an interesting and instructive essay on the British Empire, dealing principally with the British possessions in various parts of the world. Starting on an imaginary trip from Newcastle-on-the-Tyne, he visited in turn each of the British dependencies, giving an account as he proceeded how and when each of these was acquired, describing the climate, soil, products, inhabitants, etc., of each.

After a short recess Mr. S. B. Beveridge explained how he would teach reduction, a class being present. Some of the most difficult points in teaching this part of arithmetic were taken up, and the class well drilled in them; after which a discussion followed in which Mr. Warwick and Mr. Manuel took part.

Home work for pupils was next discussed by Mr. John Brebner, Mr. Manuel, Mr. Howell, and others; the general opinion being that it was better to give a reasonable amount of work to be done at home.

The association then adjourned at 5 p.m., to meet at the Oil Exchange Hall for a social entertainment in the evening.

At the evening entertainment the chair was occupied by Dr. Mearns, mayor of Petrolea. There was a large attendance, and the programme, which consisted of addresses by the mayor and Mr. Brebner, P.S.I., refreshments, music, recitations, etc., was well carried out.

FRIDAY.—The meeting was called to order at 9 a.m. Mr. A. R. Kellam gave an excellent address on the teaching of English history. His plan was to begin by referring to Britain at the present time; and from that proceed to the beginning of British history. He recommended to follow the periods as they are given in Collier's English history. At the conclusion of Mr. Kellam's remarks the subject was discussed by Mr. D. M. Grant, B.A., and several other teachers.

Mr. S. C. Woodworth then explained how he would teach elementary arithmetic. Beginning with notation and numeration, he went on to show various methods of teaching addition and subtraction. He laid particular stress on teaching the addition tables thoroughly. A discussion followed, led by Mr. W. S. Howell.

After a short recess Mr. D. M. Grant delivered a short address on calisthenics.

The necessity for physical exercise on the part of those engaged in study was first discussed; after which some of the exercises which he employed in his class were explained. A discussion followed in which Messrs. Brebner, Phillips, Copeland and the President took part.

AFTERNOON SESSION.—In the afternoon the reports of committees were first taken up.

The committee on election of officers reported as follows:—

President, Mr. S. C. Woodworth; Vice-President, Miss E. Sittlington; Secretary, Mr. H. Beaton; Treasurer, Mr. J. B. Beveridge; Librarian, Mr. John Brebner; Ex. Committee, Messrs. Kellam, Mannell and Copeland, Miss Mary Brown and Miss Annie Dibb. Delegates to the Ontario Teachers' Association, Messrs. A. Wark and H. Beaton.

The report was adopted, it being understood that the delegates to the Provincial Association urge the desirability of that association becoming representative.

The same committee also submitted the following resolutions, re promotion examinations:—

1. That the promotion examinations be held in June and December.

2. That the next promotion examination be held on the last Thursday and Friday of June.

3. That the work of candidates be first examined by their own teachers.

4. That the answer papers of successful candidates for 3rd and 4th classes, together with tabulated results, be sent to the Inspector on or before the 7th day of July.

5. Ex. Committee appoint ten teachers to meet with and assist the Inspector in re-examining the answers.

6. That each of the ten teachers appointed by the Ex. Committee draft a complete set of papers for all grades and forward to his or her Inspector on or before October 15th and May 15th.

7. That the grounds for promotion to 3rd class be: 1, literature; 2, composition; 3, dictation and writing; 4, arithmetic; 5, geography. For promotion to 4th class: 1, grammar and composition; 2, dictation and writing; 3, arithmetic; 4, geography; 5, history; 6, literature.

8. That the Inspector be empowered to arrange for printing examination papers, etc.

9. That the Ex. Committee be empowered to remunerate the Examining Committee, and pay other necessary expenses from the funds of the association.

The report was considered clause by clause and adopted.

D. S. Skinner, B.A., then read a carefully prepared paper on botany. After dwelling upon the importance of this subject and the relative value of it compared with other subjects at the Teachers' Examinations, he explained the methods he adopted in teaching it. A short discussion followed, during which some additional explanations were given by Mr. Skinner.

Mr. Woodworth being called to the chair, the President, Mr. Beaton, gave a humorous recitation, which was heartily applauded by those present.

After discussion it was decided to hold the next meeting in Petrolea.

## WEST BRUCE TEACHERS' ASSOCIATION.

THE annual meeting of the West Bruce Teachers' Association was held in the model school, Kincardine, on Thursday and Friday of last week. Inspector Campbell presided at the morning session on Thursday, and the president, Mr. Rankin, of Port Elgin, at the remaining sessions.

Routine business occupied the morning session. At 1.30 p.m., the afternoon session opened with seventy-two teachers in attendance.

The president's address directed attention to the advantages and objects of teachers' associations. Other professions have regular meetings for comparing notes and suggesting improvements. Tradesmen and farmers frequently meet and discuss matters connected with their departments and aim at shaping legislation bearing upon their interests. Teachers at their meetings are justified in following the line pursued by other professions. Much has already been accomplished by the local and provincial associations. But much remains to be done. Teachers become acquainted; ideas are interchanged; experience tells of its achievements and encourages the beginner; failure explains its troubles and receives advice; the teacher's horizon is broadened; he returns to his duties improved and inspired. A few years ago only a small amount of the work done at associations was of a practical character. But the practical is asserting its importance and coming rapidly to the front. Still there is room for improvement. Classes are now frequently taught in presence of the assembled teachers and the methods adopted discussed. The plan should be extended until these model lessons form a large part of the association work. Entrance and promotion examination papers should be intelligently discussed, defects pointed out and improvements suggested. In this way accumulated experience would produce solid and lasting results; and teachers and pupils would reap immense advantages.

Mr. A. Campbell concurred with the president respecting the advantages to be derived from regular attendance at the meetings of the association, and the necessity of making the work at them intensely practical. There is no doubt, he said, that they do much to shape public opinion on educational matters.

Mr. F. C. Powell, speaking from experience, said that there are some difficulties in conducting class exercise before the association. Pupils do not care to attend; they cannot be compelled to attend; they do not usually give undivided attention; some of the teachers in attendance keep up conversation during class exercise. These things make teachers nervous, and prevent complete success. He had been dissatisfied with himself on two or three occasions with the results of his own efforts in practical teaching before the association, and though the fault was in a measure his own, he believed part of it was due to causes not fully under his control.

A reading "The Letter Carrier," given by Miss E. Fee, was well received.

Miss A. M. Johnston read an essay on history by Miss Cleveland. The essay set forth in strong and vivid language the author's views on the subject. History, she said, is the great drama in which the thou and the thee are constantly repeated. It should be studied as a living present. The dust of the past should be vitalized. The men and women who have acted and suffered should be seen as living characters. A common humanity and a human sympathy should ever possess a charm for the student of history. History should ever be regarded as the shrine of man. History should lead up to a study of the Planner and Controller of all things. The divine should be discovered in the human.

Mr. F. C. Powell gave first lessons in surface measure.

(See *School-Room Methods*.)

Messrs. Rankin and Arnott regarded Mr. Powell's methods with favor, and were quite sure success would attend their adoption.

Mr. P. D. Muir did not consider it necessary that pupils should understand everything they learned at the time of learning it. They must accept some things without fully comprehending them.

Mr. T. B. Miller considered Mr. Powell's methods introduced the subject too soon and progressed too rapidly. Irregular attendance in rural schools would render the methods unsuccessful.

Mr. N. D. McKinnon considered that there was much in Mr. Powell's suggestions and methods that could be reduced to practice in all schools.

Mr. T. J. Nicholls considered the methods recommended as practical in every particular, and believed the simple forms could be introduced in the senior class part first.

Mr. Powell, in reply, said he would just as soon ask a child to eat what he could not digest as to learn what he could not comprehend. He also considered that the mental laws are just the same in the country as in the town. That the mind in the one case, as in the other, is properly developed by the same treatment and exercises.

The next exercise was a paper on Canadian History, by Mr. Arnott. (See *Methods*.)

Mr. T. B. Miller would begin at home and not with the discovery of America. Americans are in this respect decidedly ahead of Canadians. They first master their own history and methods of government.

Mr. N. D. McKinnon cautioned teachers in dealing with the rebellion of 1837. They must consider the politics of the parents in their section.

Mr. A. Campbell was much pleased with Mr. Arnott's address, but agreed with Mr. Miller as to the place of beginning. He believed that the American plan was in some respects defective. He found them very ignorant of most countries but their own, and woefully deficient in respect to Canada. He would begin with trustees, councils, etc., and would develop the idea of delegated power. Mr. Arnott simply considered that history and government could be taught at the same time. To begin at the present time and study back to the discovery he regarded as absurd, as you would be studying about a country without any knowledge of its discovery.

In the evening a very enjoyable social entertainment was held.

Business opened on Friday morning with seventy-eight teachers in attendance. Mr. A. Campbell addressed the association for a short time on the value of educational papers.

An instrumental solo given by Miss A. Wickham received well-merited applause.

Miss Jessie McLean gave a reading "Woman's Mission." The clear, bell-like tones of Miss McLean's voice were fully up to their usual standard.

Twenty-five pupils from Williamsburg, under the instruction of Mr. P. D. Muir, gave a chorus in good time and tone.

Inspector Campbell explained his methods of introducing writing to beginners. Many teachers under-rate the value of writing. Some regard bad writing as a mark of genius. Some write so badly that they cannot read their own productions. Writing should begin early. Slates, pencils, rulers and sponges should be used from the first. Monitors may be employed to assist beginners. Exercises should be placed on the board and explained. Mr. Campbell indicated on the board many of the exercises that should be given. Great attention should be paid to first principles, also to spacing, slope, size, proportions, turns, etc. The order of the letters should be i, u, w, n, m, o and a. These should be followed by repetition and combinations of them, as ii, uu, ww, iii, uuu, www, etc. When these letters and combinations are mastered, exercises in t's, d's, q's, p's, should follow. Loop letters, such as h, b, l, g, y, should be left for the last. The pupils should be taught to detect and correct errors themselves. They should not be asked to write much from readers until they can form all the letters fairly. Teachers should insist upon pupils having long pencils and holding them properly. They should always be extremely careful about their own writing.

Miss A. A. Powell gave a lesson on Phonics to nine little girls and boys in attendance. The object was to show that the same letter may represent different sounds, and that the same sound may be represented by different combinations of letters. Exercises were first given in sounds of consonants. Short sentences and illustrative pictures were placed on the board. The words were first treated as wholes, and then the elements sounded. The sounds were then given and the pupils required to give the words. The exercises dealt chiefly with vowel sounds. Short a, e, i, o and u were first given alone, and then in words. The long sounds of the same letters were similarly dealt with. Then followed exercises showing that c, k and ch represent c hard; e, ee, ie and ea represent long e; o, oa, oe and ow represent long o; a and ai represent long a; a, au, aw, represent broad a; u, ew and ue represent long u. These combinations and others were placed separately and in short words on the board. The pupils were quite successful in both giving fine shades of sound and distinguishing the same when given.

Inspector Campbell was much pleased with the perfect system shown in the lesson, as well as with the ease in sketching on the board. Drawing, he said, should always be turned to practical purposes in the schoolroom.

The committee appointed to nominate officers recommended as follows:—President, D. D. Yule; vice-president, N. Robertson, B.A.; secretary-treasurer, F. C. Powell; directors, A. Campbell, W. J. Arnott, A. H. Smith, Misses J. M. Johnston, M. H. Yemen and H. Leadbetter.

The same committee, in dealing with the circular from the Ottawa Association, recommended that it would be in the interests of education to place the Provincial Association upon a representative basis and allow only delegates to vote upon questions discussed by that association, but would be in favor of allowing all teachers the privilege of advocating their views on any question under the consideration of the Provincial Association. The entire report was adopted without change.

Miss L. Evans read "The Curtain." The selection was good and the rendering excellent. The selection was unlike most of those given by Miss Evans on former occasions, and required entirely different qualities of voice; still all the delicacies of thought and feeling were well indicated, and frequently it was impossible to discover the cause of the effect; still the listener was made fully conscious of the effect. The natural was a prominent characteristic from beginning to end.

The balloting for delegates to the Provincial Association resulted in the election of Messrs. N. Robertson and D. D. Yule.

Mr. N. Robertson, B.A., head master of the Kincardine high school, gave a lesson in English literature (see *Methods*) which elicited much commendation.

Mr. P. D. Muir sang a solo that was well received by the association. Miss J. M. Johnston presided at the organ for Mr. Muir's solo and also for the choruses sung by his pupils.

Miss B. McPherson, of Teeswater, read an essay on the teacher's influence. Influence of character in shaping character, though frequently slow, never fails in producing results far-reaching and lasting. Personal contact of mind with mind produces an effect so subtle that it is frequently unknown by the persons influenced. The mind of the child is a clean white tablet, upon which the teacher is daily making indelible impressions. Thousands of instances show the immense influence of the teacher upon the pupil. Teachers should recognize the greatness of the responsibility resting on them. They should ever be careful in word and deed to inculcate sound principles and noble actions. The mean, the low, the false, should always be made to give place to the true, the just, the noble. The teacher should seek divine guidance, that he may discharge his duties so as to advance the race and give glory to God. Then may he expect to receive that award which awaited the great apostle of the Gentiles.

Mr. R. A. Mitchell, in dealing with Syntax, gave numerous practical suggestions. He would give exercises frequently requiring the use of lie, lay, sit, set, rise, raise, did, done, saw, seen, went, gone, and similar forms. In this way he would give pupils a practical knowledge of those forms in the use of which mistakes are usually made. The forms is, are, was, were, have, has, sing, sings, ring, rings, he would treat in a similar way. Mistakes made in the use of adjectives and adverbs should be discussed in conjunction, so as to impress upon the pupils the exact function of each of these parts of speech. In the Fourth Book he would give numerous exercises in tense and voice, expressing the same idea in different tenses and voices. In this way he would impress practically the correct forms of expression. He would make good use of the text book, and would deduce all principles applied from examination of several suitable examples. He severely condemned bad English among teachers, and said it was a fruitful source of bad English among pupils.

#### EXAMPLES IN PERCENTAGE.\*

EGGS are sold at the rate of 6 for 5 cents; at what rate were they bought, if the profit is 16 $\frac{3}{4}$  per cent.?

If a tradesman, by selling an article for \$1.98, loses 8 $\frac{3}{4}$  per cent., what should he have sold it for in order to gain 41 $\frac{3}{4}$  per cent.?

A dealer pretends to clear only 15 per cent. of the wholesale price, but he adulterates his goods with 30 per cent. of a poorer kind, which costs only  $\frac{2}{3}$  of the price; what is the real rate of profit?

How shall a dealer mark his goods in order to be sure of a profit of 25 per cent., in case he chooses to give any of his customers a discount of 10 per cent. from the marked price?

A deceitful grocer claims to be making only 20 per cent. profit, which he says, is very small, but it is found, on investigation, that he reckons his gain on the selling price instead of on the cost, as he ought; find his real rate of profit.

A wholesale dealer sells tea on three months' credit to a retail tradesman at a profit of 50 per cent., but the tradesman fails, and can pay only 16 $\frac{3}{4}$  per cent. of his debts; what per cent. does the wholesale dealer lose?

In 1850 the population of three towns was 4,860, 3,850, and 5,230 respectively. In 1860 the first had decreased 10 per cent., the second had increased 26 per cent., while the population of the three towns together showed a total increase of 1,561. Find the increase or decrease per cent. in the third town.

In a state whose population is 8,000,000 the birth rate for the year is 6 $\frac{1}{4}$  per cent., and the death rate 6 per cent.; find the increase for the year.

THE school board that fixes the salary of a primary teacher lower than that of other assistant teachers is not yet "out of the woods."

\* Selected from H. E. Slaught's *Percentage Based on Reasoning*.

*Editorial.*

TORONTO, JULY 2, 1888.

## TEMPERANCE TEACHING.

WE are glad to note that several of the Teachers' Associations have put themselves clearly on record in regard to the necessity of scientific temperance teaching in the schools, and heartily approve of the measures that have been taken by the Department to secure it. The Assembly of the Presbyterian Church which met a week or two since in Halifax also adopted a clear and strong report on the subject, recognizing the great importance of such teaching to the well-being of the coming generation, endorsing the choice and use of Dr. Richardson's book, as prescribed by the educational authorities of Ontario, and urging its members to see to it that the law in that province is carried into effect.

It is clearly understood that the subject takes its place in the programme for all the public schools of Ontario. Next year, no doubt, the teaching of the subject will become general. Teachers will therefore need to prepare themselves for the work, by a careful study of the text-book, and such other sources of information as may be available. An attempt is being made in certain quarters, and probably by interested parties, to render the new branch of study unpopular by branding the teachings of the book as partisan and unreliable. Teachers and parents will generally know what value to attach to such representations. The object, be it remembered, is not to turn the schools into total abstinence or prohibition societies, but to teach the children scientific truth of the utmost importance in regard to the action of alcoholic stimulants upon the human system. The work, like all other scientific works, is valuable just in proportion as its facts are reliable and its methods and principles sound. It emanates from a high scientific authority. It has the sanction of many other such authorities. It deals with facts that are of the greatest practical, as well as theoretical, interest by reason of their important bearing upon health, morality, and the highest interests of society and of the State. It deals, too, with these facts largely in the way of experiment and demonstration, not of dogmatic assertion. It thus proceeds on true scientific and educational principles. No doubt the great majority of teachers will study the subject carefully, and teach it conscientiously and efficiently. The results cannot fail to be of great and lasting benefit.

## THE MARKING SYSTEM.

DR. L. R. KLEMM, of Ohio, who has been visiting European schools and taking notes, says that nowhere did he find daily marking of lessons resorted to. "The teachers are not marking machines, but are earnestly engaged in teaching, helping, suggesting, asking, directing, watching, etc. There is a total absence of that

detestable immoral competition which so often plays havoc with our pupils in America. Reports (*zeugnisse*, testimonials) are sent home at the close of every term, but they express the grades of the pupils in such terms as very good, good, satisfactory, poor, very poor, or similar terms. The prevalence of such terms as 'very good' and 'excellent' stamps the report No. 1; if the greater number of submarks is good and mediocre, it is called No. 2, and so on. Reports, such as are given out in America, that express shades of differences by tenths of a per cent., are wholly unknown."

We have long been convinced that the system of marking, prize-giving, etc., so much in vogue in the United States and Canada is, if not wholly bad, at least carried to a very unhealthy and injurious extreme. The necessity for estimating and recording a value for each pupil's work in each lesson is inimical to good teaching. It divides the teacher's attention. When his whole thought and energy should be given to his work of arousing attention, stimulating interest, making dark points clear, and compelling every young mind to put forth its own best efforts, he is constantly obliged to stop and make a mental calculation as to the value to be assigned to the answers of this and that pupil. If thoroughly conscientious in the matter, as he should be, of course, he often finds himself under the necessity of putting questions and devising tests with no other aim than to direct his judgment in this trivial work of comparison.

Suppose, on the other hand, he resorts to the self-reporting system in use in too many of our schools. This is even worse. Immature pupils are set to pass judgment on each other's work. They can do so, at the best, only by virtue of some rule, or standard, more or less artificial or mechanical, set up for them, unless, indeed, the questions and exercises are so framed as to admit of a mathematical test being applied to determine the value of the answer. Every thoughtful teacher will agree with us that they are the worst questions in point of educational value to which such measurements can be applied. But, worst of all, each pupil is by this system daily led into temptation. The opportunity to favor either himself or a friend by an occasional concealment or falsification is constantly before him. Unless exceptionally truthful, or trained with exceptional care, he is pretty sure to fall. We have good reason to believe that there are schools in which the monthly reports sent to parents are largely based upon reports given in by pupils, which are regularly and systematically falsified. What a moral training for boys and girls! What parent would not sooner have his children grow up in ignorance than under the influence of such a system?

But, in the third place, the motives to which the marking system appeals are of a low order. They may not be essentially and necessarily bad, but they certainly are neither elevating

nor ennobling. The boy or young man who prepares his lessons with a view to the standing he hopes to secure will never make the best use of his time. He knows not the delight of study, the pursuit of knowledge and truth for its own sake. He will never develop into the scholar and thinker he might have become had he been trained on different principles, and taught to pursue investigations to the end, without reference to any standing or eclat that might result.

Finally, the marking system is intrinsically unjust. The classifications reached are, at the best, not based on merit, nor even on progress, but on proficiency. As every teacher knows, the capacities of pupils vary widely. Some, by reason of better talents, better memories, or better early opportunities, can do the prescribed work much more quickly and much more easily than others. Standings to be just should record the amount of honest work done, not of progress made, or knowledge acquired. Why should the many be doomed to see their names perpetually and hopelessly in the middle or near the foot of the lists in order that the few may secure the plaudits and the prizes? They may know that they have worked more faithfully than the prize-winners. Circumstances have been against them. The poverty of their parents has deprived them of leisure and of sources of help which have enabled their more fortunate competitors to win. If the system is encouraging and stimulating to the few, it is unfair and discouraging to the many. Away with it.

## PUBLIC SCHOOLS IN NEW YORK.

ONE would naturally expect to find the great American metropolis taking front rank in respect to public school education, as it does in most other matters in which intelligence, energy, and money are required. Those who know what pride is taken in the schools in many of the cities and towns of the United States, and who may be familiar with New England or western towns in which, as is happily coming to be the case in some places in Canada, the public school buildings are among the finest to be seen, will be astonished to learn, as we do from a writer in the *Christian Union*, in how backward, untasteful, and unsanitary a condition is the average public school in New York city.

The writer, who set out, as he tells us in the investigation, intensely prejudiced in favor of the city schools, is sadly compelled to abandon his faith, and to confess the worst. There is, he confesses, "not one building in the city which makes any pretension to architectural beauty; not one in the city which makes any pretense to a playground; and not one which makes more than a pretense to observe the most obvious laws of sanitation."

In order to make good these assertions, the writer quoted does not describe the worst building which he saw, which he says would require "a special article of the most annihilating type," but takes an average structure in one of the

poorer districts. The statistics are eloquent. Size of lot, 85 x 100 feet. Average attendance, boys, grammar department, 595; girls, grammar department, 508; primary department, 805; total average attendance, 1,908; total number registered, 2,188. Just think of it. Two thousand children living for five hours a day on a lot one-fifth of an acre in size. A little over four square feet to each individual child, and that, too, not as if in the open air with an indefinite expansion of fresh air overhead, but limited upward by the height of a building of presumably, five or six stories! Of course the building covers practically the whole lot, with the exception of a few courts which are merely "waterless cisterns"; the halls are merely narrow passage ways, and each room has five or six teachers, each trying the impossible feat of teaching and governing some fifty pupils. Gas is, of course, freely used for lighting.

Is it any wonder that the visitor, after spending two hours in this school, went away with a headache? "How," he may well ask, "must it be for the teachers and scholars who work in it five hours a day?" "Is it any wonder that young women, who are expected to do nervously exciting work five hours a day in such air, and amid such surroundings, sometimes fail to be representatives of sweetness and light?"

New York Reformers are waking up to the disgrace and the danger of the thing. A remedy will probably be found in time, but it will be at enormous expense. The facts convey a lesson to which growing Canadian cities such as Toronto will do well to pay heed. Under no pressure of land booms, or any other kind of boom, should the educational or city authorities suffer the school sites to be cramped or hemmed in, in any way. On the contrary, there should be no delay in securing ample breathing space around each school, or each spot which is set apart as the permanent site of a school in the city of the future. Forbid that our city authorities should, any of them, ever be guilty of the inhumanity and folly of trying to carry on the work of public school education under such circumstances as those above described.

#### TEXT-BOOKS IN ENGLISH LITERATURE.

An annotated text-book in the English Literature for second-class certificates for 1888-9 will, in a few days, we are informed, be authorized by the Education Department as the only book for use in the High Schools. We understand, however, that it is not the intention of the Department to authorize annotations for the Poetical Literature required for first-class certificates.

Owing to the arrangements made for combining the Departmental and University examinations and the adoption by the Senate of a syllabus defining the course for matriculation, the Department now deems it unnecessary to continue to direct the teaching of English Literature so far as annotated texts can serve this end.

No doubt the Education Department feels relieved of considerable responsibility by this happy issue of the consolidated examinations. Compilers of annotated texts will also feel gratified by the opportunity now afforded them of committing, without restraint, to a generous public such hints in regard to the study on English Literature as may be most useful to the ambitious student.

#### CAMPING OUT.

A TEACHER writes us to say that we would confer a favour on many if we could indicate some route to the sea or the mountains which has not yet become the highway of fashion, and consequently too costly for small means. We heartily wish it were in our power to recommend such a trip, but amongst the many that are advertised we could hardly venture to select one for special commendation. Perhaps the best thing our readers can do is to scan closely the advertisements of various routes in the papers and choose the one which comes nearest to meeting the conditions of the individual case. Unfortunately most of those advertised are, we suppose, too expensive for slender purses. A friend at our elbow suggests a substitute which is often more satisfactory than any advertised trip. It is for a few friends to form a select party and arrange a camping excursion of their own. It is not often necessary to go a great distance, to find some combination of forest, hill and stream, or lake, with other adjuncts and surroundings such as will afford rest, recreation, and amusement for a longer or shorter period. By reference to the advertisement of the National Manufacturing Company of Toronto, in our advertising columns, it will be found that tents and all needful fittings for such excursions can be either purchased or rented at moderate charges. It may be doubted whether there is any more delightful, or health-giving way in which a party of friends of congenial tastes, can enjoy, at small expense, all the essentials of rest and out-door recreation which are to be had at the fashionable resorts, without the artificial restraints and expensive accompaniments which often deprive these of half their value.

WE observe amongst the list of those who have passed examinations for the B.A. degree at Trinity College, the name of Mr. J. A. Wismer, Principal of the Parkdale Model School. Mr. Wismer deserves much credit for his pluck and perseverance. It is not often that a man over forty years of age, and at the head of a school of nearly one thousand pupils, manages to complete an Arts course. Mr. Wismer graduates with honors in the department of Mental and Moral Philosophy. His example should be an encouragement and an inspiration to many others in the profession.

STILL another music school will be found advertised in this issue. We refer to the Ontario Summer Music School, to be held in Welland, Niagara District. A thorough grounding in Tonic-Sol-fa, by Mr. J. W. Garvin, B.A., Principal of Welland Model School, and a course in "The Howard Method" of voice culture, by Prof. Perkins, of New York city, are the leading attractions of the course. These should ensure a good attendance and a successful session. We hail the multiplication of such schools as a good omen for musical culture in Ontario.

#### Contributors' Department.

##### LAMBTON NOTES.

BY AUDITOR.

At the West Lambton Teachers' Association, I picked up a few ideas expressed by my fellow teachers off the platform on various topics that touch our work of education.

Our public school history was condemned by every one I heard speak of it, partly on account of faulty arrangement of topical headings, but mainly from its "dictionary English." Third and junior fourth-class pupils do not comprehend it, and in ungraded schools pupils must get most of their history from the text-book, in spite of the rules laid down for teaching it. Someone asked the question: Is the English language capable of being written so that children of the third and fourth classes can understand it when history is treated of?

The maps in our public school geography are not as many, nor as good as they should be; in clearness and finish they are not equal to those in some other geographies. There also seems to be a difficulty in assigning lessons from the text in parts of the work.

The public school grammar is an improvement in some respects upon those we had, and but little fault is found with it, while the public school arithmetic is pronounced the best of them all. But a mental arithmetic is wanted for the rural schools, where the subject is apt to be crowded out if not kept before the teacher in some *visible* form. Stoddard's, while in use, was well liked, and one similar to it with some new matter would be a boon.

Some of the definitions and statement of principles in the public school arithmetic do not seem to be in such a simple form of language and construction of sentence that children comprehend them. Definitions and statements in language not understood by the pupils have been the bane of schools from time immemorial, and must be an index of some chronic disease that afflicts the minds of most of the authors of text-books. Mason must have had it badly, and G. Mercer Adam must be in the last stages of the disease.

The "Over-supply" question came up in conversation quite often.

The best opinion seemed to me that the present lowest age for receiving certificates be first raised one year, which could be quite easily done, this would give one year more for study and maturity of mind and more thoroughness of preparation. The answers to examination questions might not then present so many crudities as are now alleged.

One High School teacher in speaking on this subject, said the greatest want (or fault) was that pupils did not remain long enough in school to get the most benefit or produce the best results. There was too much haste and anxiety to get through the course and away to begin earning money. Hence cramming was the result, and teachers could not well avoid it. Could pupils remain a year or two longer in school, a better method of instruction could be used and more thoroughly trained teachers produced.

But, in opposition to these ideas it was urged, that many pupils, especially those from rural districts, could not pursue the course for so great a length of time on account of a lack of means, and that many now remain as long as they possibly can.

Mathematics.

All communications intended for this column should be sent before the 20th of each month to C. Clarkson, B.A., Seaforth, Ont.

GENERAL EXAMPLES OF FACTORING.

As algebra is the soul of all mathematics, so factoring is the soul of algebra itself. There is no limit to its application. Facility in writing down products, and facility in separating products into primary factors lie at the foundation of all genuine mastery of analytical methods. The solution of equations with all that expression implies; measures; multiples; fractions; properties of numbers, etc.; all depend directly or indirectly on factoring. Many special methods of factoring are detailed in text-books, but there is a wide field in which, like the solution of problems, the student must be left to his own resources. The following general examples are of an elementary character and are given for the purpose of aiding those of our readers who may be seeking a teacher's facility in handling complex expressions or preparing themselves for higher examinations.

1.  $(ax + by)^3 + (ax - by)^3 + (bx - ay)^3 + (ay + bx)^3$

This is the sum of four perfect cubes. Taking them two and two, the first pair must be divisible by the sum of the quantities  $(ax + by) + (ax - by)$ , i.e., by  $2ax$ ; for  $x^3 + y^3$  is always divisible by  $x + y$ . Similarly the second pair is divisible by  $2bx$ . Writing out the quotient and adding like terms we have:—

Expm.  $= 2ax(a^2x^2 + 3b^2y^2) + 2bx(b^2x^2 + 3a^2y^2)$   
 $= 2x[a^3x^3 + b^3y^3 + 3aby^2(a + b)]$   
 $= 2 + (a + b)[x^2(a^2 - ab + b^2) + 3aby^2]$

2.  $(abc + bcd + cad + abd)^2 - (a + b - c + d)^2 abcd$   
 $= [ab(c + d) + cd(a + b)]^2 - [(a + b) + (c + d)]^2 abcd$   
 $= (aby + cdx)^2 - (x + y)^2 abcd$ , if we write  $x$  for  $a + b$ , and  $y$  for  $c + d$ .  
 $= (a^2b^2y^2 + c^2d^2x^2) - (x^2 + y^2) abcd$ , since  $2abcdxy$  cancels out.  
 $= y^2ab(ab - cd) - x^2cd(ab - cd)$   
 $\therefore ab - cd$  is one factor. And  $y^2ab - x^2cd$  is another.

Restoring  $a + b$  for  $x$ , etc., this  $= (c^2 + d^2)ab - (a^2 + b^2)cd$ ; since  $2abcd$  cancels.  $= ac(bc - ad) - bd(bc - ad)$ .

Thus the whole expression is  $= (ab - cd)(bc - ad)(ca - bd)$

3.  $(a + b)^3 + (a + c)^3 + (c + a)^3 - 3(a + b)(b + c)(c + a)$   
 $= x^3 + y^3 + z^3 - 3xyz$ , if  $x = a + b$ ,  $y = b + c$ ,  $z = c + a$ ;  
 $= (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$   
 $= (x + y + z) \times \frac{1}{2} [(x + y)^2 + (y + z)^2 + (z + x)^2]$  . . A.

But, since  $x = a + b$ ,  $y = c + a$ ,  $x + y + z = 2(a + b + c)$ ;  $x - y = -(c - a)$  and  $\therefore (x - y)^2 = (c - a)^2$  etc.

Substituting these values in A we get  $2(a + b + c) \times \frac{1}{2} [(c - a)^2 + (a - b)^2 + (b - c)^2]$ , i.e.,  $(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

4.  $a^3 + b^3 + c^3 + d^3 - 3(abc + abd + acd + bcd)$ . Notice that if  $d = 0$  this becomes  $a^3 + b^3 + c^3 - 3abc$ ; also that if we change  $a$  to  $b$ ,  $b$  to  $c$ ,  $c$  to  $d$ , and  $d$  to  $a$  the given expression remains the same. We see, then, that it is symmetrical for  $a, b, c, d$ , just as for  $a, b, c$ ,  $a^3 + b^3 + c^3 - 3abc$  is symmetrical. But the factors of the latter are  $(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$ , i.e., the sum of  $a, b, c$ , is one factor; and the sum of their squares diminished by their products two and two together is the other factor. Applying this, the factors of the given quantity are  $(a + b + c + d)(a^2 + b^2 + c^2 + d^2 - ab - ac - ad - bc - bd - cd)$ .

The same factors may be obtained constructively by substituting  $c + d$  for  $c$  in the identity  $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$  thus:—

$a^3 + b^3 + (c + d)^3 - 3ab(c + d) = (a + b + c + d)[a^2 + b^2 + (c + d)^2 - ab - (c + d)(a + b)]$ , which reduces to  $a^3 + b^3 + c^3 + d^3 + 3cd(c + d) - 3ab(c + d) = (a + b + c + d)(a^2 + b^2 + c^2 + d^2 + 2cd - ab - ac - ad - bc - bd)$

Subtract  $3cd(a + b + c + d)$  from both sides and  $a^3 + b^3 + c^3 + d^3 - 3(abc + etc.) = (a + b + c + d)(a^2 + b^2 + c^2 + d^2 - ab - bc - ca)$

5.  $a^2(b + c) + b^2(a - c) + c^2(a - b) + abc$ . This is not symmetrical. Collect the terms containing  $a$  thus:—

$a(b + ac + b^2 + c^2 + bc) - bc(b + c)$ . Add  $abc - abc$ , and a  $[a(b + c) + (b + c)^2] - bc(a + b + c)$  is the result.

or,  $(a + b + c)(ab - bc + ca)$  are the factors.

6.  $(a + b + c)(ab + bc + ca) - abc$ . Cancelling  $abc$  this  $= (a + b)(ab + bc + ca) + c^2(a + b)$ ,  $\therefore a + b$  is one factor and  $ab + bc + ca + c^2 = b(c + a) + c(c + a)$

$\therefore$  the factors are  $(a + b)(b + c)(c + a)$ .

7.  $(a^2 + b^2 + c^2)^2 + 2(ab + bc + ca)^2 - 3(a^3 + b^3 + c^3)^2$   
 $(ab + bc + ca) = S^2 + 2R^2 - 3RS$ , if  $S = a^2 + b^2 + c^2$ ,  $R = ab + bc + ca$ ;  $= (S - R)^2(S + 2R)$ .

Restore the values and  $(a^2 + b^2 + c^2 - ab - bc - ca)^2 (a + b + c)^2$  are the resulting factors.

8.  $(3a - b - c)^3 + (3b - c - a)^3 + (3c - a - b)^3 - 3(3a - b - c)(3b - c - a)(3c - a - b)$

This  $= x^3 + y^3 + z^3 - 3xyz$ , i.e.  $= (x + y + z) \times \frac{1}{2} [(x - y)^2 + (y - z)^2 + (z - x)^2]$ , if  $x = 3a - b - c$ ;  $y = etc.$

Now  $x + y + z = a + b + c$ ;  $x - y = 4(a - b)$ ;  $y - z = etc.$

Thus the second factor becomes  $\frac{1}{2} [(a - b)^2 + etc.]$  and the whole expression reduces to  $16(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$ .

9.  $a^2(b + c - a)^3 + b^2(c + a - b)^3 + c^2(a + b - c)$ . Take the first term of this symmetrical expression and expand thus:—1st term

$= a^2(b + c - a)(b + c - a)^2$   
 $= a^2(b + c - a)[(a^2 + b^2 + c^2) - 2(ab - bc + ca)]$   
 $= a^2(b + c - a)[(a^2 + b^2 + c^2) - 2(ab + bc + ca)] - 4a^2bc(b + c - a)$

Hence the other two terms must be  $+ b^2(c + a - b)[(a^2 + b^2 + c^2) - 2(ab + bc + ca)] - 4ab^2c(c + a - b)$  and  $+ c^2(a + b - c)[(a^2 + b^2 + c^2) - 2(ab + bc + ca)] - 4abc^2(a + b - c)$ .

Now  $4a^2bc(b + c - a) = 4abc(ab + ac - a^2)$  and the other two terms of the last row are similar,  $\therefore$  the sum of that row  $= -4abc[(a^2 + b^2 + c^2) - 2(ab + bc + ca)]$ , and the expression within the bracket is a factor of the first row. Take out this factor and collect the terms, and the whole expression becomes the product of the two factors:—

$a^2 + b^2 + c^2 - 2(ab + bc + ca)$  and  $-[(a^3 + b^3 + c^3) - (a^2b + ab^2 + a^2c + ac^2 + b^2c + bc^2) + 4abc]$

10. Factor,  $(a^2 - bc)^5(b + c)^5(b - c)[a^2 + 2a(b + c) + bc] + (b^2 - ca)^5(c + a)^5(c - a)[b^2 + 2b(c + a) + ca] + (c^2 - ab)^5(a + b)^5(a - b)[c^2 + 2c(a + b) + ab]$

This is symmetrical and of eighteen dimensions. Let  $x = (a^2 - bc)(b - c)$ ;  $y = (b^2 - ca)(c + a)$ ; and  $z = (c^2 - ab)(a + b)$ . Observe that  $x + y + z = 0$

For,  $x = a(ab + ca) - bc(b + c)$   
 $y = b(bc + ab) - ca(c + a)$   
 $z = c(ca + bc) - ab(a + b)$ , and the sum vanishes.

Observe also that  $y - z = (a - b)[c^2 + 2c(a + b) + ab]$   
 $y - z = (b - c)[a^2 + 2a(b + c) + bc]$   
 $z - x = (c - a)[c^2 + 2b(c + a) + ca]$

Hence the given expression assumes the form  $x^5(y - z) + y^5(z - x) + z^5(x - y)$ . Which we factor as follows:—

When  $x = 0$ , we get  $y^5z - z^5y = yx(y^2 + z^2)(y - z)(y + z)$  But  $x + y + z = 0$ , and when  $x = 0$ ,  $y + z = 0$ ,  $\therefore$  the expression  $= 0$

Therefore  $xyz$  is a factor of  $x^5(y - z) + etc.$  Also when  $x - y = 0$ , or  $x = y$ , we get  $y^5(y - z) + y^5(z - y) + 0$ , which  $= 0$

$\therefore (x - y)(y - z)(z - x)$  is also a factor of  $x^5(y - z) + etc.$

The only other factor possible is some arithmetical factor, say  $N$ , which is independent of  $x, y, z$ . Put  $x, y, z = 1, 2, -3$ , since we must keep  $x + y + z = 0$ , thus we get

$1^5(2 + 3) + 2^5(-3 - 1) - 3^5(1 - 2) = N, 1, 2, -3(1 - 2)(2 + 3)(-3 - 1)$  or,  $+5 - 128 + 243 = -120 N = 120$ ,  $\therefore N = -1$ , and the expression  $x^5(y - z) + etc. = -xyz(x - y)(y - z)(z - x)$ .

Restore the values of  $x, y, z$ , and the given quantity  $= -(a + b)(b + c)(c + a)(a - b)(b - c)(c - a)(a^2 - bc)(b^2 - ca)(c^2 - ab) \times [a^2 + 2a(b + c) + bc][b^2 + 2b(c + a) + ca]^2 [c^2 + 2c(a + b) + ab]$

CORRESPONDENCE.

The following problems have been sent for solution:—

II. By MISS MCL, TORONTO. Two farms are worth \$15,000 and \$12,000 respectively. It is found that they are gradually deteriorating in value through excessive cropping, decay of fences and buildings, competition of newer districts, etc. The first decreases  $12\frac{1}{2}\%$  in value each year, and the second 10%. In how many years will the farms be equal in value?

SOLUTION.—Let  $y =$  No. of years. Now at the end of each year the first farm is worth only  $\frac{7}{8}$  of its value the year before, and the second is worth only  $\frac{9}{10}$  of its previous value.

Thus in  $y$  years, they will be worth  $(\frac{7}{8})^y$  and  $(\frac{9}{10})^y$ , respectively of their original values. Thus we have the equation:—

$15,000(\frac{7}{8})^y = 12,000(\frac{9}{10})^y$  or  $\frac{5}{4} = (\frac{8}{7})^y$ , by dividing thro' crosswise.

$\therefore \log 5 - \log 4 = y(\log 8 - \log 7)$  i.e.,  $y = \frac{\log 5 - \log 4}{\log 8 - \log 7} = 7.92$  years. ANS.

12. By J. E. PRINCETON. To do a piece of work A would require twice as long as B and C together; and B would require thrice as long as A and C together. The three work together and get \$72 for the job; divide the money among them in proportion to their shares of the work.

SOLUTION I, by Arithmetic.—A, B and C do the work and A does  $\frac{1}{3}$  as much as B and C,  $\therefore \frac{2}{3}$  (B and C's work) = job,  $\therefore$  B and C do  $\frac{2}{3}$  job, and A does  $\frac{1}{3}$  job.

Again B does  $\frac{1}{3}$  (A and C's shares),  $\therefore \frac{2}{3}$  (A and C's shares) = job,  $\therefore$  A and C do  $\frac{2}{3}$  job;  $\therefore$  C does  $(\frac{2}{3} - \frac{1}{3})$  job  $= \frac{1}{3}$  job.  $\therefore$  B must have done remainder  $= \frac{1}{3}$

Thus their shares of the work are  $\frac{1}{3}, \frac{1}{3}, \frac{1}{3}$  respectively or as 4:3:5;  $\therefore$  their wages are \$24, \$18, \$30.

SOLUTION 2, by Algebra.— $\frac{2}{A} = \frac{1}{B} + \frac{1}{C}$ ; and  $\frac{3}{B} = \frac{1}{A} + \frac{1}{C}$ , whence  $\frac{3}{A} = \frac{4}{B}$  and  $\frac{5}{A} = \frac{4}{C}$  or A:B:C = 4:3:5 as before.

Science.

TEACHING BIOLOGY.\*

BY PROF. JABEZ MONTGOMERY, M.S.

(Concluded.)

So much for the subject as a college and high school study. It will be of more interest to some of you to discuss the work that may be done by the teacher in the most elementary schools. I have no doubt that much might be done if school boards and parents would allow the teacher a little more time.

The best subject to begin with is botany, because the specimens are everywhere to be found, and each pupil can study them for himself. Anything almost will do to begin with. Stems or branches may be had anywhere; let the teacher begin with them. Ask the scholars each to carefully examine a branch of any tree or shrub and let a report be made of all that is seen. Study branches for several days. Encourage the pupils to observe closely by telling them that there are many things that have not been discovered by them. This will always be true and it serves as a stimulus when nothing else will.

After six or eight lessons the following points should have been noted: Color; specks and their arrangement; buds and their arrangement; coverings and other means of protection; joints; arrangement of leaves; number of leaves on a year's growth; arrangement of pith, wood, and bark; direction and mode of growth; length of a year's growth, etc. Then different stems should be compared, those from one tree with another; those from trees and herbs. When flowers are studied, the pupil should be led to note the different sets of leaves as he will call them, the number of parts, the shape of parts, use of different parts, color and nature of parts. He should note what flowers come from, their use to the plant, flower clusters. Comparison of different flowers should be made. Do all have the same number of parts? Do all have the same organs that any flower has? When one lacks some parts, what are they? Which parts are essential? Many such questions as these the students should be led to answer. Problems about plants may be propounded. What are thorns? What are parts of flowers? What are tendrils? What are runners? What are potatoes? Could all the parts of a plant be made of three things?

In this way the children may be led to discover much more than is generally contained in any elementary text-book.

The subject will be more thoroughly mastered and the task will be too pleasant to be called a task at all, for they will experience all the enjoyment attending actual discovery. In my own teaching I am combining this, and the text-book method out of deference to the old plan, but doubt if I follow it much longer. It requires much more labor on the part of the teacher to carry out a plan like that which I have outlined, but it will give much greater satisfaction, because it secures better results.

The same course may be pursued in zoology, and even in geology and mineralogy. To give a few illustrations in zoology. Take a few domestic animals. Let the scholars study a cow, or dog, or cat, and tell all they can learn. Ask such questions as these: What sort of feet has the cow? What other animals have similar feet? What curious

\* Substance of a talk before the Teachers' Institute of Kalamazoo Co., Mich.

fact about cow's teeth? Is this true of the horse or sheep? How does a cow lie down? How does she get up? Does a horse lie down and get up in the same way? How many toes has a cat? How many has a dog? Are their nails alike? How do their tongues differ? How do their eyes differ? Are their teeth alike in any respect? How do their modes of attack or of catching things differ? Which is most like a licn? Which most like a wolf? Which likes home best? Which thinks most of its master? These questions should not be given until the pupil has exhausted his own powers of observation and discovery.

The same plan may be pursued with birds, rocks, and a hundred other things.

One word now about making collections for common schools. Every school should have a collection of objects that might be used for illustration in such a course of study as I have indicated, though, of course, most of the material is to be drawn from the fields, gardens, and woods of the neighborhood.

If the school authorities are too indifferent or too stingy to render any assistance, the aid of the scholars can be enlisted. I do not mean a scientific collection of stuffed things only fit to display the donor's name, but a few shelves full of common things such as any neighborhood affords. Such a little museum might contain parts of animals, as claws, horns, teeth, beaks, skeletons, eggs, etc., and of plants, dried specimens, seeds, fruits, sections of common trees. Crystals, shells, Indian and other relics would all be in place. Let your collection contain as many common things as possible, and then try to have your scholars know all they can learn about them.

Finally, in this method remember, above all things, that it is not an array of facts or a system of classified knowledge you are to give the pupil, but that you are to help him in learning to see and compare and think and reason.

Ask him why some fruits have burrs? others, light down; others, an edible pulp? Why plants have thorns? Why they are colored in certain parts? Why flowers are scented? and many other things intended to make him think. To do this you must begin to observe and compare and reason and think yourself if you have not already done so.

You should weave in useful knowledge to satisfy parents that look at all education from a dollar-and-cent standpoint.

Don't allow any sort of cruelty. Don't let collecting for your little museum become a rage. Don't permit yourself to be tied down to any book, or to anybody's method. Get suggestions from books and from your fellow teachers, and then work out your own methods. You will be the stronger for this and much more likely to succeed.

The thing the true teacher most needs in these days is liberty. Trammelled by text-books, by examinations, by somebody else's notions, by fashion in education, and a thousand other things, it is a wonder that he does as well as he does.

Let him feel that the destiny of a living, sentient being is in his hands, and that on him depends the development that is to result in a true manhood or womanhood; and then give him liberty, and what may not the earnest teacher accomplish?

At the conclusion of the talk the method of teaching was illustrated by considering the members of the institute a class. The cherry was taken, and by questions its nature was brought out, and it was also compared with other drupes, and also with the raspberry and blackberry.

A VERY GOOD EXERCISE.

WRITE a word of directly opposite meaning to each of the following:—

- |           |          |          |          |
|-----------|----------|----------|----------|
| cold,     | early,   | old,     | strong,  |
| right,    | begin,   | shorten, | hate,    |
| live,     | break,   | slow,    | take,    |
| true,     | cheap,   | gain,    | busy,    |
| open,     | heavy,   | clean,   | coming,  |
| white,    | sweet,   | hard,    | heavy,   |
| smooth,   | crooked, | sharp,   | thick,   |
| wide,     | even,    | deep,    | slender, |
| obedient, | neat,    | honest,  | clear,   |
| yes,      | tall,    | ugly,    | careful. |

—Ex.

Book Reviews, Notices, Etc.

*Scott's Rokeby.* Introduction, Notes and Glossary. By R. W. Taylor, M.A., late head master of Kelly College, Tavistock. Rivingtons, Waterloo Place, London.

A neat and serviceable school edition.

*William the Third.* By H. D. Traill.

This volume is another of the excellent series of "Twelve English Statesmen," now in course of publication by MacMillan & Co., London and New York. They will be read by all students of English History.

*Pilgrims and Puritans.* By N. Moore. Boston: Ginn & Co.

THIS is an interesting account of the settlement of the Pilgrim Fathers in Massachusetts. Printing, maps, illustrations, and style of narrative combine to make this a decidedly good book for boys and girls.

*Scott's Lay of the Last Minstrel.* Edited by Margaret Andrews Allen.

*Goldsmith's Vicar of Wakefield.*

It is sufficient to say of these two editions that they form part of the admirable series of classics for children, published by Ginn & Company, of Boston, U.S., and are consequently uniform in style and letter-press with the rest of the series. The notes on the former are chiefly abridgements of Scott's own.

*Thucydides, Book V.* Edited on the Basis of Clasen's edition. By Harold North Fowler, Instructor in Harvard University. Ginn & Company, Boston, U.S.

This book forms one of the College Series of Greek Authors, edited under the supervision of John Williams White and Thomas D. Seymour. A valuable work for the student, though injured for class-room purposes by having the notes on same page with text.

*Wordsworth's Prelude.* Notes by A. J. George, A.M., Acting Professor of English Literature in Boston University. D. C. Heath & Co., Boston, 1888.

A neat and beautifully printed edition. The preface is interesting, full and well arranged, and the notes, though not copious, are designed to furnish such assistance as is needed for the intelligent appreciation of the poem, and is not readily accessible elsewhere.

*Sea-side and Way-side, No. 2.* By Julia McNair Wright. Illustrated by C. S. King. D. C. Heath & Co., Boston, U.S.

This beautiful little book is filled with descriptions of the various tribes of ants, worms, flies, beetles, etc., written in a simple, attractive style, admirably suited to interest child-readers, and to foster in them tastes and habits which will lead them to use their powers of observation and to delight in the study of natural history.

OUR EXCHANGES.

THE *Forum* for July, keeps to the front as one of the most vigorous of all the monthlies. In some important features it bids fair to establish itself as *princeps*. Extended quotations from one or two of its leading articles, which we had intended to make, must be postponed to another issue. Every thinker, who is wide awake to the living questions of the day should read the *Forum*.

If you have little folks from five to nine years old you can give them more pleasure for ten cents by getting a copy of July *Our Little Men and Women*, than in any way we know of. The July number is full of pictures of all sizes, short stories, and pretty verses. You can get it at the newsdealers, or of D. Lothrop Company, Boston. \$1.00 by the year. The publishers of such children's literature are among the best auxiliaries of the schools.

"ST. NICHOLAS" for July, has for its frontispiece "Ringing in the Fourth," illustrating a pleasant story, under the same title, by Huldah Morgan.

"Two Little Confederates," by Thomas Nelson Page, is continued; "Tom and Maggie Tulliver," makes No. V of the "Child-Sketches from George Eliot," by Julia Magruder; and "Recollections of the Naval Academy," by H. Albert Johnson, a graduate, very fully illustrated, are some of the other articles which make up the number of this leading magazine for the young.

THE July *Atlantic* is marked by the great variety, as well as high literary quality of its table of contents. Variety in style, location, and treatment, characterizes in a high degree the current fiction of the number, which includes J. P. Quincy's rather weird "Miser Farrel's Bequest," Mr. House's "Tone Santo," and Charles Egbert Craddock's "Despot of Broomsedge Cove." Several vigorous articles on historical and practical subjects, the usual "Contributor's Club," vigorous "Book Reviews," etc., make up a good number.

"SCRIBNER'S MAGAZINE" for July, is the first number of Volume IV. A number of attractive features are announced for this volume, among them five articles of the remarkable railway series which was successfully begun in the June number: several papers by Lester Wallack giving reminiscences of his career as actor and manager for fifty years; important articles by the venerable Hugh McCulloch, ex-Secretary of the Treasury, drawing significant inferences from the experience of his half-century of public life; an essay in each number by Robert Louis Stevenson; and a large number of illustrated articles, stories, and poems by the best writers in each field.

"SAFETY IN HOUSE-DRAINAGE" is the opening article in the July number of *The Popular Science Monthly*. In it Mr. W. E. Hoyt controverts the theory that plumbing in houses is an inevitable source of danger, and points out, with the aid of suitable illustrations, methods for making it perfectly safe. In "Gourds and Bottles" Grant Allen maintains that all the forms of primitive pottery, from which modern styles are descended, were suggested by and modeled upon the various shapes of calabash and "dipper" gourds. The third and concluding paper of the series of "Darwinism and the Christian Faith" discusses the subject as it applies to man, his origin, and his relations to the rest of organic Nature. In "The Teaching of Psychology"—a paper which was called forth by the establishment of a professorship of Experimental and Comparative Psychology in the College of France—M. Paul Janet mentions a number of psychological questions that are awaiting solution, and considers the bearings of the new psychology on the systems of materialism and spiritism. There are a number of other important articles.

MEMORY GEMS.

Do thy little, do it well,  
Do what right and reason tell,  
Do thy little, God has made  
Million leaves for forest shade;  
Smallest stars their glory bring,  
God employeth every thing.  
All the little thou hast done,  
Little battles thou hast won,  
Little masteries achieved,  
Little wants with care relieved,  
Little words in love expressed,  
Little wrongs at once confessed,  
Little favours kindly done,  
Little toils thou didst not shun,  
Little graces meekly worn,  
Little slights with patience borne,—  
These are treasures that shall rise  
Far beyond the smiling skies.

—Anon.

TURN thine eyes to earth and heaven,  
God for thee the spring has given,  
Taught the birds their melodies,  
Clothed the earth, and cleared the skies,  
For thy pleasure or thy food;  
Pour thy soul in gratitude.

—Mary Howitt.

# University of Toronto.

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ADAM H. WRIGHT, B.A., M.D.,  
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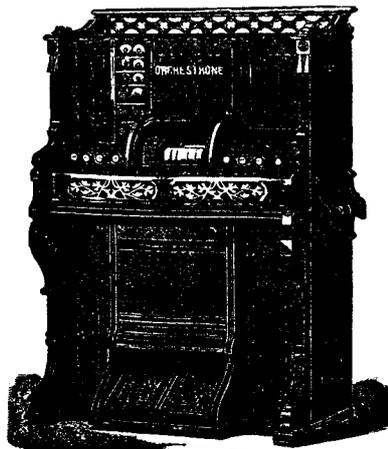
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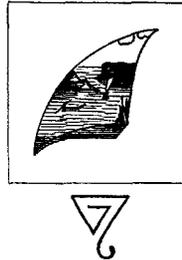
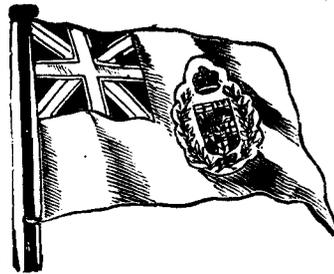
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