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The Canada School Journal.

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TO ADVERTISERS.

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

—The Schools are again at work. How? The merry boys and happy girls of the holidays have had to come back once more from their freedom and fun to the work of the school-room. To some few the return has been a joyous one; it has not been so to the majority. It should be a willing return, but, in some cases, even this has not been experienced. Why? A few words of advice to teachers may not be out of place at this time: You feel better now than in those weary days before the vacation came. Why? Because you have had more fresh air, and less school anxiety. Show your good sense by continuing to take all the agreeable exercise possible in the open air, before school, during the recesses, and after school; and leave your cares and worries behind you at four o'clock. Do not even grow too anxious about the progress of your pupils, lest the strain on your nervous system should unfit you for the accomplishment of the very work you so earnestly wish to do. You feel strong and enthusiastic now. Do not waste all your strength in a month. Work systematically and avoid rapid exhaustion. You had some difficulties in connection with the discipline of your class last session. Most of them arose from some defects in yourself. Avoid them now. Go to school with a cool head, a warm heart, and a properly nourished muscular, mental, and nervous system, and you will have no great difficulties in managing your bad boys. You travelled in ruts in teaching some subjects last session. Widen them, or get out of them altogether. Read the best educational works you can find; take a good practical educational journal; and take counsel as much as possible from the best teachers you are acquainted with.

—The Ontario School of Art has made a very decided move in the right direction by granting six scholarships to the pupils of Toronto Public Schools annually. The Council has expressed a desire to form a similar connection with the other cities and towns of the province. It is to be hoped that in some way the School of Art may become a part of the Public School system, and exercise a supervising and examination

control of a similar nature to that held in England by the Science and Arts Department. This would do much to place drawing on a proper footing in schools. There is no state or province in the New World which possesses so large a collection of art models as Ontario. They have been gathered with a view to the establishment of a school of art and design. They have as yet exercised only an indirect influence in educating the taste of those who visit the museum at the Toronto Normal School. Why could they not be used in the training of First Class teachers? When a new professional course is prepared for First Class teachers, drawing should be given a position of much greater importance than it has yet received. No subject can be taught with much success in schools unless it is taught by the regular teachers. What if arithmetic were only taught by professional specialists, as has been, and in many cases still is, the case in regard to drawing? The principles of drawing are much simpler than those of arithmetic, and they can be put in practice by teachers more easily and with more uniform success. All that is needed is training of the proper kind. We hope the Minister of Education may be able to utilize the magnificent collection of art models in the museum in Toronto by connecting them with the educational system, not merely at its top, but at the bottom, so that their influence may be directly felt in all grades of schools in developing a higher and purer taste, and in giving all classes of the community a knowledge of industrial art.

—The College of Preceptors is one of the most important institutions for training teachers in England. Although not a part of the national system of education, in the strictest sense of the term, it is recognized by the leading educators in and out of Parliament as of great service in furnishing competent teachers for the middle class schools. The Right Hon. W. E. Foster recently presided at the distribution of prizes and certificates by the College. In the course of his address he said, that "during the 30 years that the college had been established it had been instrumental in doing good work, and he congratulated its officers on the success which had waited on their efforts. This was the first body, apart from the great State system, that had looked not only to the requirements of teachers, but to the practice of teaching. During the last ten years the examination had been one of the most stringent character. Their example would be followed by both Oxford and Cambridge, and he was glad to learn a few days ago that Cambridge had actually commenced working on the same lines. (Cheers.) In examining schools, so as to test the powers of teachers, the College of Preceptors exercised a great and beneficent power over the education of the country. The schools over which the College exercised its influence formed what was technically known as the third grade, which meant schools for

that stratum of society whose parents were unable to keep their children at school until they were fifteen years of age; and their efforts were the more to be appreciated since the middle class and the rich had taken ample care for the education of their children. The College must be congratulated on account of the beneficial influence which it had exercised in improving the education of girls. At first, a much larger proportion of boys came up for examination, but now, in the higher classes, there were more girls than boys. In all the classes the girls were coming up very nearly to the boys. He had taken great interest in educational matters, but those present would not think highly of his judgment if he said that he was satisfied with the secondary education of the country. He was addressing many who found themselves called on to compete with ignorant and pretentious teachers who traded upon the ignorance of parents. In a recent paper on middle-class education, his brother-in-law, Mr. Matthew Arnold, took a gloomy view of middle-class educational prospects in England. His estimate was that not more than 20,000 children attended middle class schools about which there was any guarantee for efficiency. The right hon. gentleman said he took a more sanguine view than that, and estimated the number at 50,000; but as there were 350,000 children attending secondary schools, the proportion, to be satisfactory, ought to be much higher. Education amongst the middle classes in France and Germany was in a much more satisfactory state than in England. He disapproved of the interference with private schools which Mr. Arnold suggested, but he approved of a system as shadowed forth in Dr. Lyon Playfair's bill, under which efficient schools and efficient teachers would be registered. The scholastic profession, in his opinion, should also rank amongst professions on an equality with law and medicine. He believed that the prospects of education in England were brightening."

—The International Educational Conference which met at Thousand Island Park in August, proved to be of a most interesting and important character. The governing principle was sounded by the Conductor in his circular announcing the meeting: "Neither propagandism nor victory, but truth." Every principle laid down by a speaker was subjected to a careful analysis, and tested philosophically. The interest continued to increase during the week. Every one present felt that he was growing, and each regretted that the closing hour came so soon. The importance of the Conference does not depend on the actual work done this year, but on the arrangements made for the future. A permanent society was organized, called "The Society for the Investigation and Promotion of the Science of Teaching." The Constitution and By-laws of the Society will be given in the October number of the JOURNAL, and a summarized report of the proceedings of the Conference this year will be continued through the remainder of the year.

—THE CHAUTAUQUA LITERARY AND SCIENTIFIC CIRCLE is a success. We ventured to predict its rapid growth a year ago. It could scarcely have been otherwise. It supplied a great need

felt by thoughtful people everywhere. It aimed to give directness and breadth to the work of all literary societies in connection with the churches, young men's Christian associations, debating clubs, and social circles; and offered a means of culture to men and women of every rank of society. Its founder, Dr. Vincent, proposed that those who joined the C. L. S. C. should read a specified course for four years, giving to the work at least forty minutes per day for nine months of each year. The reading may be done individually or in connection with "local circles," whose members meet regularly for review of the work done. The latter course is the one usually adopted. A local circle may consist of from two members upwards. Each member is supplied with postal cards on which to report to the secretary once a month. It is not essential that the members shall go to Lake Chautauqua, but in August of each year the professors in the various departments give lessons to those members who assemble there. The year's reading begins in October. A new class is formed each year, and as in Universities and similar institutions there will always be a "First Year Class," a "Second Year Class," a "Third Year Class," and a "Fourth Year Class," the work for the first year is as follows:—

- Chautauqua Text-Book, No. 4. English History. J. H. Vincent. Price 10 cents.
 A Short History of the English People. By J. R. Green. Price, \$1.40.
 Primer of English Literature. By Rev. Stopford Brooke. Price 25 cents.
 Outline of Bible History. By Dr. J. F. Hurst. Price 50c.
 The Word of God Opened. By Dr. B. K. Pierce. Price \$1.00.
 Chautauqua Text-Book, No. 2. Studies of the Stars. By Dr. H. W. Warren. Price 10 cents.
 Recreations in Astronomy. By Dr. H. W. Warren. Price \$1.50.
 Fourteen Weeks in Human Physiology. By Dr. J. Dorman Steele. Price \$1.25.
 Chautauqua Text-Book, No. 6. Greek History. By Dr. J. H. Vincent. Price 10 cents.
 Chautauqua Text-Book No. 6. Greek Literature. By Dr. A. D. Vail. Price 20 cents.
 Old Greek Life. By J. P. Mahaffey. Price 40 cents.

Contributions and Correspondence.

THE SUBJUNCTIVE MOOD.

J. H. STEWART, M.A., ENGLISH MASTER, PERTH HIGH SCHOOL.

Of the many difficulties encountered by students of English Grammar, as presented by Mason, the subjunctive mood, I have every reason to be assured, is the most formidable. In saying this, I do not desire it to be understood that I am of the opinion that Mason's exposition of the subject lacks in perspicuity, or that in any particular it does violence to the principles of the English language. By no means. Of all the authors who have attempted to define the place and use of the subjunctive mood, Mason is, in my opinion, the only one who has interpreted the teachings of language faithfully. The real source of difficulty is that, in former treatises on English grammar, we were taught to determine moods mechanically. Hence, when an author who desires us "to emancipate ourselves from the tyranny of names," gives a logical presentation of previously unobservable peculiarities in the conjugation of verbs, teachers whose possession of more than ordinary intelligence and no mean literary culture cannot be disputed, but whose minds have been vitiated by the unphilosophical teachnigs

of grammarians of the old school, if I may so speak, at first fail to perceive many nice and valuable distinctions in thought, to express which our noble tongue is admirably fitted. To enter particularly into the arguments that may be urged in favor of the now conjugation is unnecessary. Weighty and sufficient arguments, clearly advanced, may be found in either Bain or Mason. It is well to observe, however, that in the abolition of that arbitrary figment, the potential mood, there has been recognized the important principle in grammatical science, that all grammatical artifices are to be valued only so far as they are truthful expositors of the force and office of those words of which they treat. The potential mood, long honored with a conspicuous place in the conjugation of our verbs, has at last been discovered to be a monstrous anomaly without a solitary feature or circumstance to recommend its retention, and it has, accordingly, been passed under the ban of criticism and discarded for an arrangement that unfolds the true use of verbs in the particulars to which it relates. How such an unphilosophical encroachment on the grammars of our language was by succeeding generations accepted as the best that could be devised, can be explained only by considering that, in matters grammatical, these were the days of little investigation, but unbounded faith. The question was not, "What does language, what does use, 'national, modern and reputable,' as laid down by the illustrious Campbell, 'teach?' The great question in grammatical enquiry was "What does the authorized text-book teach?" The doom of this vicious system, fortunately for the English studies of our youth, has been sealed. A spirit of true philosophical research has been extended to all departments of English grammar which may now in truth, and not with irony, innocently severe, as in former works, be defined to be "a science and an art."

In presenting the subjunctive mood to a class for the first time, teachers will find it advantageous to make the use of the past tense, as explained in Mason's Grammar, 433 and 434, an objective point. Experience confirms the opinion that such is the best point to begin, as one of the broadest and most easily distinguished features of the subjunctive is therein involved. To determine whether the supposition corresponds with, or is contrary to, what is the fact, requires no very keen power of discrimination. So clear is Mason's elucidation of this principle, that it would be not only useless, but presumptuous, on our part to attempt any further explanation. Yet the anomalous use of the past tense in reference to the present time demands some attention. The reason of this anomaly will, on a little consideration, make itself manifest. Take the example, "If James were well, I would ask him to do it." I am not making a very profound observation when I say, that all present conditions of things were brought about in past times, either near or remote. The recovery of James would have to be an accomplished fact, before the speaker, under the circumstances indicated, could make his request. Hence, in the hypothetical clause, the past tense is properly employed to make a distinction between the real and the supposed condition of things. In the consequent clause the use of the past tense secures the same end, showing "the want of congruity between the supposition and the fact."

As far as my experience extends, the use of the present indicative in hypothetical clauses is a serious difficulty to learners. The point where they fail is in clearly comprehending the mental attitude of the speaker—to denote which is the office of moods. Here, many investigators are baffled, and here their investigation ceases, simply because they are unable to tell when to use and when not to use the present indicative in hypothetical clauses. This is, I am satisfied, sufficient reason for giving this point somewhat lengthy consideration. Take the sentence, "If the

prisoner is guilty he deserves to be punished." In dealing with this difficulty before my classes, I have frequently been met with an enquiry like this, "If there is no doubt on the mind of the speaker respecting the guilt of the prisoner, why does the speaker put his opinion in the form of an hypothesis?" It may seem strange that, though students daily meet in their studies and reading such use of the present indicative, they are hopelessly bewildered when they attempt to define the mental attitude of the speaker in such cases, nevertheless it is a fact. In clearing the path of investigation for my pupils, I first get them to recite the two views of suppositions, so fully illustrated in Mason's Grammar, 429-433. Taking such a sentence as that already instanced, I generally pursue a line of argument like the following:—"We will suppose that you are returning from a court-house, where a friend, in whom you are deeply interested, has been tried, found guilty, and sentenced to punishment. While maintaining your friend's innocence, and complaining of the injustice with which you imagine he was treated, you meet a man, of sound judgment, who also heard the trial. To your remarks, he makes the reply: 'You complain of your friend's fall; but consider the case. The character of the witnesses cannot be impugned. They witnessed your friend's commission of the crime for which he has been sentenced. The evidence they submitted was on every point satisfactory. Now, if the prisoner is guilty, (and it cannot be doubted), if others who heard the evidence believe it, he deserves death.'" Of the prisoner's guilt this man has no doubt, and consequently he uses the indicative. It may appear to many that I magnify this difficulty. I have, however, invariably found that, simple as it may seem, it is a stumbling block to students. By such a course as I have indicated, I have found that a mastery of the principle involved is most easily acquired. Only the enthusiastic teacher can understand the gratification that it has often afforded me to see the puzzled look on the face of a perplexed enquirer give place, when we would get through such a chain of reasoning as I have outlined, to the smile of triumph. With the desire to be practical, I have simply attempted to indicate, in terms as plain as possible, the plan that I have found to be most successful in getting students to master this difficulty. When the use of the present indicative in hypothetical clauses is thoroughly understood, little difficulty will be experienced in determining when to use the present subjunctive. A word or two on this point may not be useless. Increased knowledge on one of two things which are liable to be confounded throws additional light on the other. To know when to use the present subjunctive will give material assistance in determining when to use the present indicative in hypothetical clauses. I have frequently been asked if the following construction is correct:—"If the Mosaic record of creation be true, evolutionists are in error." Only on the absolute certainty of the correctness of the Mosaic account of creation could the speaker make the assertion that "evolutionists are in error." The speaker therefore misrepresents his mental attitude (I use the same phraseology for the sake of clearness) by using the subjunctive instead of the indicative. When, then, is the present subjunctive used? The best answer that can possibly be given to this is to be found in Mason's Grammar, 438 and 439, and his remarks in the preface on the subjunctive mood.

The student must be careful in not confounding this use of the subjunctive with that found in suppositions respecting the future, treated as "a mere conception of the mind," and to express which the past tense is employed. I may here refer to that well known principle, advanced by old grammarians as an infallible guide in using the subjunctive, "When contingency and futurity are both implied, the subjunctive is used; when contingency and futurity are not both implied, the indicative." Many are misled by vainly

attempting to reconcile it with the doctrines of modern grammarians. It must be vigilantly guarded against as a most fruitful source of error. Containing only part of the truth and being very vague in its directions, the learner should not admit it into his counsels.

The most perplexing part of the whole investigation of this interesting subject is to determine whether there is a future subjunctive or not. By examining the works of Bain, Fleming, Angus, and Mason, it will be found that the three former include a future tense i. their paradigms of the subjunctive, while Mason has only a present and a past, the future of other *grammarians* being called past periphrastic in his grammar. Were this matter to be decided by appeal to reputed authorities, the solitary testimony of Mason might be outweighed by the formidable array of witnesses on the other side of the question. But there is a higher authority than authors, however great may be their claims to respect. Language is the great arbiter in all such cases. What, then, is the testimony of language respecting the verbal forms in question? Take the example, 'If Mr. Henry should advocate that measure, his popularity would decline.' The occurrence of the probability expressed in the above example, if it should be brought to the test of reality, would be in the future. The mental attitude in which the speaker places himself is to regard it as past. Let me reconcile these statements, contradictory as they must seem. In the first place, the argument of equivalents may be applied in fortifying my position. The sentence may be reconstructed in the following form, and yet convey the same meaning.—'If Mr. Henry were to advocate, &c.' The veriest tyro in grammar would at once say that the verb in the hypothetical clause is in the past tense. So far this argument is valuable, but it fails when applied to the verb in the consequent clause. The best and most philosophical way to dispose of the difficulty is to consider the mental attitude of the speaker. The supposition is, as Mason says, "a mere conception of the mind." Mentally, the speaker transfers himself forward in the future to a period of time in regard to which the probability of which he speaks is a past event. In other words, Mr. Henry's advocacy of the measure and his consequent fall in public estimation, the speaker mentally views as accomplished. Bearing in mind the fact that mood has reference to the mental attitude of the speaker, anyone who regards my statement of the question, so far, as correct, must admit that the verbs in the example given are in the past tense. Language has been consulted, and its testimony is that Mason is right, the opinion of such eminent grammarians as Bain and Angus to the contrary notwithstanding.

There is no other point that presents a serious difficulty. In the foregoing I have, without any attempt at felicity of diction, endeavored to throw light on those features of the subjunctive mood that perplex the learned. If only one teacher will receive a hint that may prove of advantage, my end will be served.

No one who presides over the intellectual interests of the young, and who is animated by the spirit of the true teacher, would delay a moment in adopting the new conjugation, if he only reflected that the practice of teaching a code of grammatical laws, without investigating whether they are recognized by language or not, is highly prejudicial to the development of clear, vigorous, and independent thinkers. May the watchword of the teachers of Ontario be, "Ring out the old, ring in the new."

THE HIGHER EDUCATION OF WOMEN.

BY D. C. M'HENRY, M.A., PRINCIPAL OF THE COBOURG COLLEGIATE INSTITUTE.

A recent writer remarks that "the air is thick with schemes for the education of women." If this be true, no apology is needed

for the action of our Executive in selecting it as a topic for the consideration of this Association.

Doubtless there are some present who regard the discussion of such a subject as unsuited to the practical purposes of our convention. I would share in that opinion if our discussion must necessarily partake of the aimless, desultory character which this and kindred subjects too often receive. Believing, however, that the higher education of women is intimately associated with the best interests of the teaching profession, and susceptible of a practical consideration, I shall try to treat the subject as fundamentally important, accepting in part the principle enunciated by John Stuart Mill, "that the standard of the education of women in any country will be the measure of the education of the men of that country."

If we would check fanciful innovations and encourage reasonable changes in our endeavor to improve the educational condition of women, we must seek a rational basis of action. In fixing on such a starting point, we shall find that our views of the final cause of the existence of woman will largely determine our ideas as to her legitimate spheres of action, and the corresponding educational qualifications to which she is entitled.

I. WOMAN: HER NATURAL SPHERE AND NATURAL ABILITIES.

The minor theories which are entertained on this point may be conveniently reduced to two: (1) that woman was created for the service she can render to man; (2) that she was created for some end proper to herself. The former, as explaining the purport of woman's life, may be subdivided into the physical theory, the domestic theory, and the social theory.

The Physical Theory, common to all savages, whether savage tribes of heathendom or the savage individual of Christendom, may be dismissed with the remark that to consider the moral and intellectual nature of woman as a sort of superfluity, and to treat her as a mere animal link in the chain of life, is a monstrous doctrine, a gross impiety against our human nature, and suited only to the ages of barbarism.

The Domestic Theory is almost universally accepted by the civilized world, and is notably favored in England, where an ideal home is a synonym for all that is good and desirable. It finds expression in the remark, "Woman's sphere is the home." Let her but pass the limit of domestic functions and relations, and she is regarded as "out of her sphere," in a fair way to become unwomanly and masculine.

Very beautiful, very proper, perhaps, but like many beautiful things and theories, often unreal, impracticable, and misleading. That the home is woman's proper kingdom; that all pertaining to its order, comfort, and grace naturally falls to her charge, and cannot be transferred to man; that woman's life, without such a domestic side, is incomplete—all this is very true. We all admit that while a man may buy or build for himself a house, it takes a woman, a true woman, to make it a home; that the more womanly she becomes the more will her true and charming personality appear in that home; transformed from what man, alone, could make it—a place of eating and sleeping—into the abode and embodiment of all that constitutes a happy home.

We all know the innate desire of woman for home-making, as natural as nest-building in the bird, nor would we attempt to eliminate the one personal element essential to its homelikeness, around which cluster the aggregate of home comforts, great or small—the one who is

"An ear that waits to catch
A hand upon the latch,
A step that hastens its sweet rest to win;
A world of care without,
A world of strife shut out,
A world of love shut in."

Unhappily, however, in this stern, practical world of ours, amid the vicissitudes of a busy age, the exercise of this instinct in woman is frequently interfered with.

We have traced to its main source the "sunshine of domestic life." Let us proceed to a closer analysis of this sunshine. Does it consist in the presence of one who by some means or other becomes "lady of the house," even though the embodiment of a dozen servants—housemaid, housekeeper, and cook—all rolled into one such mistress? Such a wife is only a higher style of domestic. Let us not forget that she who presides in our model home must possess habits of reason as well as domestic order; a refined love of the beautiful, and a dignified kind of loving care, ever present but never intrusive; always calm, bright and glad-some. What is the source, the secret, of these higher essential

qualities? Are they produced by the domestic theory, *per se*? It furnishes us a good housekeeper; but this does not meet the case. The idea that in the humbler ranks of society the cooking of dinners and the mending of clothes, and in the wealthier classes the art of ordering a dinner and studying the fashions, the receiving of company and "shining" in society, the usual round of so called accomplishments—that these constitute the true sphere of woman or indicate superior excellence is an opinion stupidly false but painfully prevalent. This theory cannot guarantee those qualities of mind and heart that produce our "domestic sunshine."

The *Social Theory* exhibits woman in her social capacity, presents to us gifted women who know how to make home a centre of intellectual and kindly intercourse—the *artistic*, the woman of letters, the philanthropist. This many-sided theory at once suggests illustrious representative examples. Mrs. Somerville and Rosa Bonheur have shown what women can achieve in science and art; George Eliot, conspicuous among novelists; Mrs. Browning and others, in the domain of poetry; Mrs. Coutts and Florence Nightingale, in benevolence and humanity; our Patis, our Nills-sons, and our Princess Louise—all illustrate the possibilities of talent and culture in women.

The most elaborate, and I think the most extravagant, theory is that of Comte. Discarding the physical and domestic ideas, he carries to excess the social; places woman where she is excluded from art, science, and even the work of education, and makes her the object of a humiliating worship.

Neither of these theories, in itself, offers a sphere generally applicable to woman, nor a suitable field for the development and exercise of her natural abilities. Could we select the real, the good that is in them, we might satisfy the demands of our matter-of-fact age by a union in woman of their excellences.

Supposing every woman inherently to possess these qualities, and that to every such woman our ideal home were really assignable, we might, perhaps, define the *sphere of woman*, and confine our attention to the means necessary for the education of these latent powers.

In our present social condition, however, we must face the fact, that there are many women naturally gifted who have to depend on their own exertions; that while man in self-complacency asks "what can she do for me?" from many a woman we hear the honest, thoughtful enquiry, "what can I do for myself?"

Let those who lightly treat such questions as the higher education of women, the efforts of women to enter industrial pursuits and professional life, bear in mind that these questions are no mere contention for woman's rights in the abstract. Voices are heard which we cannot disregard; and if the hour of earnest thought is the precursor of the hour of action, the hour of action is near at hand. This brings us to consider briefly

II. WOMAN: HER ACTUAL SPHERE, AND HER PRACTICAL DISABILITIES.

Or, which may be preferable, her actual condition in the many spheres of daily life, and the hindrances to her highest success in special spheres of action.

For obvious reasons we do not attempt to confine man within any very limited sphere, and we shall find the task practically as difficult in regard to woman. To construct any special theory and rigorously adhere to it, to form a mould of certain shape and arbitrarily try to fit woman into it, would be assuming that she is formed of some plastic material that can be manipulated at will to suit our cherished theory; that we have only to make round holes, and woman will grow round to fill them, or square, and they will become square; while man, less pliable, formed of more stubborn material, cannot thus be forced into any position our fancy may suggest.

An appeal to facts will prove that any such assumption is unwarrantable. We find, for example, that the majority of women are provided for by parents or husbands, passing their lifetime in domestic routine, with no special concern as to the necessity for independent effort.

It teaches us also that there is a very respectable minority who, otherwise unprovided for, are engaged in some honest calling to gain a livelihood or secure a competency.

It shows, moreover, a third class who, not of necessity but from choice, from their love of knowledge, an ambition, it may be, to gain a distinguished position in literature or science, or in some professional career, are claiming the right of participating in all the advantages of a higher education.

These three classes are distinct, and cover the entire ground, yet

there are certain questions on which they unite in common. For example, women display a long list of property disabilities to be relieved; social wrongs to be vindicated, and political grievances to be redressed, involving the solution of some of the deepest problems in social and political science—an undertaking quite foreign to the purpose of this paper.

I shall simply mention those positions that are attainable through what we term the higher education of women, and the principal obstacles in the way of their attainment.

These *positions*, in a word, are found in educational and literary pursuits, and in medicine, law and theology. The *obstacles* are founded on prejudices as to the natural fitness of women for any professional career whatever; from a reluctance on the part of universities to rearrange their machinery and open their doors to women.

III. THE ADJUSTMENT OF IRREGULARITIES.

At the outset I take this position. If it can be shown that a university education, or any similar form of higher culture, will satisfy the just claims of women, and result in their elevation as it promotes man's elevation, this privilege should be cheerfully accorded to them.

The reasons which lead me to take this position are:—(1) The enlargement of woman's sphere has a pressing cause, because there is an increasing number of women who have to support themselves. (2) If one class of the community, as men or women, be placed at a disadvantage, the other suffers proportionately. (3) The assumed intellectual disparity between men and women is due more to controllable circumstances than to any innate difference. (4) Even if it could be shown that the practical advantages arising from a higher education were the exclusive right of men, it cannot be denied that women, in common with men, should share in those personal enjoyments that arise from a highly cultivated intellect.

But how can it be shown that the educational privilege desired would meet the case? For the time assuming the *onus probandi*, allow me to suggest that the evidence will appear on referring to the history of the movement, and noticing what has been already accomplished by women of culture.

Such women have occasionally been conspicuous in all ages. Profane history furnishes many examples, from Homeric times to the present. We read in the *Iliad* (xi. 739) of women employed in the science of medicine; in the *Odyssey* (vi. 227) also Homer speaks of women thus officiating. Euripides bears similar testimony. Sappho seems to be the only woman in antiquity whose productions by common consent stand on the same level with illustrious poets of the other sex. Many Athenian women, not aiming at professional distinction, set about making themselves fit companions of the most elevated and illustrious among men. They accordingly studied all the arts, became familiar with all philosophical speculations, and instructed themselves in politics. We need refer only to Aspasia, wife of Pericles. Her home was the resort of all the great men in Athens; and Socrates, in his "Memorabilia," acknowledges her as his teacher in philosophy. These were exceptional cases, for historians assert that the debased condition of women generally had much to do with the decay of Athens.

This abnormal state of things was long perpetuated and tolerated in many lands; but we have reason to believe that the days of wasted activities and subjected intellects are about numbered throughout the civilized world. This principle asserts itself with the early rise of universities, soon after which women began to claim equal educational privileges with men.

Let us take a short survey of this movement, first in continental Europe. As early as 1235 we find two women graduating at the University of Bologna, and, subsequently, lecturing on the Institutes of Justinian. Another graduate in medicine became, in 1400, a professor in her own university. In 1564 a legal graduate was appointed to a chair in the University of Cordova; in 1557 another took a professorship in learned languages at Padua. In 1855 the Empress of Russia, in order to promote the higher education of women, opened 186 schools for girls, modelled after the gymnasien of Germany. So eagerly was this privilege appreciated that in a short time 23,400 pupils were enrolled. The medical schools were opened to women, but soon closed, on account of the jealousy of regular practitioners—driving many ambitious women to Switzerland, where fourteen graduated. At present, however, there are 423 female medical students in St. Petersburg.

Italy, as if mindful of her old renown in arts and letters, is found in the front rank of nations progressive in this movement. The

Italians are determined, they say, "to educate the intellect of those who are to be the earliest teachers of men." In 1209 this liberal feeling first appeared, when the degree of LL.D. was conferred on Bettasia Gozzadini. Other cases soon followed at Padua, Pavia, and Milan. Among women distinguished at the Universities were professors of philosophy, of mathematics, and of Greek. One lady took the place of her husband during his illness, as professor in anatomy, delivering her lectures from behind a screen. In 1861 schools for girls were established at Milan. In 1876 the Universities of Italy were opened to women. Thus we see that this land, with all its popular ignorance and debasing superstitions, bids fair to have the honor of being the first of all civilized nations to possess a completely organized system, open alike to both sexes, from the elementary schools to the University.

In France the Universities are open to women, but the link between her Public Schools and the Colleges is wanting. Boys are favored with good secondary schools, but those for girls are poor. They may enter convents, but the instruction is very superficial. Hence the women at French Universities are mostly foreigners, there being in Paris alone fourteen lady medical students from England.

Germany, foremost in the higher education of men, seems so to regard the mind and vocation of women that their education terminates at a comparatively early age. Their course is meagre—classics, higher mathematics, and science being generally omitted; consequently few German women ever graduate. In 1817 one was allowed to practise in a certain department of medicine; and the next did not appear until 1874. However, the Germans are aiming at improvement. Leipzig University now offers degrees to women, and there are in Germany more colleges exclusively for women than in any other country.

In Austria we find the University of Vienna admitting women to lectures when the professors do not object. The Universities of Denmark open all departments but theology. Their system of scholarships, however, is unjust; since clever women may head the list, but all bursaries are reserved for men. The Universities of Sweden are open, except in law and divinity. Throughout the continent, in fact, the older Universities are becoming less exclusive, and a new departure seems to be taking place.

Turning to England, we find better secondary schools for girls than on the continent, but greater tardiness on the part of the universities. The necessity for providing suitable feeders on the continent, and in England the desirability of some goal of endeavor in the form of university distinctions, are creating a general opinion in favor of good secondary schools leading to universities, open alike to both sexes.

In England there is still much room for improvement in girls' schools. While ample provision is made for boys, girls are treated as a separate part of the community, to be provided for by private tuition in its many forms. This at best is fragmentary and insufficient, the great majority of the English girls being educated by governesses or in small boarding schools. The effect of this system is that girls, instead of being prepared to take their place beside their brothers in higher education, too often become "accomplished nonentities," better qualified for such engagements and pursuits as fashion and frivolity stamp with their approval than those requiring serious intellectual effort. Too many mothers see that their sons are qualified to make their own way in the world, but seem to take it for granted that their daughters will have theirs made for them. This idea was illustrated in the case of the kind mamma who begged the teacher that her daughter might not be troubled with the farthings and half-pence of arithmetic, "because," as she said, "she can have no use for them when she marries; her husband and housekeeper will do all that for her." Fortunately, this prejudice is disappearing, and the endowed schools for girls are improving. Courses of lectures to women are being instituted, such as those by Professor Huxley at the London Institution, which give direction and stimulus to private study. King's College in one year registered 530 women for these lectures. Principal Barry states that the papers of the ladies were quite as good as those of the other sex, and infinitely better expressed.

In University education proper, the first step was taken fourteen years since, when Cambridge established local examinations for women. So evident were the benefits resulting that Edinburgh followed Cambridge in 1865, Oxford in 1869, the two Irish Universities in 1873, and St. Andrew's in 1877. A degree, "Literature of Arts," is conferred by several of these Universities on the completion of a course equal to that for M.A. At Edinburgh, for example, the course includes English Language and Literature,

Logic and Metaphysics, Moral Philosophy, Experimental Physics, Mathematics, Botany, Geology, Chemistry, and Latin. So many women are availing themselves of this university test, not to speak of the "school locals," that in England and Scotland there is accumulating such a force of persons virtually entitled to degrees in arts that all discriminating barriers must soon give way. We can hardly arrive at any other conclusion. In the meantime, biding the verdict of the universities, the "Women's Educational Union" was organized in 1872, under whose supervision there are 18 endowed schools for girls—six in London, in two of which 1,000 pupils are enrolled—besides 38 other schools, self-supporting. The "Society for the Extension of University Teaching in London," furnishes valuable lectures to women. There are also the "Cambridge Association for Promoting the Higher Education of Women," "Edinburgh Ladies' Association," "Rugby Council," a means of communication between ladies who have passed any university examination; the "National Union of Scotland," whose most successful students are sent to some foreign institution for a finishing course. As if these were insufficient, there is a regular system of instruction by correspondence at Edinburgh and Cambridge. These organizations indicate a widespread desire for higher education, and show the inadequacy of ordinary means and methods.

Another step is gained by such schools as "Girton College" and "Newnham Hall," Cambridge, in which classes are conducted by 26 of the university professors. The regular examination papers are given to the ladies thirty minutes after they are placed before the gentlemen; and "degree certificates" are given, indicating the rank these candidates would have taken at the university if they had been men! Only a paper wall remains to be removed at Cambridge. A similar institution is talked of for Oxford. London University now grants degrees to women, and 63 candidates presented themselves at the examination just held. Of eleven female candidates at the first examination, six took honours, four were awarded exhibitions—one standing second in the whole list of candidates. The highest mathematical prize in 1877 was carried off by a lady, who would have been a "senior wrangler" but for the crime of being a woman.

Queen's, Ireland, will follow Trinity with her affiliated "Alexandra" as soon as secondary education improves. The College of Physicians, Dublin, in 1876 received five women to medical degrees, several of whom had been denied similar privileges at Edinburgh. It is a significant fact that the incipient Victoria University of Manchester is to be open to women. So surely are restrictions being removed and exclusiveness yielding to more liberal ideas.

England, however, has been outstripped by one of her colonies—the first university in the British dominions to admit women to degrees being that of New Zealand, where a Miss Edgar graduated B. A. in 1877.

I cannot conclude the historical part of this paper without a glance at the United States and Canada. The doctrine of equality in education for both sexes was first advocated on this continent in Boston 58 years ago, and resulted in the establishment of a High School for girls. As in the case of the Russian and Dublin medicals, the men were alarmed by the great success of the movement. The school was closed, and the girls were sent to the Grammar School with the boys.

In 1833 Oberlin College was founded, open to both sexes. In 40 years 620 women have graduated. Mount Holyoke Seminary for girls was opened in 1837; Vassar, in 1865; Michigan University opened its doors to women in 1870; Boston, in 1871; Cornell, in 1875. Harvard and Yale have only the "locals" after Oxford. In all there are over 100 colleges in the United States open to women.

In medicine, the first College was open in Boston, 1848; in Philadelphia, 1850; in New York, 1863. There are over 500 lady doctors in the United States, some being college professors.

Law has its share—the first lady lawyer appearing in Chicago. Many of these do not plead in Court, but are engaged in office-work, and several being married to lawyers, practise with their husbands. In the teaching profession, as we know, many distinguished positions are occupied by women.

Lastly, turning to Canada, I believe the honour of inaugurating the movement is claimed by Victoria University, where the first lady matriculant in Arts passed with honours in September, 1878. Her lectures and degrees are accessible to ladies, a number of whom are at present availing themselves of the privilege. Queen's is to be congratulated for taking a similar position. Toronto and McGill have only reached the Oxford standard of giving local examinations, the satisfactory results of which will doubtless open the way to

greater privileges. The Chancellor of Toronto University refers in hopeful terms to the experiment, and states that their expectations have been exceeded—extraordinary ability being manifested, especially in science.

For the preparation of these candidates the facilities offered in our High Schools and Female Colleges are unsurpassed. In the former ladies are or may be thoroughly prepared for junior and senior matriculation; in the latter a substantial education is offered to displace, let us hope, the nominal scholarship and delusive, expensive "accomplishments" too prevalent in girls' schools.

And here this statement of facts must end. What are the conclusions fairly deducible? I think our outlook shows,—

1. That throughout the civilized world there is a growing conviction of the value of higher education for women; or, as one has said, "slowly but surely new notions of a curriculum, and a higher standard within it, have filtered into the many obscure nooks and crannies of the educational world."

2. That this conviction is moving the nations to provide means for the attainment of this object.

3. That while initial attempts were feeble and infrequent, the gentler half of intelligent communities are becoming strongly united in their appeals, and "listening senates" are graciously devising liberal things.

4. That what at one time were regarded as unanswerable objections are now seldom urged.

5. That educated women have succeeded in all the learned professions.

A certain mathematician, after reading "Paradise Lost," wrote on the last page, "It is very pretty, but it does not prove anything." If any of you are awaiting fuller demonstration, and ask, "Who will show us any good?" allow me to enumerate a few of the advantages which I think would likely follow the removal of present discrimination against women.

(a) The inestimable personal enjoyment attained only by persons of culture.

(b) A literary qualification for such positions as are attainable only by the educated, the duties of which can be discharged by educated women as well as by educated men.

(c) The many advantages accruing to society in general through the influence of educated women.

(d) Much of the special, artificial, and abnormal development fostered by methods too prevalent in girls' education would likely be superseded by that which is more liberal, more thorough, and more healthful.

(e) Our educational machinery might be simplified; many institutions called into existence by prejudice against co-education could be dispensed with, such, for example, as female colleges in close affiliation with Universities.

In a word, a very mischievous educational fallacy would be corrected. We make men of our boys by exercising faith in their latent powers, rousing their ambition, and subjecting them to vigorous mental discipline—in short, by treating them as men. We too often keep our girls children by assuming an innate incapacity for sterner exercises, by avoiding serious subjects, and by a spoon-feeding process that naturally produces a class of effeminate. Every teacher knows that a similar process with boys would produce similar results. This fallacy, I think, would be exposed and corrected by the adoption of common-sense methods.

I can refer to only four objections. 1. The danger of diverting woman from her proper domestic sphere. I merely repeat that the sphere of woman must be determined by circumstances, and that if a university education would enable her more efficiently to discharge her duties, no conventional vaporizing nor traditional nonsense should exclude her from the privilege.

2. The dangers of co-education. When homes and schools in general become what some homes and schools are in reality, school life will be merely an expansion of home life, preparatory to the actual life of society. No greater necessity need exist for separating boys and girls in school than in the family. Practically it has come to this, the testimony of the best educationists favours it, and the conventional idea is being generally discarded. Experience proves that the ethical and educational effect of co-education is mutually beneficial. Says Richter, "To ensure modesty I would advise the educating of the sexes together. I will guarantee nothing in a school where girls are alone together, and still less where boys are alone." Another says, "Why it should be considered so dangerous and doubtful for boys and girls, or men and women, to share each other's serious pursuits, whilst they are allowed to share each other's frivolities, is a matter of perpetual surprise to

those who look beyond the range of a custom or convention which has worked much mischief."

3. The danger of lowering the standard of education. This assumes a universal incapacity in women unsupported by general experience and frequently overturned by the significant results of contests in scholarship. All that women ask is an even start in the race. If men decline the offer, let them drop this objection.

4. The danger of over-work. If, as I believe, the amount of our healthy mental activity is the measure of our intellectual enjoyment and strength, no student was ever injured from study in itself. "La petite sante," so common in girls, arises mainly from two causes: (a) A feeble constitution, inherited from mothers with tender habits of cogitation; (b) personal habits, neglect of nature's hints and imperious demands. The foster-parent of this evil is the idea, prevalent in certain circles, that there is something peculiarly ladylike in a delicate state of health, in a pallid, languid, tight-laced creature of the drawing-room and sensation novel, with her proportionate mental feebleness. Not undervaluing genuine refinement, I would adopt the language of Cousin:—"Adore grace, but be careful not to detach it from strength; for without strength grace quickly withers, like a flower separated from its supporting stem."

Leaving further objections, allow me to summarize. I have tried to show,

(1) That women may very properly have special callings, as well as a natural domestic sphere.

(2) That discriminations against women, as to natural ability, are both impolite and unjust.

(3) That she is therefore entitled to all the privileges of a superior education.

(4) That this principle is being practically acknowledged by the leading nations of Europe and America.

(5) That the success of women in professional life fully justifies the concessions granted them.

(6) That common objections are traceable to misconception and traditional prejudice.

Finally, I would suggest,

(a) That a fair trial be made of local examinations.

(b) That to awaken general interest and save labor in teaching, the High School Intermediate be accepted, *pro tanto*, at these examinations, and that the certificate for having passed the University Local Examination should in some way be recognized by our Education Department.

(c) That if the "locals" prove satisfactory the candidates be allowed to proceed to their degree in Arts, and enjoy all the advantages it confers on men.

(d) And lastly, that in their several fields of labour, women thus qualified be paid in proportion to the intrinsic value of the work done; not according to the arbitrary ideas of their employers, nor the supposed necessities of the worker.

All this and more will be done if we forget not that

"The woman's cause is man's; they rise or sink
Together, dwarf'd or Godlike, bond or free."

THE SEPARATE SCHOOL.

BY MR. THOS. O'HAGAN, HEAD MASTER OF THE SEPARATE SCHOOL IN BELLEVILLE.

There are few subjects in this age invested with such vital interest as that of education. It is an inexhaustible theme for thinking minds. No man in our midst can fold his arms with impunity and say "this concerns me not." It must concern him. It has been a subject of earnest consideration during all ages. The existence of an educational horizon is coeval with that of a terrestrial one, and, like it, is boundless and illimitable in its space. As we look upon that point in the heavens where the sky and earth appear to meet, our first thought leads us to believe that in the apparent union of earth and sky the confines of this world exist, that the blue vault of heaven has here stooped down to meet the earth, and wall our little world around with azure firmament; that beyond this circle of our vision rests nothing. But 'tis not so. As we advance this horizon extends, and new sights, new scenes, and

new landscapes loom up before us. We are but as children set out upon a voyage of exploration among the heavenly bodies. We have no sooner clapped our hands with joy over the discovery of some beautiful and sparkling star than a still brighter jewel crowns our sight. So, too, in the great firmament of education, each step opens up new horizons of thought. When we fancy we have studied the subject from every side, it is only within the little world of our own mind. We have been taking observations very earnestly, indeed, and in good faith, but they have been all taken from one point. Hence our limited knowledge of the broad expanse of Heaven, its hosts of planets, and its countless stars. If then, we cannot afford to be stationary in so great a work as this, how can we get a true knowledge of education if we do not study it from more standpoints than one on the earth's surface? Nor can this great heavenly body and planet education be accurately measured if we do not view it from a moral as well as an intellectual standpoint. Now, by morality I do not mean that misty morality which so many writers mistake for religion in the school, and which I would term rather school virtues or princely points of discipline, but that inward and unconscious tuition which moulds the heart of every school child, or rather directs its every thought and impulse. I touch upon this point of moral education in this essay on the Separate School, not with the object of throwing aspersions negatively on any system of schools, but to show the basis upon which rests the Separate School system, as well as to answer for the faith that is in us. Catholics, in support of Separate Schools, have nothing whatever to do with Public Schools, nor, to my mind, does it become them in any shape to attack institutions of such efficiency, which have lately won the admiration of the whole world. In doing so I would consider that we would be but wounding a portion of our own body, inasmuch as every class of schools in our midst forms a portion and part of the great school system of Ontario, and I feel assured that we can all get along amicably together. The day is past for arguing the necessity of the Separate School in this Province. But we will argue that a greater efficiency should characterize it, a better legislation invest it, and a blending of harmonious action mark its upward and onward course. These points, to a great extent, shall form this paper. It is foreign to my purpose in this essay to arraign any system of schools before the tribunal of my own individual understanding. I only know that the Separate School exists, and that it is my object, my aim, my every hope to render it efficient in its work and in every way commensurate with the growth and advancement of the Catholic element of Ontario. To argue against the necessity of its existence would be but to meet in hand-to-hand combat the arrayed precedents of almost every country in Europe where Protestantism and Catholicism form the religions of the masses. Austria, France, and parts of Prussia bear testimony to the necessity of respecting the conscientious convictions and principles of the minority, even in educational matters. In our own sister Province of Quebec, Separate Schools, invested with every privilege of development, have been established to meet the requirements of the Protestant minority. I mention these facts, not for the purpose of provoking controversy, but to show that other countries, as wise in legislation as Canada, have acceded to the demands of the minority in the tolerating of a Separate School system. True, I will grant you, that Separate Schools do not find favour with statesmen; but then statesmen do not legislate for our welfare hereafter. The leading spirits among them are but earthly of the earth (like to the people whom Sallust describes with head bent down, grovelling in their desires, and incapable of maintaining a spiritual thought). Thank God, the welfare of our souls hangs not upon such men. We have spiritual statesmen who do more to further even the material glory of the country than an

army of such wily men. That statesmen are not in favour of Separate Schools is very obvious. All education which does not bring us nearer to God is worse than purposeless, it is criminally injurious. The triumph of the intellect is the world's desire, and statesmen who shape the destinies of this world consequently see but through an intellectual eye. The education which is most productive of good to us is not that which makes the proudest intellects, but that which makes the purest hearts. If you educate the head at the expense of the heart, you have an intellectual monster. True knowledge is power, but proves only serviceable while kept under restraint. The highly-mettled horse throws its rider if not checked by the rein, and the locomotive hurries train and passengers to destruction if it be not guided by the skill of the engineer. Some of the greatest nations of antiquity fell while orators were moving the populace to its very centre, and poets singing their most gifted songs. The intellect must be subservient to the soul. It is the prerogative of the latter to command, the bounden duty of the former to obey. The sceptre of the soul claims universal sovereignty.

The soul must triumph or become annihilated. How important it is, then, that the influences which surround children in the school-room should be of the purest and brightest kind. I verily believe that the principles incorporated into a child's being while at school leave a greater impression upon the age than the homilies of many a silver-tongued orator in the pulpit. It is in the age of childhood that the mind is so plastic. In a word, it is in the age of childhood is written the preface to the age of manhood. Show me a people whose children are educated under virtuous auspices, whose hearts are carefully watched over, whose passions are entirely under subjection, and I will show you a people by whose firesides domestic virtue reigns supreme, where parental obedience is not a task, where morality is the corner stone of the nation, and where truth and justice and honesty and charity abound among those who make the nation's laws and who grace its higher walks of life. Yes, gentlemen, I know this to be irrelevant to the real title of this essay, but I cannot refrain from expressing what I consider to be the true import, the true Alpha and Omega of the word education. I feel sure, too, that the educational system of Ontario possesses in an eminent degree all the beauties and excellences essential to the building up of a great people. Let us then not forget our inheritance as teachers and educators. The words of Webster should ever ring in our ears, "If we work upon marble it will perish, if we work upon brass, time will efface it, if we rear temples they will crumble into dust, but if we work upon immortal minds, if we imbue them with principles, with the just fear of God and love of our fellow-men, we engrave upon those tablets something which will brighten to all eternity." And let us never forget that as teachers in the school-room we should be living models for the pupils to copy. For, as the great English writer Ruskin says, "It is not so much in buying pictures as in being pictures that you can encourage a good school. The best patronage of art is not that which seeks for the pleasure of sentiment in a vague ideality, nor for beauty of form in a marble image, but that which educates your children into living heroes, and binds down the flights and fondness of the heart into practical duty and faithful devotion." And may that day never come upon the intellectual Ontario, when, in order to maintain a high standing in educational matters, the empire of the soul may be forced to pay tribute to the despotic power of the intellect, and immortality compelled to bow and offer incense to the God of dust. No. Ours is a grand school system, where labour forming our aristocracy, the child of the poor and rich may sit side by side and contend for the same prize. It would be useless to think that we could build up a great nation or form a great people if we expelled God from our schools. Even the har-

binger of the downfall of ancient nations was signified by the want of respect and veneration for their Pagan gods. The Government which legislates God out of the schools and guards its portals with fiery sword in hand is but sharpening the intellects of the people to commit crimes, which will necessitate a still more fiery sword to guard within the iron portals of a prison wall. And now a word touching the Separate School, which has for so many years slumbered, but lately arisen before public gaze. During the last session of the Ontario Parliament several measures, which eventually must be productive of much good to them, were passed. I shall touch upon the most salient points in these measures before I conclude this paper, as well as suggest other wants which characterize the Separate School system of this Province. There is no doubt whatever that our Separate Schools have for many years been dragging out a precarious existence. In fact they were gasping in many instances and dying of inanition. And is it any wonder? I think not. Legislation had done nothing for them. Such a thing as enthusiasm in their work was entirely unknown, while public opinion was meanwhile being whetted against them. We have, however, now resurrected public opinion in their favor so far as to win recognition of them in the Public School system of Ontario. To my mind, the two great drawbacks to the Separate School at present are a want of well-qualified teachers, with a thorough and uniform system of inspection. This latter is the backbone of the Public School system. It is somewhat strange if the interest bound up in one hundred and eighty-five schools, employing three hundred teachers and attended by twenty-four thousand children, be not of sufficient importance to the State as to call for a proper supervision and care. Can this enlightened Ontario afford to stunt the intellects of twenty-four thousand of its children? I think not. What, then, is to be done? To simply continue the work so nobly begun in behalf of the Separate School. To hedge around with the same privileges which have given such an impetus to the Public Schools. It must pass over the same rugged roads, be prepared to fight adverse criticisms, and develop under judicious care and management. But we must seek to have our Separate Schools bound together by a rigid and uniform system of inspection. The teachers must be well qualified, the schools properly graded, the general discipline of the schools in every way commendable if we wish to make progress. Now, these points will not be attended to without the aid of good and painstaking inspectors. I feel, too, that the teachers of our Separate Schools should possess higher certificates of qualification. In a Province like Ontario, where education is so widely diffused, with Collegiate Institutes and High Schools opening on every side, every facility is offered for acquiring a good education with but little expense incurred. Again, also, to the proportion of Catholics in this Province, who number about two hundred and fifty thousand, the number of Catholic teachers trained at the Normal School is a mere nothing. Of course the same inducement is not held out to Catholic teachers to study for the teaching profession, as the remuneration for services in the Separate Schools in many cases is not at all tempting.

However, this cannot be the sole reason, as several of our Separate Schools have been offering very fair salaries. I would also like to see Catholic teachers attend the County Convention and discuss educational subjects as well as hear them discussed. I cannot see any reason why the teachers of Separate Schools should inherit the sole right of striding about in old-fashioned and quaintly cut garments of by-gone days, unless it is to bring about a premature superannuation. The fact of the matter is, that the teacher of a Separate School can no longer afford to be isolated in his character if he wish to keep pace with the progressive spirit of the age. Besides, being thrown together narrows down any bigotry which might exist, we learn to know each other better, and stop

standing upon opposite shores shaking our fists at each other and threatening vengeance on behalf of our respective creeds. The day has come when we must know each other in the matter of education, as educators, not as religionists; and when we enter the arena for an intellectual discussion be prepared to disarm ourselves of all religious weapons. It matters not to me whether he be a teacher of a Separate or a Public School who solves some knotty problems in factoring before an association of teachers. The great factor, in my mind, is that they are done right. If the teacher of a Public School should choose to work a question in percentage by the unitary method, I would not feel disposed to doubt the correctness of the solution just because we did not agree in religious matters to a unit.

In the discussion of educational subjects there can be no compromise of religious convictions and principles. The building up of a great school system alone demands our attention. Let Catholic teachers see to it that they have a hand in the great fabric, so that years hence we can proudly place our hands upon the work and say, This portion of it, to some extent, has been the result of our labour. I mention these facts in connection with Teachers' Conventions, not that I think there is any great line of demarcation between teachers of Public and Separate Schools, but that we may be bound together as a unit in the promotion of educational matters in this Province, and contribute each his share to advance the interest and welfare of our noble school system. Our work is great, no doubt, and especially so within the department of the Separate School. But we will gradually lift them out of obscurity and neglect. Recent interest and legislation will summon them to a new life. Better teachers are day by day seeking admission into our Separate Schools. They are more earnest, more devoted, and better skilled in their work. I hope to see, in a few years, a high order of things in the Separate Schools. It will no longer have its arms pinioned, or be compelled to develop within the narrow confines of a Chinese boot. We can now erect a Catholic Model School when our resources admit of such—a step, I think, entirely in the right direction. True, the measure may for some time remain a dead letter, but will eventually prove beneficial to Separate Schools and their teachers. What, I ask, would be the sense of granting us Catholic elementary schools if you did not invest them with the power of developing? It would be lopping off the wings of an eagle and inviting it to fly, or pinioning the arms of a swimmer and plunging him into a deep stream and bidding him swim. The Government which would refuse a full measure of development to Catholic educational institutions would be but offering an insult to the intelligence of a portion of its own people. Again, we have, in some instances, Catholics on the Board of Examiners. This, too, has been a step in the right direction. I believe that there should be no accommodation held out to Catholics to be placed on the Board simply because they are Catholics; but with some eight hundred Catholic teachers in Ontario, it would indeed seem strange if the positions of examiner and inspector were entirely beyond their reach. The Separate School or its teacher claims no privilege or right. It simply claims as a permissive necessity the right to grow and develop under the auspices of its own resources. To ensure this development, the measures recently submitted for its amelioration were passed in its favour. We have knocked at the door of the Education Department, and it has opened unto us. We sought, and we have found, and we expect to continue to seek and to continue to find. Our schools are already inhaling the bracing atmosphere of enthusiasm, and promise ere long to grow robust and strong. The time has come when there is a necessity for efficient separate schools. Twenty-four thousand children are to daily enter their portals to receive an education to prepare them

for the great battle of life. Twenty-five years hence this number may be augmented by as many more. We can ill afford to fold our arms and let the progress of the age whirl by. If we do so, we may expect to go to the wall. The watchword of this age is "educate." Our schools are our lines of fortifications. "Education," says an eminent writer, "is a better safeguard of liberty than a standing army." Let us then see to it that our liberty is ensured, our army of educators well disciplined, our march one of continued triumph. Ours are noble conflicts—struggles for the mastery of intelligence and virtue over ignorance and vice. Go on, then, teachers of Ontario, with your noble work. Build our educational institution so high that it may reach heaven in its aspirations; so noble and pure as to be a temple of living and sanctified souls; and may the spirit of our country's greatness throb in its structure, its corner stone, and belfry, its dust unite with immortality, and the beauty which lingers around its summit melt away into eternal sunshine.

SLANG.

(From the Sackville College "Argosy" for April.)

DEAR EDITORS,—In the last issue of the *Argosy* there appeared an article from the pen of "Slap Bang," advocating the extension rather than the suppression of slang. I have no idea that the editors or a majority of the patrons of the *Argosy* coincide with "Slap Bang" in that particular. Nor do I think that he himself would like to be bound down to his own vocabulary. Were such the case, we certainly might tremble for our "noble tongue."

"Slap Bang" objects to Worcester's definition, and gives us his idea that slang embraces all words and phrases that are not classical. "To call," says he, "all slang 'vulgar,' is, I think, unfair and untrue." It may be unfair and untrue to call all the words vulgar which his wide classification would bring under the appellation of slang; but does it make the low, unmeaning jargon, now known as slang, purer or more comprehensive to place it with all the other words in the language not purely classical?

With all due deference to the ideas of "Slap Bang," in my humble opinion, from the origin of the word, Worcester's definition of slang is the correct one. From good authority we claim that the word itself came in use in the following way. In many countries criminals were sent to the galleys for punishment. While there they were chained in couples to prevent them from escaping. These fetters were usually fastened on their legs, so as to leave their hands free for labor. Now the bonds with which these convicts were thus hampered, were called *slangs*, and their dialect was called *slangus talk*, or talk peculiar to those wearing slangs, and from that expression we receive the term slang. Thus we see that slang is only an abbreviated name for the language of thieves, robbers and all kinds of criminals and convicts. Since language is the expression of thought, can it be expected that from such a source we would get strong expressive terms, refined and polished speech? Would we not, on the contrary, expect the language of such a class to correspond with their thoughts and actions? And must we now surrender the thoughtful expressions of our master minds for a coarse, unmeaning dialect, originated in dens of vice by the lowest refuse of society?

"The polite world," says he, "is sickening of a 'vague disease,' that disease is propriety, and the malady is 'catching.'" Were the above true, does he expect to arrest the "vague disease," and forever stay its ravages by substituting for words that "go with freedom, thought and truth to rouse and rule the world" those born in slavery, destitute of meaning, and shorn of virtue and truth? Then if this "vague disease," propriety, is "catching," the use of slang must be still more contagious, for he claims to have a majority.

In my opinion, the use of slang, in most cases, is a proof of ignorance, for no gentleman with a noble language at his command would be compelled to draw from the vocabulary of roughs and rowdies to express his ideas.

Go on, "Slap Bang," if you want to, and instead of saying aristocracy say *big-bugs*, or *upper crust*, as I heard a pupil in one of our schools define the word a few days ago. "Sling your

slang" around if you think you can do so with impunity, but remember that of it you cannot say—

"It goes with all that Prophets told and righteous Kings desired.
With all that great Apostles taught, and glorious Greeks admired—
With Shakespeare's deep and wondrous verse and Milton's lofty mind—
With Alfred's laws, and Newton's lore—to cheer and bless mankind."

•PUR'TY OF SPEECH.

Mathematical Department.

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

EDUCATIONAL DEPARTMENT, ONTARIO.

JULY EXAMINATIONS, 1879.

THIRD CLASS TEACHERS.

ARITHMETIC.

TIME—THREE HOURS.

Examiner—J. A. McLELLAN, LL.D.

Values.

- 20 1. Shew that $\frac{3}{4} = \frac{8}{11}$ and that $\frac{4}{5} = 9 \div 5$.
Simplify

$$\left\{ 2\frac{1}{4} \times 4.75 \div \frac{2}{3} \text{ of } (4\frac{1}{4} - 3\frac{2}{3}) + \frac{1.75}{3\frac{1}{2}} + \frac{4\frac{3}{10} \times 2\frac{7}{10}}{21.5 \times 13\frac{1}{2} \div .25} \right\}$$

of $(3\frac{1}{4} \times \frac{1}{2} \div 9)$ of £5 16s. 8d.).
- 20 2. Explain the rule for "pointing" in division of decimal numbers.
Divide 81.47 by 839.2765 correct to five decimal places, and find the product of 8.706205 by .0084005 correct to six decimal places. [20 marks if done by contracted methods, otherwise 10 marks.]
- 20 3. Extract the square root of .097199881 to six decimal places.
Simplify $(\sqrt[3]{.54 - 2\sqrt[3]{.0000390625}}) \div (\sqrt[3]{.16} + \sqrt[3]{.02})$.
- 20 4. A rectangular courtyard, 180 feet long and 185 feet wide, has a path running round it of the uniform width of 10 feet 6 inches; the path is covered with gravel at a cost of 22½ cents a square yard, and the remainder of the courtyard is covered with turf at a cost of 17½ cents per 100 square feet: find the entire cost.
- 20 5. The amount, at simple interest, of a sum of money at a certain rate per cent. is \$693.33 for 8 years, and \$640.80½ for 5½ years: find the principal and the rate per cent.
- 20 6. A grocer mixed two kinds of wine, worth, respectively, \$2.40 and \$3.20 a gallon, in such proportion that by selling the mixture at \$2.80 a gallon he made a profit of 10%: find the proportion in which the wines were mixed.
- 20 7. A merchant invested a sum of money in Federal Bank stock at 112, and after receiving a half-year's dividend at 4% he immediately sold out at 116½; he received altogether (i.e., from dividend and profit on sale of stock) \$810 more than he had invested. Find the amount originally invested.
- 20 8. A and B form a partnership, A's capital being to B's as 5:8; at the end of 6½ months A withdraws 20% of his capital, and a month after, B withdraws 88½ of his capital; at the end of the year the profits are found to be \$8047: how should this be divided?
- 20 9. A note drawn at 185 days, with interest at 8% per annum, is discounted by a broker 75 days before maturity; the broker gives \$375.80 for the note, and makes at the rate of 1½% per annum on his money. Find the amount for which the note was drawn.

Values.

20 10. Ascertain the cost, at \$85.10 per ton of 2000 lbs., of 864 yards of iron piping, 25 inches internal diameter, and half an inch thick, assuming the specific gravity of iron to be 7.77, and a cubic foot of water to weigh 62½ lbs. ($\pi = 8\frac{1}{2}$).

SOLUTIONS.

1. £8 15s. 7d.
2. .08749; .012602.
3. $.811768; = \frac{8\sqrt[3]{.02} - 23 \times .125\sqrt[3]{.02}}{2\sqrt[3]{.02} + \sqrt[3]{.02}} = \frac{3 - 2.875}{8} = .416.$
4. Area of path = 6174 sq. ft.; of rest, 18126. Cost = $\frac{6174}{9} \times .22\frac{1}{2} + \frac{18126}{9} \times .17\frac{1}{2} = 154.25 + 31.7205 = \$186.07.$
5. Interest for 2½ years = \$698.88 - \$640.80½ = \$52.52½.
∴ int. for 1 yr. = \$21.01; ∴ principal = 698.88 - 21.01 × 8 = \$525.25.
Also, 21.01 on 525.25 is $\frac{21.01}{525.25}$ on 1, or $\frac{2101}{52525}$ on 100; i.e., 4%.
6. Cost price of mixture must be $\frac{1}{4}$ of 2.80 = \$2.54¼. Hence gain on each gallon of the cheap kind was 14¼ cts., and loss on each gallon of the dear kind was 35¼ cts. The gain in one case must be counterbalanced by the loss in the other; hence they must be mixed in ratio $\frac{65\frac{1}{4}}{14\frac{1}{4}} = 9:2.$
7. Gain on 112 through advance in stock was 3¼; interest on 112 was 4, making a total profit on 112 of 7¼, or 1 on $\frac{112}{7\frac{1}{4}}$, or 310 on $\frac{112}{7\frac{1}{4}} \times 310$, or 310 on \$4480.
8. Let 5 and 8 represent their capitals. Then
A's stock $\left\{ \begin{array}{l} 5 \text{ for } 6\frac{1}{2} \text{ months} = 32\frac{1}{2} \text{ for 1 month.} \\ 4 \text{ for } 5\frac{1}{2} \text{ " } = 22 \text{ " " } \\ \hline 54\frac{1}{2} \text{ " " } \end{array} \right.$
B's stock $\left\{ \begin{array}{l} 8 \text{ for } 7\frac{1}{2} \text{ months} = 60 \text{ for 1 month.} \\ 5\frac{1}{2} \text{ for } 4\frac{1}{2} \text{ " } = 24 \text{ " " } \\ \hline 84 \end{array} \right.$
A's gain = $\frac{84}{54\frac{1}{2} + 84}$ of 8047 = \$1848; ∴ B's = \$1199.
9. To gain 10 per cent. per annum the broker's \$375.80 must become, at the end of the 75 days, $375.80 + \frac{75}{36500}$ of 10 of 875.80 = \$388.52. And the present value of this for 185 days at 8 per cent. = $\frac{100}{102\frac{1}{2}}$ of 388.52 = \$372.50 +.
10. Value = $\frac{\{(18)^2 - (12\frac{1}{2})^2\} 8\frac{1}{2}}{144} \times 864 \times 3 \times 62\frac{1}{2} \times 7.77 \times \frac{85.10}{2000} = \$6147.81.$

ALGEBRA.

TIME—TWO HOURS.

Examiner—J. C. GLASHAN.

Values.

- 8 1. Find the value of $3x^5 + 54x^4 + 50x^3 - 19x^2 - 35x - 18$, when $x = -17.$
- 8 2. Demonstrate the identities:
(a) $(5m^2 + 4mn + n^2)^2 - (3m^2 + 4mn + n^2)^2 = 4m^2(2m + n)^2.$
(b) $(a+b+c)(ab+bc+ca) - abc = (a+b)(b+c)(c+a).$
(c) $(a-b)(c-d) + (b-c)(a-d) + (c-a)(b-d) = 0.$
- 8 3. Divide $(m^2 + an^2)(x^2 + ay^2) - a(nx - my)^2$ by $mx + any.$

Values.

- 8 4. Prove that if from the square of the sum of two numbers there be taken four times their product, the remainder is a square.
5. Solve
8 (a) $(x-1)(x-2) - (x-3)(x-4) = 3.$
8 (b) $\frac{2}{x-1} + \frac{8}{x-2} = \frac{8}{x^2 - 3x + 2}.$
8 (c) $(x-a)(b-c) + (x-b)(c-a) + (x-c)(a-b) = x - a - b - c.$
- 10 6. What value of x will make $x^2 + 2ax + b^2$ the square of $x + c$? What is the result when $a = b = c$?
- 10 7. A man is thrice as old as his son, five years ago he was four times as old; how old is he?

SOLUTIONS.

1. Dividing by $x + 17$, we see the expression equals $(x + 17)(3x^4 + 3x^3 - x^2 - 2x - 1) - 1$, and when $x = -17$, the first factor equals zero, and expression becomes $-1.$
2. (a) $= \{m^2 + (2m + n)^2\}^2 - \{-m^2 + (2m + n)^2\}^2 = 4m^2(2m + n)^2.$
'b) If $-b$ be written for a in the left hand side, it vanishes, so that $a + b$ is a factor of that side; and then by symmetry $b + c$ and $c + a$ must also be factors. This side being of three dimensions must therefore equal $K(a + b)(b + c)(c + a)$, where K is some quantity independent of a, b and $c.$ To find it let $a = b = c = 1$; ∴ $K = 1$, and identity is established.
(c) Putting $a = 0$ in the left hand side, it vanishes. And from the symmetrical way in which a, b and c are involved, it would therefore vanish for $b = 0$ and $c = 0.$ Hence abc would appear to be a factor; but this is impossible since the expression is of only two dimensions. It must therefore vanish for all values of the letters involved, i.e., it is identically equal to zero.
3. Dividend = $m^2x^2 + a(n^2x^2 + m^2y^2) + a^2n^2y^2 - a(n^2x^2 + m^2y^2) + 2amny = (mx + any)^2$; ∴ quotient = $mx + any.$
4. Let a, b be the numbers. Then $(a+b)^2 - 4ab = (a-b)^2$, a square.
5. (a), 3½. (b), 3. (c). The left hand member of the equation is evidently identically equal to zero, being in fact the same as (c) in question 2, with x for $d.$ Hence equation becomes $0 = x - a - b - c$, or $x = a + b + c.$
6. $x^2 + 2ax + b^2 = x^2 + 2cx + c^2$, or $x = \frac{b^2 - c^2}{2(c-a)}.$ If $a = b = c$, x assumes the indeterminate form $\frac{0}{0}$, i.e., x may have any value, the two expressions $x^2 + 2ax + b^2, x^2 + 2cx + c^2$ being identical, and therefore equal for all values of $x.$
7. If x be present age of father, equation is $x - 5 = 4\left(\frac{x}{3} - 5\right);$ ∴ $x = 45.$

EUCLID.

TIME—TWO HOURS.

Examiner—JOHN J. TILLEY.

N.B.—Eight questions to count a full paper; value, 12½ for each.

1. (a) Define Scalene Triangle, Point, Straight Line, Square, and distinguish between Problem and Theorem, Direct and Indirect demonstrations.
(b) What propositions in Euclid, Book I, are proved by the latter method?
2. If one side of a triangle be produced the exterior angle is greater than either of the interior opposite angles. Give full proof for one exterior angle.

- 3. The greater angle of every triangle has the greater side opposite to it.
- 4. The straight lines which join the extremities of two equal and parallel straight lines towards the same parts, are also themselves equal and parallel.
- 5. Equal triangles on the same base and on the same side of it are between the same parallels.
- 6. To describe a parallelogram equal to a given rectilineal figure, and having one of its angles equal to a given rectilineal angle.
- 7. The difference between any two sides of a triangle is less than the third side.
- 8. From a given point draw a line making equal angles with two given lines.
- 9. Straight lines bisecting two adjacent angles of a parallelogram intersect at right angles.

SOLUTIONS.

- 1. (b). Converse propositions. The 48th, however, a converse proposition, has a direct demonstration.
- 7. If a, b, c be the sides $c < a + b$; $\therefore c - a < b$, &c.
- 8. If the two given lines be parallel, through the given point draw a line perpendicular to them; if not, draw a line bisecting the angle between the two given lines, and through the given point draw a line at right angles to this.
- 9. Let $ABCD$ be the parallelogram, and let AE, BE bisect the angles at A and B . Then DAB, ABC being equal to two right angles, EAB, ABE are equal to one right angle, and therefore AEB is a right angle.

FIRST CLASS TEACHERS.

ARITHMETIC.

TIME—THREE HOURS.

Examiner—J. A. McLELLAN, LL.D.

- 1. Extract the square root of .000997199881 to six decimal places, and reduce to its simplest form

$$\frac{\sqrt[2]{(8.43) + \sqrt[2]{(.02744)}}}{\sqrt[2]{(270)} - \sqrt[2]{(.08)}}$$
- 2. A cistern holding 1299 gallons is filled by 3 taps, A, B, C , in 30 minutes; A conveys 10 gallons more than B every 2½ minutes, and C 8 gallons less than B in the same time: how much does each supply per minute?
- 3. At the English Mint 1869 sovereigns are coined from 40 lbs. Troy of standard gold, which is 22 carats fine, and at the French Mint 155 twenty-franc pieces are coined from 2.2072 lbs. (avoirdupois) of gold 9½ % fine. The value of the alloy being neglected, find the number of francs in a sovereign, correct to three places of decimals.
- 4. Two men form a partnership, A contributing \$5500, and B \$4500; it is agreed that each shall receive 7½ % of the profits for managing the business, and that the remainder shall be divided according to the stocks and times of investment; at the end of 10 months B puts in \$2000 additional capital, but ceases to aid in the management, and agrees that A shall thenceforth receive 15 % of the profits for managing the business; at the end of 12 months from the time of starting, the profits are found to be \$4000: how much of this should each receive?
- 5. $\log 2 = .3010300, \log 3 = .4771213$, find \log of .0000025. In how many years will \$100 exceed \$1000 at 8 per cent. per annum compound interest?
- 6. A grocer sells coffee at a cash price which is 33½ % above cost; he also sells on credit, giving 8 lbs. for what would buy 9 lbs. if paid in cash: how much per cent. above cost is his credit price?
- 7. Assuming 19 as the specific gravity of gold, and 2.6 as the s.g. of quartz, find the quantity of gold per oz. in a mixture whose s.g. is 7.

- 8. A dealer purchased on six months' credit, goods to the amount of \$520; after keeping them three months he sold them on credit for 677.70, and allowing money to be worth 8 %, he found that he had made 16½ % on the transaction; on what term of credit did he sell the goods?
- 9. A broker sold a farm for \$6000, charging a certain rate of commission, and invested the proceeds less his charges on both transactions in city property, receiving on the latter a commission of 4 % on the price paid; his entire commission was \$975: what rate did he charge on the sale of the farm?
- 10. (1) A field in the form of a sector of a circle has its radius 80 yards, and its angle $112^\circ 30'$: find its area and the length of its arc.
 (2) The sides of a quadrilateral are 3, 4, 5, and 6, the first and last being parallel: find its area.

SOLUTIONS.

- 1. $.081578 + \frac{7\sqrt[3]{.01} + 1.4\sqrt[3]{.01}}{3\sqrt[3]{10} - 2\sqrt[3]{10}} = \sqrt[3]{.001} = .8$.
- 2. A conveys 120 more than B in 30 minutes.
 C " " " " " " " " " " " "
 C " " " " " " " " " " " "
 \therefore all convey 3 times what B does + 24, = 1299;
 $\therefore B$ conveys 425; A , 545; C , 329: or per minute $14\frac{1}{3}, 18\frac{1}{3}, 10\frac{2}{3}$.
- 3. One sov. contains $\frac{40 \times 5760}{1869} \times \frac{22}{24}$ grains pure gold.
 One franc " $\frac{2.2072 \times 7000}{155 \times 20} \times \frac{90}{100}$ " "
 \therefore one sov. is equivalent to $\frac{40 \times 5760}{1869} \times \frac{22}{24} \times \frac{155 \times 20}{2.2072 \times 7000} \times \frac{100}{90}$ francs = 25.192 +
- 4. There is 15 per cent. for management, i. e., \$600, and A 's share of this is \$350, and B 's \$250. A has \$5500 in for 12 months, —equivalent to 66000 for 1 month; B has in 4500 for 12 months and 2000 for two months, —equivalent to 58000 for 1 month. Dividing the 3400 left after deducting 600 for management, in the ratio of 66 : 58, we see that A will receive \$1809.67½, and B , \$1590.32½. Hence A 's share = 1809.67½ + 350 = \$2159.67½, and B 's share = 1590.32½ + 250 = \$1840.82½.
- 5. $.0000025 = \frac{25}{10^7} = \frac{1}{2 \cdot 10^5}$; $\therefore \log .0000025 = \log \frac{1}{2 \cdot 10^5} = -2 \log 2 - 5 = -.60206 - 5 = \bar{6}.39794$.
 If n be the number of years, $100(1.08)^n > 1000$, or $n(2 \log 2 + 3 \log 3 - 2) > 1$; $n > \frac{1}{.0394299} > 29. +$; $\therefore n = 30$.
- 6. If 100 be cost price, 133½ is cash price; also credit price = ¾ of cash price; \therefore credit price = ¾ of 133½ = 150, i. e., 50 per cent. above cash price.
- 7. Conceive the ounces divided into so many parts (bulk) of gold and so many quartz, and let unity be the weight of a quantity of water equal in bulk to one of the parts. Then $19 \times$ number of parts gold + $2.6 \times$ number of parts quartz = $7 \times$ number of parts gold + $7 \times$ number of parts quartz; or ratio of gold to quartz = $\frac{1}{11}$, or $\frac{2}{22}$ oz.
- 8. Present worth of 520 for 3 months = $\frac{100}{102} \times 520$, and this with 16½ per cent. added = $\frac{467}{102} \times \frac{100}{102} \times 520$. And the question is in what time will this amount to 677.70 at 8 per cent.
 $\frac{677.70 - \frac{467}{102} \times \frac{100}{102} \times 520}{\frac{467}{102} \times \frac{100}{102} \times 520 \times \frac{1}{102}} = \text{Ans. in years.}$
- 9. For simplicity suppose 100 the price of the farm; then the entire commission is 37½. The broker first receives the unknown percentage. 4 % on the price paid is 4 out of every 104 entrusted.

to him; so that he next receives $\frac{1}{100}$ of 100 less $\frac{1}{100}$ of the unknown percentage already received. Hence

$$\begin{aligned} \text{percentage} + \frac{1}{100} \text{ of } 100 - \frac{1}{100} \text{ of percentage} &= \frac{37}{100}, \\ \frac{1}{100} \text{ of percentage} &= \frac{37}{100} - \frac{1}{100}, \\ \text{percentage} &= \frac{1}{100} \text{ of } \frac{36}{99}, \\ &= 2\frac{2}{3}. \end{aligned}$$

10. (1) Area = $\frac{1}{300}$ of $(80) \times 3.14159 = 628.18$ sq. yds.
Arc = $\frac{1}{300}$ of $160 \times 3.14159 = 157.0795$ yds.

For ratio $\frac{1}{300}$ see Euc. Prop. 83, Bk. VI.

(2) Let $ABCD$ be the quadrilateral, $AB = 8, BC = 5, CD = 6, DA = 4$. Draw AE parallel to BC , meeting CD in E . Then the sides of the triangle ADE being 3, 4, 5, since $5^2 = 3^2 + 4^2$, ADE is a right angle; \therefore area = $\frac{1}{2}(3+6) \times 4 = 18$.

ALGEBRA.

TIME—THREE HOURS.

Examiner—J. A. McLELLAN, LL.D.

NOTE.—Ten questions reckoned a full paper.

1. Prove that $2 \{ (a-b)^2 + (b-c)^2 + (c-a)^2 \} = 7(a-b)(b-c)(c-a) \{ (a-b)^2 + (b-c)^2 + (c-a)^2 \}$.

2. Extract the square root of $ab - 2a\sqrt{ab - a^2}$, and find the simplest real forms of the expression

$$\sqrt{8 + 4\sqrt{-1}} + \sqrt{8 - 4\sqrt{-1}}.$$

3. Solve the equations:

(1). $2x^4 + x^3 - 11x^2 + x + 2 = 0$.

(2). $x^2 + y^2 + z^2 = a^2$

$yz + zx + xy = b^2$

$x + y + z = c$.

(3). $\sqrt{x^2 + 5x + 4} + \sqrt{x^2 + 3x - 4} = x + 4$.

4. Prove that the number of positive integral solutions of the equation $ax + by = c$ cannot exceed $\frac{c}{ab} + 1$.

In how many ways may £11 15s. be paid in half-guineas and half-crowns.

5. If $xy = ab(a + b)$, and $x^2 - xy + y^2 = a^2 + b^2$, shew that

$$\left(\frac{x}{a} - \frac{y}{b} \right) \left(\frac{x}{b} - \frac{y}{a} \right) = 0.$$

6. Given the sum of an arithmetical series, the first term, and the common difference, shew how to find the number of terms. Explain the negative result. Ex. How many terms of the series 6, 10, 14, &c., amount to 96?

7. Find the relation between p and q , and $x^3 + px + q = 0$ has two equal roots, and determine the values of m which will make $x^3 + max + a^3$ a factor of $x^4 - ax^3 + a^2x^2 - a^3x + a^4$.

8. In the scale of relation in which the radix is r shew that the sum of the digits divided by $r-1$ gives the same remainder as the number itself divided by $r-1$.

9. Assuming the Binomial Theorem for a positive integral index, prove it in the case of the index being a positive fraction.

Shew that the sum of the squares of the co-efficients in the expansion of $(1+x)^n$ is $\frac{2n}{n} \div \left(\frac{n}{n} \right)^2$, n being a positive integer.

10. Sum the following series:—

(1.) $1 + 3x + 5x^2 + 7x^3 + \dots$ to n terms.

(2). $\frac{1}{8 \times 8} + \frac{1}{8 \times 18} + \dots$ to n terms, and to infinity.

11. Shew that $\begin{vmatrix} bc & -ac & -ab \\ h^2 - c^2 & a^2 + 2ac & a^2 - 2ab \\ c^2 & c^2 & (a+b)^2 \end{vmatrix}$ is

divisible by $abc(a+b+c)$.

SOLUTIONS.

1. Put x, y, z for $a-b, b-c, c-a$, and then shew that $x+y+z$ is a factor of $2(x^2+y^2+z^2) - 7xyz(x^2+y^2+z^2)$. But $x+y+z = a-b+b-c+c-a = 0$. Hence given expression is an identity.

2. (1) $= a - \sqrt{ab - a^2}$.

(2) $= 2 + \sqrt{-1} + 2 - \sqrt{-1} = 4$.

3. (1) $= (2x^2 - 5x + 2)(x^2 + 3x + 1) = 0$; or $(x-2)(2x-1)(x^2 + 3x + 1) = 0$; i.e., $x = 2$, or $\frac{1}{2}$, or $\frac{-3 \pm \sqrt{5}}{2}$. Or it may be solved as a reciprocal equation.

(2) From first two equations, $x+y+z = \pm\sqrt{a^2+2b^2}$; also, $x+y-z = c$. $\therefore z = \frac{1}{2} \{ \pm\sqrt{a^2+2b^2} - c \}$, and thence x and y may be found.

(3) $\sqrt{x+4}$ is a factor, giving $x = -4$ as one root. Dividing through by $\sqrt{x+4}$, we have, to find other roots, $\sqrt{x+1} + \sqrt{x-1} = \sqrt{x+4}$, or $2x + 2\sqrt{x^2-1} = x+4$, or $x = \frac{-4 \pm 2\sqrt{13}}{3}$.

4. (1) Book-work.

(2) Let x be number of half guineas; y , number of half crowns. Then $10\frac{1}{2}x + 2\frac{1}{2}y = 235, 21x + 5y = 470$. Also, $21 \times 1 - 5 \times 4 = 1$; $\therefore 21 \times 470 - 5 \times 1880 = 470$; $\therefore 21(x-470) + 5(y+1880) = 0$, or with usual notation, $-5t = x-470, 21t = y+1880$; thence $x = 20, 15, 10, 5$, or 0 ; and corresponding values of y are $10, 31, 52, 78, 94$.

5. From given equations, $\frac{x}{y} - 1 + \frac{y}{x} = \frac{a}{b} - 1 + \frac{b}{a}$, or $\left(\frac{x}{y}\right)^2 - \left(\frac{a}{b} + \frac{b}{a}\right)\frac{x}{y} + 1 = 0$, or $\left(\frac{x}{y} - \frac{a}{b}\right)\left(\frac{x}{y} - \frac{b}{a}\right) = 0$, or $\left(\frac{x}{a} - \frac{y}{b}\right)\left(\frac{x}{b} - \frac{y}{a}\right) = 0$.

6. The values of n are 6 and -8 . The first has reference to the series of 6, 10, 26. The negative value has reference to the series obtained by starting with 26 and counting backwards 8 terms, i.e., the series $-2, 2, 6, \dots, 26$.

7. (1). Let a, a, c be the roots, then from relations between roots and co-efficients (See May number of the JOURNAL), $2a + c = 0, a^2 + 2ac = p, -a^2c = q$; $\therefore c = -2a$; $\therefore -3a^2 = p$;

$$2a^3 = q, \text{ or } \left(\frac{q}{2}\right)^2 = \left(-\frac{p}{3}\right)^3.$$

(2). Let $x^3 + px + a^3$ be the other factor, then multiplying $x^3 + px + a^3$ by $x^3 + mx + a^3$ and equating the co-efficients with those of corresponding powers of $x^4 - ax^3 + \dots$, we have $m + p = -1, mp = -1$, thence $m = \frac{-1 \pm \sqrt{5}}{2}$.

8. Book-work.

9. Let $(1+x)^n = p_0 + p_1x + \dots + p_nx^n$. Then also $(x+1)^n = p_0x^n + p_1x^{n-1} + \dots + p^n$.

And these are identities. Hence if we multiply them together, co-efficients of corresponding powers of x on both sides will be equal. On right hand side co-efficient of x^n is sum of squares of co-efficients. On left hand side, co-efficient of x^n in $(1+x)^{2n}$ is

$$\frac{2n(2n-1)\dots(2n-n+1)}{\binom{2n}{n}} = \frac{2n}{\binom{2n}{n}}.$$

10. (1) Let $S = 1 + 3x + 5x^2 + 7x^3 + \dots + (2n-9)x^{n-2} + (2n-1)x^{n-1}$.

$$\therefore Sx = x + 3x^2 + 5x^3 + \dots + (2n-5)x^{n-2} + (2n-3)x^{n-1} + (2n-1)x^n.$$

$$\therefore S(1-x) = 1 + 2\{x + x^2 + x^3 + \dots + x^{n-2} + x^{n-1}\} - (2n-1)x^n.$$

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

$$S = \frac{2x^n - x - 1}{(x-1)^2} - (2n-1)\frac{x^n}{x-1}.$$

(2) Let $S = \frac{1}{3} + \frac{1}{8} + \frac{1}{13} + \dots + \frac{1}{5n-2} + \frac{1}{5n+3}$.

$$\therefore S - \frac{1}{9} = \frac{1}{8} + \frac{1}{18} + \frac{1}{18} + \dots + \frac{1}{5n+8}$$

$$\therefore \frac{1}{9} = 5 \left\{ \frac{1}{8 \cdot 8} + \frac{1}{8 \cdot 18} + \dots + \frac{1}{(5n-2)(5n+8)} \right\} + \frac{1}{5n+8}$$

$$= 5 \text{ times sum of series} + \frac{1}{5n+8}$$

$$\text{Sum of series} = \frac{1}{15} - \frac{1}{5(5n+8)}$$

Sum ad. inf. = $\frac{1}{15}$, second fraction disappearing when n becomes infinite.

11. Putting $a=0$, the determinant becomes

$$\begin{vmatrix} bc, & 0, & 0 \\ b^2 - c^2, & 0, & 0 \\ c^2, & c^2, & b^2 \end{vmatrix}$$

which is evidently zero, each minor determinant vanishing. Therefore a is a factor.

Similarly, b and c are factors. Again putting $a+b$ for $-c$, the determinant becomes

$$\begin{vmatrix} -b(a+b), & a(a+b), & -ab \\ -a^2 - 2ab, & -a^2 - 2ab, & -a^2 - 2ab \\ c^2, & c^2, & c^2 \end{vmatrix}$$

which is evidently also zero, since the minor determinants

$$\begin{vmatrix} -a^2 - 2ab, & -a^2 - 2ab \\ c^2, & c^2 \end{vmatrix} \text{ all vanish.}$$

For information on Determinants see Loudon's and Gross's Algebras.

Communications received are held over until next month.

Practical Department.

ARITHMETIC—ITS STUDY MADE EASY AND PLEASANT.

M. M. BALDWIN, GROTON, N. Y.

What I have to advance on this subject will be condensed within the narrowest limits possible; and, as far as consistent, I prefer to let eminent scholars speak for me.

I. The subject of arithmetic itself is easily comprehended. We shall realize this if we remember—

(1.) That *unschooled* men in all ages have understood and performed its vital processes.

(2.) That there are excellent accountants among us who have never learned a rule in arithmetic; nor have they ever studied any but a child's arithmetic.

(3.) That many of our best business men have never advanced in written arithmetic beyond fractions.

II. Its fundamental principles are few and simple.

(1.) "Arithmetic is founded on Notation."—Ray's Higher Arithmetic. "When we enter into the spirit of the methods of arithmetic we perceive that they all flow clearly and simply from the very principles of Numeration and a few axioms."—Le Verrier, the great French mathematician. "Every change we make upon the *value* of a number must *increase* or *diminish* it."—Thomson's New Practical.

III. Its fundamental operations are but two; Addition and Subtraction. See Duncan's, Jamieson's and Wilson's Logic.

(1.) "Multiplication is a short method of *adding* equal numbers."—See Quackenbos's, Davis's, Thomson's and Felter's Arithmetics, Day's Recent Logic, and Rev. J. Currie, of Edinburgh Training College.

(2.) "Division is but a different kind of subtraction."—See

Wickersham's Methods, DeGraff's School Room Guide, Sheldon's Elementary Instruction and Ray's Arithmetic.

(3.) "Multiplication, Division, Involution, Evolution, etc., are only more useful because shorter methods to the same results."—Prof. Wilson, Cornell University Logic.

If things are so (and who will dispute them), why is it that pupils in all our schools spend so large a portion of their school days in the study of arithmetic? Here is one answer:

"We do not hesitate to acknowledge that the teaching of elementary mathematics has lost its former simplicity, and assumed a complicated and pretentious form which possesses no advantages and is full of inconveniences."—Professor Gillespie, Union College.

"In New England, the science of arithmetic is taught backward, beginning with reasoning instead of observation; and it is hampered with factitious difficulties, produced by a variety of *unessential* names and processes."—Ex-President Hill, Harvard University.

To restore arithmetic to its former simplicity, and to render its study easy and agreeable—

(1.) Omit from our books on this subject, or remand them to an Appendix, most or all of the following titles, which are little used in the *actual* business of life:—The English mode of numeration; most contracted methods; greatest common divisor; true remainder; different scales of notation; proof by casting out the nines and the elevens; continued fractions; periodical or circulating decimals; compound and conjoined proportion; compound interest; annuities; modes of computing interest in other states and nations; life and marine insurance; general average; stock jobbing; arbitration of exchange; alligation; permutations and combination; duodecimals; methods of analysis by position, and all those parts which treat merely of curious properties of numbers. But, care should be taken to "retain and increase those parts which furnish commercial expedients, or are essential to a thorough preparation for the actual business of life." Says Prof. DeGraff: "As the majority of pupils leave school at the average age of twelve years, they should be drilled on the subjects which they will be obliged to use through life. They should be taught to solve problems they will meet in *real* life."

(2.) "Apply the formulas of mental arithmetic to the solution of questions in written arithmetic."—Felter's Arithmetic. "There should be no difference between the analysis of a problem in mental and written arithmetic."—DeGraff.

(3.) All mere *rote* teaching and learning should, at once, be abandoned. Long ago said Montaigne: "To know by rote is no knowledge."

(4.) Mere *rule* teaching should also be abandoned. Said Locke, two hundred years ago: "Nobody has made anything by hearing of rules, or laying them up in his memory. *Practice* must settle the habit of doing, without reflecting on the rule." Said Diesterweg, the great German educator: "In arithmetic, prescribed rules and formulas are to be entirely annihilated. No operation not understood in its reason should be performed or learned." Warren Colburn taught how many problems may be solved without having "learnt the rules." Said Horace Mann, who visited the German schools some years ago: "It struck me that the main difference between their mode of teaching arithmetic and ours consists in their beginning earlier, continuing practice in the elements much longer, and in requiring a more thorough analysis of all questions. *There were no abstract rules or unintelligible forms of words given out to be committed to memory.*"—School Bulletin.

THE EDUCATIONAL PLATFORM.

When politicians desire to produce a change which they claim will effect an improvement in the physical well-being of the people, they state with clearness the objects at which they aim. They fix a platform and organize all who agree to it on that platform. This platform must announce practicable desires and views, or nothing will result. In this world, things do not right themselves; those who compose the educational party must agree upon certain principles and disseminate them; must write and speak upon them; have campaign documents written to show their importance, and finally never cease discussion until victory is reached. Consider the following:

1. That only those persons who have demonstrated by experience their ability shall be employed as teachers. REMARKS.—That is, the present plan of judging whether a person has the power to teach, by the scholarship he may have, is radically wrong, always has been and always will be. How a successful experience shall be gained is the business of normal and training schools. But an experience must be gained, and a successful one, too. The teacher is allowed in the school room for the benefit of the children solely.

2. That when a teacher has been appointed to a place, he shall have a guarantee of permanence. REMARKS.—The present plan of changing teachers at the end of each year, if not each session, grows out of the fact, mainly, that inexperienced persons are employed—the parents naturally are tired of the experimenting, and so are the scholars; besides that, there is far too much dictation by meddling parents and politicians. What other laborers are so kicked about? Not the clerks nor the kitchen girls. It is plain that some body of persons besides the “trustees” should have a word to say on this question. To put a man in the school in the winter and a woman in the summer, is another phase of this ridiculous business. This movableness is the sure means of driving away good teachers and keeping those who have little spirit and dignity. Away with it!

3. Superintendents of schools must be men or women who have had at least five years of successful experience as teachers and possess a state certificate, or diploma from a normal school or college. REMARKS.—When these persons are appointed on account of their fitness, dignity will be given to the whole business. Put in a seven-by-nine superintendent because he is a Democrat or Republican who cannot get any other office, and all the schools suffer, and the whole cause suffers. Yet this is constantly done. The case is a rare exception where these officers are not chosen by political influence; if they are good men it is accidental. A rascally state of things for the nineteenth century!

4. That the normal schools, where the science and art of education can be learned, should be increased to an extent sufficient to supply all of the schools of the State with teachers. REMARKS.—The connection of high schools or academic departments with normal schools, while once necessary, is now needed no longer. Let those who want to teach prepare themselves on the subjects which they will be required to teach, so that they can give their time to study the Art and Science of Teaching. Normal schools should be increased. New York State needs twenty-five such schools, and it could carry them on with \$250,000. It now spends \$160,000 on eight. Three or four men would manage such a school splendidly if the Academic Departments were cut off. There is no objection to these existing in the same building for the use of the locality. What is wanted is that each normal school shall furnish us with teachers, not with those who have been drilled on arithmetic, geography, etc. Other schools can do that as well or even better. Our schools must get up higher if they intend to do the good they might do.

5. The teachers must receive a fair salary, to be paid in monthly instalments. REMARKS.—The value the people set on education is measured by what they pay their teacher—all long-winded talks and snuffing to the contrary notwithstanding. Teachers are now meanly paid. Trinity Church pays its head gardener \$2,500—the head teacher of its schools \$2,000! No country can prosper that under-values and under-pays its teachers. It would aid very much to compare the amounts paid per scholar, and hence these should be reported. In other words, one town pays \$12 per scholar per annum, another \$24. Why this difference? A quotation of rates will assist many a stingy district to know how much it can afford to pay.

6. There must be ability and performance in all the offices from the State Superintendent down. REMARKS.—One official hardly becomes acquainted with his duties before another intrigues for his place. Hence there is no persistent nor long-continued effort. All is in a state of change. It resembles the child's planting a seed and digging it up in a few days to see if it has grown!

7. The teachers and friends of education must each and all take hold of the work of organizing the educational party of the country and direct its movements. REMARKS.—There are a million of adult persons who are interested in the welfare of our public schools. But many never have moved an atom to help forward education. They will rail because they get no larger salaries, but they will do absolutely nothing to increase that public sentiment that regulates salaries. The teachers should at once begin to wake up from their Rip Van Winkle sleep, and begin to act.—*N. Y. School Journal.*

DEVELOPING A TASTE FOR ENGLISH LITERATURE.

Oliver Optic is to many a lad a greater man than Scott or Dickens, and Beadle's Dime Novels will be eagerly read by him, while Shakespeare, Homer, Milton, Dante, and Macaulay are resting, unmolested and dusty, upon the library shelf. There was a time when love of reading in a child might be regarded as a hopeful sign of intellectual capacity. When books were few and costly; when very few of them were in any way intended for children in particular; when there were no children's papers or magazines, a child that was inclined to reading was compelled, perforce, to grapple with something which was considered worthy of mature thought. In reading, the mind was, of necessity, lifted somewhat beyond a childish range of elevation; and so, while many were repelled, some from pure affection, became, as a matter of course, thinkers and reasoners.

But at the present time it is not safe to say that a love of reading is a hopeful sign, or a proof of a promising intellect. One must know what is read and how, before speaking with anything like approval of a craving appetite for printed matter.

In general, as people read more, they profit less. There are hundreds who take their daily novel almost as the toper does his drams, and almost as ruinously. There are others to whom the daily paper, even of the best kind, is a positive injury, because of its excessive demand upon their time.

Our schools have done very much to create this appetite for reading. Are they doing what they ought to direct their pupils to healthful food for satisfying it? Are they in a position to do more without letting slip some of those things which the public seem now to demand? If they can do this work, how?

All agree that it is desirable to do so. All admit that a school education ought to impart to its recipient something of taste to incline him to good reading, judgment in selecting books, ability to appreciate and enjoy them, and knowledge of the art of using them. All admit that books are a most important factor in that

social and moral education that reaches beyond school life, and is more important than the ordinary lesson work. Some who know by happy experience the power, the comfort, the restfulness of a good book, long, with a spirit of true benevolence, to transmit their own delight to their pupils. But objections are made to any effort; difficulties are suggested; it is said that we have neither the time, the books, nor the public sympathy which are necessary to successful work.

In the first place, as I have already said, reading must receive more attention in the lower grades. Pupils should read more in a month than they now do in a year. They should read more stories, and fewer detached sentences. Fortunately we have good juvenile magazines, published monthly, possessing the important requisites of good paper, clear type, choice engravings, and interesting matter, ranging from the charming little *Nursery* and *Wide Awake* up to *St. Nicholas*. There are several schools which are using these magazines with excellent results and with trifling expense. In using these books the aim of the teacher should be largely to make the pupils master the sense fully and to read in an easy, natural way.

I wonder if it has ever occurred to my fellow-teachers that all the reading matter of a whole series of ordinary readers, as high up as the Fifth, is actually less than that of an ordinary eight-page, first-class daily paper. I believe this to be the fact. Now, as far as the comprehension of the existing world is concerned, it would be far better, educationally, to read one newspaper than four or five readers. At some time in the latter part of my school course, I frequently introduce the daily paper, as a regular lesson, and have spent a month upon a single copy, so much of study is required to appreciate it fully.

The proper place for a school reader seems to me to be after the pupils have learned to read common stories fluently and naturally, and to think about the sense of what they read; so as to be able to tell correctly in their own words, either orally or by writing, what they have read. At that time there can be taken up a reader which contains a treatise upon the principles of good reading, something upon elementary phonics, and pieces selected partly for their elocutionary value; such as are suitable for drill pieces, both for thought and for expression. Then, for a time, a well-selected school library should be used in place of a reader. Each pupil should read one book, and prepare himself to report upon it to the class. Class reading should give place to class listening and criticism. The books will, of course, be exchanged, and read in time by most or all of the class. They will mutually correct statements of facts as to the narratives, and unconsciously acquire much of valuable regard to the important subject of successful presentation.

At this point the teacher will have enough to do. He must train the class to notice in the books, read any inconsistencies, contradictions, or absurdities. He must test their judgment of probabilities. He must draw out their thoughts upon the characters presented, upon their fidelity to nature, whether they are the counterparts of those people whom they know and see. The language put into the mouth of a character must be tested, to decide whether it is natural or not. By talks upon books, by comparison and judicious questioning, a class of intelligent pupils can be led on to make judgments of value, and to acquire the habit of deliberate and careful study of what they read. Knowing that they are to be held accountable, they will read, not merely for the story, but to grasp and retain plot, characters, language style and moral. If any one objects to the cost of this, it may be answered that books suitable for this use cost little, if any, more than school readers, and will serve for several generations of pupils. A year of library reading, with general criticism, may be followed by the

reading of some standard author with critical study. Briefly I would say, Read with a class nothing that is not classic, and read exhaustively; with the closest grammatical analysis; with attention to position of words and arrangement of sentences as affecting clearness and emphasis; with development of all figures of speech; with study of all geographical, historical, biographical and mythological allusions; with special attention to derivation and composition of words; with study of synonyms, inquiring closely as to the reason why the author chooses one word rather than another; and, above all, seeking to "read between the lines" as the phrase is; to see what fine and subtle thought may lurk in a seeming riddle or an apparent paradox. Such teaching is twice blessed—"it blesseth him that gives and him that takes." It is because of such close and persistent study that some of the ancient classics have become such a power among men—influencing, perhaps unconsciously, so much of modern thought, and pervading so much of modern literature.

After this work is done, a text-book in literature may be introduced to advantage, and the pupil may be made familiar with the great names in our own literature and that of the world. He is prepared to recognize that it is unpardonable in a fairly educated person not to know something of those great thinkers whose books have lighted up their respective centuries; "those dead, but sceptred sovereigns, who still rule our spirits from their graves." Great names in literature impress him now, because he has learned that there is a greatness of mind displayed in clear thought, and in successful marshalling of words, as well as in planning campaigns and marshalling armies. He has learned that a book may be more powerful than an army; that a nobler immortality may be won by the pen than by the sword. Therefore he is willing to study authors as he studies other great men.

The most common fault in this study is the attempt to grasp too much—to fix in the memory names of unimportant books and of obscure authors. This should be most studiously avoided. Cut down unflinchingly the briefest text book, if it mentions a single author who is not really a man of mark and influence.

It seems to me a waste of time to attempt to teach historic English Literature without a previous study of English History. The significance and power of many books is to a degree lost, unless one knows the time which either called them forth, or gave them form and shape.—*Chicago Educational Weekly*.

SCIENCE NOTES.

RAPIDITY OF THOUGHT.—By way of ascertaining just how fast we can think, experiments, with the use of several forms of apparatus, have been made by scientific men. In all the experiments the time required for a simple thought was never less than a fortieth of a second. In other words the mind can perform not more than 2,400 simple acts a minute, 1,500 a minute being the rate for middle age. From these figures it will be seen how absurd are many popular notions in regard to the fleetness of thought, how exaggerated are the terrors of remorseful memory that moralists have invented for the moment of dying. And we may reasonably "discount" all the stories told by men saved from drowning, cut down before death by hanging, or rescued from sudden peril from other causes. No doubt a man may think of a great multitude of experiences, good or bad, in a few minutes; but that the thoughts and emotions of a long life may surge through the mind during the seconds of asphyxiation is manifestly impossible.

—From Havre comes the tidings that there need be no more sea sickness. A number of persons, it is said, have repeatedly been taken on board the steam-tug *L'Avant-port*, and have put out to sea just where they were most likely to meet with severe tests, and it has been found that those who were provided with a certain electro-magnetic girdle were entirely exempted from sea-sickness, while those who became sea-sick without this appliance were almost

instantaneously cured by its application. The girdle, it is explained, tends to check the derangement of the diaphragm.—*Barnes' Educational Monthly*.

—Prof. Marsh, of Yale, has been finding more toothed birds among the Wyoming and Colorado fossils, besides the petrified remains of 300 or 400 dinosaurs, a mammoth kangaroo of the crocodile order, sometimes 100 feet long, and about 1,000 pterodactyles, a sort of contemporary flying dragon, with a spread of wing 30 or 40 feet.

BOTANY—The Italian botanist, Professor Caruel, has recently proposed to divide the vegetable kingdom into five groups, setting aside the ancient classification. His groups are as follows: 1. Phanerogamia or flowery plants, divided primarily into Monocotyledones and dicotyledones. 2. Schistogamia, including the characeae only. 3. Prothallogamia, continuous with Vascular Cryptogamia and divisible into heterosporic and isosporic. 4. Bryrogamia, synonymous with muscinæ, and divided into musci and hepaticæ. 5. Gymnogamia, corresponding to thallophyta, an assemblage which Caruel believes will ultimately be broken up into several primary groups.

—Professor Pierce, of Harvard College, has startled the scientific world by declaring that far beyond the uttermost planet bounding our solar system is a vast spherical shell of matter broken up into small fragments, from which come the meteors. This shell he calls the home of the meteors. He gives the reasons why some such theory must be adopted to explain the movements of the planets and comets, and the persistence of the constant amount of heat given out from the sun. The hitherto accepted theory that comets may be, and some necessarily are, strangers to our system, he rejects.

SCIENTIFIC EDUCATION.—It would certainly be a great boon to the world if the general level of scientific education could be raised, so that each young man or young woman, when he or she issues from school-doors, should have enough definite knowledge of the great laws of the physical universe to instantly denounce blue-glass theories and attempts at perpetual motion, not from the pride of knowledge, but from the feeling that error, credulity, and superstition should be combatted with truth.—*Prof. John Troubridge, in Popular Science Monthly*.

MICROSCOPIC STUDY OF THE LEAVES OF PLANTS.—Dr. R. H. Ward, of Troy, describes a method by which much of their structure may be preserved. A piece of dry leaf is laid on a thin piece of platinum, or mica, covered with mica or colored glass, and heated on an alcohol lamp until the organic matter is burnt out, and the mineral matter or ash remains. This is dropped on a slide wet with turpentine, and very carefully mounted in soft balsam. The preparations show the construction of the parenchyma, veins, epidermis, stomata, and hairs with great beauty and distinctness.

ONTARIO TEACHERS' ASSOCIATION.

ANNUAL CONVENTION.

The nineteenth annual Convention of the Ontario Teachers' Association opened on Tuesday, August 12th, in the public hall of the Normal School; the President, Mr. Jas. A. McLellan, M.A., LL.D., in the chair.

The proceedings were opened with the reading of a selection from the Bible and prayer by the Secretary, Mr. Jas. Hughes.

TREASURER'S REPORT.

The Treasurer, Mr. F. S. Spence, presented his report for the year 1878-9, which showed a balance to the credit of the Association of \$158.97.

On motion, the report was referred to Messrs. Wm. McIntosh, A. McMurchy, M. A., and H. Dickenson for audit.

MINUTE SECRETARY.

Mr. Andrew Hendry, of Toronto, was appointed Minute Secretary for the Convention.

OBITUARY.

Mr. S. McAllister referred to the death, since the last Convention, of Mr. Archibald McCallum, M.A., of Hamilton, one of the most esteemed members of the Association, and moved, "That

Messrs. McMurchy, D. Johnson, and McIntosh be a Committee to draft a suitable resolution." Carried.

The Association then adjourned till the afternoon.

AFTERNOON SESSION.

The President took the chair at two o'clock.

CONSTITUTION OF THE ASSOCIATION.

Mr. Hughes presented the report of the Committee appointed last year to consider the advisability of making the Association representative, recommending in favor of that change, and the appointment of a Committee for that purpose to report during the present meeting of the Association. He stated that though the Committee did not recommend any specific arrangement, their opinion generally was that each inspector might be a representative to his own section and to the general Association; that all High School masters and all High School teachers might be representatives as at present in the High School section, but only head-masters of High Schools or Collegiate Institutes representatives to the general Association; that all Public School teachers might continue to be members of the Public School section, but that only two Public School teachers from each inspectorial district should be representatives to the general Association. This would leave the sections as they are, and give the general Association a membership of 344 members—about 80 inspectors, 104 High School masters, and 160 Public School teachers.

Mr. D. Johnson, Cobourg, approved of the report, because the Association would no longer be open to the imputation of being a Toronto Association, and the Public Schools of the country would be more fairly represented than they are at present.

Mr. Boyle, of Elora, expressed himself warmly in favour of a representative Association. He believed it was the desire of all the Associations of Western Ontario that this Association should be representative in its character. If it were so every vote would be properly cast, there would be no bad ones, and it would then be the imperative duty of every local Association to send representatives. He believed the Association would be composed of delegates from every part of the Province.

The President said that all teachers might attend the meetings of the Association, but they would not be permitted to speak or vote.

Mr. McIntosh, of North Hastings, said there was unanimity as to the desirability of giving the Association a representative character. Their decisions would then carry greater force and influence in the country. But how to give a fair representation was where the difficulty lay. He thought nobody should be excluded from the privilege of discussion in the meetings of the Association.

Mr. Harvey, of Barrie, spoke in favor of the general principle, and proposed to leave the details to the Committee.

Mr. Carson, of Middlesex, thought the representatives should be elected, and not appointed under the constitution as Inspectors or High School masters.

Mr. Scarlett, of Northumberland, held that the Association must be a representative one, if it was to have its due influence on the educational affairs of the province. The money granted to local Associations by Government would enable them to pay the expenses of their delegates.

After further discussion the report was adopted, and the following Committee appointed to mature the details:—Messrs. Hughes, McMurchy, Dawson, Johnson, of Cobourg, McAllister, Dearness, Doan, Carson, Boyle, and Seath.

DISTRIBUTION OF LEGISLATIVE AND MUNICIPAL GRANTS.

Mr. R. McQueen, of Kirkwall, on behalf of the Committee on the Distribution of Legislative and Municipal Grants, Township Boards, and Equalization of Assessments, reported as follows:—

DISTRIBUTION OF LEGISLATIVE AND MUNICIPAL GRANTS.

1. That in addition to the present legislative grant to Public Schools the Government should give to every section employing a second-class Provincial certificated teacher the sum of \$10, and to every section engaging a first-class Provincial certificated teacher the sum of \$20; and that the municipality in which such teachers are employed be required to grant to each section so employing them a sum equal to that contributed by the Government.

2. That the legislative and municipal grants to townships be discontinued, and that in lieu thereof grants to inspectorial districts be made, in order that the present unequal distribution may be remedied, and that they be apportioned on basis of average attendance in the said inspectorial division.

TOWNSHIP BOARDS.

1. That it shall be the duty of the chairman of every annual meeting held in each school section to take a vote of the ratepayers then present on the matter of the establishment of Township Boards, and that a special meeting may be called at any time during the year to consider and decide upon the question, and that in all cases the matter shall be decided by a majority vote in a majority of the sections in the municipality.

2. That in the organization of every new municipality provision be made for the institution of the Township Board system in the management of its school affairs.

EQUALIZATION OF TAXATION.

That in order to equalize taxation where the system of Township Boards may not be adopted, the following amendments to the present law are recommended:

1. That the Municipal Council of each township be required to levy an equal school rate upon all the taxable property of the municipality, and to pay therefrom each year to the local trustees of each section a sum equal to at least two-thirds of the average salary of teachers in such municipality during the year then last past.

2. That sections in which more teachers than one are employed shall be entitled to receive a sum equal to two-thirds of the ordinary sectional grant for each assistant employed.

3. That each union school section shall receive from each of the municipalities out of whose territory it is formed that proportion of the ordinary sectional grant for such municipality which the equalized assessment of the portion of the section within such municipality bears to the whole equalized assessment of the section.

After some discussion,

Mr. McAllister, of Toronto, moved, "That in the opinion of this Association the most effective way of doing away with inequalities of school taxation would be the establishment of Township Boards." Carried.

Mr. McIntosh moved, "That as the distribution of the legislative grant among the minor municipalities of the Province is now made on the basis of the population returns made by the local assessors, this Association would suggest to the authorities interested the necessity that exists for taking such steps as shall ensure the accuracy of such returns." Carried.

The following delegates then reported from local Associations: Mr. Neely, South Simcoe; Mr. Knight, East Victoria; Mr. Duncan, North Essex; Mr. Johnston, Northumberland; Mr. Hall, South Grey; Mr. Rennie, North York; Mr. Henderson, East Huron; Mr. Gregory, West Huron; Mr. Coates, Holton; Mr. Chapman, Waterloo; Mr. Thompson, North Hastings; Mr. Maxwell, Essex; Mr. Gardiner, South Hastings; Mr. J. H. Smith, Wentworth; Mr. C. A. Barnes, Lambton.

EVENING SESSION.

At the evening session the President, Dr. McLellan, delivered an able address on

THE VALUE OF MATHEMATICS AS AN INSTRUMENT OF EDUCATION, a full report of which has been sent to subscribers of the CANADA SCHOOL JOURNAL as a supplement.

SECOND DAY—AFTERNOON SESSION.

In the absence of the President, the 1st Vice-President, Mr. J. C. Brown, of Peterborough, took the chair.

Mr. D. C. McHenry, M. A., Principal of the Cobourg Collegiate Institute, read a paper on the Higher Education of Women.

(This excellent paper will be found in another column of the JOURNAL.)

Mr. Millar, of St. Thomas, remarked that the establishment of denominational colleges for women was an admission of the right of women to higher education, and it was, therefore, the duty of our educational authorities to provide them with opportunities for such education. Some of the branches taught in those colleges, such as music and drawing, might profitably be introduced into the High Schools and Collegiate Institutes. He heartily sympathized with the essayists' views in favor of the co-education of the sexes. Young people of both sexes were permitted to associate together in social and other gatherings, and why not in schools and colleges?

The Chairman here introduced to the Convention the Rev. Dr. McVicar, of Montreal, who took his seat on the platform amid applause.

Mr. Coleman, of Cobourg, pointed out that the male sex were assisted in every way to obtain an education, while ladies were

obliged to pay cash for many of the educational privileges accorded them.

Mr. Knight, of Victoria, moved "That in the opinion of this Association, and in order to facilitate the higher education of women and to secure them equal advantages in the general affairs of life, the co-education of the people is necessary and desirable."

The motion not receiving a seconder, was dropped.

Rev. Dr. McVicar, by invitation, then made a few remarks on the subject. He stated that in the city of Montreal and Province of Quebec they had a superabundance of institutions for the training of women. The Protestants in Montreal had established a few years ago what was now an efficient High School for girls. There boys and girls were separate. Observation had led them to the conclusion that it was essential to the proper development of woman's nature to bring to bear upon it the influence of woman. In McGill College and University they had gone as far as they thought desirable in the direction of admitting women to the examinations for Bachelor of Arts, and some women had taken advantage of the opportunity they afforded them to take the degree of Associate in Arts. In certain branches he thought it was desirable that the sexes should be educated separately. Although brothers and sisters might associate together, as they did in their homes, yet he would have considerable hesitation in throwing open the doors of the schools to everybody, and allowing girls and boys to mingle indiscriminately in the class-rooms. He would like to select the boys who were to associate with his daughters in any brotherly relationship.

UNIFORM PROMOTION EXAMINATIONS.

Mr. J. S. Carson, of Middlesex, opened the discussion of the subject of "Uniform Examinations for Promotion in Public Schools." He dwelt on the necessity of a proper classification of pupils, deprecating their too speedy promotion from one grade to another. It would be well, he thought, that the promotion examinations should not be held by teachers in their own schools. He explained the method of conducting uniform examinations, stating that in his own inspectorial district the expense of two examinations annually did not exceed \$25.

Mr. Chapman, of Waterloo, Mr. McKinnon, of Peel, and Mr. Harvey, of Barrie, explained the systems adopted in their respective districts. In the course of the discussion it was stated that the County Council of Wellington had voted \$200 a year for uniform examinations.

On motion of Mr. Munroe, of Ottawa, it was resolved, "That in the opinion of this Association the entrance examination for High Schools is a fair and satisfactory test to teachers and trustees of the work done in the Public Schools in the fourth class."

Mr. McKinnon moved, "That the Education Department be respectfully requested to provide, at as low a cost as possible, for such counties as may wish to avail themselves of them, uniform promotion examination papers for the classes below the fourth." He thought that this would secure greater uniformity than now existed.

Mr. D. Johnston thought these examinations should be the work of the inspectors.

Mr. Carson agreed with this view, and remarked that the inspectors did not desire to shirk any of their work.

Mr. McIntosh protested against the motion, as tending to centralize to too great a degree the educational authority of the Province. It would not do to go too far in the direction of placing everything in the hands of the Department.

Mr. Glashan, of Ottawa, said he had always held that it was not his duty as an inspector to hold promotion examinations, because he could not do it. They must be held by the teachers and controlled by the inspectors without the interference of any central power. It would be both profitless and injurious to strive for exact uniformity.

The motion was lost.

EVENING SESSION.

At the evening session there was a large attendance of ladies and gentlemen to listen to Professor Young's lecture on "The Order of Development of the Faculties in Relation to Education." On the platform, besides the President, were Dr. McLellan, Principal Cavan, Professor Goldwin Smith, and Principal McVicar.

An outline of this lecture will be given in the October number of the JOURNAL.

THIRD DAY—AFTERNOON SESSION.

The President in the chair.

THE AUDITORS' REPORT.

Inspector McIntosh presented the report of the Auditing Committee. They found the Treasurer's accounts correct; and reported a decrease in the revenue derived from the sale of the annual report.

The report was adopted, as also was a motion to reduce the price of the reports by twenty-five per cent. when purchased by Associations in quantities. The Secretary took numerous orders for books from representatives of local Associations, and said the Executive Committee would make an effort to have them ready for distribution at the fall meeting of associations.

EASTERN EDUCATIONAL ASSOCIATION.

Mr. A. P. Knight, of Kingston, was introduced by the President as a delegate from the Educational Association of Eastern Ontario. Mr. Knight met with a cordial reception, and conveyed the friendly greetings of the Eastern Association, which, instead of being antagonistic, was auxiliary to the older Association.

THE LATE INSPECTOR MACALLUM.

Mr. McMurchy, M.A., of Toronto, presented the report of the Committee appointed to draft a resolution of regret at the death of Archibald Macallum, M.A., LL.B., late Inspector of the Public Schools of Hamilton. Mr. Macallum, the resolution stated, was a faithful and useful member of the Association, from its very beginning, in 1860. By his presence, effort, and counsel he aided very influentially to forward the business of their annual gatherings, and thus in every legitimate way secure the healthy advancement of education and the best interests of the teaching profession. The Association put on record its earnest sympathy with the family of the deceased in their sore bereavement.

The resolution was carried by a standing vote, and a copy ordered to be transmitted to Mrs. Macallum, at Hamilton. The Association also requested Mr. McMurchy to prepare an obituary notice (having special reference to his school work) of Mr. Macallum, for insertion in the annual report of the Association.

SECRETARIES OF SECTIONS.

Mr. Alexander, of Galt, gave notice of a motion to make the secretaries of the different sections *ex officio* members of the Board of Directors.

THE CONSTITUTION.

Inspector Hughes reported that the Committee appointed to amend the Constitution of the Association recommended that the question be laid over for one year, and that the Executive Committees of the Sections be appointed a Joint Committee to consider and report on the subject at the next annual meeting. Adopted.

ELECTION OF OFFICERS.

Inspector Hughes read the report of the Executive Committee, nominating the officers of the Association for the ensuing year as follows:—President, R. Dawson, Belleville; Vice-Presidents, Wm. McIntosh, North Hastings; J. Seath, St. Catharines; H. Dickenson, Stratford; Secretary, James Hughes, Toronto; Corresponding Secretary, A. Purslow, Port Hope; Treasurer, F. S. Spence, Toronto.

In amendment to the first clause, Mr. Johnston moved that Mr. Alexander, of Galt, be appointed President.

The amendment was carried.

The other officers were elected by acclamation.

PHYSICAL EDUCATION.

Inspector J. Coyle Brown, of Peterboro', read a paper on the above subject. In the outset the writer referred humorously to certain classes of men who overrun the country, viz., sewing machine men, lightning-rod agents, apple-tree men, pedagogues, politicians, professional men, lawyers, doctors, clergymen, saloon-keepers, drummers, etc. These different classes of men are all useful in their way—some of them exceedingly so—but when by undue multiplication they threaten the well-being of society, it is high time for society to look round, ascertain the cause of the undue multiplication of these classes, and, if possible, remove it. Why, the writer asked, are these classes increasing so fast? Why are so many leaving the fields of manual labour and entering those of mental labour, or of no useful labour at all? Because physical education is neglected. Sports, such as cricket, football, lacrosse, and numerous other kinds of athletic games, are much encouraged, and develop the physical powers. But they scarcely reach the many; and a knowledge of no one of them, nor of all of them

combined, can be said to constitute physical education. A knowledge of them is no more physical education than a knowledge of whist, chess, etc., is mental education. Besides, if a true account could be made out of the effects of these, in which account the beneficial results could be placed on one side and the injurious on the other, it appears uncertain to the writer on which side the balance would be. The kind of physical education that is wanted is four or five hours' daily labour from say the age of twelve to the age of twenty-one—labour at the work-bench, at the anvil, in the garden, on the farm—labour that will lighten the burdens of parents and add to the wealth of the country. Why is it that so little attention is paid to physical education? Because intellectual education is so carried on as to render physical education impracticable. Our system as conducted is calculated to make book-worms rather than active men and women; to predispose to sedentary pursuits rather than to out-door ones. And how can this state of things be avoided? The writer, although confessing himself to be sadly deficient for the task, would make a few suggestions. A national system of education should prepare for all vocations, and unfit for none. Physical education is desirable for all, and indispensable for most. The most important part of physical education cannot be given in schools. Schools should therefore be so conducted as to afford time and opportunity for physical education elsewhere. Classes should be limited to 30 pupils, who should be divided into two sections—one attending school in the forenoon, the other in the afternoon. The advantages would be:—(1) Less school accommodation would be required; (2) there would be more teaching and less keeping order, more work and less worry; (3) there would be more bodily activity and greater progress in learning. Elementary departments of many schools, as conducted at present, are calculated to make blockheads rather than scholars. Children attend them for several years, not making the progress which ought to be made in one. They become listless and indifferent; sluggish in both mind and body. As to the number of teachers under the system proposed, the writer was of opinion it would not be increased, because the pupils would pass through the different grades much more rapidly than they now do. Country schools should be kept open during the summer half of the year, from eight until eleven for the large pupils, and from two until five for the smaller. The advantages would be:—(a) a portion of each day would be devoted to study, and another portion to work on the farm or in the house; (b) each child would have a warm dinner at home with the family, instead of a cold lunch to bolt down, as at present; (c) the smaller ones would have secured to them their fair share of the teacher's time and attention; (d) the difficulty of governing would be very much lessened, only half the pupils being under the teacher at a time; (e) the intervals between recitations being shorter, there would be greater mental activity; (f) the teacher having his dinner at his leisure, and having a considerable rest thereafter, would be better able to do justice to his pupils; (g) much of the misconduct that prevails during the noon hour would be avoided; (h) the period for continuous attendance at country schools would be lengthened, and the intelligence of country people materially increased; (i) continuous labor in the field from daylight until dark on long summer days would not drive so many country boys into towns in the often vain hope of finding an easier and more desirable way of making a living. As to High Schools, they should be open from 8 to 11.30. The course of study should be somewhat changed. Great attention should be paid to English; comparatively little attention to the other languages, except so far as to throw light on our mother tongue. Natural History should occupy a prominent place.

THE SEPARATE SCHOOL.

Mr. Thomas O'Hagan, head master of the Belleville Separate School, and President of the Separate School Association, read an interesting paper on Separate Schools.

(This paper is given in full in another column.)

UNIFORMITY OF TEXT BOOKS.

Inspector Hughes, of Toronto, followed with a paper entitled, "Is compulsory uniformity in Text Books desirable?" The "Text Book Question" is one of the most important subjects in connection with school work, and in undertaking it the writer desired to aid teachers and others in arriving at right conclusions in regard to it. He would not like to see any hurried change in existing regulations, but he had the strongest conviction that the time is not far distant when a radical change must be brought about. It may be laid down as a fundamental principle that the best text-book system

is that which secures in the highest degree the culture and the development of pupils at the smallest cost. Our aim should be to obtain at the minimum of expense the most appropriate books to place in the hands of school children. How a Government a right to interfere in local management so far as to decide the books which shall or shall not be used in schools? Certainly it has, if the schools are partly supported by a Government grant. It becomes merely a question of how far it is wise for a general Government to interfere in local matters. It is absolutely necessary to have uniformity in text-books to some extent. For instance, class and school uniformity are essential so as to prevent confusion in teaching and to lessen the expense of books to pupils. Municipal uniformity in cities and towns is also requisite, as then pupils moving from one school to another in the same municipality are not obliged to buy a new set of books. Is Provincial uniformity desirable? The advantages claimed for it are as follows:

I. Removal of families from one part of the Province to another would cause no inconvenience by requiring the purchase of new books.

II. Uniformity of language and method in all the schools of the Province would make changes of teachers less injurious than if a variety of text-books were used.

III. The Government can control more readily the character of the education given in the schools.

IV. It places the selection of the text-books in "hands of the most competent persons.

The central authorities would be more likely to decide correctly, if they should be more cultured, and possessed of larger experience; and they should give the subject more time and attentive consideration than local authorities could do.

V. If sections or municipalities purchased the books they could make better terms, or the Government might make an immense contract for the Province at a small advance on cost.

Its disadvantages are:—

I. The injury to mental growth and originality resulting from the parrot-like repetition of exactly similar language in definitions and statements of principles.

II. Subsistence of teachers to the mere words of their text-books, causing a lack of desire to keep up with the current of advanced thought upon the subjects which they have to teach and the methods of teaching them.

III. The difficulty in obtaining a list of books which would meet the approval of all or even the majority of teachers and school officers.

IV. Difficulty or impossibility of enforcing it. (Since options were allowed, and teachers and officers began to examine text-books with a view to selecting the best, they have stepped beyond the fixed boundary.)

V. It interferes with local management, and prevents the adaptation of the books to the special necessities of certain places.

VI. The mechanical execution of the books is certain, and the internal character is likely to be worse than if books were allowed to stand or fall on their merits alone. Publishers will not revise if the Government compels people to buy their books. They will keep up with the times if the books have to make their own way.

Mr. Hughes recommended, therefore, that local authorities be allowed to exercise the fullest liberty in selecting text-books, provided that they conform to the standard laid down by the central educational authorities. The Department fixes a standard for teachers, to which they must attain; the local authorities select from those who have risen to the fixed standard the teacher best suited, in their opinion, to their needs and circumstances. Trustees may not engage whom they please to teach their school. They may do so, however, from among those authorized to teach. As great evil would undoubtedly result from unlimited license in engaging teachers, so much injury might result from allowing an unrestricted choice of text-books. The Department fixes a programme of study, and states how far each grade shall go in every subject of the school course. This, on the partially adjustable plan of Hon. Mr. Crooks, which allows options to a certain extent, is not only desirable, but essential. Is it not enough that the text-books in our schools should conform to the requirements of this programme? Would it not be sufficient, if the publishers were required, as in England, to adapt their text-books to the work of the various grades? Our readers are supposed to be adapted to the several divisions of the schools, why not our arithmetics and other books which are used by all classes? With this single limitation, the writer held that to the local authorities belongs the right to select their own text-books. This claim is in perfect

harmony with the present administration of the Educational Department. It also corresponds with the working of our municipal and general government. Who are the local educational authorities who should determine which books should be used in our schools? Not the teachers, because they change too often. The same objection applies to the trustees alone. The Inspector does not often change, he is a permanent officer during good behaviour. He is also to a certain extent a Government officer, and through him the Government could have all the local control it is entitled to. If the Government cannot trust this function to Inspectors, they are certainly unfit for their positions. They surely have to perform other duties quite as important as the selection of the best text-book for use in their districts. The duty is a very simple one if they are restricted in their choice to those officially recognized by the Education Department as conforming to the programme and standard laid down. If the matter was left in the hands of the trustees and the Inspector, changes would not take place too often. The danger would be that they would not be changed often enough.

AN AMERICAN VISITOR.

Inspector Hughes introduced Prof. Jones, Inspector of the Public Schools of Erie, Pa., to the Association, as a gentleman who took an active part in educational matters. Mr. Jones was warmly received, and made a few remarks. He said he was pleased with the earnest and practical manner in which the teachers discussed the topics that had come before them, and hoped the discussion would be of benefit to them.

The Association rose till evening.

EVENING SESSION.

The Association resumed at eight o'clock, Dr. McLellan in the chair. The attendance was large, many ladies being among the audience.

MORAL CULTURE.

Rev. Dr. McVicar, Principal of the Presbyterian College, Montreal, was introduced, and delivered a lecture on "Moral Culture an Essential Factor in Public Education."

[The address of Dr. McVicar will appear in full in the October number of the JOURNAL.]

THE RAILWAYS.

Inspector Hughes drew attention to the desirability of allowing teachers to travel at $1\frac{1}{2}$ fare for return trips during the midsummer and Christmas holidays. He thought it would be a great boon to the teachers of the Province generally if this privilege were extended to them, and moved for the appointment of a committee, consisting of Adam Purslow, M.A., Port Hope, Inspector Smith, of Hamilton and the mover, to confer with the railway companies with that end in view.

The motion was carried.

A VOTE OF THANKS.

was tendered to those railway companies who had granted reduced fares to teachers attending the Convention, and also to the Minister of Education for allowing the Association to meet in the Normal School.

The Association then adjourned, to meet again in the second week of August, 1880.

PUBLIC SCHOOL SECTION.

Mr. H. D. Dickenson, of Stratford, read a paper on "Educational Journals." Such journals, he held, are manifestly essential. In the present day every institution of any extent has a periodical conducted specially in its interests. Teachers need this auxiliary as well as others. As church societies, conferences, synods, etc., control their denominational organs and elect their directors and editors, this Association should so control the educational journal of the country. If teachers would organize a joint stock company so that many of them would be interested in it, it could not fail of being a success. A monthly magazine would be most suitable at present. No journal in existence just now exactly meets these requirements. The advocates of a particular school, college, or publishing house cannot do this, their object being not to promote teachers' interests in general as much as those of its proprietors.

The speaker proposed a plan for conducting such a periodical in accordance with these ideas.

The discussion was continued by Messrs. Boyle, McAllister, Clarke, Alexander, Doan, Barber, Harvey, and others, but no resolution was adopted.

Mr. David Johnston, of Cobourg, read a paper on

THE UTILITY OF TEACHERS' ASSOCIATIONS,

which will be given in full in the October number of the JOURNAL.

Mr. W. B. Harvey, of Barrie, President, read a paper on

MODEL SCHOOL WORK.

The regulations in connection with the County Model Schools are wise and patriotic. Third-class teachers not having permanent or renewable certificates can hardly be considered as members of the profession till they make a further step, but they are the only teachers available for many of our Public Schools, and so must be prepared for their management. Therefore our Model School work should consist of lectures on the best methods of school management, and teaching should be practically illustrated. There must also be practice for the student in the work of teaching, that his mistakes may be noted and corrected. This can be best attained by having the teachers in training watch and criticise one another's work. A familiarity with the principal points of school law and official regulations is desirable, but knowledge of all legal details is not essential. General literary education of these students has been undertaken by the Model Schools, but this plan should be altered. This work properly belongs to other institutions. The length of session that these students are required to attend is too short. They should have at least three or five months, and as a compensation for time so spent might have the duration of their certificates extended. This would avoid such frequent changes of teachers in Public Schools, and lighten the pressure that is now felt from overcrowding in our Normal School. Model School teachers should be the very best that can be secured, and thoroughness should be insisted upon. Uniformity in examination of candidates for third-class certificates is very desirable, and would be best attained by having all the papers prepared by the Education Department. Increased aid, in shape of a larger Government grant, to such schools is desirable and deserved.

The following resolutions, in reference to County Model Schools, submitted by Mr. Dickenson, were adopted:—

1. That the present standard for principals and assistants be adhered to.
2. That professional papers for M. S. students be set by the Central Committee.
3. That the county grant of one hundred dollars be made compulsory.
4. That the legislative grant be increased.

Mr. Hughes, Inspector of Schools, Toronto, explained the Phonic system of teaching reading. The first point of impression to be made upon the mind of a child is that the name of a letter is not the same as its sound when combined with other letters so as to form a word. He would with persistent illustration impress this fact upon the child's mind, distinguishing between what the letter is called and what it "says." Because children learn quickest what they have to do, they learn the sounds which they are taught to make quicker than they learn the word-names that they must memorize. As soon as the power of a letter is known, the pupil could at once, by naming the sounds represented by [letters in succession, read words and even sentences. He explained this at length, with many illustrations showing how to deal with letters having a duplicity of sounds. He would first give only one power of a letter, and when it occurred with another sound the child's sense and the other words in connection would prevent mistakes. He stated facts to illustrate the success of this method, and satisfactorily answered several questions regarding what seemed to be difficulties in its application. He regretted the unfitness of our present school primers for the purpose for which they are intended, and expressed a hope that very soon better appliances and a more scientific method for teaching reading would be adopted all through the Province.

The following resolution, moved by Mr. T. Hall, seconded by Mr. G. Treadgold, was adopted:—

That, in justice to the teachers of the Province, the clause relating to the Superannuation Fund which provides that teachers shall teach until sixty years of age unless disabled, should be amended by introducing a clause giving them permission to retire after twenty-five years of active service without forfeiture of their claims on the Superannuation Fund; and that Messrs. McAllister, Campbell and Spence be a committee appointed to lay this resolution before the Minister of Education.

Mr. R. Alexander, seconded by Mr. Boyle, moved:—

"That we recommend that the qualifications demanded from candidates for third-class certificates be the successful passing of the Intermediate Examination and the subsequent training at the County Model Schools, and we further recommend that the ages of candidates be not less than twenty years for males and eighteen for females."

The mover considered that the training of teachers in Public Schools interfered with the work of these institutions; that teachers of this grade were abundant; that the standard might profitably be raised, and the work done by High Schools and Collegiate Institutes.

The motion was discussed by Messrs. Boyle, McQueen, Campbell, Alexander, Dickenson, Kirk, Lindsay, Treadgold, Johnston, Monro, Clark, Hall. The resolution was carried.

The Section then proceeded to the election of officers, with the following result:—President, Mr. H. Dickenson; Secretary, Mr. Wm. Rennie; Executive Committee—Messrs. H. Strang, S. A. McAllister, R. W. Doan, D. Boyle, and Wm. Rennie.

HIGH SCHOOL SECTION.

A paper was read by Mr. A. Millar, M.A., of Walkerton, on the High School Programme, in which some changes were suggested, and a committee was appointed to consider the subject, and report at a subsequent meeting of the Section.

The report of the Committee appointed at the previous meeting was presented by Mr. McHenry. It recommended that a difference should be made between those candidates who are purely intermediate being promoted to the upper school and those who are aiming at taking second-class certificates, a lower percentage being desirable in the case of the former. This was unanimously agreed to.

After discussion, it was moved by Mr. Dawson, seconded by Mr. Miller, and carried unanimously:—

That the Executive Committee of the P. S. Section be invited to meet with the Executive Committee of the High School Masters' Section to take into consideration the desirability of having candidates for third-class certificates examined on the same papers as those for second-class, and to report at the next annual meeting of the section.

After a discussion, in which Messrs. Strong, Purslow, Orr, McHenry, Robinson, Hicks, and others took part, it was moved by Mr. Strong, seconded by Mr. Purslow, and carried unanimously:—

"That in view of the fact that the grading of the High Schools and the distribution of a large portion of the legislative grant is decided according to the results of inspection, it is, in the opinion of this Section, very desirable that the High School Inspectors should be enabled to devote a greater amount of time to the work of inspection at their semi-annual visits."

The report of the Committee appointed to consider what changes were desirable in the High School programme was received. It suggested alteration in the science optional group, and the English history of the lower school. In the former, that the examinations be less mathematical and more practical in their character, and that the English history prescribed should be limited to some particular period.

After discussion, the report was unanimously adopted.

The subject of "Modifications of the Intermediate" was then taken up, and it was resolved:—"That in the opinion of this Section the intermediate examinations should be held in mid-summer."

It was also unanimously resolved:—"That in the opinion of this Section the system of rotation should be more fully recognized in the assignment of subjects to members of the Central Committee."

A vote by ballot was then taken for members of the Executive Committee, and resulted in the election of Messrs. Seath, McMurchy, McHenry, J. Miller, and Inspector Carson.

PUBLIC SCHOOL INSPECTORS' SECTION.

The Public School Inspectors' Section met on Wednesday, 18th August. Mr. J. C. Brown in the chair.

Mr. Wm. McIntosh moved, seconded by Mr. D. A. Maxwell,

That as different tests should be applied in the examination of second-class and intermediate candidates, this Section would respectively suggest to the department that such changes be made in the regulations affecting such examinations as will allow of this being done." Carried.

Mr. Maxwell moved, seconded by Mr. Knight,

"That second-class candidates should not be allowed options between the group Natural Philosophy, Chemistry, and Book-keeping and any other subjects." Carried.

Mr. Maxwell moved, seconded by Mr. Knight,

"That the minimum qualifications required for second class certificates shall be:—For grade B, 50 per cent. on each group, and 25 per cent. on each subject; and for grade A, 60 per cent. on each group, and 35 per cent. on each subject." Carried.

Mr. Dearness moved, seconded by Mr. McIntosh,

"That in addition to the different test percentages proposed to be required for second-class and intermediate certificates, candidates for the former class of certificates be submitted to *viva voce* examination in reading, and receive marks for writing and neatness; also that reading be invariably required for the non-professional third class certificate." Carried.

The officers for the ensuing year were elected as follows:—Chairman, Wm. McIntosh; Secretary, D. J. McKinnon; Executive Committee—Messrs. Scarlett, Smith, Dearness, Maxwell, and McQueen.

A discussion took place on the provisions of the school law relating to union school sections, and a resolution, moved by Mr. Frothingham, was passed requesting the Secretary to communicate with the Minister of Education, asking him to issue a circular giving full explanations respecting the equalization of assessments in union school sections in giving effect to section 18 of the Bill of 1879 under section 187 of the Consolidated School Law.

A committee was appointed to consider the subject of second-class certificates.

Mr. Dearness moved, "That whereas since pedagogy, school law, reading, and other important subjects are not included in the literary second-class examination; therefore it is exceedingly desirable in the interests of education that teachers holding second-class non-professional certificates, who have taught three years before 1877, be required at least to pass the professional examination before being granted Provincial second-class certificates." Carried.

The following resolution was adopted on motion of Wm. McIntosh: "That the Minister of Education be respectfully requested to issue instructions clearly defining the relations and duties of the Public School Inspectors in connection with the County Model Schools; and that it is the opinion of this Section that persons practically acquainted with public school work should be appointed as general inspectors of Model Schools."

PERSONALS.

Mr. G. W. Fields, of Seaforth, has been appointed Principal of the Elora High School.

Rev. Dr. Jacques has been re appointed President of Albert University. Dr. Badgley will remain in the College as Professor of Metaphysics, Ethics and Hebrew.

John E. Hodgson, B.A., Head Master of the St. Mary's High School, has been appointed to a similar position in Brantford, at a salary of \$1,750.

Hon. Adam Crooks has returned from his trip to England.

The following officers have been elected by the Eastern Ontario Education Society: T. M. Slack, B.A., I.P.S., Lanark, President; A. Smirle, 1st Vice-President; W. Summerby, 2nd do.; D. D. Keenan, 3rd do.; Mr. Mitchell, B.A., Corresponding Secretary; Mr. Jamieson, Recording Secretary; Mr. Orr, Treasurer; Directors, Messrs. McGregor, Riddle, Dawson, Steele and Cochrane.

Notes and News.

ONTARIO.

Collingwood Collegiate Institute building has to be enlarged.

Strathroy High School Board desired to enlarge their school. By the aid of "the 29th clause" the Council prevented their doing so.

St. Mary's High School has become a Collegiate Institute.

Head Master Checkley, of London Collegiate Institute, suggested that a tablet be erected in a prominent position in the In-

stitute, on which the names of pupils winning honors should be inscribed. He considered that this would be an incentive to the others.

The statistics of the High Schools and Collegiate Institutes show that the highest expenditure for teachers' salaries was in Galt, with \$7,330; the lowest was in Belleville, with \$2,250.

Some County Councils recommend that third class candidates be charged a fee for attendance at the County Model Schools.

The pupils of Chatham High School have formed a Choral Union. The High School Board in Chatham propose to devote one hour per month of the school time for the purpose of having lectures delivered to the students and their friends by leading citizens of the town. This may awaken interest in school matters.

A third class candidate at the last examination wrote, "Transubstantiation was a duty laid on tea coming from foreign countries to Canada on account of the quantities that was transported." He has been studying political economy.

The first term in the County Model Schools will begin on Friday, August 29th, and end on Saturday, October 25th. The closing examination will begin on Thursday, Oct. 23rd, or Friday, the 24th, at the option of the Board of Examiners. The second term of the Model School will begin on Monday, Oct. 27th, and end on Saturday, December 20th. The closing examination will occupy the last two or three days of the term.

The Public School Inspector for the County of Dundas reports that he had during 1878 under his supervision 73 rural schools and 14 departments of town schools. The school population of the county was 5,371; the average attendance for the first half of the year was 2,754, and for the last 2,890. There are only one first-class and seven second-class teachers in the county. The highest salary paid a male teacher was \$600 and the lowest \$180, the corresponding limits for the salaries of female teachers being \$310 and \$75. The Inspector, in his report, speaks favorably of the benefit to the cause of education from the County Model School, and suggests the imposition of a two-dollar fee in order to prevent all but *bona fide* candidates from coming up to the third class examinations.

The calendars of Victoria University and Albert College have been received, and contain very complete announcements relative to examinations, degrees, scholarships, medals, prizes, &c. Copies may be obtained by addressing the Registrars; Professor John Wilson, Cobourg, and Rev. E. I. Badgley, Belleville.

After a trial of five years, the teachers of the County of Durham are still in favor of County Competitive Examinations. The following resolution was passed at the last meeting of the Association at Port Hope: Moved by Mr. T. J. Calbery, seconded by Mr. J. Crawford, "That whereas competitive examinations in the County of Durham have been attended with such beneficial results in awakening interest in Public School work, in the opinion of this Convention it is desirable that they should be continued in future, and that a committee of three, consisting of Messrs. J. Tilley, H. Barber, and W. Stott, take the subject into consideration and report at the October session of this Association, and that the Inspector be kindly requested to solicit the Counties Council for such aid as they may see fit to grant for the above purpose."

QUEBEC.

It was stated in the last issue of the JOURNAL that the educational interests of this Province were centred on the Legislature in session in Quebec, and they have continued to do so till nearly the present time. The Parliament has since been prorogued.

It was anticipated that there would be great changes in the administration of the Department of Public Instruction, all with a view to economy, and the removal of abuses, if not all tending as some think to the promotion of education, or the greater efficiency of our educational system. Important changes have been made, and it is to be hoped that some of them at least will be both economical and beneficial.

A searching enquiry into everything connected with the Department of Public Instruction, and the whole working of the school system of the Province, if not revealing in every case all that could be desired, will disclose merits as well as defects, and good results may be anticipated. Every lover of his country will at least agree with the remark of the able Provincial Secretary, the Hon. Mr. Mercier, that "his theory had been that all those who could not read or write should, after a certain period, be deprived of the right to vote."

In consequence of the rumour of the changes contemplated in

education, a special meeting of the Protestant Committee of the Council of Public Instruction was called by the Superintendent of Education at the request of the Lord Bishop of Quebec, and resolutions were passed deprecating any organic change in the educational system without giving the committee an opportunity of expressing their opinion thereon, at the same time assuring the Government that its members will offer all the assistance in their power towards the rendering of inspection both efficient and economical, and praying that the grant to McGill Normal School be not decreased. The Chairman, Dr. Dawson was authorized to submit these resolutions to the Government at a conference to be held afterwards, as also to express the satisfaction of the committee with, and its confidence in, the Hon. Mr. Ouimet, Superintendent of Education, and its regret that his salary should be reduced by Government.

The changes in educational matters made during the session of Parliament about to close are not as numerous and sweeping as they were reported likely to be, or perhaps as they were intended, for a closer examination into facts doubtless modified the views of the Cabinet.

The principal changes and the saving thereby effected are as follows:—The Book Depository has been done away with, which for the year ending 30th June, 1878, cost \$15,000, and for the year ending 30th June 1879, cost \$6,500; the grant to the Normal Schools has been reduced from \$46,000 to \$42,000 per annum; the *Journal of Public Instruction* has been abolished, which was kept up at an annual cost of \$4,000; there are to be no more prize-books, which involved an outlay to the Province every year of \$6,500; the grant for School Inspection has been reduced from \$28,625 last year to \$20,000.

If the Normal Schools can be conducted as efficiently as before on the sum now granted, well; but if their efficiency and usefulness are impaired by the diminution of the grant, it is questionable economy.

There may be defects in the system of inspection, and if there are they ought to be enquired into and remedied, but there are certainly few things that will do more to promote the best interests of education than an able and judicious Inspectors of the schools, and it is to be feared that the present diminution of the grant for inspection will fall heavily on some Inspectors of long standing, who have done faithful service.

The Education Bill proposed to reduce the salary of the Superintendent of Public Instruction from \$4,000 to \$3,000 per annum, but the feeling against this was so strong on the part of both committees of the Council of Public Instruction, with whom the present able and courteous incumbent, the Hon. G. Ouimet, is a great favorite, that this clause of the bill was at last unanimously set aside.

James Mitchell, Esq., graduate of Glasgow University, first-prizeman in Natural Philosophy, Glasgow, and Fellow of the Educational Institute of Scotland, has just been appointed rector of the High School, Quebec.

NOVA SCOTIA.

A Teachers' Association, organized under the recently published Regulations of the Council of Public Instruction, was held at Kentville, Kings Co., on August 28th and 29th: A large majority of the teachers of the county were present and enrolled themselves as members. The proceedings were of much interest. The Association was presided over by Colin W. Roscoe, Esq., Inspector of Schools. An address was delivered by the Superintendent of Education. A fuller report of this interesting meeting will appear in next month's notes.

A partial Pass List of the July Examinations in connection with the University of Halifax has been published. It is as follows: M.B.—Norman E. McKay, Halifax Medical College. LL.B.—John Leonard Sinclair, James McDonald Oxley, William Edward MacLellan. 1st LL.B.—Edmund Leslie Newcombe, Frederick P. Outram. 1st B.A.—Samuel C. Murray, Mount Allison College; S. Dunn Scott, Mount Allison College; John Mc Kercher, Private Study; F. W. Vroom, King's College. B.A.—Examiners' reports not handed in. B.Sc.—Examiners' reports not handed in.

The annual examinations for teachers' licenses took place on the 22nd of July and three following days. It is understood that there was, as compared with the previous year, a reduction of nearly fifty per cent. in the number of candidates presenting themselves.

The report that John T. Mellish, Esq., A.M., Principal of the Albro Street School, Halifax, has accepted a position in the Normal School of Prince Edward Island, has been formally contra-

dicted by that gentleman in a letter addressed to the Halifax Board of School Commissioners.

Mr. Archibald, Principal of the Tower Road School, Halifax, has resigned his position. It is understood that he proposes to complete a University course preparatory to entrance upon one of the professions.

George Monroe Grant, Esq., of New York, the well-known publisher of the "Seaside Library," has founded a "Physic Chair" in Dalhousie College. The income of the endowment is \$2,000 per year. Mr. M. Grant was formerly a school teacher in Halifax.

Teachers' Associations.

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

WEST BRUCE.—A meeting of this Association was held in the Central School, Kincardine, on June 19th and 20th. A communication from Waterloo Teachers' Association respecting the training and certificates of Third Class Teachers was read, but was not approved of. Miss Maggie Sinclair read a paper on "Sowing and Reaping." A lively discussion on the advisability of substituting Classics or Modern Languages for the group, Philosophy, Chemistry and Book-keeping, on Second Class Examinations, resulted in the following resolution, viz.: "That in view of the substituted subjects not being those which are required to be taught by Second Class Teachers, and in addition, that such substitution may have, and indeed often has, the effect of leading to the neglect of the important subjects of Philosophy, Chemistry and Book-keeping, this Association is strongly of the opinion that there should be a return to the former programme, viz., that the latter subjects be required of all candidates for Second Class certificates." Dr. McLellan, H. S. I., dealt with "Factoring in Algebra," and "How to introduce Arithmetic to beginners," after which the following resolution was unanimously carried: Moved by Mr. F. O. Powell, seconded by Mr. Benjamin Freer, "That this Association having heard Dr. J. A. McLellan's admirable lectures on Algebra and Arithmetic, record a hearty vote of thanks, expressive of its high appreciation of his masterly style of presenting these subjects, and that especial mention be made of his novel and labor-saving methods of handling algebraic quantities, containing symmetrical expressions, exact divisors, and linear factors, as well as of his lucid and highly practical manner of teaching Arithmetic to beginners, feeling confident that every teacher present must go away with new and improved ideas on these subjects, and the best methods of teaching them." Another paper was now read, on "The Teacher's duties and influence," by Mr. Benjamin Freer, Head Master Kincardine High School. Mr. Lane introduced Mental Arithmetic, and was followed by several others, after which Mr. G. W. Priest illustrated his method of teaching vulgar fractions. Messrs. Theobald and McKellar gave some very nice illustrations on mathematical geography. Then followed a lesson on Third Class Literature, by Mr. B. Freer. On the evening of the first day, Dr. McLellan delivered his excellent lecture on "This Canada of ours," in the Town Hall, to an attentive audience. The officers for the current year are Mr. A. Campbell, Inspector, President; Mr. G. W. Bowman, First Vice; Mr. Geo. Priest, Second Vice, and Mr. A. H. Smith, Sec'y-Treas. The next meeting will be held in the same place in September.

A. H. SMITH, Secretary.

Official Department.

EDUCATION DEPARTMENT, ONTARIO.

FIRST CLASS PUBLIC SCHOOL TEACHERS' EXAMINATION, JULY, 1879.

The following are the successful candidates at the recent first-class examination:—

NON-PROFESSIONAL EXAMINATION.

Grade A.—Wm. Cassidy, W. H. G. Colles, Smith Curtis, Kate Hagerty, Wm. Johnston, Samuel N. McCreedy.

Grade B.—Welbern Atkins, Katharine Ballantine, John T. Bowerman, D. B. Johnston, Helen McMurdoch, Donald Marshall, Geo. E. Phoenix, Richard Shepherd, Lafayette Welch.

Grade C.—Fred Burrows, Richard C. Cheesewright, Thos. Cameron, Alfred T. Day, Thomas Dunsmore, Miles Ferguson, Sydney Foster, Thomas Frazer, Henry Gray, Nicholas Kellet, Jennie M. Lalor, F. Lamoreaux, Joseph Maguire, Margaret A. Mills, Freeman H. Moyer, Thomas McLaughlin, Alex. A. McTavish, Wm. F. Rittenhouse, John W. Scott, Janie Thomas, James Winterborn, S. C. Woodworth.

PROFESSIONAL EXAMINATION.

Grade A.—William Cassidy, W. H. G. Colles, Smith Curtis, Kate Hagerty, Wm. Johnston, Samuel N. McCreedy.

Grade B.—John T. Bowerman, Donald Marshall, Geo. E. Phoenix, Richard Shepherd, Lafayette Welch.

Grade C.—Alfred T. Day, Thomas Dunsmore, Thomas Fraser, F. Lamoreaux, Alex. A. McTavish, Freeman H. Moyer, Wm. Rittenhouse, John W. Scott, James Winterborn, S. C. Woodworth.

REVIEWS.

THE STUDY OF ROCKS. By Frank Rulley, F.G.S. Longmans, Green & Co. This is another volume of the excellent *Text-Books-of-Science* series issued by Longmans. The work is eminently adapted for the guidance of students of Petrology. It is divided into two parts: (1) The Rudiments of Petrology, (2) Descriptive Petrology. The arrangement of the matter is good, and the facts presented with clearness and precision. We recommend it to teachers and students.

MANUALS FOR TEACHERS. No. 2, *The Cultivation of the Memory*; No. 3, *On the Use of Words*. Philadelphia: Eldredge & Bro. 50c. Messrs. Eldredge & Bro. are republishing a series of five admirable manuals which were originally issued in England, at the request of the Literature Committee of the National Educational Society. When completed they will form a valuable addition to a teacher's library. The books are beautifully executed, the matter is written in a philosophical style, and arranged in a most systematic manner.

SUMMER AND ITS DISEASES. Philadelphia: Lindsay & Blakiston; Toronto: Messrs. Hart & Rawlinson. This is No. 3 of the American Health Primers. It gives very plain directions in relation to the proper means for avoiding summer diseases, and treating them when necessary. The hygienic rules are simple and excellent. The chapters on Sunstroke and Heat Fever; Summer Diarrhoea and Dysentery; Cholera Infantum; Summer Colds and Hay Asthma; and The Skin in Summer, are especially good. The rules for the treatment of infants, the preparation of their food, &c., are exceedingly valuable.

RHETORICAL METHOD. St. Louis: G. J. Jones & Co. 75c. This book has been prepared for advanced classes. There is probably no subject taught so unsystematically in schools as composition. This work is clearer in its arrangement and better adapted to school work than any we have yet seen. Prof. Northrop, of Yale College, says: "It is really surprising how much has been put into these one hundred pages."

MONTEITH'S EASY LESSONS IN POPULAR SCIENCE. New York: A. S. Barnes & Co. This is an easy introduction to the most striking natural phenomena of the earth. They are grouped around Geography as a central study. The illustrations are all excellent, but by far the most valuable are the black-board illustrations. They are drawn in white on black, and are very suggestive and simple.

ELEMENTS OF ENGLISH ETYMOLOGY. By James W. Connor, B.A. Toronto: Wm. Warwick. This treatise has been prepared at the request of the Education Department, and is authorised for use in Ontario. It fills a place in the list of Text-books which was heretofore vacant, or worse than vacant.

OUTLINES OF THE WORLD'S HISTORY. By William Swinton. New York: Ivison, Blakeman, Taylor & Co. Professor Swinton is already well known in Canada as an author of school books. His marked characteristics in the preparation of his books are breadth of grasp, and clearness and simplicity of arrangement. The history is one of his best works. It examines and outlines the history of the world with a special view to the civilization and progress of mankind. It asks what each nation has contributed to the general growth, and briefly answers the question. It traces the growth regularly from the beginning, but preserves the connection between races and empires all the way through. It does not give a history of a number of separate countries, but a bird's eye view of the history of the world as a whole.

WEBB'S MANUAL OF ETYMOLOGY. Philadelphia; Eldredge & Bro. \$1.00. While it is not to be expected that this work should be placed in the hands of the pupils in the Canadian schools to supersede that now in use, there is no doubt that teachers and advanced students who are especially interested in the critical study of the English language will be interested and profited by a perusal of its pages. The arrangement of the book is not novel, but is simple and practical.

MAGAZINES.

THE CONTEMPORARY REVIEW (Strahan & Co., Paternoster Row, London, Eng.) for August has been received. The contents are: "The Religious Condition of Germany," "Cheap Justice," "An American Divina," "The Classical Controversy: its Present Aspect" (by Prof. Bain), "Indian Religious Thought," "The Progress of Education in England," "Conspiracies in Russia," "Intemperance and the Licensing System," "Contemporary Life and Thought in France," Review of Contemporary Books on Classical Literature, Literature of the Middle Ages, and Science. It is an excellent number.

THE EDINBURGH REVIEW for July is a very readable number. It contains "Canon Stubbs' Constitutional History of England," "The Worthies of Norwich," "Brugsche's Egypt under the Pharaohs," "The Hatton Papers," "The Works of Rembrandt," "The Scots of Buccleuch," "The Fallacies of Evolution," "Rural England," "A Brief Retrospect."

No 1, Vol. II, of the **AMERICAN JOURNAL OF MATHEMATICS** has been received. This journal is published under the auspices of the John Hopkins University, and is devoted chiefly to advanced mathematics. The editors and contributors are beyond doubt among the foremost mathematicians of the age; and every student of mathematics cannot fail to be interested and instructed by their contributions. We have not time to notice in detail the valuable discussions contained in the number before us. It is perhaps enough to say that there are articles by Prof. J. J. Sylvester (the editor-in-chief), Prof. Cayley, Prof. Halsted, and other distinguished mathematicians. The subscription price is \$5.00 per volume; single numbers, \$1.50. Address Prof. W. E. Story, John Hopkins University, Baltimore, Md.

The May-June number of **THE WESTERN** has come to hand. As usual, it furnishes an excellent "bill of fare." It contains among other valuable articles, "Analysis of the Nibelungen," "The Method of Studying Social Science" (by Dr. Harris), "To Ruin is not to Reform" (an excellent address delivered before the Teachers' Association of St. Louis by L. Soldau), and "The Orient under the Caliphs."

BLACKWOOD'S MAGAZINE, August, contains parts of two serials, Notes from Cyprus, Stock Jobbing and the Stock Exchange, St. Neot's in Cornwall, India and the Silver Question, and Contemporary Literature.

POPULAR SCIENCE MONTHLY: D. Appleton & Co., New York. Contents for September: Spiritualism as a Scientific Question, by Professor Wilhelm Wundt; Geographical Evolution, II, by Archibald Geikie, F.R.S.; Serpent-Charm, by Felix L. Oswald, M.D.; Novelty in Patents, by Oliver E. Lyman; Development of the House-Fly, by M. H. Robson (illustrated); Food and Feeding, III, by Sir Henry Thompson; A Remarkable Coincidence, Letter from Dr. Geo. M. Beard; The Classical Controversy, its Present Aspect, by Professor Alexander Bain; The Vanilla-Plant, by J. Poisson (illustrated); Chloral and other Narcotics, II, by Dr. B. W. Richardson, F.R.S.; Spontaneous and Imitative Crime, by E. Vale Blako; Materialism and its Lessons, by Dr. Henry Maudsley; The Birth, Life, and Death of a Storm, by Robert H. Scott, M.A., F.R.S.; Biographical Notice of George F. Barker (Portrait).

THE ATLANTIC MONTHLY. Houghton, Osgood & Co., Boston. Three good Poems, Songs and Eccentricities of Birds; a Tennysonian Retrospect; The Use of Numbers in Society, Nobility and Gentry, by Richard Grant White, and A Word to Philosophers, form the most interesting portions of this standard monthly for September.

The contents of **APPLETON'S JOURNAL** for September are as follows: Vivian the Beauty, by Mrs. Annie Edwardes, author of Archie Lovell, Ought we to Visit Her? etc., Chapters I. to III.; French and English Pictures; A Venetian Night, by Charlotte Adams; How to popularize Wordsworth; the Seamy Side, a novel, by Walter Besant and James Rice, Chapters XIII. to XV.; The Souvenirs of Madame Vigee Le Brun, An Hour with Thackeray, by John Estlin Cooke; The Critic on the Hearth, by James Payn; Russian Conspiracies, II, by Karl Blind; A Novelist of the Day. The Editor's Table contains: About Melancholy again; The Poetry of the Familiar; The Honors to the Prince Imperial. Books of the Day. Tennyson's *The Lover's Tale*; Mallock's *Is Life worth Living?* Froude's *Cæsar*, Blaikie's *How to Get Strong, and How to Stay So*; Robinson's *The Great Fur Land*; Alexander's *Maid, Wife or Widow?* Nichol's *English Composition*; Stockton's *Rudder Grange*; Cable's *Old Creole Days*; Green's *History of the English People*; Couture's *Conversations on Art Methods*; Hume's *History of England*, etc.

ST. NICHOLAS, by Scribner & Co., New York, and **PEEP SHOW**, by Strahan & Co., London, are the most wonderful magazines published. They probably bring more delight to their juvenile readers than any others do to those for whom they are intended. True stories, fairy tales, pretty pictures, pleasant poems, etc., form a rare treat for old and young.

HARPER'S MONTHLY, September, contains Fifty Years of American Art, No. II.; The King Collection of Engraved Gems; The Navasink Highlands; An Industrial Society and its Work; Gold Mining in Georgia; three fine stories; a large instalment of Young Mrs. Jardine, a very excellent novel; a sweet poem, My Mariner, and the usual amount of editorial wisdom and fun.

—Managers have their rights as well as the teachers. When an engagement has been made it should be faithfully fulfilled, and there should be mutual consent before its terms are altered.