THE EDUCATIONAL REVIEW.

FOR THE ATLANTIC PROVINCES OF CANADA.

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The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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EDITORIAL NOTES.

IN commencing the second volume of the REVIEW, the support that has been received during the past year encourages us to hope to make it still more valuable in future as an educational journal. Since our last, many in renewing their subscriptions for the ensuing year, have spoken in such terms of the REVIEW as to warrant us in believing that it has afforded them valuable assistance in their work. A larger issue of the REVIEW than usual is sent out this month, and we hope that those who may perhaps see it for the first time will determine not to be without it.

THE anniversary exercises of Acadia College are ending as we go to press. This is the fiftieth anniversary of its foundation and its friends are preparing to celebrate the event by a grand rally in August next and the foundation of a jubilee fund for the better equipment of the college. The year is appropriate, as it has been one of marked progress and success at Acadia.

THE programme of the Interprovincial Convention, to be held in St. John in July, is published in full in another column. Among those who have accepted the invitation to be present, are Sir Wm. Dawson, Dr. J. C. Fitch, the educational author whose works have such a wide popularity here, Col. Francis W. Parker and Mrs. Parker, of Illinois, Dr. Th. H. Rand, Dr. Schurman, of Cornell University, and leading educationists throughout these Provinces. Some of the men whose names are given above have a world-wide reputation as teachers, and no one should miss an opportunity, that may not soon occur again, of hearing them.

"THE nursery and orchard of Franklin Sharp, jr., just at the town boundary, is growing under his skill and unremitting industry to be one of the finest agricultural aspects in this fair country. When Mr. Sharp commenced work on that land a large part of the ground was rough and undrained. To-day the thousands and thousands of trees set in rows as straight as a line; the ground drained, leveled and thoroughly cultivated; busy men and boys extending and improving the plantation, is a sight to make one feel that our boys are not devoid of enterprise and energy. The young proprietor of this prospering enterprise is to be congratulated and given credit for his pluck in going forward, under very serious drawbacks, in the heavy work in hand."—*Windsor Press.*

The above is an illustration of what may be accomplished by intelligence and energy. There are hundreds of acres in these provinces that are awaiting just such treatment to yield the results above mentioned. The REVIEW in both the last and the present number is aiding in this work by showing how to preserve orchards from the ravages of insects.

IN connection with the "Drawing" in our common school course, great practical benefits can be secured by drilling the pupil in the use of the scales for the plotting of simple plans and the construction of angles. First, the labor would not be great, and the results would be as valuable in the training of the hand as an exclusive attention to freehand work. Secondly, the pupil leaving the common school for the avocations of life would have a knowledge which would be of practical use to him in understanding

plans, maps, etc., and in the construction of plans. Thirdly, it would constitute the best preparation for study of geometrical mathematics in the high school, should he go on, and for the workshop mathematics, should he have to leave at the common school stage, as the great majority must do. The plotting of simple plans according to scale can be made an interesting lesson to very young pupils. Begin with the outlines of the school-room.

AT THE late meeting of the Royal Society at Ottawa the president, Dr. Lawson, delivered an address reviewing the year's work. Among the many papers submitted and read were the following: On the Nymphæaceæ, by Prof. Lawson. Revision of the Canadian equiseta, by the same. Notes on Nova Scotia gold mines, by E. Gilpin, jr., M. A., F. G. S. On Hamalanotus Dawsoni, by Rev. D. Honeyman, D. C. L. On Serpulites longissimus, by the same. The Giant Trilobite of Moose River, Asaphus (?) Ditmarsiæ, Hnym, by the same. A table of the Cubical Expansion of Solids, by J. G. MacGregor, M. A., D. Sc. On some Remarkable Organisms of the Siberian and lower Devonian rocks of Acadia, by G. F. Matthew, M. A.

The following new fellows were elected: In section I., Abbe Cuoq. In section III., Professor Bovey, of McGill College. Section IV., A. H. MacKay, B. Sc., Pictou, N. S.: Abbe Provencher, Portneuf, Quebec.

THE following extract from a paper read by Miss Gillmor, of the Milltown High School, on Arbor Day contains a truth that should never be lost sight of. The influence in after life upon the child whose surroundings have the elements of beauty and order cannot be overestimated:

"The little world in which children spend the most impressionable season of their lives should be fresh, bright, clean, and attractive, for like children of a larger growth, they are influenced by their surroundings. A little cost and care, on the part of parents and teachers, can make a school and its environments one of the bright spots of earth. Give us shaded, orderly grounds without, and within a home-like room brightened with plants and flowers, which are themselves neither sweeter nor brighter than the flower faces of little children—give us these, with your sympathy and co-operation, and we will give you back the material of which men and women are made."

THE Experimental Farms of Canada, under the management of the director, Professor Saunders, must eventually prove of very great value to the agriculture of the Dominion. James Fletcher, the Entomologist, has in "Bulletin 3", shown his skill in Botany by a scientific and at the same time most popular exposition of the cause of the "Smuts affecting Wheat," and the method of preventing them.

"A QUARTER of a century ago, a proposition was made by the teachers of Nova Scotia to start an educational journal. Over the meeting at which the proposition was made the Rev Dr. Forrester presided, the man to whom Nova Scotia may indeed be grateful for the impress which his life work left upon the educational institutions. The journal was started, to be followed in time by many others; and yet it seems strange that notwithstanding the literary activity which has prevailed among the teachers of the lower provinces in support of such educational periodicals, no extended life has ever appeared of the "father of free schools" in Nova Scotia. Is there not something ungrateful in this neglect on the part of those who first drew inspiration from the Stowe of the Maritime Provinces."—*Educational Record, Quebec.*

This remark is to the point. Why should it be so? A short sketch of the life of Dr. Forrester, the "father of free schools in Nova Scotia" has been prepared for the REVIEW, and will in due time appear.

THE success which has attended the establishment of the branch of the Berlitz schools of language in St. John and Fredericton, must be gratifying to the Professors Ingres and Bober and a proof of the excellence of their system. The classes both in St. John and Fredericton have grown so rapidly that the school, it is hoped, may have a permanent establishment here.

IT HAS been decided to abandon the N. B. Summer School of Science for this season, the required number of students not having enrolled.

SEVERAL candidates for matriculation into N. B. University from the young ladies' High School, St. John, are undergoing examination. Four candidates from the same school have completed their examination for the degree of Associate in Arts in McGill University, Montreal. This speaks well for higher education, and especially for the character of the work done in this school by the accomplished principal, Mrs. Carr, and her staff.

IN the *Bookmart* of Pittsburg, Pa., which comes to us for June, enlarged and greatly improved, is a translation of an exceedingly rare copy of verses on the Defeat of the Spanish Armada, which took place in June, 1588,—three hundred years ago.

ANOTHER compliment to a Canadian scholar is the conferring knighthood on Dr. Wilson, of Toronto University. It is said that he declines to accept the proffered honor.

Back numbers of the REVIEW, from August to April, inclusive, will be paid for in cash if returned to this office.

ARBOR DAY.

From reports received from different parts of New Brunswick, Arbor Day seems to have been observed very generally. The success which attended the experiment last year of setting aside a certain day for planting trees and otherwise improving school grounds induced the Board of Education to make permanent provision for the observance of the day. We are glad that the response to the order has been so general. In addition to the tree planting the school exercises appear to have been practical and appropriate, and the interest seems to have extended beyond the school grounds.

One hundred and fifty trees were planted on the High School grounds, Milltown, by Principal N. W. Brown and his assistants. Mr. Brown's success in previous years in transforming the school grounds at Forest City, York County, into a garden is an example worthy of imitation in other districts.

From reports in the papers, throughout Nova Scotia Arbor Day appears to have been observed very generally, although the day selected in some districts, the 29th of May, was rather late for successful planting.

THE NEW BRUNSWICK UNIVERSITY.

Encœnia at New Brunswick University will take place on Thursday, June 21st. Judge King will be the Alumni orator, and Prof. Dyde will give the annual oration in praise of the founders.

From the Calendar which has just been issued it is gratifying to learn that this institution has had a more than usually prosperous year. There has been an attendance of sixty-one students in the regular classes with thirteen pursuing a partial course. This is an increase on previous years, but there is still much to be desired in this respect. The additions that have been made to its faculty of instructors, the raising of the standard of instruction, and the improvement of the course in lengthening it and otherwise increasing its efficiency, should be the means of bringing within its walls still larger accessions of students and of stimulating its graduates to put forth greater efforts to add to its endowments.

In the proposal to found a scholarship in memory of its late president, Dr. Jack, the public spirit and liberality of its graduates should cause them to respond so quickly, that the enthusiasm of giving to an institution to which New Brunswick owes so much would prove infectious. Is it not time that the public pulse in New Brunswick was quickened into giving more liberally for the support of higher education? How little has been done in the past fifty years to add to the university scholarships or to increase its endowments; to add to its faculty of instructors, or to increase their emoluments! Did the spirit of noble giving and effort end with those who established the institution, and has a grateful posterity no ambition to add *its* testimony to the donations of nearly a century ago? Perhaps those who listen to the oration in praise of its founders on the 21st will be animated by a zeal to present good gifts.

LIVING SALARIES.

If the teaching profession is really to be a profession it must hold out better inducements in the shape of salary. The laborer is worthy of his hire. And if his hire is not sufficient to support a family, he must make a stepping-stone of the present labor for a more remunerative one. This knight-errantry which utilizes the educational field in our country for temporary personal advantage, is the bane of our present system; such is the testimony of every one of our inspectors. A prospective literary professional class gives the elements of literary knowledge to our young people in too often a very perfunctory manner. And when the work is enthusiastically done, as it often is, the young pupils have sometimes no other aspirations developed than to go to college, or to be a minister, lawyer or doctor. But what the country needs most, is the enthusiastic direction of our young people to the development of agriculture, the arts and manufactures, and whatever latent industrial resources may exist in the country, not forgetting the literary professions either. The teacher must be an all-round man himself to do this work. But such a genius with such a training costs something to produce; and its value to the country is something that is not likely to be estimated by persons whose ideas do not rise above the quotations of the market in their own line of production. The lowest priced teacher is engaged. The useful one is starved often into another profession. When our teachers ask what can be done to increase salaries, it is not necessarily a cry of selfishness. It is more often the expression of those whose hearts are wholly in the work of education, and who are loth to leave so useful a field in the care of hirelings. But the magic of genius is not the power of living upon nothing. It is rather the faculty of finding something to live upon. The educational genius must therefore too often turn from the pursuit of his cherished purpose, and take his place in another profession. Surely it is not too much to hope for that some scheme may be devised to make evident to all concerned the advantage of a more enlightened and liberal policy in educational matters. The first movement must come from our teachers by demonstrating the practical value of worthy educators,

PERMANENCY.

In looking over the reports of education for New Brunswick and Nova Scotia it is a matter of regret to observe the frequent change of teachers, the short space of time that they are employed in a district, and the general unrest that seems to be characteristic of the teaching profession. No matter how well fitted teachers may be by previous training and scholarship for imparting instruction,—no matter what special gifts they may have for moulding the mind and forming the character, the consciousness that they are soon to engage in other pursuits must act as a clog on their efforts and prevent that development of their powers which increasing knowledge and a riper experience are sure to bring.

This element of permanency is one which should be fostered—by governments, by communities, and especially by those upon whom is placed the responsibility of administering our education. A government that fosters education by a wise and liberal policy is laying the foundation of a lasting prosperity. Institutions, as normal schools, that fit teachers for their work, higher institutions of learning, especially those that stimulate the industrial activities of a people, should be so thoroughly equipped and maintained as to make their influence felt in all departments of life. It may be necessary to practice rigid economy, but an economy that cripples education is unwise.

Many communities have yet to learn that the cheapest teachers are the most expensive in the end. The least reflecting person must realize that to intrust the education of his children to an inefficient teacher is a poor way to economize. If he must stint he should do it in some other direction. But the time must soon come when to pay trained and capable teachers a living salary as one means to ensure permanency will be looked upon as a wise and judicious investment by those who employ educated labor.

But if a government supports normal schools in which to fit teachers for their work it should have the assurance of at least some degree of permanency on the part of the pupil-teachers who are graduated therefrom. In Newfoundland there is one excellent feature in the school system, and it is that teachers who receive normal school advantages have to guarantee to teach for a stated period. If normal schools are called upon to do less academic and high school work and more training orprofessional work, it certainly seems but a measure of justice to the country that it should receive the benefit, by requiring their graduates to remain longer in the profession. A correspondent in our last put this matter very forcibly, and it is worthy of consideration.

MOUNT ALLISON INSTITUTIONS.

The academic year has just closed at Mt. Allison. From the reports to hand the past year has been one of more than ordinary progress and success. These Educational Institutions, though under the control of the Methodist church, are not conducted in sectarian grooves. All denominations and classes throughout the Provinces patronize them, and so generally has this been the case that scores of old students are found in all departments of professional, mercantile and manufacturing employments. The great success that has crowned the efforts of Mt. Allison during the past year may be regarded as an indication of increased interest in the higher education all along the line. The attendance at the University during the year has been 95; at the Ladies' College, 145; and at the Academy, 57. These figures indicate that the stimulus of intellectual quickening and culture has been brought to bear upon nearly 300 youths of our country in these institutions during the past year.

The closing exercises were of a very interesting and pleasing character. These are among the strong points in favor of Mt. Allison. The students show to the public what they are capable of doing and the character of the instruction during the year. Principal Davis was able to report a larger attendance in the Academy than the year previous, but the attendance is by no means what it might be or what its friends hope for. The high state of the public school system of the Provinces has, no doubt, affected the attendance at the old Academy. The Ladies' College is in a highly flourishing condition. Principal Borden and his fellow instructors may well feel proud of the success which has attended their efforts. Music, Fine Arts and Modern Languages are taught by instructors of the very highest attainments, and then all the advantages of the University classes are thrown open to the young ladies. The attendance is so large and the applications for rooms so pressing that a further enlargement of the building has become a necessity. To meet the growing demand for musical culture in all its branches, a movement is on foot to erect a new building to be known as the Conservatory of Music.

We are glad to note that the graduating class this year is the largest that has yet gone forth from the University. Another pleasing feature in connection with this class is that two of its members were young ladies. Mt. Allison has the distinguished honor of being the first College in Canada to throw open its doors to women, and also the first to confer the regular B. A and M. A. degree upon the other sex.

The University at Sackville is fortunate in having such an accomplished scholar and fine executive officer for its President as Dr. Inch. He is ably assisted by a staff of enthusiastic professors. The Chair of Literature organized last year has been satisfactorily filled by Prof. Tweedie. It is a hopeful sign for our country when our young men who have earned distinction in the Universities of Great Britain and Germany return to assist in the development of the higher education. Prof. Smith has been the recipient of the degree of LL. D., from Victoria University, and Prof. Burwash has just received that of D. Sc., from Mt. Allison. We congratulate both of these gentlemen on their well earned honors. Dr. Burwash has long been held in high esteem for his attainments in natural science.

A great improvement has been made in Lingley Hall. The rooms at the front entrance have been thrown into the auditorium which is now capable of seating fully two hundred more than formerly. We are glad to notice these signs of improvement and progress at Sackville. These Institutions have done and are doing a noble educational work in our midst, and they are at this moment better equipped to continue that work than ever before.

The exercises just closed must have rejoiced the heart of the venerable Dr. Pickard, who was present. He was the first Principal of the Academy and the first President of the College. He spent nearly thirty years of his active, busy life in working for the cause of education and the welfare of the Sackville Institutions. It will soon be fifty years since the Academy was first started. From that beginning have grown, by a regular process of development, the Ladies' College and the University, with all their appliances and equipments; and taken altogether there is no more complete educational centre in Canada. The friends of Mt. Allison will soon, therefore, celebrate the Jubilee year of the organization of their educational work. When that celebration takes place, there could be no more graceful, no more deserving act than that of founding a chair or other endowment and associating with it the name of HUMPHREY PICKARD.

SECONDARY EDUCATION IN ENGLAND.

The friends of National Education in England have cause to be satisfied with the work of the last twenty years. Primary education has advanced by "leaps and bounds." The sections of the community that in former times were reached by the inadequate means at the command of the various organizations which dispensed the benefits of education to the country have for years been enjoying advantages, which twenty or twenty-five years ago could only be secured by their richer neighbors. While those who were removed from all educative influences, except those which debased their nature and prepared them for a career of crime, have, by the compulsory clauses of the Education Act, and the earnest, enthusiastic and intelligent efforts of School Boards and educationists, had opened to them opportunities to lead honest, useful and industrious lives. The statistics of crime prove unquestionably that, during these years, coincident with a vast increase in the number of schools and the pupils attending them, there has been a great diminution in the number of juvenile delinquents. Reports of school boards, of committees who have inquired into the social, moral, and economical effects of recent educational operations, and of commissions appointed by Government to prosecute similar investigations, but of a wider scope, concur in recognizing the undoubted evidence of a salutary change in the condition of the people, and of brighter hopes and fairer prospects for the future.

But if we extend the region of our observation beyond that in which primary education is operative, we are not rewarded by the same gratifying results. Between the primary school and the college and the University no well organized system of intermediate schools has been interposed. There are the great public schools, the grammar schools and private and proprietory schools, but there is no inspection, no registration, and no responsibility to the public. Mr. John Morley in a recent speech on this subject said: "Every person who watches secondary education is too familiar with the confusion of wasted and misapplied endowments, distracted trustees, and bewildered parents—a very Babel of abounding conflict and misdirected criticism." The colleges and universities complain of the state of unpreparedness in which lads enter their classes. It is true that an excellent intermediate education can be had, but then it is beyond the reach of any except the wealthy. All the education that is good is intolerably expensive, while that which can be obtained at a moderate fee is excessively bad. The late Mr. Matthew Arnold says: "The English middle classes are among the worst educated in the world. Their education is vulgar and unsound. Our body of secondary schools is the most imperfect and unserviceable in civilized Europe, while our middle class is the worst schooled." And this condition of matters is not the result of apathy, or the absence of any strong desire for reform. Discussions of this question on public plat-

forms, denunciations from educational enthusiasts, and articles by leading educationists in the most influential magazines, have led to the appointment of commissions and committees by Parliament and the preparation of voluminous reports. But everywhere these efforts are hampered or directly opposed by the three obstacles which must always be overcome by those who enter the field of educational reform—"vested interests, local prejudices and stupid obscurantism."

It must also be mentioned to their credit that the universities, by means of local examinations, have sought to influence the secondary education of the country, and not without good results. Many excellent schools have been, by the success of their pupils at these examinations and those of the College of Preceptors, brought into public notice and have had their credit established as sound and reliable places of learning. And at the same time there has been demonstrated to the public the fact that judicious examination is not only of advantage to their interests, but that it cannot fail to bring fame to and increase the income of the schools. But educational reformers, though satisfied with these as experiments, are by no means content to rest here. They behold, with dismay, that every new experiment, however successful, only adds to the chaos that formerly existed. They feel confident that from the £660,000 stg., of annual income, devoted by endowment to secondary education, there ought to be derived education of better quality and of greater quantity, and that three or four times the number of pupils ought to participate in it. And they are convinced that the spasmodic efforts of the teachers of the higher departments in primary schools, the private adventures of enterprising teachers, and the combined efforts of the wealthy in certain localities to establish proprietory schools, cannot supply the deficiency. And, therefore, during the last few years, constant, untiring and enlightened efforts have been put forth to educate public opinion on this great question, and to keep up a constant pressure in the direction of reform. Doubtless the debate in the House of Commons on 27th April brought gladness to the hearts of many. Its whole tenor was a pledge from both sides of the House that both parties were resolved that the present state of things must not continue any longer, and emphasized the admission that they were responsible to the public for the efficiency of secondary as well as primary education. And the least sanguine are justified in hoping that a resolute effort will be made, by the appointment of well qualified inspectors, to bring order out of the existing confusion, and by the power to be granted under the proposed "Local Government Bill," to utilize, to the utmost extent, local efforts and local capabilities to satisfy the demands of secondary education.

Such an admission on the part of English statesmen of their obligation to provide for the higher education of the youth of the country is a very hopeful feature of the politics of the day. It has long been acknowledged in Germany as the duty of the state to see that education, from the primary school to the university, is as perfect as it can be made. Germans are always ready to express their opinion that what they are at the present day, in the arts, or in war, is most of all attributable to their admirable educational advantages. In Germany the state inspects the primary schools, but reserves its grants for the higher education. Mr. Matthew Arnold writes: "We are misled if we are merely told that the schools for the lower classes in Berlin are free, while those for the middle and upper classes charge school fees. What would the schools for those classes be in Berlin, or anywhere else in Germany if they had merely the school fees to depend upon? The schools are built and maintained, and their teachers are paid by the state or the municipality; the school fees of the pupils, always very moderate according to their notions, are merely a contribution in aid of the expense of admirable schools provided really like the elementary schools by the public." Such being the case, need there be any fear of following in the footsteps of the Germans. A generous and intelligent support of the higher education will serve to develop, foster, and exalt the professional spirit of the teachers, and quicken and stimulate the intellectual energies, and strengthen the moral force of the pupils.

THE PLANETS FOR JUNE.

Jupiter shines with great splendor in Scorpio. It is slowly moving westward from Beta Scorpii, with which in May it was nearly in apparent contact. After night-fall it will be the most conspicuous object in the southern sky.

Mars is further west in Virgo, but is moving eastward among the stars. It was in conjunction with *Uranus* on the 6th inst.

Saturn is still further west, east of Pollux and Procyon, in Cancer. It is moving eastward, and during the month will pass Præsepe, the nebulous cluster, also called the Beehive.

Venus is morning star in Taurus with Neptune.

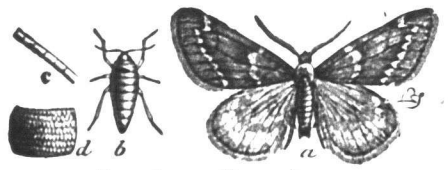
Mercury is in greatest eastern elongation from the sun on the 12th, when it sets about two hours after the sun. It is then in Gemini and forms a triangle with Procyon and Pollux.

FERNDALE SCHOOL.

No. XIII.—The Canker Worms.

1. *Anisopteryx pometaria*, Harris, (Fall Canker Worm).
2. *Anisopteryx vernata*, (Peck), (Spring Canker Worm).

Teacher. Here is another of the great enemies of our apple trees. When was this delicate, brownish grey, nearly transparent winged, moth captured?



Fall Canker-Worm (*Imago*).

a. Moth (Male); b. Moth (Female); c. Portion of Antennæ Magnified; d. Segment of Body Magnified.

Jack. On a fine day last November. After the first frosts are over in the fall, they come out of their cocoons in the ground in great numbers. The female ones, without wings, looking like a kind of grey bug or spider less than half an inch long, were caught climbing up the apple trees and laying pretty patches of small eggs on some of the twigs.

Teacher. Very good. Here we have one of these patches figured at *e*, and the separate eggs magnified at *a* (side view) and *b* (top view). When do these eggs become hatched?

Fall Canker-Worm, (*Eggs and larva*).

S. In May just when the buds of the trees break out into leaf, and the larvæ keep eating at the leaves until they grow about an inch long before the end of June.

T. There is a drawing of one at *f* with one of its segments magnified at *c*. What habits have you noticed?

S. They sometimes stand out straight in the air.

Another S. There are no feet on the middle of their bodies, and they loop when crawling.

Other S. They call them loopers . . . measuring worms . . . yardstick caterpillars, because they crawl on as if they were measuring. If you shake the tree they fall off and remain hanging on fine silk threads like spiders' webs.

T. Correct. And about the end of June when full grown they reach the earth, go down into it from two to six inches, weave a buff-colored cocoon of silk and change into chrysalids. The pupa comes out of this after the first autumn frosts, as the perfect moth, male or female, as we have seen. To what order of insects does the Canker-worm belong?

S. To the lepidoptera.

T. To which division of the lepidoptera—the butterflies, sphinges or moths?

S. To the moths.

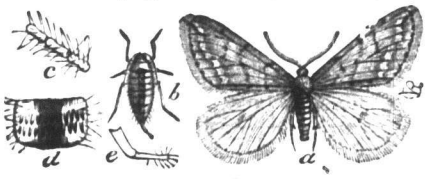
T. Geometry is the science which enabled people first to measure the earth. Hence the moths whose larvæ are so constructed that they loop when moving about as if they were measuring everything, are put in a class by themselves called the *geometrid* moths.

S. Does the other Canker-worm — the *Spring* one—belong to the geometrids.

T. Yes. It was once thought to be only a variety of the *Fall* Canker-worm, the only great difference in its habit being that it generally remains in its cocoon all winter until the first warm days in spring, when it comes out to deposit its eggs as the other species did in the fall.

Jack. But it is different in all its stages from the *fall* species—not very much, but quite enough to be very distinct.

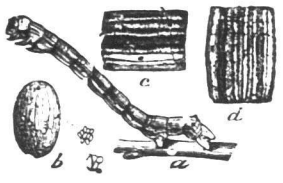
T. Very good, Jack; let us just compare the two species. Here is the male moth at *a;* the female at *b* with its ovipositor, or egg placer, (which the other species has not), magnified at *e*. A segment of its body is magnified at *d* and shows two rows of minute reddish spines on it. A portion of its antenna is shown magnified at *c*.



Spring Canker-Worm (*Imago*).

S. Are its eggs laid like those of the Fall Canker-worm.

T. No, not so regularly, generally in small masses in the crevices of the bark as shown of natural size and with one egg magnified here at *b*. The egg is different in shape also; as are the markings on the body of the caterpillar. *c* is a magnified side view of one of its segments, and *d* a back view. The young caterpillar is of a dark olive green or brown with a black shining head, and a black plate on the next segment. They are very variable in the color of the bands, stripes, and mottlings when older. As they become very numerous under favorable circumstances and strip whole orchards of their leaves before the end of June when they enter the ground, let us find out how we can prevent their depredations.



Spring Canker-Worm (*Eggs and Larva*).

Jack. As the females have no wings they cannot place any eggs on the trees unless they walk up from the ground along their trunks. I have seen people tie broad bands of paper with tar or some sticky sub-

stance around the tree trunks in October to catch the Fall species, and about April to catch the Spring species. The wingless females walk up to the band, and if there is no way to get over or under it they either get stuck in the sticky substance on the band, or never get up the tree.

T. Very good. The tar must be kept soft and sticky by mixing with oil; and the bands must fill the crevices of the bark or else the small caterpillars hatched from eggs at the root of the trees might get up to the foliage. But spraying with the Paris Green water recommended for the Codling Moth in our last lesson (one ounce to about fifteen gallons of water) is sure death to the young caterpillars. When should the spraying be done?

S. When the eggs commence to hatch.

T. When is that?

S. When the buds commence to open.

T. Very good. Spray the trees for the Canker-worm in May just before the buds open. Then again in June, just as the petals have fallen from the flower. Then the two great enemies of our apple trees, the Canker-Worms and the Codling Moth, can have but little chance for life or for mischief doing.

FERNDALE NOTES.

No. IV.—The First Map.

Side of the school-room in the direction of the rising Sun—East. Opposite side—West. Face the Sun at noonday—South. Opposite—North. People agree to have the North at the top of a map. Let us make a map or plan of the school-room—that is, a drawing to show just what the room is like.

Here is a foot rule. Measure the North end of the room. How many feet? It measures 30 feet. Can I draw a line this long on the board? No. How long? Thirty inches. Well, we draw a straight horizontal line, and make it 30 inches.

Now, Jessie, you measure the East side of the room. How many feet? Thirty-two. How does the East side join the North side? Look down at the floor. It makes a square corner. Well, we shall draw a line from the end of the one on the board making a square corner. Is that like it? Yes. But from which end should I draw it? We don't know. Well, face the North end. At which hand is the East? At the right. Well, face the line drawn for the north end on the board. From which end should we draw the line for the East side? From the right-hand end. Very good, from the right-hand end we shall draw it. And how long? Thirty-two inches.

Now, Lena, will you measure the West end? Can anyone tell how long she will find it to be? Yes, 32 feet. How do you know? It appears the same length. It would have to be the same length or the room wouldn't look square at the corners. Lena says you are right. We shall draw it like the other side.

Who will measure the South end? We needn't. It must be the same as the North end? Must it? Go and try. Yes, thirty feet. What kind of corner shall we make? Square. Drawn, but not at right angles and does not meet the end of the other side. Oh, it is not a square corner. Why? Because it would meet the other end. Why? The South end of the room meets the two ends. Very good.

Measure the platform. Six feet wide and all across the room. How far from the North line shall I draw it? Six inches.

How far are the seats from the wall and platform? Measure. Three feet from the wall and four from the platform. How far from the lines in our drawing shall I make them? Three inches, and four inches.

Complete in like manner. Mark cardinal points on the plan of school-room. What direction is teacher's desk from such a desk? In which seat is four sitting? John, please walk round the passages through which I am drawing this dotted line.

This is a plan of the school-room. If the trustees somewhere else wished to build a school-room like this, would this plan show them how to do it? Yes, if they knew how much an inch meant. How much? One foot. But could not the same thing be shown without so large a drawing? Yes, make half an inch stand for a foot. Couldn't it be made still smaller? Yes, a quarter of an inch for a foot. Which drawing would be on a large scale? The first. Which on the smallest scale? The last. What is the scale? I don't know. Well, in the first it is *one* inch to the foot. You can now tell me the scale of the others. A half an inch to the foot, and a quarter of an inch to the foot. Correct. If we wish to draw a map or plan of the school grounds, what must we first do? Measure it. Well, you shall do so, and I shall draw the plan for you on the board, according to your measurements. But will the board be big enough? Yes, if we draw it on a smaller scale than the school-room.

We learn from the London *Schoolmaster* that the introduction of shorthand into Rugby School, England, has proved a great success. There are nearly one hundred boys in the shorthand class, and all of them are most attentive and eager to learn. Dr. Percival, the head master, says "the boys are delighted with the lessons," and he thinks that shorthand will become a very popular subject among them.

PRACTICAL BOTANY.

No. IV.—Movement in Plants.

Very few subjects of study present more opportunities, in the hands of skilful teachers, for training the observing powers of pupils, than the structure and habits of plants. In the preceding papers on this subject it has been shown how this can be done, in a measure, without the aid of text-books, by encouraging pupils to cultivate plants in order to watch their growth from the seeds; to learn the names of plant parts by taking those of the simplest structure and leading the pupils to observe the arrangement and purpose of each; to make drawings of the plant and its parts, and be able to describe what they see with as little aid from the teacher as possible. There will be a strong temptation to *tell* pupils what they should find out for themselves, but this should not be yielded to. Proceeding slowly and with patience, and connecting each day's work with what has been done before, progress will soon be rapid, if the teacher has been careful to let the pupils depend largely on their own resources at the outset. A good beginning will thus be made for systematic study of plants later on—and in any case the pupil will be trained to observe what is about him.

Plants have many curious habits, which is a source of never-ending interest to observe. That some of them have the power of motion in certain parts, to a limited extent, is quite evident if we watch them carefully. Notice how young seedlings, growing near a window, will bend instinctively toward the light. Climbing plants, whether upon walls or woody supports, show the same tendency to expose as large a surface as possible to the light. Such climbers, when they have reached the top of their support, will sweep round in a circle as if instinctively seeking another prop, to which, if not too far off, they will become attached. To illustrate this, let a Hop or Morning Glory be allowed to overtop a short support. Place near it, at the distance of a foot or so, a longer pole, around which, if rapidly growing, it will soon twine.

Some plants climb by their stems, others by their leaves, others by tendrils (thread-like shoots). Ask the pupils to observe climbing plants, and bring examples illustrating the different methods.

Some plants are very susceptible to changes of the atmosphere. The little Wood-sorrel (*Oxalis acetosella*) which is so abundant in the woods in early summer, and several species of clover, especially White Clover, close their leaflets at nightfall, thus exposing the least surface to be cooled by radiation. Under the influence of light and warmth, however, this position is exchanged for one which gives the greatest exposure. This folding up of the leaves at nightfall was fancifully termed the "sleep of plants" by Linnæus. Many flowers of the compositæ, such as the Dandelion and Sow-thistle (*Sonchus arvensis*) close at nightfall or before a rain. The Evening Primrose (*Œnothera biennis*) closes its flowers in the morning and opens them at sunset. These are only a few of the plants whose leaves or flowers open or shut at stated intervals. Ask the pupils to observe others, and in this way new facts may be brought to light.

Another remarkable evidence of the power of motion in plants is furnished in the Round-leaved Sundew (*Drosera rotundifolia*) which grows abundantly in damp places. At this season of the year it will be observed in the form of a cluster of reddish leaves growing close to the ground. Later on in the summer it will send up a stalk or scape bearing the flowers. Each leaf is thickly covered with small spines. At the end of a spine glistens a minute drop of moisture which shines brilliantly in the sun, giving rise to the popular name of the plant. But on placing the finger upon these drops, it is found to be composed of a sticky or glutinous substance. Small insects alighting upon the leaves become entrapped, and the more they struggle to escape the deeper they become entangled on the treacherous surface. The leaf gradually but surely folds in from both sides upon its victim, worn out with the unequal struggle, and gradually entombs it after some hours. After a day or two the leaf re-opens, but the insect has disappeared, and the leaf is ready to make another meal of the first unwary small insect that may be attracted to its leaf. This phenomenon of a plant that derives a part of its sustenance, at least, from insects may be observed by anyone. Search out the plant. It is very common and easily recognized from the description given above. Dig it with a sufficient supply of earth to ensure its life for some weeks, and place it in a sunny window. Place a mosquito, or a particle of fresh beef about the size of a pin head, upon the open leaf and await the result. In the course of several hours the leaf will have enclosed the particle. When it again unfolds the object will be found to have disappeared—in other words to have been absorbed or digested by the juices of the leaf.

The Pitcher-plant (*Sarracenia purpurea*), which is abundant in swamps, is another insect catcher, although not in the same way as the Sun-dew. In these pitchers water is generally found, in which may be seen drowned insects in all stages of decay. What use, if any, these dead insects are to the plant has not yet been made clear, and yet plants rooted in bogs scarcely need to store up water in pitchers for their own use. Is it simply a trap to drown useless or unwary insects?

THEODORE HARDING RAND, A. M., D. C. L.

President of Woodstock College, Ont.

In the past quarter of a century there has been no man who has exerted a greater influence in educational affairs in Nova Scotia and New Brunswick than Theodore H. Rand. He successively filled the important positions of Chief Superintendent of Education both for Nova Scotia and New Brunswick at times when clear judgment, wise forethought and a fixedness of purpose were necessary to organize systems of education of which we are justly proud.

Dr. Rand was born at Canard, Cornwallis, N. S., Feb. 3rd, 1835. He was educated at Horton Collegiate Academy and Acadia College, and was graduated from the latter institution in 1860, in a class the most brilliant that has passed from the walls of that honored institution of learning. Among the fellow students of Dr. Rand were the late Prof. Chas. Fred Hartt, Prof. Jones, Dr. Alward, Dr. Wickwire, and others, who have won distinction.

In 1860, Dr. Rand was appointed to the chair of English and Classics in the N. S. Normal School, Truro, and in 1864 he was called to fill the position of Chief Superintendent of Education for the Province, from which office he was removed in 1870. In 1871 he was called by the Government of New Brunswick to be Superintendent of Education on the inception of the new school law for the province. This position he held until 1883 when he resigned to enter upon his duties as Professor of the Theory and Practice of Education at Acadia College. His work was regarded as most successful in the college, and when he left to fill the chair of Christian Ethics and Didactics in McMaster Hall, Toronto, it was with universal regret.

Dr. Rand's force of character and genius for organization secured him a warm friend and patron in the late Senator McMaster. He was called to the Principalship of Woodstock College, which, aided by endowments from a princely giver, and stimulated by an intelligent and vigorous leader, soon gave promise of the larger institution into which both Toronto Baptist College and Woodstock College have been incorporated—McMaster University.

Dr. Rand was chairman of the committee to secure the charter for this University, and chiefly to his tact and energy, and the princely generosity of him in whose honor it is named and who bequeathed nearly a million dollars as an endowment, McMaster University owes its foundation.

Dr. Rand has qualities which distinguish him as a teacher and a leader. In both Nova Scotia and New Brunswick, as Superintendent of Education, he did not flinch in the discharge of duties that required tact and determination. In the equipment of a system of free school education it was but natural that Dr. Rand should be subjected to much hostile criticism, but the character of his work and its results will become more apparent with the lapse of time.

Dr. Rand is an untiring worker, an enthusiastic teacher. Wherever he has labored he has inspired his students and co-workers with a spirit that has stimulated them to noble effort. At the age of fifty-three, although there is no sign of abatement to his intense energy and tireless activity, he has been warned that he must seek rest and leave of absence from work for at least a year. He will visit these Provinces in July and will take part in the proceedings of the Interprovincial Convention of Teachers.

EDUCATIONAL OPINION.

I am glad to have to say that the study of the elementary principles of agriculture has been prosecuted with considerable success by the student teachers, and that during the past year, all, without exception, have had the subject so elucidated that they ought to be able to communicate instruction in it to their more advanced pupils. This in itself is a very noteworthy advance, and probably all that can be done until it be recognized as a distinct branch of study, with a laboratory for practical purposes, and a teacher specially trained to conduct classes in it. As we have already a stock farm, may we not hope that, at some day, not distant, it may be converted into an experimental farm, and that a practical training in

agriculture may be available for such as desire it under the supervision of a competent scientific agriculturist.—*Principal Anderson, Prince of Wales College, Charlottetown.*

It is generally true that the schools are improved only by the pressure of public opinion and cannot rise higher than the average intelligence of the community, yet there are schools in which the work done by the teachers and pupils is much better than the ratepayers appear to think it is—if we judge by the mean appearance of the school and the manner in which it is furnished. But the character and value of the school depends on the quality of the teacher more than on all things else.—*Inspector Cain, P. E. I.*

Teachers are engaged to do a certain amount of work per day for so many days in the term or year, and when their day's work is performed, their obligation for that day is fulfilled. True: but the faithful performance of a day's work presupposes a thorough understanding of the work and ability to perform it. Wanting this thorough understanding and consequent ability, the moral obligation of the teacher is not fulfilled by spending so many hours in the school-room. Such an one is bound to secure for himself the necessary aids in the shape of books and other school literature, and to spend the necessary time outside of school hours in preparation for the work of the morrow. Teachers enjoy advantages nowadays which were not possessed by their predecessors when there was no recognized system, but when each had to work out a system for himself.—*Inspector M. J. T. Macneil.*

The schools generally are fairly well supplied with blackboards and maps. If globes and mathematical blocks could be cheaply and conveniently had, I would very strongly recommend their introduction into many of our common schools. Much could be most profitably done, orally, with such aids, in entering upon the study of geography, geometry and kindred subjects. At present, however, these helps are rarely found in our common schools, owing to their costliness and the expense incurred in getting them from abroad. A few of our more enthusiastic teachers have brought the skill of our home turners and joiners into their service, and thus procured for their schools most serviceable, if somewhat rude, apparatus.—*Inspector A. G. Macdonald.*

The teaching on the whole was characterized by an increasing effort to approximate more closely to the standard of the prescribed course of study. Considerable prejudice still exists as an obstacle to the full adoption of this standard of classification and school-work, and teachers in many sections incur the risk of unpopularity by insisting on compliance with its requirements. In several sections pupils have been withdrawn from school in their own section and sent to an adjoining one on such grounds. When appealed to, I have invariably refused to sanction such transfer. It is not surprising that this opposition should be met with among the ignorant, where nothing but the practical is recognized as of value in education; but unfortunately it is becoming fashionable among those who should know better, to condemn what they term "a multiplicity of subjects for young children." They should remember that "diversity is relaxation," and that the amount of instruction prescribed is graded in proportion to the age and capacity of the pupils. As a matter of fact, I have not observed any superiority of attainment in reading, writing and arithmetic among those pupils who have been taught these subjects to the exclusion of all others. On the contrary, the greatest proficiency in these branches is invariably found in those schools where all the subjects of the course receive their due share of attention. Teachers, as a rule, cheerfully acknowledge the utility of the course, and it is to their faithful adherence to their convictions that we must look for the overcoming of this prejudice.—*Inspector R. McLellan.*

The majority of our people have the utmost confidence in our school system, and are willing to make great personal sacrifices to enable their children to attend our schools.—*Inspector Geo. W. Mersereau.*

The Trustees of.....school, Section No. ... are notified that, in compliance with the school law, you are required to furnish the following, in addition to the ordinary text-books, of which each pupil shall have the supply required of his grade:

1. Clock.
2. Hand Bell.
3. Thermometer.
4. Ball Frame.
5. Wall Cards.
6. Map of Nova Scotia.
7. Map of Dom. of Canada.
8. The Hemispheres.
9. Globe.
10. Map of ————.
11. Calkin's Object Lessons.
12. How Plants Grow.
13. Science Primers.
14. Health Lessons.
15. Temperance Manual.
16. Prang's Nat. History Series
17. Manual of Drawing.
18. Chart of Colors.
19. Models of Solids.
20. Dictionary.

—*Inspector C. W. Roscoe.*

A number of our teachers have recently matriculated in arts, medicine and law, making averages ranging from 80 to 90. Two have obtained bursaries of two years continuance worth $150 each per annum. And in a keenly contested competition with representatives from nearly every county in the province, at the recent Pictou Academy Annual examinations, one of our

teachers succeeded in winning a beautifully ornamented silver cup, presented to the student of the senior class making the highest general aggregate of marks in the academic course—comprising, in addition to branches of a more ordinary character, Greek, Latin and German.—*Inspector John Y. Gunn.*

An Inspector says: "I am delighted with the EDUCATIONAL REVIEW, and I am happy to say that every educationist worthy of the name, with whom I compare notes upon the subject, is of the same mind. How any teacher with an ordinary amount of vim in him can afford to do without its periodical bracing up is a marvel. I am especially pleased with the articles on the "Ferndale School" and on Astronomy. The former fairly bristles with practical knowledge and the latter brightens up old memories. I want more diagrams in your "Trips among the Stars." Many of your readers will rise up and bless your efforts to raise their aspirations above the crawling worms of earth."

MANUAL TRAINING IN THE TOLEDO SCHOOLS.

The opposition to manual training manifested in various quarters arises largely from the lamentable ignorance which prevails as to its aims and results. Many seem to think that the sole object of industrial training is to make mechanics and train them to mere manual dexterity. This is an utterly erroneous idea. The manual work is to train the senses, to quicken the perceptive power, and to form the judgment by furnishing the pupil an opportunity to study at the bench, forge, lathe, and engine, the nature of matter and the manifestations of force. It is purely educational in its object. It first teaches the pupils to portray in the drawing a variety of beautiful and useful forms, and then to embody these forms in wood, clay, and metals. It teaches how to express thought, not in words alone, but in things. It produces nothing for the market except well trained minds, seeing eyes, and skilful hands. In the ordinary factory, which produces for the market, the individual is nothing, the article is everything. In the manual training school the articles made are of no moment, the boys and girls are all important. As soon as a pupil makes one thing well, he is led on to something higher and better. The pupils make many useful and beautiful things, but these are of no value compared with the knowledge gained, the symmetrical mental development acquired. Some of the advantages, other than those named, apparent from the manual work combined in this way with the public school studies, are: The industrial work holds a far greater proportion of pupils throughout the entire course of study, and thus gives them the benefits of a more complete education; it conduces to their moral welfare, not that it gives them "a passport to heaven," but employs all their time in a pleasant and healthful way, thus preventing idleness and crowding out impure conceptions that might find a harbor in the young mind; it dignifies and exalts labor, and teaches respect for the laboring man; it teaches no special trade and yet lays the foundation for any trade, and gives the youth such knowledge and skill that he becomes a sounder and better judge of men and things in whatever business or profession he may engage. Manual training is a successful branch of study in the Toledo schools, not because it is theoretically a good thing, nor because it is given undue prominence and special advantages, but because it is in harmony with the nature of things, has a noble purpose in view, has been well managed, has good instructors, and has proved itself of great value to the pupils.—*H. W. Compton, Superintendent of Schools, Toledo, Ohio, in the May Century.*

FALSE SYNTAX.

Since the "time whereof the memory of man runneth not to the contrary," grammars, composition and language books have contained a plentiful supply of what has been termed "false syntax," "errors for correction," and the like. Is this a scientific method? Has the correction of false syntax any considerable educational value? Are there not serious reasons for believing that such exercises involve not only a waste of time but a positive injury to the student?

I cannot state my proposition in a general way more clearly than to restate a suggestion, emanating from Col. Parker. In speaking of the efforts of first primarians in their written work, it was advised that the attention of the pupil should never be directed to his errors. It was urged that to call attention to a bad form, with a view to showing him how far he was from the correct form, resulted in so deeply impressing the poor form that in his very next effort he inclined unconsciously to repeat his error; the impression of the incorrect form being uppermost in his mind predominated in his effort. Promptly and quietly erase the mistake, then give him a correct model, impress that upon his mind and ask him to imitate it. His mind not being disturbed by a misleading concept, now devotes itself to reproducing the model placed before him. I have ever since regarded it as a wise and valuable suggestion and have been highly gratified over the success we have had in its application. It seems to me to be logical in theory

and wholesome in practice. Now if this is a correct pedagogical principle—and if it is a correct pedagogical principle it has its foundation upon a psychological law—in the domain of first primary work, is it not just as true, and just as applicable in advanced language work? The mere difference in mental growth and capacity does not restrict the principle to small children. Smart teachers have repeatedly told me that after examining many spelling papers and seeing certain words so often misspelled, the incorrect form of the word was uppermost in the mind, and only with difficulty could they decide with certainty as to the proper spelling. Who has not often been mislead in the spelling and use of a familiar word from having seen it spelled or used improperly somewhere, having unconsciously carried with him an impression that asserted itself on first opportunity?

Is it correct teaching? Are not schoolmasters the only class of instructors that use this method—teaching the good by emphasizing the bad? Does the music teacher give an incorrect model in order to inspire a pupil with correct notions of harmony, time, and rendition? Does the art teacher make hideous daubs and caricatures as aids to the student in acquiring the taste and skill of the artist? Does the housekeeper, when teaching her daughter the mystery of bread-making, purposely bake an unpalatable loaf and then say: "Daughter, this is not the kind of bread you should bake?" Or the wagon-maker very carefully put the tongue on the rear of the wagon and then say to his apprentice: "I have done this to impress upon your susceptible mind so you may never forget it that the tongue must always be attached to the front part of the structure where it belongs?" Are these illustrations more absurd than to expect pupils to acquire good English by holding up bad English before them and saying: "This is the way you are *not* to talk?" Correct errors of speech as they arise in current class-work. Ever exalt correct models; build them up in the minds of pupils. The rational plan is to dispossess the mind of all incorrect forms of expression, and as far as possible banish them forever. Teach good language by the constant use of good language and the careful study of pure and elegant models of our English.—*Supt. Gault in N. Y. School Journal.*

Professor James says: "No one can doubt, who has taken any pains whatever to institute extended comparisons, that the teaching in our elementary schools is much better on the average than that in the secondary school and college, and that the teachers in the former come much nearer realizing the end which they set before them than the latter."

THE BLUE VIOLET.

Blossom that spread'st as spring brings in
  Her sudden flights of swallows,
Thy nets of blue, cool-meshed and thin,
  In rain-wet pasture hollows.

Thronging the dim grass everywhere
  Amid thy heart-leaves tender,
Thy temperate fairness seems more fair
  Even than August's splendor!

Yet do I hear complaints of thee,—
  Men doubting of thy fragrance!
But, dear, thou hast revealed to me
  That shyest of perfume-vagrants.

Do ever so, my flower discreet,
  And all the world be fair to,
While men but guess that rarest sweet
  Which one alone can swear to!

—*C. D. G. Roberts.*

The Study of Things and the Study of Books.

An objection is sometimes raised to the introduction of manual training into elementary schools on the ground that, as the children of the working-classes necessarily leave school at an early age, and spend their lives for the most part in manual work, such time as they can give to study should be occupied in other pursuits—in cultivating a taste for reading, and in the acquisition of book-knowledge. This objection is due to a misconception of the true objects and aims of education, and to an imperfect knowledge of what is meant by workshop instruction. To assume that the best education can be given through the medium of books only, and can not be equally well obtained from the study of things, is a survival of the mediævalism against which nearly all modern educational authorities protest. But there is another and more deeply-rooted error in this argument. People often talk and write as if school-time should be utilized for teaching those things which a child is not likely to care to learn in after-life; whereas the real aim of school education should be to create a desire to continue in after-life the pursuit of the knowledge and the skill acquired in school. In other words, the school should be made, as far as possible, a preparation for the whole work of life, and should naturally lead up to it. The endeavor of all educators should be to establish such a relation between school instruction and the occupations of life as to prevent any break of continuity in passing from one to the other. The methods by which we gain information and experience in the busy world should be identical with those adopted in schools.—*Sir Philip Magnus.*

TRIUMPHS OF SCIENCE.

Archdeacon Farrar in a recent address at Liverpool College, said:—

"In this great commercial city, where you are surrounded by the triumphs of science and of mechanism —you, whose river is ploughed by the great steamships, whose white wake has been called the fittest avenue to the palace front of a mercantile people, you know well that in the achievements of science there is not only beauty and wonder, but also beneficence and power. It is not only that she has revealed to us infinite space crowded with unnumbered worlds; infinite time peopled by unnumbered existences; infinite organisms hitherto invisible, but full of delicate and iridescent loveliness; but also that she has been, as a great Archangel of Mercy, devoting herself to the service of man. She has labored, her votaries have labored, not to increase the power of despots or add to the magnificence of courts, but to extend human happiness, to economise human effort, to extinguish human pain. Where of old men toiled, half blinded and half naked, in the mouth of the glowing furnace to mix the white-hot iron, she now substitutes the mechanical action of the viewless air. She has enlisted the sunbeam in her service to limn for us, with absolute fidelity, the faces of the friends we love. She has shown the poor miner how he may work in safety, even amid the explosive fire-damp of the mine. She has, by her anæsthetics, enabled the sufferer to be hushed and unconscious while the delicate hand of some skilled operator cuts a fragment from the nervous circle of the unquivering eye. She points, not to pyramids built during weary centuries by the sweat of miserable nations, but to the lighthouse, and the steamships, to the railroad and the telegraph. She has restored eyes to the blind and hearing to the deaf. She has lengthened life, she has minimised danger. She has controlled madness. She has trampled on disease. And on all these grounds, I think that none of our sons should grow up wholly ignorant of studies which at once train the reason and fire the imagination, which fashion as well as forge, which can feed as well as fill the mind."

An examination is not so much for the purpose of finding out what a pupil knows, as *ascertaining his mental power*. Technical knowledge goes for everything in a school graded according to the cast-iron plan of some critics: but it goes for much less in a school where each pupil is studied, as far as it is possible to do so, and treated according to his individual wants.

ENGLISH IN JAPAN.

A lady teacher who went from Halifax to Japan some years ago, sends to a friend in that city the following composition, written by a Japanese student in an English school:

THE UNITED STATES THE FATHER OF OUR CIVILIZATION.

Our ancestors slumbered in their shutted houses for about twenty-five hundred years, when a messenger came, and knocking the gate, requested to communicate.

They sprang up and opened the gate, but they found that the messenger was a very ugly man, and they thought, 'This is the barbarous people about which we often heard before, and who eats the beasts as their ordinary food.'

Some of them cried – Never communicate with such an ugly people. Give me a sword, I will put them all to death? But some of them who knew more exactly about foreign people wished to communicate. At this time, it was too late to sleep any more, and a communication followed.

The more exactly they knew them, the more respectable they became. It is their gift that we may now boast of calling our country the most civilized country in Oriental. Who is that visitor of our country? It is the people of United States.

We have been promised a description of a Japanese school for the columns of the REVIEW. This will appear in a future number. The lady teacher above referred to, in a letter, makes the following interesting statements about her adopted country:

"Until the last few years the Japanese thought it abominable to eat animal food and would not take the life of animal or insect.

"Foreigners are permitted to live *only* in Yokohama and a part of Tokio, unless they teach, when they may live in any part of Japan. No one can go more than two miles out of either of these places without a passport.

"The Japanese would open up the entire country to foreigners if the English government would allow their people to be under Japanese law. But the English will not do so."

The object of teaching is good citizenship, and that implies development of the best faculties of children's minds. Good citizenship implies intelligence, industry, patriotism and temperance.—*Topeka Capital.*

It is impossible to insist too strongly upon the fact that efficient teachers of science and of technology are not to be made by the processes in vogue at ordinary training colleges. The memory loaded with mere book-work is not the thing wanted—is, in fact, rather worse than useless—in the teacher of scientific subjects. It is absolutely essential that his mind should be full of knowledge and not mere learning, and that what he knows should have been learned in the laboratory rather than in the library.—*Huxley.*

For the REVIEW.]

KINDERGARTEN DISCUSSION AT THE INTER-PROVINCIAL CONVENTION.

Those interested in the progress of Kindergarten culture will be pleased to learn that a full discussion of the special topic, "The Practical Application of Kindergarten Principles to the Primary School," is upon the programme. It is not wide of the truth to say that no more important question will fall under the consideration of those who attend the convention. We trust that our Nova Scotia teachers, without distinction of sex or grade, will prepare themselves to take an intelligent part in the discussion. They should study not only the methods of the Kindergarten, but also the profound principles on which these methods depend. Frœbel's distinction as an educator does not rest simply upon the Kindergarten, although that alone would confer imperishable fame, but on the deep spiritual insight that enabled him to take a comprehensive view of man in his complex relations to nature, to the human race as a solidarity, and to the Divine Father. He grasps the spiritual significance of the incidents of everyday life. Every little childish play is seized upon as a means of alluring the child to a higher plane of thought and feeling. In the "Mother-Play and Cosselling Songs" it is shown how the infant play of "Peep-Bo" charms by the "connection of contrasts." The little one hides; not having mother in full sight is pleasing as a new sensation; but see the delight that expresses itself in every lineament and feature when, "found," he is clasped in the loving arms again. "Let him not," says Frœbel, "stray too far, nor stay too long, lest he lose his sweet, clinging dependence on your faithful love and guardianship." We recommend to teachers Frœbel's two works: "Education of Man," Hailmann's edition, annotated; and "Mother-Play and Cosselling Songs." This last, translated by the generous aid of Mrs. Pauline A. Shaw, was used by Miss Blow in her instructions to her training class in St. Louis with excellent results. It contains verses for mother and child, with music, and has the quaintest illustrations, by Frœbel himself, full of incident and suggestion. If every mother and teacher would study with childlike docility this wonderful book, it would, in many cases, be such a revelation that the whole course of training would be changed, to the great advantage of the children. But, as the time is short, and only special work has much chance of accomplishment, we sincerely wish that Dr. Hailmann's "Primary Methods," and Prang's "Teachers' Manual for the Study of Form and Drawing," could be in the hands of all our teachers. If they would read them, even cursorily, it would place them well for the discussion at the Convention. Their serious study during vacation would show itself in the coming term in improved teaching in our schools, especially in arithmetic, geometry, drawing, and modelling. "Primary Methods" is published by A. S. Barnes, New York, 75 cents; "Prang's Manual" by Prang, Boston, 50 cents. For $1.50 a box of material is sent with the Manual, so that the teacher could gain facility in illustrating and superintending the exercises of the little book. It is as unique as simple in its methods, and is the outcome of several years' study by Mrs. Mary Dana Hicks, of drawing for children, from the standpoint of physiology and psychology. The object is to teach pupils to *see correctly*, to gain clear conceptions through well defined sense impressions, and to embody their ideas in concrete forms in different materials, as clay, paper, card-board, sticks, pencilled lines, water-colors, etc. Dr. Hailmann's work is strong in its application of Frœbel's methods to geometry and arithmetic; Prang's in its treatment of modelling and drawing. But both smooth a hard place where there has been much stumbling, and they are so logical that no one who will follow their lead need fail of success. Two or three or more teachers might join and get a single copy of these books, and the necessary material, and study them in concert; if they could beguile some intelligent mothers to join them for an occasional hour of reading and discussion it might create community of interest and help the cause of education.

C.

Halifax.

PERSONAL NOTES.

R. P. Steeves, of the Woodstock Grammar School, recently passed a successful examination at Sackville for the degree of M. A.

Victoria University, of Coburg, Ont., has conferred the degree of LL. D. on Prof. A. D. Smith, of Mount Allison University.

Rev. President Forrest, of Dalhousie, passed through St. John this week on his way home from a trip to the United States.

Abbe Casgrain, of Quebec, succeeds Professor Lawson, of the University of Dalhousie, as President of the Royal Society of Canada.

Principal Cameron, of Yarmouth Academy, gave a very interesting series of popular astronomical demonstrations during the winter. He recommends students of the Summer Science Schools to buy or borrow opera or field glasses for the study of the sky.

Inspector Lay has given a course of popular scientific lectures in Amherst during the last winter. The local press had invariably words of high praise for his work.

Professor Macoun, Botanist of the Geological Survey of Canada, intends spending the summer in Prince Edward Island. He will arrive probably about the middle of June.

Simon Newcomb, LL. D., Professor of Astronomy in the Johns Hopkins University, Baltimore, and the author of several astronomical works, was in St. John recently. Dr. Newcomb is a native of Kings County, N. S., and expects to spend a portion of his vacation this summer in his native province, and seek a much needed rest.

G. R. Parkin, M. A., of Fredericton, will leave New York on the 16th of June for England, with a view of preparing material for the biography of the late Mr. Thring, of Uppingham School. Mr. Parkin's intimate knowledge of the life of this great educational writer and thinker renders him specially fitted to undertake the task.

SCHOOL AND COLLEGE.

Mr. A. P. Silver, the well known entomologist of the Nova Scotia Institute of Science, addressed the students of the Halifax Academy, on Friday, May 26th, on the collecting and preserving of insects. Several prizes have been offered for the best collections.

Prizes have also been offered for the best collection of the Nova Scotian Orchidaceæ. Our orchidaceous native flowers are among the most beautiful and interesting of our flora.

At Convocation of the University of Mt. Allison, on the 30th May, the following degrees were conferred: Graduates in course B. A., Reginald Percival Alexander, Stanhope, P. E. I.; Aldran Allen, Albert, N. B.; Thomas David Blaikie, Great Village, N. S.; Edie Annie Elizabeth Burwash, Sackville, N. B.; Clarence Edward Casey, Amherst, N. S.; George Frederic Dawson, Campbellton, N. B.; Albert Charles Dennis, Margate, P. E. I.; Peter Coffin Laverton Harris, Halifax, N. S.; William Jost Howard, Cornwall, P.E.I.; Fred. Harris Pickles, Halifax, N. S.; Sarah Lætitiah Shenton, Charlottetown, P.E.I.; Aubrey Cecil Smith, Sackville, N. B. M. A.—Rev. David William Johnston, B. A., Horton, N. S.; Rufus Palmer Steeves, Woodstock, N. B.; Albert Bliss Tait, Sackville, N. B. Honoris Causa, L. L. D.—Professor A. R. Bain, M. A., Coburg, Ont.; D. C. L., Hon. Justice Burbidge, M. A., Ottawa; D. Sc., Rev. John Burwash, M. A., Sackville.

The anniversary exercises of Acadia College took place this year on the 7th June. The graduating class was comprised as follows: James W. Armstrong, Kingston; Oliver H. Cogswell, Morristown; Carmel L. Davidson, Gasperaux; Horace L. Day, Yarmouth; Chas. W. Eaton, Lower Canard; Herbert O. Harris, Canning; Lewis J. Lovett, Kentville; Morley D. Hammeon, Wolfville; Walter B. Wallace, West Gore; Lewis D. Morse, Nictaux; Alfred E. Shaw, Avonport; Harry S. Shaw, Berwick; Harry H. Wickwire, Canning; J. R. Hutchinson, Wolfville.

For the first time in the history of St. Joseph's College, Memramcook, the faculty will confer degrees at the 23rd annual commencement, which will be held on the evening of the 21st of June instant. The college is now a chartered one, and the exercises on the coming commencement day will constitute its first really Academic Commencement. The Alumni orations will be delivered by Geo. V. McInerny, LL. B., and Hon. P. P. Porier.

The closing exercises of Prince of Wales College, Charlottetown, came off on the 25th ult. An unusually large number of visitors was present. Addresses were delivered by Dr. Anderson, the Principal, Lieutenant-Governor McDonald, Hon. L. H. Davies, Hon. David Laird, and others. Reference was made by some of the speakers to the growing interest taken in the college both in town and country, and to the necessity of a new college building.

The New Brunswick Normal School closed on Friday, the 8th inst. Of 136 students classified for examination, 26 were male and 110 female. Two were examined for grammar school license, 24 for first-class, 83 for second, and 27 for third.

In 1887 Canada had 12,292 miles of railway in operation, carrying 10,685,508 passengers during the year, 16,367,987 tons of freight, equal to 3.35 tons per inhabitant.

The world consumes annually about 650,000 tons of coffee. At an average price of $400 a ton this is worth $260,000,000. The best is from Jamaica, 5,000 tons. Then Hindostan and Ceylon, 25,000 tons. Next Java, about 90,000 tons, and Brazil with about 380,000 tons.

QUESTION DEPARTMENT.

Questions and Answers.

Y. S. F. 1.—As it is impossible to see the entire half of a sphere, what answer should be given to question 3, page 7, Calkin's General Geography: "At what elevation above the earth would one be able to see half its surface?"

The earth is a spheroid, surrounded by an atmospheric film which refracts light. The mean refraction of this film is such that a ray of light proceeding from an object on the earth's equator parallel to the earth's axis would be refracted towards the earth's axis 33 minutes of an arc after leaving the air. This ray would meet the axis of the earth produced about 412,725 miles from the earth's centre. This may be shortly found as follows: Semi-diameter of earth = 3,962 miles, multiplied by co-tangent of the angle of refraction 0° 33′ = 104 17094 × 3,962 = 412,725 + miles. An eye, therefore, placed at this distance from the centre of the earth in the line of its axis would have its terrestrial view exactly bounded by the equator. A correct answer to your question would, therefore, be: *At an elevation of about 408,763 miles above the earth's surface.* Were the refraction of the air not taken into account, the answer would be: *At an infinite distance.*

2.—Why is the ice formed on sea-water fresh?

The molecules of water are strongly attracted to each other, but are kept apart within certain limits by the heat vibrations of the molecules. When these vibrations are lowered to what we call the freezing temperature the molecular attractive force prevails, drawing the water molecules into a more fixed and rigid connection with each other and pressing out into the liquid water the less strongly attracted molecules of the sodium chloride. The water molecules in freezing are strongly drawn in to the ice-forming surface, while the salt molecules, not being strongly attracted by this surface, are crowded back into the liquid water.

3.—Are the enclosed specimens of *Viola cucullata?*

No. It has a stem with leaves and branches, which, with its pale purple corolla with bearded lateral petals, and its fringe-toothed stipules, show it to be *Viola canina*, var. *sylvestris* (the Forest Dog Violet). Sometimes it is called Muhlenburg's Violet, from a name given it by Torrey before it was decided to be a variety of *V. canina.*

4.—What difference is there between the appearance of Land and Water Salamanders?

The tails of Water Salamanders are strongly flattened, vertically, sometimes with a ridge or crest running along the back of the animal. Land Salamanders like moist, wet places, but are not adapted for swimming.

J. A. V.—Will you kindly inform me if insects, including the various kinds of winged flies, moths, house flies, butterflies, wasps, beetles, etc., come from the pupa in the size they are seen and known, or do they improve and develop in size as other orders in Natural History?

The insects you specify develop in size during the larval stage. The imago is the adult stage and growth is complete. Ametabolian insects, that is those which do not pass through the three distinct changes of larva, pupa, and imago, increase in size while they have the adult form, as the *aptera* (lice and springtails). Hemimetabolian insects have the larval forms very much like the imago, and therefore appear to grow in size from moult to moult, as the grasshopper, for instance. The full-winged grasshopper, however, is the imago, and develops no more in size.

LITERARY NOTES.

Mr. C. Powell Karr, a graduate of School of Mines, Columbia College, has in preparation a manual of American Colleges, which proposes to give in classified form all the leading Colleges, Universities, Technical and Professional Schools, their requirements for admission, courses of study, cost of tuition and living expenses, and, in a word, a systematic *resume* of all the information needed by parents, guardians and students to enable them to decide intelligently what college or institution of learning it is best to attend. It is to be issued from the press of William T. Comstock, New York.

Dr. J. G. Bourinot, clerk of the Dominion House of Commons, is about to publish a "Short Constitutional History of Canada," as one of the "English Citizen" series.

D. C. Heath & Co., Boston, will publish at once Compayre's "Lectures on Pedagogy: Theoretical and Practical," a companion volume to their Compayre's "History of Pedagogy." It is translated and annotated by Professor Payne, of the University of Michigan. Supt. MacAllister of Philadelphia, says: "I have known the book ever since it appeared, and regard it as the best work in existence on the theory and practice of education. It will be a much more valuable manual for the average teacher's use than any we now have."

BOOK REVIEWS.

THE HANDY REFERENCE ATLAS OF THE WORLD, by John Bartholomew, F. R. G. S., etc; containing 100 maps and plans, as well as a complete index and geographical statistics; size, 7½ by 5 inches. Price, $2.50 For sale by J. & A. McMillan, St John.

It is doubtful whether a book more useful to the geographical student has ever been published. It contains, in a neat and handy volume of convenient library size representations of general and particular geography. Opening the volume we find a series of maps illustrating many astronomical and physical features. This is followed by a map of Europe, then several of the British Isles, one showing the depths of the surrounding seas, another its railway sys-

tem, while in several additional folio plates there are shown the sections of the country, including the chief cities and suburbs, and so with all parts of the world. It is especially full in details of British Colonies and possessions. Its different maps of commercial routes are invaluable to the business man; while to the student and teacher it is so convenient for reference and at the same time so complete, that the study of geography will be invested with a new interest.

PRACTICAL LESSONS IN THE USE OF ENGLISH: Book I. for Primary Schools, Book II. for Grammar Schools; by Mary F. Hyde, Teacher of Composition in the State Normal School, Albany, N. Y.: D. C. Heath & Co., Publishers, Boston.

In these books we have an admirable series of steps, illustrating how the English language may be taught so as to secure the best expression of thought and at the same time to cultivate a taste for good literature. From the first, ideas of grammar and correct syntax are developed. No incorrect expressions are given for correction, but the pupils are led to avoid common errors by being trained to use correct forms. The books will be welcomed by all who are striving to teach English composition by natural and practical methods.

CARDINAL WOLSEY AND WILLIAM THIRD.—We have received the above named works in the "Twelve English Statesmen" series: Published by MacMillan & Co., London and New York.

The subjects of these sketches were men whose policy did much to make the England of to-day, and no one can rise from a perusal of the books without being profoundly impressed with the character of each. The author of "Cardinal Wolsey," regards that statesman as the greatest political genius and the most devoted patriot that England has ever produced. One may differ from the author's estimate, but he cannot fail to be influenced by the keen analysis of the aims and methods of Wolsey, as well as the striking and vigorous language in which the book is written. The author of William the Third has been less successful in placing a striking portrait before us, but he has given us a graphic delineation of the events of European history at that time.

SEA-SIDE AND WAY-SIDE: No. 2 of the "Nature Readers" by Julia McNair Wright: D. C. Heath & Co., Publishers, Boston.

All who read the first of this series must have been charmed with the delightful way in which the authoress introduces her subject. The simple and unique manner in which objects are described must awaken a strong interest in children's minds, arouse their curiosity, and lead to further observation. The second volume deals with the different kinds of ants and their habits, earth-worms, the house-fly, beetles and other insects. The descriptions are novel and interesting, and at the same time care has been taken to make them scientific and accurate.

WORLD-ENGLISH: The Universal Language: by Alex. Melville Bell. Published by M. D. C. Hodges, New York.

This is a pamphlet (price 25 cents), giving a statement of the forms of the letters, the sounds, etc., with other information concerning the "World-English."

WORDSWORTH'S PRELUDE: An Autobiographical Poem. Annotated by A. J. George, Acting Professor of English Literature in Boston University, and Teacher of English Literature, Newton, Mass., High School. D. C. Heath & Co., Publishers, Boston.

Few even of the most ardent admirers of Wordsworth are familiar with this remarkable poem which was not published until after the author's death and has never before been published apart from his complete works. It is a correct biography of the poet's life and shows the growth of his mind. While not so beautiful nor delightful as many of the smaller poems, it reveals the secret of their beauty and contains the key to that poetic philosophy which characterizes Wordsworth's writings. In the notes will be found such assistance historical, geographical, and explanatory, as the student would not be likely to get elsewhere. The prelude will be followed by the publication of other of Wordsworth's poems.

EXCHANGES.

The *Illustrated London News* (American edition, published at New York,) has some fine sketches in its issue of June 2nd of the Anglo-Danish Exhibition at Copenhagen, in which the Prince and Princess of Wales have taken a great interest. *Garden and Forest* has had several interesting and valuable articles recently on the decoration of school grounds. Its weekly illustrations on garden and forest topics are valuable to a student. The *Scientific American* for June 2nd, commenced a series of articles on Fabulous Astronomy, which, to judge from the first, will possess considerable interest for the students of astronomy. The *Microscope*, 25 Washington Ave., Detroit, Mich., U. S. A., for May, is invaluable to the young microscopist, 32 pages, monthly, and only $1.00 a year. The *Eastern Chronicle* is printed on a new press, and is one of the best looking weeklies in Canada. *Science*, 47 Lafayette Place, New York, is becoming weekly more interesting. It gives most readable summaries of scientific work in America. The *Swiss Cross* comes monthly laden with its usual good bill of fare. The *Yarmouth Herald* is one of our best filled weekly exchanges. In a late issue it had a brief sketch of Sir Wm. Dawson. The *Century* is specially interesting at present on account of George Kennan's graphic description of Russia and the exile system in Siberia. The first instalment of this serial appeared in the May number. The second of the series in the June number is a perfect revelation concerning the resources and climate of Siberia. No student should miss reading these articles. The *Century* is always well filled with the most interesting general articles, and is superbly illustrated with the best engraver's art. *St. Nicholas*, another of the *Century's* publications, is also finely illustrated and admirable for the excellence of its articles for youthful readers. *Wide Awake*, published by D. Lothrop & Co., Boston, is one of the most attractive magazines for children and the June number is especially beautiful. *Popular Science Monthly* for June has an excellent article on "Education and the Employment of Children," and its table of contents embraces a wide range of subjects, scientific and practical.

A CONVENTION

—OF THE—

TEACHERS OF THE MARITIME PROVINCES

OF CANADA,

Will be held in St. John, commencing on Tuesday Evening, July 17th, and continuing during Wednesday and Thursday.

On Friday there will be an EXCURSION TO FREDERICTON AND RETURN.

Arrangements are being made for reduced fares on all railroad and steamboat lines.

The general meetings of the Convention will be held in the Hall of the Mechanics' Institute, St. John. Meetings of Sections will be held at places designated at the time of the Convention.

PROGRAMME:

Tuesday, July 17.

A meeting for organization will be held in the Hall of the Mechanics' Institute at 7.30 p.m., when the officers of the Convention will be elected.

A PUBLIC MEETING at 8 p.m. will be presided over by Mayor Thorne of St. John, and addresses will be delivered by citizens of St. John and Portland.

Wednesday, July 18.

MORNING SESSION.

The Convention will assemble at 9 a. m., when the teachers of the different Provinces will enrol themselves with the assistant secretaries for the Provinces.

At 10 the Convention will be formally opened by an address from Theodore H. Rand, D.C.L., President of Woodstock College, Ontario, to be followed by addresses from J. G. Schurman, D. Sc., of Cornell University, and Prof. Ray Greene Huhling, Secretary of the American Institute of Instruction, New Bedford, Mass.

AFTERNOON SESSION.

At 2.30 p.m. an address will be given by Dr. J. G. Fitch, the well known educational author and lecturer, of London, England, on "Hand work and Head work in Schools," followed by Col. Francis W. Parker, of Cook County Normal School, Illinois—the subject to be hereafter announced. Addresses will also be delivered by Superintendent Crocket of New Brunswick, and Superintendent Montgomery of P. E. Island.

EVENING SESSION.

At 8 p. m. there will be a discussion on "The Influence of the College on Industrial and Social Life," by President Rev. Dr. Sawyer, of Acadia College, Dr. Harrison of New Brunswick University, Rev. Dr. Forrest of Dalhousie University, Dr. Inch of Mt. Allison University, Dr. Anderson of Prince of Wales College, and Dr. Prof. Roberts of Kings College, and others.

Thursday, July 19.

The Convention meets in sections, at 9 a. m.

Section A.—Normal Schools. The following topics will be discussed: by Principal Anderson, of P. E. Island, "Scholarship as a Preparation for Teaching;" Principal Calkin, of Nova Scotia, "The Relation of the Normal School to the Subjects Taught in the Common School;" Principal Mullin, of New Brunswick, "The Relation of the Model School to the Normal School."

Section B.—Inspectors of Schools. Topics: "The Inspector a Necessary Factor in a Public School System;" to be discussed by Inspector Condon and Roscoe. "The Relation of the Inspector to the Teacher and the District;" by Inspectors Carter, Smith and Merserau. Another subject will be discussed by Inspectors Arbuckle, Cain and McSwain.

Section C.—High School. Topics: "Science in the Curriculum," by Principal A.H. MacKay, of Pictou; followed by Principal Mackay, of New Glasgow, on Physics," and A. J. Denton, Halifax, on "Chemistry." "The Study of Plant Life," by Geo. U. Hay, St John; followed by John Brittain, Principal of Petitcodiac schools, on "Methods in Zoology;" "Literature," by Principal Cameron, Yarmouth, followed by W. Campbell, Truro, on the same subject.

Section D.—Common School. Topics: "Aims and Processes of Moral Culture," by A. W. Hickson, Portland, followed by Geo. Robinson, P. E. Island. "Physical and Moral Culture in the Play Ground," by W. T. Kerr, Woodstock. "Moral Influence of School Ornamentation," by Geo. J. Oulton, Dorchester. "Moral Culture," by Robert Campbell, P. E. Island, followed by L. A. McKenna, Halifax. "Grammar in the Common School," by Principal Burbridge, Halifax, followed by Geo. T. Miller, Hantsport, N. S., and J. D. McIntyre.

Section E.—Primary School. Topics: "Kindergarten methods in the Primary Schools," by Miss Lewis, Truro. "Social Instincts as a Factor in Character Building," by Miss Sullivan, Halifax. "Character Building on its Moral Side," by Miss Murphy, Portland, St. John. "Physical Culture as a Part of Character Building," by Miss Adams, St. John.

AFTERNOON SESSION.

Address on Agricultural Education by Prof. H. W. Smith, of the N. S. Normal School.

Address on the Delsartian School of Expression, by Mrs. F. W. Parker, of the Cook Co., Normal School, Illinois.

Address on Art Education by Miss Harriet C. Magee, of the Oshkosh, Wisconsin, State Normal School.

EVENING SESSION.

Public meeting at 8 o'clock, presided over by Sir Leonard Tilley, at which addresses will be given by Sir Wm. Dawson, Hon. Justice King, Chief Supt. Allison, Hon. W. S. Fielding, Premier of Nova Scotia, Hon. A. G. Blair, Premier of New Brunswick, Hon. Mr. Sullivan, Premier of P. E. Island, and L. H. Davies, M. P., of Charlottetown.

Any persons may become members of the Convention by enrolment and payment of the fee of one dollar.

Nova Scotia County Academy Entrance Examination, 1888.

THURSDAY AND FRIDAY, APRIL 26 AND 27.

ARITHMETIC AND ALGEBRA. 10 *a. m.*—12 *m.*

1. What is the difference between Numeration and Notation? How many kinds of Notation are there?

2. A person bought 68 bales of cotton cloth comprising 67048 yds., each bale contained 34 pieces, and each piece contained the same number of yards; find the number of yards in each piece.

3. Write square measure; find the number of inches in 6 m. 2 fur. 28 rds. $2\frac{1}{2}$ yds. 2 ft. 9 in.

4. Find the total cost of the following:

17 lbs. Sugar at $6\frac{1}{2}$c. per lb.
$3\frac{1}{2}$ " Tea " 40c. "
15 " Soap " 5c. "
12 gals. Oil " 32c. per gal.
6 " Molasses at 29c. per gal.

5. Define Fraction, Denominator, Numerator, Mixed Number, and find the value of

$$\frac{\frac{3}{4} \text{ of } 5\frac{1}{2} \text{ of } \frac{1}{2}}{4\frac{1}{2} \text{ of } 8\frac{1}{4}}$$

6. What will a creditor lose on a debt of $5342.25 if he receives only $67\frac{1}{2}$c. on a dollar?

7. What is Present Worth? Discount? Find the Present Worth of $1000.00 due in 1 yr. 4 mos., when money is worth 6%.

8. A man, after spending $\frac{1}{2}$ of his money, and then $\frac{1}{3}$ of the remainder, and then $\frac{1}{4}$ of what remained, had $25.00 left; how much had he at first?

9. Find the sum of $ab-bx+cd-3am+7ab-6xy+3bx-2cd+9am-3xy+4cd-2bx-6am+9xy-3x+2y-2x^2+4ab$.

10. Multiply $a^2+2ab+b^2$ by $a-ab-b$.

11. Divide $4x^4-64$ by $2x-4$.

GRAMMAR, ANALYSIS AND COMPOSITION. 2–3.30 *p.m.*

1. Name the "Parts of Speech" that "change their form in order to express difference of relation," and state what this change of form is called in each.

2. Give the Rule for the formation of the Possessive Case of Nouns, and give the declension of *[illegible]*.

3. Name all the parts of speech which may be employed as "subjects." Write sentences illustrating the use of each.

4. Give the principal parts of the following verbs, classifying them as *weak* or *strong*: *stay, choose, grow, eat, cleave* (to split), *[illegible], [illegible], bear* (to carry), *steal, clothe, spill, creep, freeze*.

5. Write in full the past progressive indicative passive of the verb *take*.

6. Name the Interrogative Pronouns and state the uses of each.

7. Analyze: A few weeks before the death of Elizabeth, the conquest of Ireland, which had been begun more than one hundred years before by Strongbow, was completed by Mountjoy.

8. Parse: Tell the others what I said.

GEOGRAPHY. 9 *a. m.*–10.30 *a. m.*

1. Explain the terms Equator, Axis, Poles, Plateau, Prairie, Strait, Lake.

2. Name the rivers and lakes of Nova Scotia and the chief towns of Ontario.

3. Name the provinces and territories of the Dominion; and give the boundaries of New Brunswick.

4. What States of the American Union border on the great Lakes? Give their capitals.

5. Name the coast waters of Great Britain, and give the names and situation of the Provinces of Ireland.

6. Write a short description of France.

7. Describe Africa with respect to its surface, climate and productions.

8. Where and what are the following: Tadoussac, Manitoulin, Assiniboine, Qu'Appelle, Hudson, Sierra Nevada, Havana, La Plata, Apennines, Jersey, Elbe, Belfast, Naze, Tokio, Celebes.

9. Draw outline map of Asia