

The Educational Review.

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EDITORIAL NOTES.

WRITERS for the REVIEW must study brevity; otherwise we shall be compelled to reject valuable matter too often.

ARE you a subscriber to the REVIEW? We send a number of copies to teachers who are not yet on our list. Examine closely its contents and see if you can afford to be without it.

WE have to thank those gentlemen who, at the various County Institutes in New Brunswick spoke so cordially of the REVIEW, and otherwise helped to advance its interests.

YORK COUNTY TEACHERS' INSTITUTE put on record

a resolution affirming the desirability of an Arbor Day for 1888. That is a move in the right direction.

ONE mail a short time ago, brought in the names of 33 new subscribers. This and other evidence show that the REVIEW is prospering.

WE have to thank Mr. H. B. Kilburn, of Fredericton, for a full and interesting report of the York County Institute. Unfortunately it arrived just as the paper was going to press, and we can only make use of a few references.

WE publish in another column the report of the committee appointed by the N. B. Educational Institute, to revise the grammar school course. Next month we shall publish the committee's report on the superior school course.

MR. VROOM, in his paper on "History," before the Charlotte County Institute, stated that "No history lesson was a success if the student did not gain from it clearer ideas of the general character of the age. Much that could not be brought out by an examination paper ought to be learned through history—lofty sentiments, admiration for a principle, attachment to a cause. The teacher should implant a sympathy for all that is right and good, and a prejudice in favor of home." When the subject is taught in this way we shall have better students of history, and—what is more important—better men and women.

YORK COUNTY INSTITUTE affirmed, "That this Institute wishes to put on record its appreciation of the value of the EDUCATIONAL REVIEW as an organ of the profession, and heartily recommends it to the support of the teachers of this county." Mr. Parkin spoke to the resolution, strongly recommending the REVIEW to every teacher. Mr. Day followed with a hearty approval of the REVIEW. He made special reference to an article written by Mr. Thring and published in the REVIEW a short time ago, which he considered worth a whole year's subscription itself. After further favorable comments upon the REVIEW by several of the teachers, the resolution was put and carried unanimously.

WE give up considerable space in this issue to the Rev. Dr. Milligan's letter in reply to an article which appeared in our June number on the School System of Newfoundland. The latter has provoked considerable discussion in the Island, and Dr. Milligan's letter shows the other side of the question.

THE University of New Brunswick opened this week. Thirty students presented themselves for matriculation, among whom are five young ladies who take a partial course. The number of students at the University the present year is a large one, and with the entrance upon a four years' course, there is every promise of increased prosperity for the University. The following are the winners of the county scholarships: York, Ernest Brydon Jack; St. John, W. H. Vanwart; Queens, Arthur L. Slipp; Kent, J. T. Hutchinson; Old Boys prizeman, David L. Mitchell.

THE death of Hon. Senator McMaster, of Toronto, removed from active life one of the few men in this country whose energy, abilities, and ample means were devoted unsparingly to the advancement of education. McMaster University, Toronto, is a monument to his unselfish devotion and noble benefactions. His bequests to this institution have been princely. Besides erecting fine university buildings, endowing chairs, he leaves an endowment which, at five per cent., represents an annual income of \$40,000. This, in addition to other gifts which he has made to education, is the noble example of a wise and generous philanthropist.

THE *School Journal* (weekly), New York and Chicago, is a capital paper. Accidents occur in the best regulated households; but the following from a leader, Sept. 24th, is more like a Yankee conceit than an accident: "The time will come when the government of Great Britain, like the United States, will be a government of the people, by the people, and for the people; but it cannot be so long as the right to rule is transferred from father to son." The fact is that the government of Great Britain is more responsive to the representations of the people than that of the United States ever can be until its constitution is changed. The British and Canadian governments can be changed in a day if the people's representatives deem it necessary. The United States, under the same circumstances, would have to endure a dictatorship for four years or have a rebellion.

THE PROVINCIAL NORMAL SCHOOL of Nova Scotia at Truro will open about the time of our next issue. The advance made by this institution of late is re-

markable. With a magnificent building, and a staff of instructors of more than provincial fame, built upon work which will ensure its permanency, and a growing demand for superior teachers on the part of our awakening school trustees, it could hardly be otherwise. What Nova Scotia wants more than any thing else, is the school-master who will disclose to the opening eyes of the future man the possibilities of his country and the possibilities within himself. A great deal of what is yet fashionable in our educational work will in the near future be looked upon as we now look upon what is called "the absurdities of Chinese civilization." Our normal schools, while paying all necessary deference to the hoary-headed pioneer principles of the past, are the natural guides to more economical and power-producing methods in the future.

METEORIC.

The meteor which passed over western Nova Scotia about 8.40 P.M., local time, 15th of September, is the most remarkable in the history of these provinces. Although it was so generally observed, we regret that so few accurate observations have been made. The *Morning Chronicle*, of Halifax, excelled all its contemporaries in taking in the situation. On the next morning it had from a number of distant points very complete telegraphic descriptions of the phenomenon. To-day, October 5th, after scanning nearly all our provincial papers, and waiting for private reports, which have only partially come in from several stations, we have but little more accurate observation to fall back upon. Many of the observations were necessarily inaccurate to a small degree, thus necessitating the averaging of as great a number as possible of those bearing evidence of the greatest precision.

The meteor, then, appears to have been a mass of matter over 1,000 yards in diameter, moving in an orbit around the sun, with a very great velocity, perhaps over 40 miles per second. If it could have been watched out in space a short time before collision with the atmosphere of the earth, it might have been seen moving from that portion of the sky near the head of Draco, which was high in the northwest at the time of its passage. Swifter and swifter it was falling, as if to cross the earth's track right in front of it. But the earth, with its ponderous steady swing, at the rate of nineteen miles per second, seemed determined to pass the line of the meteor nearly at right angles. The earth barely crossed this line ere the meteor struck the retreating rear of the earth's atmosphere over one hundred miles above

eastern New Brunswick, descending towards the Atlantic in a line passing across western Nova Scotia. The meteor, hitherto colder than the iciest arctic mountain, chilled to its very heart, moved through the tenuous atmosphere with such a velocity that if it were moving in our lower air, and the law of pressure of wind storms held true, there would be three-quarters of a million pounds pressure on every square inch. It glanced off from against this terrible pressure about sixty miles above the coast-line of Shelburne County, on the Atlantic. But still there was such pressure exerted against the thin upper air by this terrible velocity that the air in front was liquefied and nearly instantly became hotter than white-hot liquid iron. The air in front was pressed in intensely writhing flame against the cold mass, just as the compressed flame in a huge cannon rolls in terrific force against its sides, or as if a continuous explosion of dynamite were playing on its surface. The surface of the mass melted, and no sooner melted than it was thrown off in flaming dust miles behind. It glowed like the seven-times heated furnace of Nebuchadnezzar, while the eighth part of an inch within the mass was probably cold enough to freeze mercury. The whirlwinds of white-hot air in front scooped out little pockets in the mass, just as the heated gas in large guns wear out pits in the surface of their bore, or as nitro-glycerine has been observed to abrade a metallic plate upon which it has been exploded. But as the meteor rolled in its course, this liquid flame struck its projecting angles with the force of cyclopean steam-hammers—with the force of batteries of cannons—and the splintered fragments fell to the ground. Imagination could not picture the terrific sounds, were such an event to take place in the denser air near the surface of the earth.

When the meteor struck the air, the resolved motion of the earth in its orbit directly from the course of the meteor was about thirteen miles per second at 8.40 P. M. This motion would contribute to the glancing tendency. The easterly component of this velocity would be about twelve miles per second, the diurnal easterly motion being scarcely worth noticing—one-fifth of a mile per second. The course of the meteor through space was nearer north-west to south-east. Its course over the earth was only a relative one, the earth's easterly motion making it approach the meridian more closely.

Its track over the province is found by noticing that on one side it passed to the east of the zenith, and on the other side of its track to the west.

That it was over the Atlantic in front of Shelburne when most brilliant, is shown in this way: From Bangor, in Maine, it was seen about south 50° east.

Plot that line on the map. From Vanceboro and McAdam Junction it was seen about south 20° east. Plot that. From Bay of Fundy stations, nearly south. From Pictou, Halifax, Bridgewater, west of south.

That its minimum height was about sixty miles, appears from the following consideration: Professor Fernald, with his class, at Orono, near Bangor, was engaged in studying the sky. The altitude of the meteor was therefore very carefully estimated at about 20°. Bangor was 4° of longitude distant, which, roughly speaking, would make the angle of elevation of the meteor above Shelburne a little greater, say 22°. Now, Orono was fully 200 miles distant; multiply by the tangent of 22° and we get eighty miles of an altitude. Let us discount Fernald's altitude 5°, making it 17°. That will give us sixty miles. This altitude will agree with the described position of the meteor from other places where it was perhaps not so carefully estimated. But there is another witness. Sound, at its usual rate of travel in cool air, would come from the meteor to the earth in between four and five minutes, which is the time after its transit, when, according to several observers, the sounds commenced to be heard. Some report a shorter time. But then they admit that their time cannot be depended upon as accurate. The tendency in estimating it by after thought would be to diminish the time.

Its size may be inferred as follows: At Bangor and Orono, it appeared about the size of the moon. That is, it subtended an angle of about 31 minutes. But as it was near the horizon it might strike the observers as larger than it really was. Discount it 50 per cent. Suppose it appeared only half the diameter of the moon. Multiply the distance 200 miles and more by the sine of 15' 30" = .0045 and it will give over .9 of a mile. Bring to yards, $.9 \times 1760 = 1584$. Over 1,500 yards. According to Mr. Nickerson from the Shelburne coast, its smaller diameter subtended 47 minutes, which at 60 miles distance means over 1,300 yards. The greater diameter appeared to be one-third more, making it over 1,700 yards.

That the meteor glanced off from the atmosphere, appears from a number of positive observers who saw it vanish nearly 20° above the horizon. Its trail was seen foreshortened after it ceased to descend. If it maintained the same altitude above the Atlantic following its curvature, it would have been seen to go down to the horizon. As it did not go down, it must have glanced upwards and out of the air. Chill space on one side, and chill metal on the other side, would cause the skin-deep glow of incandescence to vanish in a second or two, once again in space. The meteor

of Dec. 2nd, 1876, with apparently a slower velocity, passed over more than 1,300 miles, from Kansas to the coast of New York, without at the latter point coming nearer than 30 miles to the earth. Several showers of fragments, however, were thrown off in its flight. The course of the meteor of July 20th, 1860, from a point 90 miles above Michigan passed through the air with a velocity of only 10 to 12 miles, and when it passed the coast line of New York for the Atlantic, it was still 42 miles high. The evidently greater velocity of our meteor caused it to ricochet from the earth's atmosphere in a comparatively short course.

There have been a great number of accurate observations on meteors of late years in Europe and America, so that we are certain of many points formerly doubtful. We trust that the interest excited by our late celestial visitor, will cause our people to be better prepared to make accurate observations when the next comes.

TEACHERS IN COUNCIL.

During the past month many of the County Institutes in New Brunswick have held interesting, and, we hope, profitable sessions. From the reports that have been furnished us we are glad to notice the practical character of the work that has been done. At the Westmorland County Institute this was especially marked. The papers and addresses were practical, and the exhibition of school work of such a superior character as is fitted to give a great impetus to manual training in the schools throughout that county.

Among other interesting subjects at the Carleton and York Institutes, we notice that there were addresses on the importance of developing ideas among scholars in regard to civic government—teaching the functions of our municipal, provincial, and general governments. Inspector Oakes introduced the subject to the Carleton County Institute, and Mr. G. R. Parkin to the York Institute. The subject is an important one, and our readers will be interested in learning that a prominent barrister of New Brunswick has in course of preparation a treatise that may serve as a hand-book on civil government and its functions.

We expect to be able to present to our readers a synopsis of the addresses made before the York and Carleton Institutes, by the gentlemen who took part in the discussion on this subject.

The substance of a paper read by Mr. H. C. Creed, A. M., of the Normal School, will be found elsewhere.

The Charlotte County Institute met at St. Stephen last week. Papers were read by Inspector Carter, P. G. McFarlane, A. B., James G. Campbell, J. Vroom, and others. The papers and discussions seem to have been both interesting and profitable.

The Institutes of Albert and Gloucester are in session this week, and so is the Educational Association of P. E. Island, the programme of which is published in another column.

Northumberland County holds its Annual Institute on the 20th and 21st, and St. John on the week following.

Concerning the work of teachers and the sympathy and co-operation of parents, the *Moncton Times* of a recent issue makes the following pointed references:

"The school teachers of Westmorland have met and separated, and for another year the public will hear very little about them. But their work will go on, and will doubtless be the better because of the influence brought to bear upon them during these days in Moncton. * * Not when they meet together for deliberation, and have the strength of each other's sympathy, do they most need or most appreciate the kindness and sympathy, the courteous treatment and pleasing compliments of others. But it is when each teacher is engaged in his or her daily work, without the counsel and companionship of fellow teachers, that the kindness and sympathy of others is most appreciated and will do the most good.

"If it be true, as teachers are on festive occasions assured, that their work is grand and worthy of the best energies of the greatest intellects, then teachers have a right to expect that a due appreciation of that work, and a never-failing aid and sympathy will be accorded them. Else, they must have been wrongly assured in the first place, or there is a distinct neglect of duty on the part of those who gave the assurance. That is sufficiently clear. Whatever may be the shortcomings of individual teachers, however distasteful some of them may be to the people of a district, the fact remains that they are there, that their labor is with the impressible unformed minds of children, and that for good or ill the impress of their far reaching influence is being stamped upon those young lives. Prudence, therefore, and parental foresight would suggest the advisability of a deep and manifest interest in their labor and its results. It cannot be too strongly impressed upon the public mind that upon the general public rests a vast amount of responsibility in connection with the failure or success of school work, which is, ultimately, the success or failure of individuals and nations."

DALHOUSIE'S NEW BUILDING.

The Halifax daily papers recently contained full descriptions of the new building that has been erected for Dalhousie University. We have wished to reproduce a whole or part of these descriptions, but, unfortunately, our space is too limited. We can only point our readers to the cut of this magnificent building, found on our first page, and let them in imagination gaze upon it, approach it, enter that imposing door-way, and pace the halls soon to resound with the foot-steps of eager and ambitious youths, the hope of the years yet to come. Let them, if they will, put off their imaginary visit for a few days, and then enter the various schools, sheltered under one spacious roof, devoted to arts, science, law,—witness the admirable facilities for college work, listen for a moment to the teachings of the distinguished scholars who have been drawn to these halls by an enthusiasm for their work, a faith in the ultimate triumph of steady, upward effort, and by the encouragement of generous benefactors—let our readers do this, let them take a brief glance at the past, at what a few short years have accomplished, and they will be filled with hope for the future of this fine seat of learning.

We congratulate President Forrest on the many substantial tokens of the interest of the public in the institution, which he has been receiving. Dalhousie may yet do more for Halifax than any other of its institutions—make it famous.

EDUCATION AT THE ANTIPODES.

A most interesting and instructive letter on education in Victoria, from the pen of Dr. Cameron Lees, appeared in a recent issue of the *Scotsman* newspaper. As the information contained in it has been obtained upon the spot, and the Doctor himself is an accurate, and, upon the whole, an unprejudiced observer, the material he presents to the reader may be accepted as reliable and worthy of attention. But while there are facts and statistics which are gratifying to the educationist, there are statements and inferences which, as in every country where education is secular, cannot fail to be suggestive of grave reflections.

In Victoria education is given free to all, and *all* children in the colony *must* be educated up to a certain standard whether they be willing to accept state education or not. Consequently, the whole country is dotted with schools. Even on the most distant frontiers of the colony, in the deepest recesses of the bush, on the banks of the remotest streams, where neither church nor railway station has yet been

built, there commodious and well-equipped schools are to be found. Wherever people have settled, schools have been erected.

Perhaps no country provides more liberally for education. Excellent buildings, abundance of teachers and assistants, and all necessary apparatus supply the conditions for the efficient accomplishment of the aims of the education department. But this is done at great expense to the colony. In 1885, the total cost per scholar, in average attendance at the state schools, was \$24, and per head of the population nearly \$3; the cost of public instruction, exclusive of the erection of school buildings, being nearly \$2,500,000.

The state thus generously discharges its duty in affording opportunities of education to all. But it goes farther, it compels parents to avail themselves of their privileges. During the above mentioned year, the compulsory clause was so rigorously enforced that a sum of over \$9,000 was inflicted as fines upon defaulters, with costs amounting to \$1,800 more.

But education is not free throughout. The state defrays the whole expense of elementary education, but if the pupil desires to study advanced English, French, Latin, Greek, Mathematics, etc., he must pay a fee. Yet the state recognizes secondary education to some extent. There are grammar schools which we infer receive government aid, but in what measure Dr. Lees does not tell us. And assistance is given to deserving pupils in elementary schools in the form of scholarships, to encourage them to continue their studies into regions beyond that embraced in the elementary course. In addition to eleven exhibitions, of the annual value of \$175, awarded for competition to pupils under fifteen years of age on the free programme, there are scholarships awarded annually to two hundred pupils of the state schools under eighteen years of age, of \$50 each, on condition that the scholar attends at and obtains favorable reports from the authorities of one of the public grammar schools, or some other school, to be approved of by the Minister of Education.

The public school system is connected with the university by means of the matriculation examination at the University of Melbourne, when honors and exhibitions are competed for by candidates from the grammar and other schools of the colony. All who pass the examination, or even appear on the honors' list, do not necessarily attend the University. In fact a large number do not. But it is looked upon as affording the pupil on leaving the public schools, the best and last proof of the thoroughness with which he has prosecuted his studies while there. In India, we understand, the same system prevails, and it is

almost useless for a young man to apply for a respectable-situation unless he can present a certificate that he has passed the matriculation examination of one of the universities.

Another interesting and important, and we may say peculiar feature of state education in Victoria is the encouragement given to drill and rifle shooting. "There is a cadet corps which forms a part of the military system of the colony. Of this corps there are now eighty-five divisions, numbering upwards of 3,300 cadets. They are armed with Francotte rifles lent by the government, and ammunition is issued at half-price, the same as to the rifle clubs. Their uniform is simple and inexpensive, and is worn as the ordinary school dress. They are regularly inspected by military officers, and are divided into battalions. It was a curious sight to see in a country town a number of these young soldiers, with rifle in hand and satchel on their back, making their way to school on a day of inspection. 'There goes,' said an officer who was with me, as one of them rode past on his rough pony, 'the soldier of the future.'"

The education which is given in the state-supported schools is strictly secular. The name of God and Christ have been removed from the text-books in which they occurred. Even history has been withdrawn from the public school curriculum, because it was considered that opportunities might be offered during a history lesson, and taken advantage of by an enthusiastic partisan, to present such views of men and events as would be scarcely suitable in a mixed community. And assuredly it would be difficult, we may safely say impossible, to find a history worthy of the name that might not give offence to somebody.

The pre-eminently secular character of the education of the colony is strongly protested against by the clergy of all denominations. They freely and heartily condemn it, and declare that the youth of the country are being forced into absolute paganism. And yet Dr. Lees, who sympathizes with their attitude, tells us that little of anything has been done by them to meet the emergency. The clergyman is allowed the use of the school for half an hour before or half an hour after school-time for religious instruction if he desires it, but very few avail themselves of the arrangement. The Sunday-school, with its hour once a week, certainly cannot be regarded as equivalent to thorough and systematic instruction by a well qualified teacher. Some plan must be adopted by the various churches whereby the religious education of their youth can be overtaken, and the stigma of "godless" be removed from the education of the country.

But of this there can be little doubt, that it is most

unjust to brand all schools as godless in which religion is not taught as a subject of instruction. Many who most frequently and most persistently use the term of reproach are those who, instead of the free, generous and noble teachings of the New Testament, would, in their religious instruction, substitute the narrowest, most intolerant, and most barren lessons in dogma. While there are many enlightened and self-sacrificing teachers, who, imbued with Christian principle, by the silent influences of their lives, their demeanor in school and out of it, their justice, temperance, and piety, lay the foundations of a lofty morality in the young people entrusted to them.

The apex of the educational system of Victoria is the University of Melbourne. Thither repair those who wish to prosecute their studies beyond the stage of the grammar schools, and for examination those who desire the university stamp put upon the education they have received in the state schools. The university is well equipped, has splendid buildings, able professors, laboratories, library, museums, all the conditions of successful work. In 1885, the government grant to the university was over \$100,000, and the college fees amounted to nearly \$60,000. In the same year there were 954 candidates for matriculation, 257 of whom were young ladies. All this indicates great educational activity in the colony. The state is generous in its support of its university, and private munificence has splendidly supplemented its expenditure. Colleges in affiliation with the University of Melbourne have been endowed and erected by the Presbyterians and Episcopalians on ground granted by the government, while the Wesleyans and Roman Catholics are doing the same.

One cannot but be amazed at such a state of advancement. The colony was only constituted in 1851, and the vast majority of the inhabitants belonged to a class which could not be called educated. Yet by their indomitable perseverance and intelligence they have greatly developed the resources of their country and become the possessors of much wealth; and prizing education as the true basis upon which to rest the security and advancement of their state, they have established a system under which no youth can enter upon the business of life without having received some mental training. Enterprise, public spirit, enthusiasm, self-reliance, and faith in their future, are qualities prominent in the Victorians, but they value education because it refines the nature without effeminating it; and they arm their children with that weapon which rarely fails, and without which they would assuredly be overcome in the battle of life.

FERNDALE SCHOOL.

No. V., AN APPLE TREE BORER.
(*Saperda Candida*. Fabr.)

T. Position *First*, and observe what I am showing you. This is a portion of the stem of a fine young, and at one time a promising, apple tree. Without any visible cause, this summer, it commenced to droop and then died. Here is the root and stump, with some sections sawn across. What do you see?

S. Why! there are holes going right through the heart of the stem of the tree.

T. You are right; but now look closely at this part of the stem, just above the root, about on a level with the surface of the ground around the stem.

S. It is mostly all eaten around under the bark and the vacancy is filled with a dirty kind of sawdust stuff.

T. Look closely to see if there is any opening in the bark which could admit an insect into these cavities.

S. No, there's none. Yes, here is a hole—a very small one—with a little of the sawdust stuff coming out. Is it there the insect got in? If so, it must be a very small one.

T. No, it is not so very small. Perhaps we can find it.

S. I don't see how anything big could get in. Nobody could tell

there was anything wrong with the wood, the bark looks so sound; unless one was expecting to find something by looking very closely for it.

T. Yes, tap the bark over the cavities. It sounds hollow, does it not?

S. Yes, but you wouldn't notice that unless you expected something wrong.

T. Very good. But now look at these sections of the tree a little higher up. Large holes are bored towards the heart of the stem. The borers are probably in this upper piece yet, because you see the upper section is solid. I shall strike it so as to make whatever is in the holes fall out. What is coming?

S. Some of the sawdust stuff.

T. Keep watching, as we must soon shake something more out.

S. Oh! there is an ugly white maggot—a grub—come out.

T. Perhaps we may find more than one of them. You are quite right in calling it a grub, as it is the larva of a beetle, and is called by gardeners the

Round Headed Apple Tree Borer. Let us examine it, and make a large drawing of it on the blackboard. See that our drawing will be a true one now. Here we have it at (a).

T. How large is it?

S. About an inch.

T. Its color?

S. White; but its head is brownish, hard and shining.

T. Its jaws?

S. Black and very hard. They move sideways like the caterpillar's jaws. But it has no feet like the caterpillars.

T. But here from another cavity we have got something else—more like a beetle asleep. What do you suppose it to be?

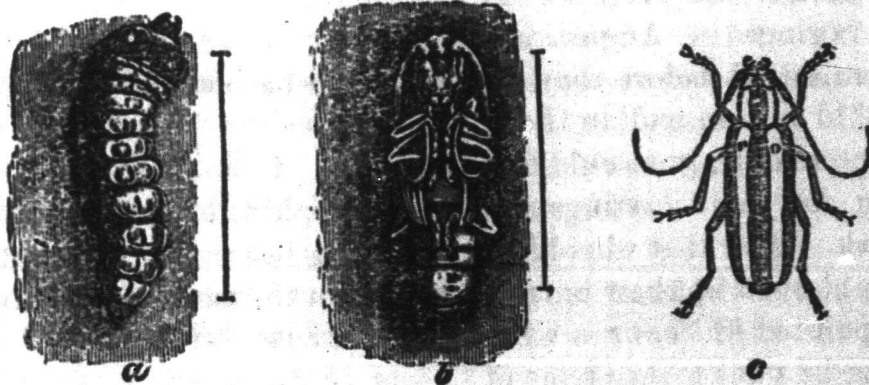
S. The beetle.

T. No. Let us draw it at (b). You see it is midway between a grub and a beetle. It is the pupa, or, as some call it, the chrysalis.

S. What is the beetle like?

T. Here it is pinned in our collection. Jack caught several of them last June one evening about some apple trees. Let us figure it at (c).

S. Who would have thought such a pretty beetle could have been so ugly once and have done so much mischief? How pretty the two broad white stripes look on its pale



brown back. See how long and curved its antennae are! Will you give us its life history?

T. I will. This pretty beetle's mother came out of the stem of an apple tree, or perhaps of a thorn bush, mountain ash, or some other tree nearly related to the apple tree, just three years ago this summer. Early in July, 1884, it deposited the egg which developed into this beetle in June, 1887. It selected the place with care, on the bark of the apple tree stem just above the ground. In a fortnight the egg was hatched and the young grub with its sharp jaws eat a small hole through the bark to the juicy wood upon which it fed. It grew larger and cleared a small space under the bark, larger than a cent, which was filled with its castings. These castings were pressed out of the small entrance hole and would have betrayed its presence if one should have examined the tree. The color and the sound made by the bark when tapped would also reveal the secret of its hiding-place in the cool days of autumn. In winter it becomes passive, reviving with renewed energy in the

spring of 1885. This summer it extended its excavations and grew to over half an inch in length. After a second winter's sleep, it grew still more vigorous in 1886, boring this large hole up the centre of the stem, then out to the bark to prepare a way for its escape. But towards winter it filled up this point and enlarged its cavity in the interior of the stem, and became dormant, with its head directed towards its future place of exit. Then in the spring of 1887, it cast its skin and became a pupa. In two or three weeks the perfect beetle came out of its chrysalis case, with all its parts very soft. In a few days the wing cases and other parts of the beetle became hard, and it eat its way through the prepared opening in June, when Jack caught it for our collection.

S. It lives, then, for about three years in the living wood, does it?

T. It does. But now that you know its life history, what would you suggest to be done to preserve our apple trees from them?

S. I don't see that much can be done when they get into the middle of the tree.

ANOTHER S. We might scrape the bases of the trees and search for their borings in August and September. If they were scraped off before they got deep into the bark, that would put an end to them.

ANOTHER S. And if they were older you could find out their places by looking for their castings and scraping and tapping the bark. And if it should be hollow under the bark, I would open up their burrow and kill them with a sharp pointed knife, or a wire.

JACK. Couldn't something be put on the stems of the trees in June and July, when the beetle lays its eggs, that would keep them away.

T. Very good. I see that when you know the life history of an insect, you know about as well as anyone how to treat them. All your suggestions are good; and so is Jack's, especially, because if successful, the tree would not be injured at all. Mr. Saunders, superintendent of our Dominion experimental farms, recommends painting the tree stems with soft soap made as thick as paint by adding a strong solution of washing soda in water to it. A dry day will cause this to harden, and unless the season is very rainy it need be used only once in early June and once in early July.

S. Where did this beetle come from?

T. It is a native of America, first described by Thomas Say in 1824. In 1825, its first destructive effects were felt in the State of New York.

S. Does it do much harm in this country?

T. It has destroyed thousands of dollars' worth already in this country. But you now know how we can save all this loss, with but a little intelligence and labor.

S. Are there any other kinds of insects that bore apple trees?

T. There are one or two others common, but we shall talk about them some other time.

AMONG THE CONSTELLATIONS.

No. II.

"In fourteen hundred and ninety-two
There happened to be a great ado,
For close without, before the town,
The seventh of November's moon,
A stone was fallen, and there it lay,
With thunder and in open day!
Two hundred and a half it weighed;
Its color iron. Then they made
Procession, and 'twas hither borne;
But much by force from it was torn."

— *Old Translation of Inscription on the Ensisheim Aerolite.*

Of the Ensisheim aerolite it could be truly said, "A stone was fallen and there it lay." Of the 15th September meteor of the Atlantic Provinces of Canada, notwithstanding all the positive assertions based on the evidence of "my very own eyes," the rhymster cannot say it. It has been seen to fall in Pugwash harbor, over the new Pictou railway bridge, in the woods of Maine, and in somebody's backyard in Halifax. It was observed to be of the size of a plate, of a pumpkin, of the end of a barrel, of an elephant, and of a box car. It ran to the east, to the west, to the south, and even to the north. But there was some excuse for this. The meteor was evidently never so flamboyantly flustered before. Its peep at the domicile of Adam's race, through the azure of a Nova Scotian sky, no doubt surprised it in its mad rush. We believe it is off never to return. What a lot of gaping, mildly intelligent, enraptured countenances it must have thrown its startled beams into in those few seconds! If there are a half dozen of these able to describe its position with reasonable accuracy, then we are not acquainted with them all. A leading daily next morning had telegrams from various points of the province, giving very fair, some very good, descriptions of the phenomenon. The rural papers repeated some of these instead of interviewing some person in their vicinity who had seen it. The results are that the single edition of that paper did as much to determine the elements of the problem as all the rest of the press from Cape North to Cape Cod.

Now, in hope that the readers of the REVIEW will be ready for the next meteor, remember that it is an object comparatively near the earth—within one hundred miles. If it fell vertically over St. John it would never be noticed there, especially were it as large as the meteor of the 15th. The arrival of a

three mile belted volcano in a vertical hurricane would flatten out a larger superficies. At the same instant the Cape Cod fishermen would see a star fall in the north-eastern sky into the Atlantic. The English mail opposite Halifax harbor would see it in the western sky falling behind the citadel. Yarmouth would watch it falling across the north pole star; while Fredericton would see it in the south-east, and send out scouts to capture it in their celestial meadows. At any given instant a meteor must be seen by observers at different points in different parts of the heavens. If these different positions are carefully noted, the height and course of the meteor can be accurately determined from two or three of them.

Again, to some people the moon appears as large as a plate, to others as large as a cart-wheel. But everything depends on the imagined distance of the object. However, if the man who took the meteor to be of the size of a pumpkin, thought it also equal to the moon, and the man who took it to be the size of an elephant also saw it to be the size of the moon, then we would know that the object appeared to subtend an angle of about half a degree (31 minutes+) and that for every hundred feet it was distant, it was about one foot in diameter. In other words, we know exactly the angle subtended by the moon, and if a body in the heavens be compared in dimensions with the moon, we know the angle it subtends, and when we find its distance, we can easily determine its size. A very accurate way of estimating short distances in the heavens is by estimating the number of moon spaces, two moon breadths being a degree.

But another tendency to err in estimating celestial distances, is the apparent magnification of objects near the horizon, due to their unconscious comparison with juxtaposed objects, or to the suggestion of great distance from the observer. If a tyro were asked to point out with his finger an altitude of 45° , in the direction of a distant horizon, he would probably point little above 30° actually. Proof: look at the north pole star, which is about 45° high with us, and see if it does really commend itself to your judgment as being exactly midway between your zenith and the horizon. It looks more like an altitude of 60° .

Finally, we congratulate our readers who took the advice of our opening article, as it gave them the day and the hour of the advent of the September meteor. We admit the meteor was not in the programme. But it is always good to have the performance better than the promise. We are fully avenged on those who neglected our advice; with this prestige we come forward with more advice. Set to work at once to post yourselves in the constellations. There is no

better way of describing accurately the course of any meteoric phenomena, than by naming the portions of the constellations through which they passed, or by the stars in their course. There are future opportunities coming, and those who take our advice will be gratified, and those who don't will be mortified, and it will serve them right. Keep your eyes open for the Leonid meteors of November 13th and 14th. The earth then plunges through a known orbit of meteoric bodies. After midnight they may be expected to be seen radiating from a point within the constellation Leo, whence their name.

We expect to illustrate these articles, occasionally, with small star maps or cuts of the constellations.

THE COMET.—Olber's comet, which visited our sky in 1815, has now returned, after seventy-two years' absence. It is telescopic; will be brightest about October 6th, and may be seen near Denebola in the constellation Leo.

THE MOON IN OCTOBER is in conjunction with *Uranus* on the 7th, *Mars* on the 13th, *Mercury* on the 14th, *Jupiter* on the 17th.

AURORA.—A beautiful display of the *aurora borealis* was observed between 8 and 9 p. m., on September 25th, in Nova Scotia. The "merry dancers" waltzed for a short time in most brilliant hues of nearly every color.

ALGOL, the "demon star" of the Arabs in *Perseus*, is now favorably situated for observation. In our next we may help our readers to find it, and give them times of its brightenings and wanings.

NOTES AND COMMENTS.

Newfoundland has a "Society of Arts" which enrols the names of the leading men of the island in its membership.

The *Evening Mercury*, Newfoundland, has had a valuable series of editorials on the fisheries of the island during the month of September.

The *Marine Industrial News* says that there is on exhibition at Peake's Island, Portland Harbor, a stuffed sea-serpent, captured on the banks of Newfoundland September 11, 1887, by Capt. Barnstead, of the schooner "Hattie F. Walker," Halifax. Its length was 47 ft. 3 in., and its weight 900 lbs. Its mouth contains a fine set of teeth, and on its upper jaw are two feelers, 13 inches long. Five feet back of his head are flukes on each side, and the end of his tail is formed like a sculling oar, being flat and nine inches in width at the end. This is news to us.

For the REVIEW.]

**WRITING IN THE SCHOOLS OF NEW BRUNSWICK,
AND THE NEW COPYBOOKS.**

That good work is done in the primary and intermediate schools of New Brunswick, is the judgment of all competent observers, whether residents in the province, or visitors from abroad. The methods of teaching generally followed are natural and reasonable. Due importance is attached to *method*. And the results are, in general, of a gratifying character.

This is not equally true, however, of all the subjects taught; and notably, I think, it is not true as regards writing. This opinion is based upon my observation in the Normal school during the last fourteen years. Taking the students who come from all parts of the province as specimens of pupils taught in the public schools, I am justified in asserting that only a small proportion of the pupils learn to produce writing fairly resembling the copies set them, or to write with their pens held in any proper manner, or to maintain a proper position while writing. Nine-tenths of the pupils, I should judge, habitually stoop over the desk when writing; and many of these bring the face within five inches of the desk. Probably not more than one pupil in ten holds the pen in such a way as to be able to make downward shaded strokes, as shown in the copy-books. Nearly all *draw* the pen instead of "driving" it with the point forward. Very many rest the hand wholly on its side, and thus cause the pen-handle to take the direction of the line of writing, whereas it ought to have the direction of the downward strokes. Very many pupils—chiefly girls in certain classes of schools—have a fashion of using blunt pens, drawing them as just described, and producing an angular, ungraceful, illegible, usually magnified style of penmanship, which is as different from any copies I ever saw as a duck is unlike a swan.

All or nearly all professional teachers of penmanship are substantially agreed as to the best manner of holding the pen. There are, I know, some reasons for thinking it easier to hold the hand with the back outward, than with the back upward. And when a convention of judicious teachers shall be disposed to favor a proposal to adapt our style of writing to that manner of holding the pen, I shall, perhaps, be ready to promote such a change. But for the present there is no call for a movement so radical.

To what extent the new series of writing-books will effect an improvement in the writing in our schools, time alone will tell. It is gratifying, meanwhile, to find the teachers on every hand expressing themselves as well pleased with the change. At the same time it is to be expected that some of the details will meet with adverse criticism.

As a guide to teachers, and in order to emphasize the importance of a proper manner of sitting and holding the pen, directions on these points were placed on the cover of the new copy-books. But unfortunately, through some mistake, the description of the writing position reads "Left side to the desk," where "Right side to the desk" was intended, and the cut on the front of the cover is not only incorrectly drawn, but in no way represents the position recommended.

About the time the books were issued, the publishers printed a small circular to be sent to teachers, the contents of which were as follows: The first part consisted of a few lines addressed to the teachers by the publishers over their own signature, calling attention to the peculiarities of the new course of penmanship, and the advisability of paying heed to the "hints and directions," etc. The second part, given over the signature of the writer, related to three topics: (1) Position in writing, briefly correcting the mistakes mentioned above; (2) Upward and downward strokes; (3) Movements. The following is the substance of what was said on the last two topics.

As a rule, the light lines are traced upwards and the shaded or heavy strokes downward. This should be observed in forming such letters as capital A, M and N. In O and similar forms there is an exception.

There are three different movements that may be employed in writing, all of which it is desirable for pupils to practise at times.

1. *The finger movement*, which is, perhaps, too exclusively used by many, as it lacks freedom.

2. *The fore-arm movement*, which consists in the movement of the fore-arm in any direction while supported on the muscular rest and finger rest, with no separate motion of the fingers. The fore-arm and finger movement are often combined. The former may advantageously be employed in forming capital letters, in "text-hand" and in the "continuous movement."

3. *The whole-arm movement*, in which no part of the arm touches the desk, but only the "finger rest." This movement should be practised occasionally in order to give freedom of action. It is adapted to large-sized lettering and ornamental flourishes.

This circular being deemed by the Chief Superintendent unsuitable to be sent out to the teachers, the whole parcel was destroyed by request of the publishers, and a new one was issued from the education office, which many of your readers have had the opportunity of reading.

In closing this communication, which has grown perhaps to an undue length, I desire to express regret that, in two or three books of the series, the ruling is not as it should be. In order to write some of the

copies twice on the page, it will be necessary to rule an additional line (with pencil).

All errors noted in this edition will probably be corrected in another edition.

HERBERT C. CREED.

Fredericton.

For the REVIEW.]

SCHOOL SYSTEM OF NEWFOUNDLAND.

An article in the June number of the EDUCATIONAL REVIEW by "L. G. M." is ostensibly an exhibit of the Newfoundland school system, but I regret to say that it is little better than a caricature. Though written by a gentleman who says "that a residence of eight years in St. John's enables me to say that the results of the system are evil and evil continually," I hesitate not to state that the sweeping charges it contains, and the unqualified condemnation with which it abounds, are misleading and unfair, and are not only *unworthy* of the dispassionate utterance of the reverend and learned expositor, as I hope presently to make apparent to your readers, but smacks of prejudice much more than pertains to criticism, which should be honest, however rigid.

Of it, in a recent review, Rev. Moses Harvey, known favorably to many in the Maritime Provinces, writes: "We are unable to accept of Mr. Macneill's description as just or accurate. Many most important considerations are overlooked, and the whole facts of the case have not been presented with sufficient care."

In offering a few strictures, I charge Mr. Macneill with glaring omissions essential to fair interpretation, and with exaggerated assertions, that he has no evidence to establish. My contention with him is not whether in the abstract, under different conditions, a system after the model of New Brunswick, Nova Scotia, or Prince Edward Island, would not be better in Ontario and Quebec, etc., than the present separate system for Roman Catholics and Protestants,—or whether, under different circumstances, a dual separate system would not be an improvement upon a denominational one in Newfoundland, which, while "purely sectarian," recognizes practically Roman Catholic, Church of England, and Methodist schools, as there are but four or five public schools of the minor denominations. Mr. Macneill knows that 75,254 Roman Catholics out of a total population of 196,085, make separate schools inevitable. He may grow eloquent over "the Government that shall have the courage to pass a free unsectarian school act for the colony," but he knows right well that such an act is not in the region of practical politics. He knows, too, that the two denominations chiefly concerned in sub-division in 1876, have shown *no* wish to return to

the separate school system, as it was previously, and are not likely to be influenced much by his extravagant deductions and unwarranted reflections. There might be perfect agreement between him and the writer in recommending one or the other of the above systems, if only practicable, and circumstances were favorable for its adoption; but this affords no justification for the charges of "L. G. M." which I hope now to make manifest.

Newfoundland, he says, has distinguished herself by the establishment of a "purely sectarian system," "wrought out on strictly denominational lines," the interpretation of which in his own words, is as follows: "The public schools, instead of being seminaries of patriotic and liberal sentiments, become sectarian centres, the children of one sect being *taught* from infancy to look with jealous and unfriendly eye upon those of another sect. The seeds of bigotry and narrowness of views are implanted at an early age, which the teachers of religion and patriotism find their efforts vain to uproot." The gist of this tirade is that public schools, instead of fostering love of country, nation and throne, teach principles on which not one of them can long exist. That this position is untenable is clear from the evidence herewith submitted. "No teacher in any academy or school, aided by moneys granted under this act, shall impart to any child attending the same, any religious instruction which may be objected to by the parent or guardian of such child." Such is the conscience clause of our Education Act, of which I have never heard of one violation in twelve years of my superintendency. Besides, I ask him to deny, if he can, that children (and very many of them) have been attending all the while, schools of other denominations than their own, and that every one of these supported by public funds is a "public school." Moreover, how can he reconcile with teaching "jealousy, bigotry, and strife," the employment of teachers of one denomination under boards of other denominations? Such possibilities as they now exist (and they have occurred again and again) prove that the alleged purposes, for which he asserts public schools are maintained, are not real, and that his testimony needs to be accredited. Finally, the use of the R. R. series of text-books, authorized here, and broad enough for New Brunswick, can scarcely be deemed un"patriotic" and illiberal in Newfoundland, while recent Jubilee services, in which both old and young united to celebrate their high regard for Queen and country, proclaim, despite of all defamers, that still this is "the ancient and loyal colony of Newfoundland."

"The system is most expensive, involving at least three times the cost of an equally efficient public free

school system." The terms here are certainly studiously vague. I challenge him to name any free school system in the provinces so inexpensive. It certainly is not Nova Scotia, which, by the Report of the Chief Superintendent in 1886 cost \$641,450.88 for 105,410 pupils, or a little over six dollars each; whereas Government expenditure, fees and contributions, towards property, have not averaged five dollars per pupil in Newfoundland. But certainly a dense population, as in the former, is in much more favorable circumstances for economical management than where the population is scattered along thousands of miles of coast line, in many cases without roads being possible, except at great expense.

Even in Prince Edward Island the total expenditure for education was \$148,778.96, an average of \$6.64 for each pupil enrolled. Nevertheless, in the face of these facts, "L. G. M.," expecting to enlighten your readers, asserts "the system is most expensive." Fancy is, however, made to serve for fact. "The three-fold superintendency, three-fold academy course and primary schools involve," he asserts, "at least three times the cost," etc. If meaning anything, these words assert that a free school system equally efficient is feasible for one-third the cost, or less than one dollar and sixty-six cents per scholar, which is a delusion. Again I ask, will one superintendent, one academy, and one-third of the teachers employed be equally effective as the present number employed? All acquainted with the facts know the cry of "most expensive"—"at least threefold the cost necessary"—is preposterous. The total number of schools, with all gradation possible beyond the present, could not be reduced, I say it advisedly, one-third of the whole, much less by two-thirds, owing to the physical difficulties in the way. Be it remembered that in by far the greatest number of settlements, there is never more than one school in operation, and that where there are two schools in the same harbor they are often far separate, and much more convenient to the scholars than could be any one where roads are poor. The total number of Methodist schools averaged an attendance of fifty-six scholars each: hence it is *not* true that there are three times more primary schools than there need be. It might be shown conclusively here, and in reference to the academy course as well as the primary one, that while some gain might follow in a few places from perfecting the gradation, which is now not interfered with in many of the populous centres, a little wholesome rivalry, without scattering firebrands of discord, proves a valuable incentive to both teachers and scholars—unquestionably also to Boards of Management.

But with "L. G. M." the threefold superintendency

is a chief cause of the system being most expensive. Let us see. In New Brunswick the Chief Superintendent received a salary of \$1,600.00; travelling expenses, \$400.00; extra clerical service, \$357.50; assistant got a salary of \$1,200.00; clerk, \$700.00; six inspectors, \$7,200.00; travelling expenses, \$40.40; total cost of superintendence of service in New Brunswick, \$11,497.90, besides cost of stationery and office, not included, and of examining teachers, \$680.92. Similarly, the management in Nova Scotia cost for officials, including inspectors, \$15,225.00; besides office expenses, \$1,368.63; and examination, \$870.35. In Newfoundland, three superintendents received each \$1,620.00 for salaries and all expenses, including their own office, which they have to provide; all travelling expenses, which in this colony are very heavy; stationery; postage outside of colony; leaving them for their entire work of superintendence, inspection, office, correspondence, examination of teachers—a work which is one of very great responsibility, so onerous as to admit of neither holidays nor office hours—and which with all that involves fatigue and much exposure in journeying by boat or on foot, as well as by steamer or carriage, the net salary of \$1,200.00. It seems scarcely credible that in view of these facts, "L. G. M." should speak of the three *well* paid superintendents, and in such courteous terms (?) suggest "There are men to be found who try to defend the system as the best for Newfoundland; among these are *principally* the three *well* paid superintendents." Now, while at some loss to know what the learned reviewer here precisely means, as indeed in very much more of his remarkable paper, I doubt not that many of your readers will think with me that it was not "a little cool" for that reverend gentleman, who with light duties had received \$2,000.00 a year, besides manse and perquisites, to insinuate that gentlemen not inferior to himself in social position, or possibly in educational or other respects, are overpaid or highly paid on the above salaries, or to flippantly speak of them either in the sense of being *overpaid* or as being ready advocates of a "most expensive" system—"evil and evil continually"—on the ground that they have an axe to grind.

"The system is most inefficient." This again is settled without proof by his "*ipse dixit*," albeit I think it doubtful if he ever spent an hour during session in half a dozen of the public schools of Newfoundland in the whole eight years of his residence. I claim for it that great progress has been made every year since 1876, in everything pertaining to educational advancement. Better school-houses have been erected, school furniture has been revolutionized,

and school work has been rendered more attractive and effective by the introduction of maps, apparatus, and needful equipments, teachers have been trained and certificated according to standards of qualification, that the unbiassed cannot fail to respect and to encourage them in this. The legislature has made a liberal appropriation. They are not "cheap" uneducated men, but trained men and women receiving salaries comparatively respectable. Schools have not only multiplied, but attendance has marvellously increased and average greatly improved. In short, facts and figures undoubtedly prove that, when the previous condition of Newfoundland is taken into account, especially on the French shore (so called), and when difficulties to be overcome and means at command are borne in mind, the progress in the past decade has been marked and solid, and will compare favorably with what has been done elsewhere under more favorable conditions, and as a result in very many of the populous centres the public schools are quite as effective as in the provinces or England. Higher education is also showing signs of great hope. Our academies have prepared students for matriculation in Europe and America, and are prepared to do so regularly. To speak in the contemptuous way in which "L. G. M." points to our academies is characteristic of the whole paper. "An academy with a staff of half a dozen teachers or less publishes a syllabus of subjects taught that would eclipse a university with its staff of thirty professors." This grandiloquent sentence, if intended for the Methodist academy, I indignantly resent, and cannot forbear saying that any gentleman who can thus sneeringly refer to an institution having for its faculty a graduate of London University, another of Dublin, and a third of Mount Allison, besides a fourth who is a trained master from Westminster, and a fifth a mistress who is a matriculant of London, disparages himself, however exalted in his own judgment by his obvious prejudice.

I close with one observation more. "L. G. M." says, "The utter failure of the old, cumbrous, expensive system is evidenced by the fact brought out by the recent census, that in a population of less than 200,000, over 50,000 above ten years of age can neither read nor write." Here imagination must take the place of evidence again, as the enumerators give testimony *only* regarding *some* who can read and write, and without saying a word, *pro* or *con*, about a large doubtful class, of which they knew nothing, and had in many cases no means or power of testing, left him to perfect their statistics by making the above objection to the damage of the good name of Newfoundlanders.

St. John's, Nfld.

GEO. S. MILLIGAN,
Supt. of Methodist Schools.

For the REVIEW.]

THE S. P. C. A.

I am very glad to see the evident interest the editors of "THE EDUCATIONAL REVIEW" feel in the work of the "S. P. C. A." Some reference has been made to the institution in every successive number of THE REVIEW, but too much has not been said, although the limited space furnished by a twenty page quarto must necessarily be husbanded with great care. THE REVIEW is the proper channel of intelligence concerning the great and good work of that noble organization; for it reaches all the teachers of the three provinces, and these teachers have, as no one else can have, the opportunity to instil into the minds and hearts of their pupils the sentiments of kindness and mercy towards the animal creation—the sentient beings over which God has placed the human race as guardians or friends. It would not be hard to show that the reflex influence of such efforts would be a great help in the government and work of the schools, but that must be reserved.

I was glad, too, to see how prominently our good Queen is brought to the notice of her loving subjects in this regard; showing that from the days of her early girlhood, she has been the constant and ardent friend of the society, and an ever ready and efficient aid in its benevolent and most meritorious operations. There is no truer sentiment than that of our great philosophical dramatic poet. "Mercy is twice blest; it blesseth him that gives, and him that takes;" among the beatitudes that fell from the lips of our Divine Lord, there was not a more gracious one than that embodied in the words—"Blessed are the merciful, for they shall obtain mercy." All our teachers should be induced to engage in this Divine work; and the REVIEW could in no way be more useful than in forwarding it.

EDUCO.

Wolfville, Sept. 16, 1887.

For the REVIEW.]

THE GILCHRIST SCHOLARSHIP.

A worthy young gentleman who recently left New Brunswick for the Mother Country, with the intention of studying at the London University, had a very hearty and complimentary send-off from his numerous friends. Commended for his diligence and good conduct, congratulated on his success, assured of the good wishes of many who seemed delighted to honor him, he no doubt experienced a happy complacency as he took his departure. This is all very well. He is a good fellow, has done well, and has been fortunate enough to gain that which secures to him at a trifling expense, a term of study at one or

more of Britain's greatest seats of learning. No wonder the people of his acquaintance wish him well.

But he was banqueted and flattered; and his alma mater fairly beamed upon him with pride; and professors and alumni exclaimed, "See what our college can do!" It has become the fashion in New Brunswick to banquet the winner of the Gilchrist Scholarship. What does it all mean?

A graduate of a Canadian college, who, though perhaps not considered unusually brilliant among his school-mates, has by his diligence maintained a good position in his classes, spends a large part of a year in preparing himself for the entrance examination of an English university. Only a half dozen students in all Canada this year have thought it worth their while to enter for the same examination. Probably all of these are graduates. Our friend gets the highest marks among the six, and for this probably deserves praise. Only two or three of the English competitors in this same examination stand higher than he on the list. But these competitors are not college graduates. The examination is for *entrance upon* a collegiate or university course. Why, then, should grave professors, doctors of law, legislators on the floor of the House, even the highest officials in the land, be willing, or even eager to do homage to the fortunate winner of this scholarship? Is it not, in the eyes of the onlookers, "just a little flat?"

Will not somebody found a scholarship or bursary that will enable the winner to take a year or two of advanced work, as a post-graduate course, at Leipsic, or Edinburg, or Harvard, or Toronto, or whatever university he may prefer? To come out first in an examination equivalent to that on which the degree of B. A. is awarded in England, would, if the number of competitors were considerable, merit a measure of praise. But if this glorification over Gilchrist scholars is to continue, we need not weep for the predicted withdrawal of the benefit from Canadian students, though several of our young fellow-countrymen have received large advantages from it.

DOMINE.

THE VOLAPUK LANGUAGE.

Seven years ago, says the *San Francisco Call*, a Catholic priest named Schleyer, a linguist of some celebrity in Germany, gave to the world as a result of a lifetime of study, what he termed a universal language, and named it Volapuk language (pronounced Wol-a-peek).

Volapuk is defined world's speech, from *vol*, meaning world, and *puk*, speech. The language consists

of the best of over twenty tongues, omitting their irregularities. The most is taken from the English language, the others being represented according to their importance. The pronunciation is arranged to be easy for all nations; the letter "R," therefore, is seldom used. If that letter is contained in English words when brought into Volapuk, it is changed to L. All the letters are English. The consonants are pronounced as in English, and the vowels like Spanish. Every word is spelt phonetically, there being no silent letters.

The rules of the Volapuk grammar have no exception. It even goes so far that plurals from the pronoun I (ob) are formed regularly by adding an s (obs), the same as with every noun. Adjectives and verbs can be formed from every noun by adding the syllables "ik" or "on." Certain syllables are used to save memorizing a large vocabulary; an instance is the syllable "le", which, when prefixed to any word, expresses the same general idea in a larger degree. House in Volapuk is "dom." The prefix gives the word "ledom," meaning palace. The syllable "lu" prefixed to a word denotes the same idea in a smaller sense, using the same example, "ludom" is cottage. These two syllables alone save memorizing of 100 words. Out of a classification of 900 words it is necessary to memorize but 302 syllables. Volapuk is so arranged that in translation all peculiarities are retained. To one unaccustomed to the sound of the language it seems strange, but its harmony grows upon the ear.

The whole grammar is contained in four small pages. Such grammars are printed yearly in twenty-five different languages.

When the language was first given to the world its advocates were mostly Germans. It subsequently came in great favor with the Dutch. Now in every large city throughout the world there are clubs, some very strong, devoted to the study of the language.

The thought of inventing a universal language was prompted by the difficulties experienced by German immigrants in America. The language is not designed to supersede any of the living ones, but to be a means of intercommunication between people having no common tongue.

Volapuk literature has assumed larger proportions, most of the classics in the principal ancient and modern languages having already been translated into it. A new dictionary of the language has just been issued in two books of 175 pages each. At present there are eight journals printed wholly or partly in the language, all of which are well supported by the adherents of Schleyer's novel tongue.

PERSONAL NOTES.

D. A. Murray, late "Munro Tutor," in Dalhousie College, has gone to the Johns Hopkins University, Baltimore.

W. S. Calkin, B. A., (Dalhousie), has gone to Cornell University, to take a four years' course in the science department.

Arthur Stanley MacKenzie, B. A., "Munro Tutor" in mathematics, we are glad to learn, has fully recovered from his illness.

Howard Murray, B. A., (London), "Munro Tutor" in classics in Dalhousie College, has returned to the province to assume charge of his duties.

J. W. Bailey, son of Dr. Bailey of the New Brunswick University, and Harris G. Fenety, son of Mayor Fenety of Fredericton, both graduates of the N. B. University, have gone to Harvard to take the law course.

Mr. W. F. Ganong, B. A., has recently received the appointment of assistant botanist to Prof. Goodale of Harvard. We extend our heartiest congratulations to Mr. Ganong on receiving this appointment, which was proffered without his seeking; and while welcoming him to the ranks of botanists, we hope that his "first love" in science will still claim his best attention.

Mr. A. W. Macrae, B. A. (Dalhousie) stood 36th on the honor list of matriculants to the London University in the June examination. Mr. Macrae holds the position of mathematical master in the St. John Grammar School, and we believe intends to stand the pass examinations with a view of ultimately taking a degree from the London University. We congratulate Mr. Macrae on the excellent record he has already made, being second of the Canadian matriculants, and predict for him further honors in the future.

SCHOOL AND COLLEGE.

We are glad to observe that the people of Truro are indefatigable in raising funds for a first-class *Kindergarten*.

The Halifax Medical College opens its course of regular lectures in primary subjects October 29th. The Registrar is Dr. A. W. H. Lindsay, M. A., etc., of Halifax.

We have received the "Catalogue" of Pictou Academy. Three hundred and fifteen students have been registered during the year, the majority of them from abroad.

The Victoria School of Art is going to be opened in October, we learn from advertisement. It has a superior staff of instructors, and is under a management which augurs success.

The New Presbyterian Ladies' College in Halifax opened last month under very auspicious circumstances. Over 100 pupils were enrolled. The faculty of instruction is a very strong one. This, no doubt, accounts for the large attendance at the first opening of the college.

We have received the annual circular, eighteenth year, of the Ontario Business College. We have been surprised to see so large an attendance from the Atlantic Provinces of Canada, and even from the West Indian Islands, enrolled on its register. There can be no better index of the thoroughness and extent of work done, and the influence of the institution in securing good positions for its graduates, than the list of students from all parts of Canada as well as from Ontario. Its principals and proprietors, W. B. Robinson and J. W. Johnson, F. C. A., have a good staff of instructors and several departments, including telegraphy, phonography, type-writing, etc., under their general management. The college is situated in Belleville, Ontario, corner Trout and Bridge Sts. Five thousand young men, representing eighteen different provinces and states, have passed through it since 1868.

QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

Questions and Answers.

1. E. J. L. Kindly tell what the enclosed insects are. My hop vines, which a fortnight ago were green and flourishing are now black as if frost-killed, and literally swarming with these creatures, even the poles on which the vines are trained being covered.

The insect is *Aphis humuli*, Curtis, commonly called the "Hop Aphis," or "Hop-Fly." In Ontario it has been very destructive in some places to the hop farms. In England, Kirby and Spence say, "The hop grower is wholly at the mercy of these insects; they are the barometer that indicates the rise and

fall of his wealth, as well as of a very important branch of the revenue, the difference in the amount of the duty on hops being often as much as £200,000, more or less, in proportion as the fly prevails or the contrary." The effect produced on the vines are exactly as above described from Cumberland County, N. S. *Treatment:* (1) Make a mixture of strong soap-suds; add to it salt and saltpetre till a brine is made about half as strong as ordinary beef pickle; add further a pound of copperas dissolved in warm water, to every five gallons of liquid; or (2) Make a strong decoction of tobacco by boiling at the rate of a pound of stems and refuse parts, or other cheap tobacco, to a gallon of water. Syringe the under sides, especially of the infected leaves, with this liquid.

2. Tell me something, also, of the maggot which eats into the apple.

This maggot is the larva of the "codling moth," *Carpocapsa pomonella*, (Linn). It has been very destructive to fruit in Nova Scotia. We have ordered a cut of it; and as the subject is worthy of it, we shall give it full attention at some future time.

3. A. F. How can we get caterpillars to spin cocoons and then come out the perfect insect, so that we may know which is which?

Take a chalk-box, cut the lid in two halves, crossways, and drive it home into its place; half fill the box with light sandy soil and set it on end filled up to the end of the half cover; cut a piece of ordinary window-glass equal to the other half of the lid and run it in to touch the lower half lid. You have now a good breeding cage. Put your caterpillars in, not too many. Feed them if they wish to eat. Some may descend into the earth to pupate, others may spin their cocoons above. Through the glass door you can observe their movements and trace their history. You should have several of these boxes, and write or draw descriptions of each kind of caterpillar you put in, with a note as to what you found it feeding upon.

4. E. F. M. What bright star is in the west in the evenings, below the line produced from the two last stars in the handle of the Dipper? It goes down now earlier than a few weeks ago.

The star is *Arcturus*. See Job ix. 9, and Job xxxviii. 32. It is of the first magnitude and is in the constellation *Bootes*.

5. E. M. Which city is now the capital of Louisiana, New Orleans or Baton Rouge?

Baton Rouge is now the capital. New Orleans was made the capital during the war, but Baton Rouge was reinstated as the seat of government some years since.

QUESTIONS TO BE ANSWERED NEXT MONTH.

1. "He reckoned without his host;" what is the derivation of this?
2. "The territories are under the direct supervision of the Federal Government (U. S.)." What is the government of the territories?
4. "'Provisional' County of Ontario;" what is that?

J. M.

BOOKS AND EXCHANGES.

ELEMENTARY NATURAL HISTORY.—An Introduction to the Study of Minerals, Plants and Animals, with special reference to those of New Brunswick. Prepared for the use of schools by L. W. Bailey, M. A., Ph. D., F. R. S. C., Professor of Natural History in the University of New Brunswick. St. John: J. & A. McMillan, 94 pp. This book, which is now being issued from the press, has been looked for with considerable interest, both on account of the increased attention to the study of our natural history and from the fact that no work whatever bearing upon this subject has been accessible to our teachers. At first view it may seem extraordinary that a book of less than 100 pages, with not more than three or four pages of illustrations, can be anything like an adequate text-book on the three kingdoms of nature. But on examining the work carefully, it will be seen that the author has kept in view one purpose—that of stimulating inquiry and guiding students in the pursuit of natural history. One sentence in the preface explains the plan of the work: "Mere descriptions are of very little value, unless the pupils have the opportunity of seeing the objects described; and even then, they should not be told what their characters and relations are, but by judicious guidance be led to deduce them for themselves." With this idea the author has prepared a work, which, in the hands of intelligent and practical teachers, is certain to be of the greatest importance to our common schools. The mineral and vegetable kingdoms have been treated more fully than the animal kingdom, nearly four-fifths of the books being given up to the two former. This is to be expected when we consider that these kingdoms furnish objects more accessible and convenient for study. The book furnishes proof—if any were needed—that school-books may be produced in the province, which for cheapness and mechanical execution cannot be excelled. The book is a pretty and compact little volume, neatly printed, well bound, and reflects the greatest credit on the publishers—Messrs. McMillan.

THE HISTORY OF ENGLAND for beginners, which was reviewed in the August number of this paper, is for sale at Messrs. J. & A. McMillan's, St. John. We repeat what we have before said of this work—it is admirably suited for schools—the events narrated in a pleasant strain, and its excellent maps form an admirable feature of the work.

THE EARTH IN SPACE: A manual of astronomical geography, by Edward P. Jackson, A. M., Instructor in Physical Science in the Boston Latin School. Boston: D. C. Heath & Co., Publishers. This is an excellent and delight-

ful little compendium of astronomy and geography combined, and is well adapted by its admirable method of illustration to arouse and maintain an interest in a subject that is apt to be overlooked and at best imperfectly taught.

THE CANADIAN RECORD OF SCIENCE, Vol. II., No. 8, has just come to hand. It contains the following articles: "Distribution of American Plants," A. T. Drummond. "Invaporation," Prof. W. L. Goodwin. "Plague of Mice, N. S. and P. E. I.," Rev. Dr. Patterson. "The Rearing of Bears and the Worship of Yoshitsune by the Ainos of Japan." Prof. D. P. Penhallow. "On the Physiology of the Heart of the Snake," Prof. T. Wesley Mills. "The Freshwater Sponges of Newfoundland," (with cut), Principal A. H. MacKay. "Fossil Woods, Western Canada," Sir J. W. Dawson. "Squirrels," Prof. T. Wesley Mills.

The *Bookmart* for September, among other interesting articles, has an account of the ninety-five public libraries of New York. . . . In the *Popular Science Monthly* for October, Prof. Joseph Le Conte, in an article "What is Evolution?" makes the somewhat startling statement that evolution constitutes one-half of all science. The method by which he seeks to prove the asser-tion, and the clearness with which he states the evolution theory, form an interesting contribution to this important subject. . . . In *St. Nicholas* for October there is an illustrated description of the Netherlands and the Rhine, by Frank R. Stockton. It is so graphically told that it is almost as good as a trip to those famous lands. . . . The *Century* magazine for October contains a striking portrait of Harriet Beecher Stowe. Mr. Stedman, author of "Victorian Poets," contributes a paper on recent English verse, in which many striking passages occur. . . . *Science* is publishing a series of maps that are especially valuable to teachers. The latest is one showing the trans-continental railways of America, with a description of each—route, country traversed, cost, etc.—a most valuable contribution to geographical literature. . . . The *Illustrated London News* for October 1st contains a full page illustration of Miss Mary Anderson as Hermione in "A Winter's Tale," pictures of the New Chinese Naval Squadron, and an illustrated article on English Exploration in Egypt, besides other articles of interest and pictures of merit. Dealers now furnish this noted periodical for ten cents a copy, and at the office of publication, 237 Potter Building, New York, subscriptions are received at very favorable rates. . . . We have received Nos. 1 and 2 of the *County School Council*, a monthly publication devoted to the supervision and general interests of common schools. It is published at Chicago, and judging from the initial numbers it has a useful and prosperous career before it. . . . The *Swiss Cross* for October, has an excellent table of contents. It is an admirable publication for young persons interested in the study of science.

BOOKS RECEIVED.

From A. S. Barnes & Co., New York: Hale's Lights of Two Centuries. Price \$1.75. The English Language; Its grammar, history and literature, by J. M. D. Meiklejohn, M.A. Boston, New York and Chicago; D. C. Heath & Co.

NEW BRUNSWICK NORMAL SCHOOL.

ENTRANCE EXAMINATION.—SEPTEMBER, 1887.

ARITHMETIC. Time, 1 hr. 30 min.

(All essential operations to be exhibited. Eight questions taken as a full paper).

1. In round numbers, the population of New Brunswick is 320,000; the annual revenue, \$600,000; the annual expenditure from the Provincial Treasury for Education, \$154,000; the number of pupils attending school, 68,000. Find (a) the percentage of population at school, (b) the percentage of total revenue expended for education, and (c) the cost to the province of educating each pupil.
2. Find the least number that can be divided by any or all of the nine digits without leaving a remainder.
3. Make out a bill for the following articles, viz.—
13½ yards of cloth at \$1.50, 17 yards of flannel at 37½ cents per yard, 19 yards of linen at 18 cents, 10½ yards of muslin at 30 cents, 35 yards print at 17 cents. Use any names and write a receipt for the amount of the bill, making a deduction of 7½ per cent. for cash.
4. Divide \$21 among three boys in proportion to their ages, which are 11, 14 and 17.
5. A man owns 3-5 of a ship, he sells ¼ of a share for \$27,000; what is the value of the ship?
6. Compare the following fractions, viz.:— $\frac{1}{2}$, $\frac{2}{11}$, $\frac{3}{5}$ of 2½, .5625, and determine (a) the difference between the sum of the first two and last two, (b) the quotient of the 4th by the 2nd, and (c) the product of the 1st and 3rd.
7. A farmer is offered a mower at \$75, payable in three annual payments of \$25, without interest; or at \$70 payable in three annual payments, the last two bearing interest at 7 per cent. Which is the better offer, and how much?
8. A room is 25 feet long and 22½ ft. wide; at one end is a platform 10 ft. long and 4½ ft. wide. What will it cost to carpet the room with yard wide carpet worth \$1.20 per yard, the platform not being covered?
9. From 2 acres take 1 acre, 1 rood, 1 perch, 1 yard, 1 foot, 1 inch. (Arrange the work as in compound subtraction; no credit for working by reduction or by fractions).
10. If I pay \$9.10 for a load of hay weighing 1,625 lbs., what ought I to pay at the same rate for 16½ tons?

MENTAL ARITHMETIC. Time, 12 min.

N. B.—Answers to be written on this paper. Questions to be worked mentally and in silence.

1. 16½ yards at 16 cts. a yard?..... Ans.
2. Divide \$32 between two persons, giving one \$9 more than the other..... Ans.
3. What part of \$1 is 37½ cents?..... Ans.
4. In 2½ bushels how many quarts?..... Ans.
5. In 4 rods how many inches?..... Ans.
6. Interest of \$64 for 4 yrs. 2 mos. at 6 per cent.?.... Ans.
7. If ¼ of an acre cost \$27, what cost 3-5 of an acre? Ans.
8. 5½ lbs. of beef at 6½ cents per lb?..... Ans.
9. Find the sum of the odd numbers between 1 and 20..... Ans.
10. 19 eggs at 15 cents a dozen..... Ans.

N. B.—Any eight questions correctly answered taken as a full paper.

GEOGRAPHY. *Time, 1 hr. 30 min.*

(Any six questions, including the first, taken as a full paper).

1. Draw an outline map of New Brunswick, and locate on it the chief rivers, towns, lines of railway, coast waters, capes, islands, and the principal industries of the province.
2. Contrast New Brunswick and Nova Scotia in respect to (a) form, (b) area, (c) length of coast line, (d) number and length of navigable rivers, (e) physical features, (f) number and location of chief towns, (g) exports and imports.
3. Write geographical notes on the following rivers:—Hudson, Ottawa, Danube, Thames, Columbia.
4. Give a brief description of the river systems of North America.
5. Where and for what noted are the following places, viz.:—Amsterdam, Marseilles, Atlanta, Sherbrooke, Heidelberg, Florence, the Black Forest, Rimouski, The Tyrol, Winnipeg.
6. Write a brief account of lakes from the following heads, viz.:—(a) Origin, (b) classification, (c) uses to man. Refer particularly to the lakes of New Brunswick.
7. Latitude and longitude.—(a) What they are, (b) how measured, (c) from what points and in what directions measured, (d) how to find from a map, (e) the connection between latitude, and animal and plant life, (f) between longitude and time. State the advantages of the 24 hour system of reckoning time.

HISTORY. *Time, 1 hr. 30 min.*

1. Write a summary of the chief events in Canadian History since confederation.
2. Give a brief description (a) of the early settlements in New Brunswick and Nova Scotia, (b) of the expulsion of the Acadians, and (c) of the struggle for responsible government in New Brunswick.
3. Name any events in the history of Canada or of New Brunswick which occurred during the reigns of Henry VII., Charles I., Oliver Cromwell, George III., and Victoria, respectively.
4. Write brief biographical notes, giving dates when you can, on any five of the following personages in English history, viz.:—Suetonius, Godwin, Earl of Kent, Simon de Montfort, Warwick the king-maker, Cardinal Wolsey, Earl of Essex, John Hampden, the Duke of Marlborough, William Pitt, Earl Beaconsfield; and of any five of the following personages in Canadian history, viz.:—The Cabots, Jacques Cartier, Sir William Alexander, Count Frontenac, Pontiac, Sir John Harvey, L. A. Wilmot, Joseph Howe, and Sir John A. Macdonald.
5. Describe the plan of operations in America during the War of 1812, and illustrate your answer by a rough sketch of the ground over which they extended, locating battle-fields.
6. Make a list of the sovereigns of the Stuart line, and describe briefly the reign of any one of them.
7. What is meant by "Reciprocity," "Imperial Federation," "Home Rule," "Commercial Union."
8. Explain the terms "Magna Charta," "Bill of Rights," "Act of Settlement," "Canada a Sovereign Colony," "Quebec Act," "British North America Act."

(N. B.—Any five questions, including the fourth, taken as a full paper.

(Concluded next month.)

GRAMMAR SCHOOL COURSE.

The following is the Report of the Committee appointed to revise the course of instruction for the grammar schools of New Brunswick.

STANDARD IX.

- CLASSICS. *Latin*.—Finish Bryce's 1st Latin book. (Fables optional). Begin Caesar, as contained in Bryce's 2nd Latin book. *Greek*.—Bryce's 1st Greek book, to the end of regular verbs.
- MATHEMATICS. *Arithmetic*.—Up to and including discount, with special regard to the application of commercial rules Square and cube root. *Algebra*.—To end of chapter 21 (Todhunter), omitting fractions and chapter 20. *Geometry*.—1st book of Euclid (Hamblin Smith) completed. *Mensuration*.—Surfaces. *Book-keeping*.—Single entry (optional).
- ENGLISH. *History*.—British history to the end of Tudor period—with special reference to the growth of social and political institutions. *Grecian and Roman History*. in alternate years with Grade X., as required for matriculation at the University, (Collier, or Liddell's smaller history if authorized, or Swinton's outlines). *Geography*.—General geography of the great divisions, and particular geography of the British Empire. *Classical geography in connection with history*.—*Grammar and Composition*.—Analysis and parsing—letter writing. Exercises in narrative and descriptive compositions.—*English Literature*.—Critical examination of literature taken from fifth and sixth readers.
- FRENCH. (Optional).—First French reader and grammar.
- SCIENCE. *Plant life*.—"How plants grow." *Animal life*.—Physiology and hygiene (or lessons in Natural history as alternative).

INDUSTRIAL DRAWING ?

WRITING ?

STANDARD X.

- CLASSICS. *Latin*.—Finish selections from Cæsar (Bryce's 2nd Latin book), Æneid, book I., Latin prose composition—syntax and parsing—written translation from author used by class once a month. *Greek*.—Finish Bryce's 1st Greek book (dialogues optional). Begin Xenophon—syntax and parsing.
- MATHEMATICS. *Arithmetic*.—Commercial arithmetic, continued, with special attention to stock, partnership and exchange. *Algebra*.—Fractions and remaining chapters on simple equations. *Geometry*.—Euclid, 2nd and 3rd books (Hamblin Smith) (exercises on page 116-120 optional), completed. *Mensuration*.—Surfaces completed; solids. *Book-keeping* (optional).—Double entry. *Natural Philosophy*.—Dynamics.
- ENGLISH. *History*.—British history to present, with special reference as in Grade IX. *Roman and Greek History*, in alternate years with Standard IX., as required by the University matriculation examinations, (Collier. Smith's smaller or Swinton's outline).—*Geography*.—Review of general geography, particular geography of United States, physical geography, classical, in connection with history. *Grammar and Composition*.—Analysis and parsing, (continued). *Composition*,

as in Standard IX. Lessons on growth and structure of English language. *English Literature*.—Study of one or more plays of Shakespeare, with sketch of author.

FRENCH. 2nd French reader and grammar.

SCIENCE. *Chemistry*, (optional). *Natural History*.

INDUSTRIAL DRAWING.

STANDARD XI.

CLASSICS. *Latin*.—Cicero or such authors as required for University matriculation examination. (*Ars Poetica*, Horace's Odes, Book I., or equivalents (optional). Latin prose. Composition, syntax and parsing. Written translations from author, read by the class.

GREEK. *Anabasis and Homer*, as required by the University matriculation examination. Greek prose. Composition, Syntax and parsing. Written translations from author read.

MATHEMATICS.—*Arithmetic*.—Solution of any ordinary arithmetical process. *Algebra*.—To the end of Surd's. *Geometry*.—Book IV., with exercises of Hamblin Smith's text-book completed. *Trigonometry*.—Plain triangles. *Land Surveying and Navigation*, (optional). *Natural Philosophy*.—Statics.

ENGLISH. *History*.—Review of British history—general history (Swinton's). *Geography*.—Review of general geography—physical and mathematical geography, classical in connection with history. *Grammar and Composition*.—Carefully prepared monthly essays of some length, to be criticized and corrected by teacher. Lessons on growth and structure of English language

(continued). *English Literature*.—Reading and criticized study of two or more plays of Shakespeare or optional use of other English classics, with sketch of literature of the Elizabethan period.

FRENCH. (optional). 3rd French reader or Pujol with grammar.

SCIENCE. *Chemistry?* *Natural History?*

INDUSTRIAL DRAWING.

This curriculum is based on the supposition that the required work is completed in the lower standards.

The committee would recommend that the Board of Education would allow this course to be so amended by the consent of the inspector as to suit the condition of schools unable to work out the course as above.

Committee. { GEO. R. PARKIN, *Chairman*.
J. M. PALMER,
W. M. McLEAN,
J. G. A. BELYEA,
S. A. McLEOD.

OFFICIAL NOTICE.

English Literature for next June examination for license:

CLASS I. Reader VI. and Julius Cæsar (Shakespeare).

“ II. Readers IV. and V.

“ III. Reader IV.

WM. CROCKET,
Chief Supt. of Education.

Education Office, Fredericton, N. B.,
September 13, 1887.

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Matriculation Examinations begin Oct. 4,
The Calendar for 1887-88 ready Aug. 24.

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and Professor of Didactics.

FRANK H. EATON, M.A.,
Professor of Mathematics and Physics.

JAMES B. HALL, Ph.D.,
Professor of Language and History.

H. W. SMITH, B.Sc.,
Lecturer in Natural Science.

MISS OTTIE A. SMITH,
*Instructor in Industrial Drawing and
Callisthenics.*

The Examination for admission to the Normal School will begin on Wednesday, the 2nd of November, at 9 a. m. Applications should be made at once to the Principal

THE EIGHTH ANNUAL MEETING
—OF THE—
TEACHERS'
PROVINCIAL ASSOCIATION

Will take place in the Hall of the Upper
Prince Street School,

CHARLOTTETOWN,

—ON—

THURSDAY and FRIDAY, Oct. 6th and 7th.
The first Session opens at 10 A. M.

Papers will be read on the following subjects:

"The Work of the Primary
Department," by Mrs. J. McPHAIL.

"Writing," by Mr. A. D. McDONALD.

"School Hygiene," by Dr. JOHNSON.

"Elementary Arithmetic,"
by Mr. CAIN, Inspector.

"The School and the World,"
by Mr. G. W. SUTHERLAND.

There will be a Public Meeting on Thursday
evening.

GEO. E. ROBINSON,
Secretary.

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