

# THE EDUCATIONAL REVIEW.

FOR THE ATLANTIC PROVINCES OF CANADA.

VOL. II.

SAINT JOHN, N. B., DECEMBER, 1888.

No. 7.

## J. & A. McMILLAN,

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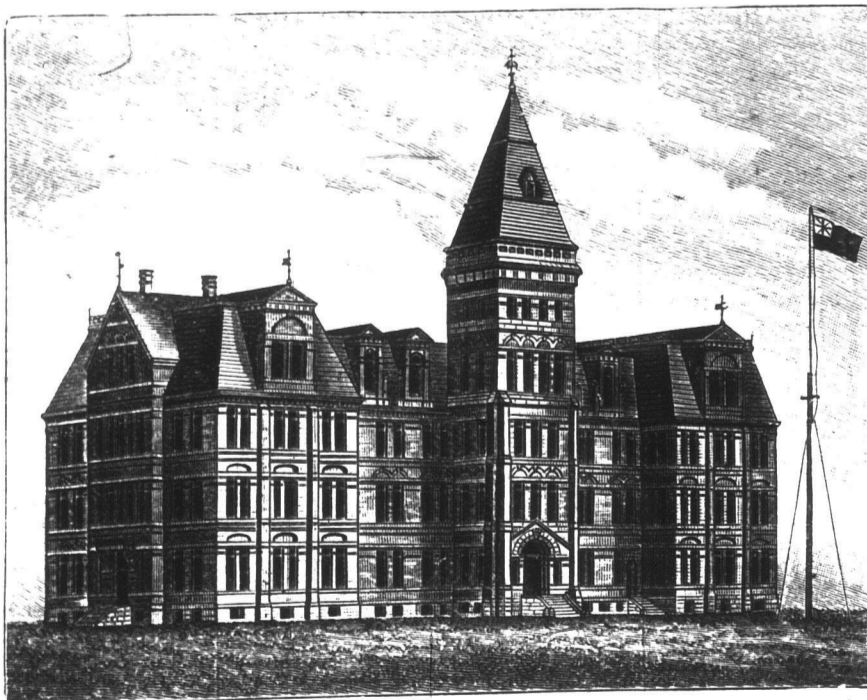
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# The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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VOL. II. No. 7

A. H. MacKAY, B. A., B. Sc.,  
Editor for Nova Scotia.

ALEX. ANDERSON, LL.D.,  
Editor for P. E. Island.

G. U. HAY, Ph. B.,  
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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

## EDITORIAL NOTES.

WE take this opportunity to wish all our readers A VERY HAPPY CHRISTMAS AND A PROSPEROUS NEW YEAR.

HERE are a few of the words which accompany subscriptions to the REVIEW. They are from teachers whose good opinion we value and whose encouraging words lighten toil:

"I enclose one dollar for the EDUCATIONAL REVIEW, Vol. II. I trust your subscription list is prosperous in proportion to the sterling merits of your paper."

"I hope you will pardon my negligence in not remitting sooner. I am very thankful for the EDUCATIONAL REVIEW, and begin to think I cannot get along without it"

From the normal school, Shiznoka, comes the following, which shows that our far-off fellow-workers in Japan know how to appreciate a good educational journal:

"I receive the EDUCATIONAL REVIEW, which I read all over with much delight. I have always been happy to read it. Many thanks to you for all this."

We could multiply these words of good-will, but it is unnecessary. We believe that every constant and intelligent reader of the REVIEW finds help from its pages. We desire to make it even more valuable for the coming year. Will our friends help to extend its influence? Introduce it to some friend who is not already a subscriber, or send us the name of one who may be a subscriber, and we will be glad to send a sample copy.

HERE is the testimony of an intelligent reader of the REVIEW concerning the merits of *Ledum latifolium* (Labrador tea): "I have taken to it, and I would not return to the Chinese drug on any consideration. I sleep better and am generally improved by its use." Will our correspondent favor the readers of the REVIEW with his method of preparing the tea?

THE superintendent of education and the inspectors of schools for New Brunswick met recently in Fredericton to revise the course of instruction for public schools. The changes made will, it is expected, receive the sanction of the Board of Education at its next meeting. We shall, if ready, publish this revised course in our January number.

THE Board of Education for New Brunswick has been pleased to make the following orders:

1. That instruction be given in the public schools on the effects of alcoholic stimulants on the human system, and that Palmer's *Temperance Teaching of Science* be prescribed as the text-book on the subject.

2. That *Les Grandes Inventions Modernes* be prescribed for use in the French-English schools, to alternate with Royal Reader No. IV.

3. That the texts of the Berlitz Schools of Languages may be used, with the sanction of trustees, in schools taught by teachers having a competent knowledge of modern languages.

WM. CROCKET, Chief Supt. Education.

WE notice in the provincial press indications of a general movement in our academies and advanced schools for the formation of local museums in connection with these institutions. This is a promising feature. The guiding principle in the formation of these should be collection and representation of the complete natural history of the particular locality. Foreign articles of scientific, historic or curious interest should, of course, always be thankfully received. But *the* effort should be made in the direction of the study and systematic illustration of the world of nature in our neighborhood first and foremost. We should like to have reports from academies, high schools and other schools which have already made attempts in this direction, and from those who propose to make attempts. We shall be glad to note the progress made in this department by December of the next year.

THE third session of the Nova Scotia Summer Science School will be held in one of the most interesting portions of the province—Parrsboro. Now is the time to commence preparing to utilize the advantages offered by such an institution.

OVER 150 students are attending the Provincial Normal School at Truro. Each year the general scholarship of the students attending is of a higher order. Principal Calkins' lately published text-book on education is found to be an invaluable aid to the student-teacher as to the teaching teacher.

MR. GEO. R. PARKIN, of Fredericton, has contributed an able and scholarly article in the December *Century* on the "Reorganization of the British Empire." This, with a series of letters to the *New York Nation*, in which Mr. Parkin traces the growth of the federation scheme, shows an intelligent view of the question from a British as well as a Canadian standpoint.

WE have much pleasure in directing the attention of teachers throughout New Brunswick to the announcement made in another column by the Ladies' Auxiliary Committee of the S. P. C. A. This committee has for years been doing a very useful work in disseminating literature, and by other means to secure a greater interest among children in regard to the lower animals. They realize that to make these efforts successful and lead children to be kind to the lower animals, the teachers' co-operation should be secured. We hope that the efforts of these energetic and humane ladies will be appreciated by a general response to the call for essays.

PROFESSOR LAWSON, Ph. D., LL. D., ex-President of the Royal Society of Canada, has, as Secretary for Agriculture for Nova Scotia, reduced the reporting of crops to an exact science. From his exhaustive report published last month, in which he sums up crop statistics from every county of the province, we cull the following notes: Hay, 97 per cent. of the average, but, owing to superior pasturage, will be equivalent to something above the average; oats, 104 per cent.; wheat, *below* the average; buckwheat, *above*; peas and beans, *below*; Indian corn, 60; turnips, *above*; potato, slightly *below*. Apple culture is extending in the province. The crop, on the whole, is above the average, the best varieties being the most successful.

THE *Maritime Medical News*, a bi-monthly journal of medicine, surgery and obstetrics. We have just received the first number of this promising journal. While published in Halifax, it has a staff of editors representing the three Atlantic provinces of Canada, in this respect following the example of the *REVIEW*. Professor D. A. Campbell, M. D., of the Medical Faculty Dalhousie College, and Dr. Morrow, Pleasant street, Halifax, represent Nova Scotia; J. W. Daniel, M. D., M. R. C. S., and L. C. Allison, M. B., of St. John, represent New Brunswick; and James McLeod, M. D., Charlottetown, represents Prince Edward Island. The present number contains the annual address of Dr. P. R. Inches, President of the New Brunswick Medical Society; of William McKay, M. D., M. P. P., President of the Nova Scotia Medical Society, and papers by other eminent medical men, in addition to editorial articles and notes. The diffusion of native medical literature by this journal must do much to advance the science of healing and general sanitation in our provinces.

WE have received a copy of the annual University lecture of McGill University, for 1888-89, by Principal Sir J. W. Dawson; also from Ray Greene Huling, of New Bedford, Mass., reports of High, Grammar and Primary School Education in Massachusetts, with the Proceedings of the N. E. Teachers' Association; and from Prof. Macoun, Dominion botanist, a Catalogue of Canadian Plants, Part IV.—Endogens.

THE *Montreal Witness* offers a number of valuable prizes for competition in the schools of Canada. First, there is a Dominion prize, worth \$125; secondly, a prize for each province, and thirdly, a prize for each county and to each of twenty-three cities. The subject given is the best true story of adventure, the scene of which is laid in the county or city in which each competitor resides. The stories must be sent to the *Witness* office before the 28th of February next.

**DR. INCH AT CHARLOTTETOWN.**

We had lately the very great pleasure of a visit to Charlottetown of the President of Mount Allison University. He came in the interest of the education schemes of the Methodist Church in Canada. Besides speaking twice at Charlottetown, he addressed audiences in other parts of the province. It has rarely been our good fortune to listen to a speaker more sensible, manly and moderate. It was very refreshing to hear Dr. Inch, with so much force and fervor, plead for the highest and most thorough intellectual preparation of candidates for the ministry. The time has gone by, said he, when an illiterate clergy could be tolerated. The clergyman must be able to keep abreast of the thought of the day—be able, as a cultured man, to speak to cultured men, and as a champion of the truth to meet its enemies upon their own ground; and should he determine to proceed, as a missionary, to distant lands, it is equally incumbent upon him to go forth armed at all points to do battle with error and superstition, whether they be Buddhist, Brahminic or Mohammedan; and as the state takes no cognizance of religious instruction, he claimed the support of his audience, in behalf of institutions of learning, which, while providing an excellent secular education for the youth of the Methodist Church, did so under religious influences, and with a view to the establishment of their minds in the faith.

We can only give a faint idea of this admirable address, but we trust the results were good and encouraging. At any rate, we can assure Dr. Inch that, as the advocate of a thorough, broad and enlightened system of higher education, he will not only have the good wishes and assistance of his own people, but the hearty sympathy of the friends of sound education in all other denominations.

**EDUCATIONAL OPINION.**

**HALIFAX TEACHERS.**—I have referred to the zeal manifested by our teachers in their noble calling. It may be interesting to mention a few facts bearing on this subject. In 1887, a summer school of science was established for the special purpose of giving such instruction as might be needed in reference to the lessons on nature, as prescribed in the course of study. The second session was held in Pictou last summer, and was attended by 67 students, of whom thirteen were from this city, viz.: Mr. W. T. Kennedy, Miss J. M. Creighton, Miss A. M. Cunningham, Miss A. J. Mitchell, Miss J. M. Wiswell, Mr. W. H. Waddell, Miss C. J. Miller, Miss Maude Bowder, Mr. L. A. McKenna, Miss H. L. Flowers, Miss Mary Brims, Miss M. A. S. Holloway, Miss Mary Donohoe. They voluntarily gave up a large part of their holidays,

studied faithfully in advance and during the sessions, incurring, besides, large expenses for fees, travelling, board and books—all for the benefit of their pupils. The majority of those named and several others were also in attendance at the Interprovincial Convention of teachers at St. John—learning from the celebrated educationists: Dr. Fitch, H. M., Chief Inspector of training schools, England; Col. and Mrs. Parker, of Illinois; Sir William Dawson and others. I might also refer to the fact that no less than thirty-one teachers of the city were enrolled as students in the Art school. They wished in the first place to acquire such a ready use of the pencil as would enable them to illustrate on the blackboard any subject which could be made more intelligible by the pictorial art. In the second place they recognized the fact that drawing is gradually beginning to take rank with the essentials of a common school education—that all manual training must be preceded by and founded on a thorough knowledge of the principle of freehand and design—and that all teachers retaining a satisfactory rank must obtain a mastery of this subject.—*Supervisor McKay in his annual report.*

From very many of the leading school sections of Nova Scotia, we get expression of opinion favoring a one term system. The term to begin about the last week of August and end about the first week in July. The supervisor of the Halifax schools recommends such a system in his annual report as the best for the schools of Halifax.

**THE DRIFT.**

We ask our school teachers and officers to carefully weigh the import of the following presentation of present educational development, which we quote from the report of one of the most practical educationists of Canada, Supervisor McKay of Halifax. For the unprogressive, it is the handwriting on the wall:

In my reports to the board for three or four years past I devoted much attention to the vital educational questions of the day as they presented themselves to my judgment. Some propositions, which at that time were deemed debatable, are now regarded as settled. No man with any reputation as an educationist would dispute the absolute necessity for trained teachers or for free and properly equipped high schools. All are willing to admit that drawing, singing, calisthenics and nature lessons should form part of the exercises of every well conducted school; that co-education, almost universal in America and fast gaining ground in England, is a success; that some considerable modification of our curricula, looking towards the introduction of manual training and kindergarten principles, are necessary, and must soon come. But how can anything new be admitted into a course of study generally regarded as already overcrowded with subjects, each as important as those seeking admission? Well, in the first place, the course of study seems to be more formidable than it is in

reality, on account of the fullness with which the requirements in the various topics are described. Again, increased practice in the teaching of nature lessons, of drawing and other new subjects, will eventually make them the most popular and the easiest on the programme. Much of the feeling of over-pressure experienced at present arises from the want of interest, which is the result of defective methods of presentation. In a primitive form of society man could afford to satisfy his few wants in spite of energies misdirected and wasted by crude machinery and unskilled labor. But as society became more complex and social demands multiplied, a proper economy of productive forces became the prime necessity. Just so in educational matters. The many-sided culture demanded by modern life renders necessary the wisest economy of educational energy. In the words of Dr. Eliot, our school programmes must be shortened and enriched. As to how this can be done, the most authoritative deliverance comes from the reports of two committees appointed in England—one in 1886 by the English parliament, the other in 1887 by the London school board. These committees, including the most distinguished educationists of the country, after an exhaustive investigation, have recently reported. Acting on a motion of the Hon. Senator Power, the board sent for these valuable reports, and they have just come to hand. As offering a solution of difficulties, and for the information of this board, I beg to present, in a condensed form, those recommendations in the reports which are most suited to the circumstances of a new country not unduly trammelled by the traditions of the past.

They recommend.—

1. That the method of kindergarten teaching be developed for senior scholars throughout the schools, so as to supply a graduated course of manual training in connection with science teaching and object lessons.
2. That the teaching of all subjects be accompanied, where possible, by experiments and ocular demonstration, and that the necessary apparatus be supplied to the schools.
3. That the board encourage modelling in clay in all departments of schools, both in connection with drawing as a training of the artistic faculties, and for the illustration of the teaching of geography and other subjects.
4. That all manual instructions should be given in connection with the scientific principles underlying the work, and with suitable drawing and geometry.
5. That greater attention be paid to the teaching of mechanics, and that models for illustrating the instruction be supplied.
6. That instruction in practical geometry be included in the teaching of drawing, and that mechanical drawing to scale with actual measurements be encouraged in all boys' departments.
7. That the time now given for dictation be reduced, and that in substitution for the part omitted in the lower classes the reproduction by children in their own words of passages read out to them, and in the senior classes original composition be usually taken.
8. That the teaching of reading should be specially directed to give children an interest in books, and to encourage them to read for their own pleasure, and that reading books should be used for imparting a knowledge of geography, history, social economy and facts of common life to all children who may not be able to take such subjects for examination.
9. That in order to allow time for experimental teaching and manual work, the time now given to spelling, parsing and grammar generally be reduced.
10. That principals of all schools be required to forward each year, for the approval of the school committee, a scheme of object lessons and a copy of the time tables proposed to be used.
11. That teachers be informed that the board do not pay so much attention to the percentages obtained at written examinations as to the general tone and character of the school work as set out in the supervisors' reports.
12. That the play grounds attached to schools be used for the formation of clubs for hardy sports, gymnastic exercises and drill.
13. That the question of organized physical education out of school hours receive careful consideration.
14. That with a view to secure the improvement of kindergarten in the schools of the board, the education departments be required to grant certificates to teachers after examination, showing that they have been trained in the principles and sound practices of kindergarten.

Acting in the spirit of these recommendations would imply:

1. A great deal of intelligent and interesting reading in all the classes, for the purpose of securing readiness in word, recognition, command of language and fluency of expression. Opposed to this in the younger classes would be the mischievous habit of continually interrupting the reader and harrassing him with trivial explanations. Minute accuracy is neither natural nor desirable in very young children. A correct general understanding is all that is necessary at that stage. Let the teacher be a good reader, and read much to her pupils for their imitation.
2. But little attention to spelling as a specific exercise until the pupil could read fairly well. After they have spent three or four years in becoming familiar with the forms of words by much reading and by simple exercise in composition, spelling could then be taught thoroughly at the least cost, thus saving much time for other important work.
3. That arithmetic should be practical, dealing with matters of every-day life. Arithmetical puzzles should be postponed until they could be solved by algebra. There are practical difficulties enough for the purposes of mental gymnastics without creating artificial ones. Actual weights and measures, ocular demonstration and experiment would elucidate principles and render the subject less obtruse. Here again time could be saved.
4. That but little attention be given to grammar or parsing until the eighth grade be reached. The mental discipline can be supplied in more useful ways, while the practical uses can be acquired by exercises in composition and letter-writing.
5. That geography be combined as much as possible with object lessons, and be taught from maps made by the teachers and pupils. Modelling in clay is required for the best teaching of geography.
6. That interesting biographical sketches should form the beginnings of history teaching.
7. That instrumental and geometrical drawing, for the purposes of training the eye and hand to accuracy, should be continually associated with free hand drawing. Writing is very much improved by the teaching of drawing.
8. That in teaching nature lessons pupils should be made to base their conclusions on what they observe, not on what they are told.
9. That singing should be obligatory in all schools. It lends brightness to school hours and gives a taste for a higher kind of recreation in subsequent life.
10. That teachers should be teachers and not lesson hearers.

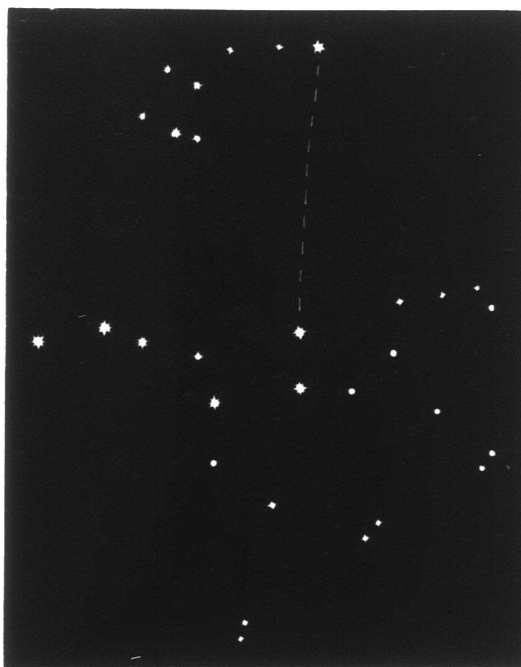
## PUBLIC EDUCATION IN ENGLAND.

The tone of the debate on the education estimates lately was eminently satisfactory. All who took part in it seemed to recognize that our system of elementary education is still very far from perfection. Sir John Lubbock evidently expressed the general feeling of the House of Commons when he complained that "the great faults of the present system were that it was too bookish and too dry." Mr. Mundella had a good deal to say—and said it well—on the necessity of the education of children being carried on to a much more advanced stage than that at which it now usually stops. "So long as the school life of the child was so short and limited," he said, "it was no use, in his judgment, talking about improved methods or an improved curriculum. So long as a child could enter a factory as a half-timer at ten years of age, or, as was the case in 8,000 or 10,000 parishes in England, children were allowed to leave school after passing Standard IV., it did not matter what their curriculum was, or what their methods were, they could have no good results. It was impossible for them to force a number of compulsory subjects into a child who was to follow the plough-tail before he was eleven years of age. In the counties around London it was found that children left school after passing Standard IV., which they generally did about ten. There could not be a greater waste of money than to educate a child up to ten years of age at the expense of the state, and then turn him out into the world, the eventual result being that by the time he had reached thirteen he had forgotten everything he had learnt." After quoting from the report of Mr. Matthew Arnold, as to the curriculum in force in Germany, showing that in Hamburg, for instance, there are thirteen obligatory subjects taught in the elementary schools, English being one of the subjects, Mr. Mundella pointed out that in Prussia no child leaves school till he is fourteen. Even after he leaves school, unless he can satisfy the school authorities, he must attend the continuation schools until he reaches sixteen or seventeen years of age.—*Nature*.

I often think that if I were a foreigner and had to set about learning English I should go mad. I honestly say I cannot conceive how it is that he learns to pronounce English, when I take into account the total absence of rule, method and system, and all the auxiliaries that people usually get when they have to acquire something difficult of attainment. There is much that may be done with advantage—in the reform of spelling our language. It is not in my power under present circumstances, to offer to give time to the undertaking which I recommend and in which I should gladly have found myself able to join.—*Rt. Hon. W. E. Gladstone, Ex-Prime Minister of England*.

## AMONG THE CONSTELLATIONS.

No. VIII—THE NORTHERN BEARS.



The sad and solemn night  
Hath yet her multitude of cheerful fires;  
The glorious host of light  
Walk the dark hemispheres till she retires;  
All through her silent watches, gliding slow,  
Her constellations come, and climb the heavens and go.

*Bryant—Hymn to the North Star.*

Early in the evening this month *Ursa Minor* and *Ursa Major* can be seen, when it is clear, in the position given above. The tail and about one-half of the body of the Great Bear is the familiar "Dipper," or "plough." The dotted line from the two stars, called the pointers, lead up to the North Pole Star, which is at the top of our map. This star is called Polaris, or *Alpha Ursæ Minoris*. The latter name means Alpha of the Little Bear. Alpha is the name of the first letter of the Greek alphabet, and is therefore generally applied to the brightest star in the constellation. *Beta Ursæ Minoris*, the next brightest, is at the lower end of the parallelogram, and is also known by the Arabian name Kocab. The outline of this constellation is somewhat like the "Dipper" in the Great Bear, and consists of seven stars. The Little Bear is pinned to the sky by the North Pole Star at the tip of her tail. The tail is outlined by the three stars, and the rectangle of four stars forms the hinder half of the body. She is springing in the direction of the tail of the Great Bear. The two pointer stars are in the middle of the body of the latter. The head is over the stars at the right side

of the map, and three of the paws are indicated by the three lower couples of stars. The paws are below the horizon until later in the evening, when the Great Bear will be seen climbing up the north-eastern sky. In one hour these bears swing around the North Pole Star fifteen degrees, or the twenty-fourth part of a circle—a very noticeable displacement. From six o'clock to midnight they swing around ninety degrees, or the quarter of a circle. But the skies really stand still. It is the great world, which rolls around from west to east, and its axis of revolution passing through its South and North Poles, when produced into the infinitude of northern space, passes nearly through the North Star, Polaris. The true pole of the heavens is more than two moon-breadths from this star. In 200 years it will be nearer still, as near as it ever will be—about one moon-breadth, or half a degree. So the North Pole Star itself describes a small circle. The true pole of the heavens is really moving with extreme slowness in a large circle with a radius of  $23^{\circ} 28'$  around a point in the Dragon's Head, which is called the Pole of the Ecliptic. In 12,934 years the North Pole of the sky will be a little further from our present North Star than the horizon now is, viz.,  $46^{\circ} 56'$ . In a Platonic year—25,868 of our years—it will return again to its present position. At six hours and ten minutes in the evening and about the same hour in the morning of New Year's day the North Star is exactly on opposite sides of the true North Pole. Taking the average of its altitudes at these two hours we find the altitude of the true North Pole, which is the true latitude of the place where the observation is made. Another experiment which should be tried is the following: Mark by some object in the field or country to the north of you, where a bright or known star of the Great Bear is seen; time its arrival at the same point next night; and so on for a number of nights. Each night the star comes up to the mark nearly four minutes earlier than the preceding; or, speaking more accurately, the star makes an exact revolution in 23h. 56' 4" nearly—3' 56" less than the day of twenty-four hours. The day of twenty-four hours is measured by the sun, and is hence called the *solar* day. The time in which the stars make a complete revolution is called a *sidereal* day—from *sidus*, a star. As it is the earth which turns, it then follows that the earth makes an exact revolution in 23h. 56' 4". In our twenty-four hour day the earth makes a complete revolution and a little more—nearly four minutes more—so that the sun may be our midday mark. The reason of this is that, while the earth makes a complete revolution in 23h. 56' 4" from west to east, the sun apparently moves also about twice its own breadth from west to east in

the sky. The earth has to turn for three minutes and fifty-six seconds longer in order to catch up to the sun. Twice the sun's breadth is about one degree. In about 365 days the sun would complete the circuit of the sky. This apparent motion of the sun in the sky is really due to the motion of the earth around the sun, the sun being always seen projected against the constellation beyond it from the point of view of the earth. The gain of three minutes and fifty-six seconds nearly each night by our marked star would give in one year—365 days—a gain of twenty-four hours. Each night, then, we will see the Great Bear climbing up easterly a little higher than at the corresponding time of the previous night.

In our next issue we shall give a popular account of some of the stars in these constellations.

#### SCIENTIFIC NOTES.

The solar eclipse on New Year's day will not be visible in the Atlantic provinces.

There will be a partial lunar eclipse on January 16th, commencing in the Atlantic provinces after 10 p. m. Middle of eclipse, about 1 a. m., 17th; end, about 4 a. m.

Venus is about two hours and a half after the sun; Mars over three hours after; Jupiter nearly an hour ahead, during the latter portion of December.

The great Lick telescope is reported to be making new discoveries as to the character of the surface of the moon and of some of the planets.

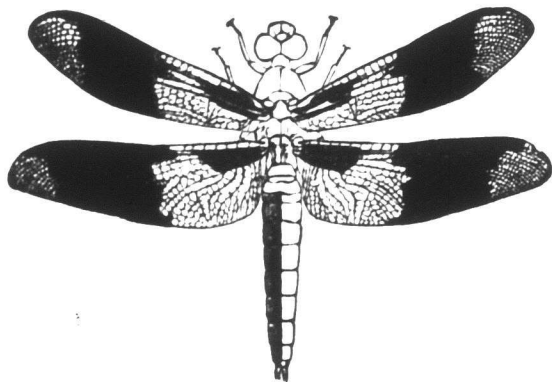
Herschel's supposed discovery of active volcanoes on the surface of the moon, is now thought to be the reflection of sunlight from some large mirror-like surface. Prof. Holden, of the Lick Observatory, observed for a short time, July 15th, a brilliant speck of light near the southern extremity of the lunar Alps. Other observations of a similar kind have been recorded.

English spelling simply disgraces civilization. We every now and then assume a theatric attitude and explain to the world that we are a practical people; that we don't pretend to do any great feats in the airy realms of imagination; but if you want to realize what it is we are, set us a practical problem, etc. Here is a practical problem at the very hand of the Anglo-Saxon race and has so lain for 1,000 years. Let them reform their spelling. Within 300 years the gay Italian, the serious Spaniard, and the phlegmatic Dutchman have taken stock of their instruments of speech and have brought spelling into conformity, partly with phonetics, partly with common sense. In our day the plodding German has detected anomalies in spelling his language and has fulminated the only thunderbolt with which he is acquainted—a military ordinance—for their prompt and immediate elimination. But we? Well, we practical Britons go on year after year, and age after age, using the most absurd instrument of speech known to man; when asked to make some moderate changes for our own benefit and for the benefit, above all, of our children, we raise objections on the score of trouble.—*St. Helen's Lantern.*



FERNDALE SCHOOL.

NO. XVII.—A DRAGON FLY.



(LIBELLULA TRIMACULATA. L.)

\* \* \* \* \*  
To-day I saw the Dragon-fly  
Come from the wells where he did lie.

An inner impulse rent the veil  
Of his old husk: from head to tail  
Came out clear plates of sapphire mail.

He dried his wings: like gauze they grew:  
Thro' crofts and pastures wet with dew  
A living flash of light he flew.

Tennyson—*The Two Voices*, Stanzas 3-5.

TEACHER.—Do you know this specimen from our collection?

SCHOLARS (chorus).—A dragon-fly.

T.—Look at its wings and tell me to which order of insects it belongs?

S.—To the *Neuroptera*, because it has *nerved* wings. Its wings are nerved like a piece of lace, but there are no holes in the wings like lace.

T.—What time of the year have you noticed the dragon-flies to be most abundant?

S.—During the holidays. They were very plenty flying about a pond near the road.

T.—Very good; July and August is the time, and the springy pond with a stream flowing from it is a very suitable place for them.

S.—They call them the "Devil's Darning Needles," and they say they will bite and sting.

T.—They never bite you, and they have no sting. You can see they have a very formidable apparatus for jaws, in our specimen, but they are of no use for biting large animals. They are very terrible to mosquitoes, flies, and even moths, however. They are powerful flyers, with great range of sight, and are most voracious insect killers.

S.—They must be useful to us, then.

T.—So they are; but they are often more useful before they become full grown flies.

S.—But their long abdomen and big head, with such awful eyes, make them look so hideous!

T.—Yes; those two huge compound eyes, each of which is made up of thousands of minute ones, visible nearly to the unaided eye, make it look like a dragon, to our fancy. There are three simple eyes in addition to those, situated on the upper surface of the head. A great many insects have these simple eyes in addition to the large compound ones.

S.—Do they live long?

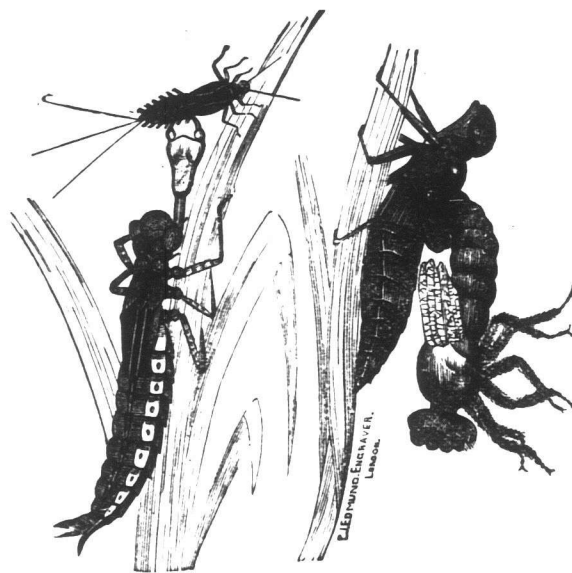
T.—For about twelve months, but the first eleven months are passed in an active life in water.

S.—In water! That is why they hover so much over the pond, is it?

T.—Exactly. The female dragon-fly attaches herself to a stem of grass growing out of the water. She then backs down until her long abdomen is below the water, where she glues some eggs to the submerged stem.

S.—Then the small *larva* would be drowned as soon as they would be hatched.

T.—Not at all. They are as much at home there as the *imago* is in the air. In fact, they are as much at home in the water as any other water insect. They are ugly six-footed things, like those in this sketch:



The larva grows rapidly to the size of the large figure on the left side. It can propel itself by squirting a stream of water from the end of its abdomen with considerable force. Its head is covered with a huge masked lower jaw, which it can suddenly throw out to a distance, as in our sketch, to seize a weaker body. It is a regular water tiger, destroying thousands of small insects which breed and live in this element.

S.—Has it a *pupa* stage?

T.—It has; but it is active even then, or else some of the other water insects might retaliate. Before

midsummer, when the larva has grown too large for its skin, by a muscular effort it breaks open the outer skin over the back of the thorax, and fastening its claws over anything firm it soon works its larger but softer body out. The body soon hardens. It has small wing pads now, and crawls along the bottom of the water, seizing insects for its food as before.

S.—And how does it come out as the glittering dragon-fly?

T.—The picture to the right in our sketch shows that. When mature, about the first of July, the pupa climbs up a grass or reed stem near the surface of the water; the skin over the thorax bursts open, as in our drawing; the head is first got out, then, by moving itself backward and forward, the whole body is set free. For an hour or so it remains as if stupefied by the great change. Its small, motionless flabby wings rapidly expand to their full size. A few tremulous quivers in the air at length show that they are full grown, dry and firm. In the next instant it darts off, all gleaming in its sapphire mail, like an arrow jewelled with flashes of sunlight and rainbow, the most fierce and knightly insect destroyer of its rival insect kinds.

S.—Oh, I have often got the husks or cast-off skins of the pupa of the dragon-fly sticking to stems of coarse grass growing in the water, but I didn't know what they were. They are quite firm and hollow, and can be mounted like insects on pins.

### THE SCHOOL ROOM.

#### GEOGRAPHY IN CLAY.

Modelling in clay, besides being useful in developing and making definite the ideas of form in connection with elementary drawing, is also useful in the proper teaching of geography. A rough model of Nova Scotia, New Brunswick or Prince Edward Island, for instance, could be made out of the pliant clay on a light, smooth piece of board. The board represents the level of the sea. Then fix the contour of the province. Next bring out the mountain ranges, sloping them down to the brooks and river beds, so as to show how water falling on the general surface would be drained into the sea. Then place the towns at points where it is most convenient for people to settle so as to have the best chances for communicating with other parts of the world, by a good harbor, or by a river. Then note the principal industries in each commercial area, and the causes of the increase of population in towns and countries. Why do towns grow in these spots and none on this mountain, or on this plain? Why did your own town grow at such a point instead of somewhere else? What effect would

railroads have?—they are as convenient for transportation as rivers or the sea. Do railroads tend to disturb the old balance of town populations? How? Do you know any illustrations? Have inland points a better or worse chance for growing into towns since the introduction of railways? Do mountain ranges determine the course of railways, and therefore of towns that may arise on their course? Can an inland town grow to be a great city? Only at some points. Why? Give an example. Under what circumstances can a village grow at a railway station? When there is local trade. What will cause local trade? The neighborhood of mines or of a good agricultural settlement, or manufactures. Which of these is most dependent, as a general rule, on the character of the soil? The first two. Is the last affected by the character of the land surface? Yes; the presence of water power in a stream, of raw products, or convenience as a centre of distribution.

Clay models of the continents would graphically illustrate and impress on the mind the causes of the distribution of population; the causes of physical phenomena, such as the cool climates of table-lands, the limiting and separating effects of high mountains, rainy and rainless areas, the inundations in regions denuded of the forest, etc., etc.

#### CLAY FOR THE SCHOOL ROOM.

Where potter's clay can be had, it should be used. It can be kept moist by being covered in a wooden, or, still better, an earthenware vessel, with water when necessary. It should be well kneaded or wedged before being used. Wedging is done by moulding in the hand and forcibly throwing it against a wall or floor so as to make its texture uniform. It should be just so soft as not to stick to the fingers. When modelling a napkin should be at hand to clean the fingers when the work is done.

Where potter's clay is not to be had, take some of the toughest and lightest colored clay in the neighborhood. Free it from sand and gravel by mixing it thoroughly with water in a vessel until the liquid becomes slightly thick. Pour off the liquid into a second deeper and larger vessel, being careful to let it rest sufficiently to prevent the decantation of any sand or gravel. Treat the remainder in the same way, so long as a considerable amount of clay remains. Treat more clay in the same way until the larger vessel is full. Then stir the whole until all the previously subsided clay is in motion. Let it settle permanently. Pour off the supernatant water. Take the clay out and work it with the hand. If it is too moist evaporation in the air will soon help it. If sand is present it will be in the bottom and can be left.

**INTERPROVINCIAL CONVENTION.**

[In the report of the High School Section, in last number, a reference to the paper on "Physics," by Principal E. Mackay of the New Glasgow High School, was inadvertently omitted. The following is an abstract of Mr. Mackay's paper, and its practical suggestions will be of great interest to teachers and students.]

**PHYSICS IN THE HIGH SCHOOL**

The science of physics investigates a class of phenomena underlying all nature. It is therefore of prime importance that the methods of teaching here employed should be of the soundest; for, sound or unsound, their influence may permeate all subsequent scientific study. Leaving out of consideration minor varieties, methods of teaching physics may be regarded as two—the lecture method, and the experimental method. The characteristic of the former is that the pupil first gains his knowledge of a physical law from his text-book or teacher, and afterwards sees its exemplification in experiments performed by the teacher; of the latter that the pupil performs for himself a series of experiments leading up to the law. Take, for illustration, any physical law—that of electrical resistance, for instance. When the lecture method is pursued, the pupil first makes himself acquainted with that law as stated in his text-book, and is then expected to watch the teacher, as with the aid of a galvanometer, a battery and a few coils of wire, he illustrates its truth. A knowledge of the same law obtained by the experimental method requires each pupil to perform for himself some such series of experiments as the following:

A battery, a galvanometer and a number of conducting coils are first supplied the pupil, and the character of the experiments he is to perform explained to him. He takes a coil of iron wire of known length and diameter, and connecting it in circuit with the battery and galvanometer, he notes the deflection of the magnetic needle produced by the current. He next connects up in a similar way a coil of copper wire of the same dimensions, and again notes the deflection; it is greater than before, denoting a greater current. He infers that the resistance of a copper conductor to the electric current is less than that of an iron one of the same dimensions, and hence that resistance varies with the substance of the conductor. If time permit, he may satisfy himself of the truth of this conclusion by substituting for the copper, coils of the same size of various other conducting substances. Taking next, say the copper coil, the pupil cuts it into two equal lengths, and connecting up each half in succession,

he notes the deflection in each case. The deflections are the same, but greater than the deflections previously noticed for the entire coil. This experiment he repeats a few times, and, taking the mean of the deflections observed, he sets it down as the true deflection. If the galvanometer be one from the angle of deflection of which the real or relative strength of current may be calculated, he now finds, by comparing the current in the half-coil with that in the original, that the former is approximately double of the latter, or the resistance of the former half that of the latter. He therefore concludes, allowing for errors in experiment, that resistance is directly proportional to the length of the conductor. In a precisely similar way the pupil now compares the currents in conductors of the same length and substance, but of varying diameters. He is thus finally led to sum up the results of his experiments in the statement that the resistance of a conductor of uniform thickness to the passage of an electric current varies with the substance of the conductor, is directly proportional to its length and inversely to the square of its diameter.

The distinction between the two methods is thus apparent. The lecture-method requires the pupil to obtain a knowledge of nature through the medium of his teacher or text-book. The experimental method permits him to question nature for himself. Teachers and text-books have undoubtedly an important place in our present educational system. But the primary source of knowledge is nature, and both teacher and text-book occupy usurped places when they stand between the pupil and nature. The experimental method of teaching physics, therefore, since it alone admits of living contact with nature, is the only method which insures a knowledge of the science at once adequate and abiding.

The individual experimental work required of this method suggests a practical difficulty—insufficiency of apparatus. The difficulty is frequently over-estimated. That pupils may work simultaneously does not imply that each is supplied with apparatus of the same kind. It will usually be found quite unnecessary to duplicate apparatus. Suppose, for example, that working accommodation can be provided for the simultaneous work of a dozen pupils, a number sufficiently large for the teacher to properly superintend. Then, in preparation for each day's work, the apparatus required for a single experiment is placed in readiness for each of the twelve pupils. The general character of the experiments to be performed is first discussed; then each pupil takes his place at one of the pieces of apparatus. When he has finished his experiment he writes out its details in his text-book, and exchanges

apparatus with any other pupil who has completed his work. In this way the same apparatus serves for each member of the class in succession.

To meet the requirements of a given class, the preceding method of working may need modification. Thus, while individual work should be encouraged, it may sometimes be advisable to allow two pupils to work together. Further, there is a very limited class of experiments which may often best be performed by the teacher before the class. The essential principle to be kept in view is that, in the main, the pupil, not the teacher, must do the work.

With regard to apparatus, a consideration of practical importance is its cost. Expensive and elaborate apparatus is not indispensable. A boy can investigate the law of falling bodies almost as well with a smooth board and a rubber ball as with the most costly Attwood's machine. And in no other department of a teacher's work has his ingenuity so wide a field as in the devising of simply-constructed apparatus to take the place of costly appliances.

An objection frequently urged against the experimental study of physics is want of time. By those who hold that quantity of work should be subordinated to quality, it will be estimated at its true worth. He who has wrested from nature the fact that change of motion is proportional to the impressed force, even were this the sum of his physical knowledge, would be a better physicist than if he had learned to recite the whole of Newton's Principia without having gained an adequate conception of its meaning. And moreover, the book-taught pupil has been deprived of that admirable mental discipline which the study of physics affords, but affords only when taught in the living language of experiment.

Section D, Advanced Schools, met in the Leinster street school, St. John, on Thursday, at 9 a. m., July 19th. Principal Kennedy of the Albion street school, Halifax, was chosen chairman, and L. A. McKenna, of Dartmouth, N. S., secretary. "The Aims and Processes of Moral Culture," by J. W. Hickson, Principal of the Winter street school, Portland, N. B., was the first paper read. He showed the difficulties presented in the education of children on account of so many influences that are brought to bear on the child in the home, school, and in society. He believed in the inculcation of piety, justice, truth and honor.

"Physical and Moral Culture in the Playground," by W. T. Kerr of Woodstock, was the subject of the next paper. Mr. Kerr spoke of the advantages of physical exercises, and spoke of the moral atmosphere that should pervade the playground, under the superintendence of the teacher.

R. H. Campbell, of P. E. Island, read a paper on "Moral Culture." Both physical and intellectual training should be subordinate to the moral training. There is too much change in the employment of teachers for the sake of false economy, as it robs the children of the training and the experience of teachers whose place is supplied by the raw material turned out from the normal schools without any experience whatever. Train the conscience as well as the mind and the body, as morality cannot be taught from books, but by the actions of the teacher. Principle could be the guide in leading the pupils in the right way.

L. A. McKenna of Dartmouth, N. S., followed in an address on the same subject. The results of moral teaching are not always seen at once, but may be latent and working in the character, to be found in after life. Public opinion of the school was useful in cultivating this feeling. Religion is the foundation of morality and its support.

D. H. Burbidge, Principal of the Morris street school, Halifax, (since deceased) contributed a paper on "Grammar in the Common Schools," which was read by Principal Kennedy. He freely criticized, with much ability, defects in teaching English grammar, pointing out glaring inconsistencies in concord and government that needed to be eliminated from the study, and cited authorities in support of his position. Excessively minute parsing, he considered, is of little use, and only a waste of time in schools.

Geo. T. Miller, Principal of Hants County Academy, N. S., read a paper on the same subject. Scientific grammar is, in his opinion, the cause of all the trouble and drudgery when introduced into the common school work.

John D. McIntyre, of P. E. Island, contributed a paper on the same subject, read by Mr. A. C. Stewart. He thought too much time is devoted to the teaching of grammar.

Addresses followed by H. Y. Corey, of Acadia College, Mr. Lawrence of the Deaf and Dumb Institution, Halifax, and others.

THE YORK COUNTY TEACHERS' INSTITUTE will meet in Fredericton, Dec. 20th and 21st. Papers and addresses will be given by Mrs. Philips, Mr. Alonzo Kelley, Miss Ella Thorne, Principal Mullin, B. D. Branscombe and N. W. Brown. A public educational meeting on the evening of the 20th will be addressed by Mayor Hazen, Supt. Crocket, Dr. Bailey, Principal Mullin and Principal Parkin. The programme for the institute is a very interesting one and ought to attract, especially at the time named, a large gathering of teachers from all parts of the country.

## HISTORY.

In the REVIEW for February we called the attention of our readers to the subject of the teaching of history. We offered some remarks upon the importance of this branch of instruction, and made a few suggestions which might serve to render the history lesson attractive and permanently useful. We had then neither time nor space to illustrate the method we would recommend, but now purpose to do so, and to take as our subject that chapter in English history which embraces the period of the Roman occupation.

But at the outset we must insist upon what is a necessary condition of all sound and successful teaching in any department of instruction—careful and intelligent preparation. The teacher should not only be familiar with the facts of his lesson, but he ought to have them so systematised that there would be, if possible, an interdependence of the various parts upon each other. In such a case the pupil, young or advanced, would find it not only easy but interesting to follow the subject as it is opened up to him, and derive pleasure from dwelling upon the recollection of it. And we doubt not that in proportion to the degree in which the teacher has secured the sympathy of the pupil will be his chance of arousing his desire to extend his reading beyond the school book and to acquire information for himself.

I need not say that, in the following scheme, the teacher must use his own judgment as to the degree of minuteness with which the lessons on this period are to be given. Not that the distinction between the work of a junior class and that of one more advanced is to depend upon the elaboration of details, but in the number of distinct topics which are attended to. Young pupils will more readily attend to, and remember, a few points placed before them in a skilful manner with considerable minuteness, than if mainly dry facts were presented to their minds, without any effort being made to stimulate their fancy and rouse their curiosity.

In the first place, the teacher should sketch on the blackboard a map of Great Britain, and write in the names of the leading British tribes; the Cantii, the Trinobantes, the Iceni and the Silures. He should then approximate to Cæsar's landing place, and the route which he followed in 54 B. C., when he crossed the Thames a few miles above London, and advanced upon and took the capital of Cassivelaunus, the chief of the Trinobantes. Here may very properly be introduced the materials which are available for an account of the ancient Britons.

1st. Commerce.—The Britons, from very early times, traded with the Carthaginians in tin, the point

at which they touched being the Cassiterides (probably the Scilly islands). More recently they exported tin, lead, skins, hunting dogs and slaves to the mainland, and, as they advanced in civilization, corn, cattle, gold, silver, iron and pearls.

2d. The Race.—The Britons were Celts, of whom there were two branches in Britain—the Gael and the Cymry. The former are now represented by the Highlanders of Scotland and the Irish, the latter by the people of Wales and Cornwall. The Britons were chiefly of the Cymric stock.

3rd. Religion.—The following are the chief peculiarities of Druidism: The Britons were taught to believe in a plurality of Gods, whom they propitiated with sanguinary rites. They were urged by their instructors to be charitable toward men and to endure suffering with fortitude. The services of their religion were performed in the depths of the forests, and we know that the oak and the acorn were objects of veneration. The Druids were the priests. They enjoyed many immunities and possessed the civil and criminal jurisdiction. Closely connected with the Druids were the bards.

4th. Civilization.—Their commercial intercourse with foreigners had improved the condition of the tribes along the shore of the English channel, but in the interior of the country the people were shepherds and herdsmen, tattooed their bodies, and were much addicted to war. Their fortresses were clearings in the forest, in which their huts were built, surrounded by a ditch and a breastwork of felled timber. Their chiefs fought from chariots armed with scythes, whilst their followers were equipped with shield and sword and javelin.

I may remark that each of the above sentences may be regarded as a heading, and may be said to constitute a guide in arranging the materials which have been collected by the teacher.

Not till nearly a century afterwards did the Romans effect a permanent settlement in the country. The emperor Claudius, in person, landed, and was able to reduce the country from Essex to Hampshire, which became a Roman province. The British hero who led the army opposed to the Romans, who fought many battles in the south and centre of the country, and disputed with them the possession of southern Wales, was Caractacus. Whilst "the British warrior queen," Boadicea, in the eastern part of the country, emulated his fame by placing herself at the head of her oppressed countrymen and carrying fire and sword through the Roman settlements which had been planted within the conquered territory. This rising was quelled by Suetonius Paulinus, whom it had recalled from the slaughter of the Druids in the island

of Anglesea. Agricola carried the arms of Rome to the foot of the Grampians, and there met and defeated, after a stubborn resistance, the Caledonians, under their principal chief, Calgacus. Though he overran the country, and though his fleet sailed through the Moray and Pentland Friths, and coasted along the western shores of Scotland and England, partly for geographical purposes, but chiefly to overawe the natives, Agricola had to content himself with the southern part of Scotland, and secured it by a line of forts and a rampart extending from the Clyde to the Forth. Under his beneficent and conciliatory rule (78-85) more was accomplished in consolidating the Roman power and winning the confidence of the Britons than by any of his predecessors.

The northern frontier appears to have been, even at that early time, the most uncertain of all the possessions of the masters of the southern part of the island. When Hadrian visited the country, and had personally inspected the region between the Tyne and the Forth, he determined, with his accustomed moderation, to abandon it to the Caledonians and protect his northern border by a line of defences reaching from the mouth of the Tyne to the Solway; and although there was a departure from this moderate policy during the reign of Antoninus Pius, when the boundary of Agricola was resumed, the duty of maintaining so distant a frontier in the neighborhood of enemies so warlike, watchful and irrepressible as the Caledonians, and which required for its performance so many of the best troops of the empire, was considered by the emperor, Severus, as too costly and hazardous. He withdrew to the line selected by Hadrian, and erected a series of permanent forts, connected by walls, which remained till the downfall of the empire, the bulwark of Roman Britain. That it was not an effectual defence is evident from the fact that, in the time of Valentine I., the turbulent tribes of the north, taking advantage of the weakness of the garrison, broke through it and penetrated as far as London, where they were met and defeated by Theodosius.

In the map which has already been drawn, I would now mark off as accurately as possible the provinces into which Britain was divided by the Romans: *Britannia Prima*, *Britannia Secunda*, *Flavia Caesariensis*, *Maxima Caesariensis*, *Valentia*; the lines of the Roman walls and the chief Roman towns: *Londinium*, *Verulamium*, *Camulodunum*, *Deva*, *Eboracum* and *Isca Silurum*.

The condition of the conquered and subject Britons can be readily ascertained from their utter helplessness when the protection of the Roman legions was withdrawn. They were encouraged by their masters

to cultivate the arts of peace, but they were precluded from serving in the army in their own country. The best of their youth were drafted off to fight the Roman battles in other lands, and there they distinguished themselves, but never returned. The Romans were the privileged class; they held all the important civil offices; generally enjoyed exemption from taxes; were favored in the administration of the laws, and treated the Britons with haughtiness and cruelty. Latin, being the language of the conqueror, was used in all legal proceedings, and any Briton who hoped for justice, or preferment to one of the minor civil positions, had to acquire a knowledge of it. The chiefs and wealthy Britons were encouraged in their desire to adopt the luxurious habits and vices of the conqueror, and soon, from this class at any rate, the last vestige of national sentiment and public spirit disappeared with their ancient language and traditional simplicity of life. In Wales, Cornwall, and the parts of the country farthest removed from the Roman colonies and municipal and other towns, the language of Britain was still spoken, but centuries of oppression and misery had reduced them to a condition of wretchedness and despair.

Wherever the Roman held sway, he left behind him abundant evidence of his presence. From the foot of the Grampians to Land's End many camps can be pointed out, and some of them wonderfully complete. Roman roads are being constantly laid bare, Roman villas covered by the accumulated rubbish of many centuries, and in a good state of preservation, have been restored to the light; Roman baths, and even Roman towns, such as at Silchester, have afforded rich materials to the students of classical antiquities. The many towns that end in *-chester* (*castra*), and the Roman features still marked in the countenances of the people in certain districts of England, also bear testimony to the lasting impression left in the country by that masterful people.

The whole of this subject can be overtaken in three lessons. The first embraces Caesar's invasions and the account of the condition of the Britons when the Romans first came into collision with them; the second comprises the summary of the history of the conquest and occupation; the third consists of what we know of the influence exerted by the Romans upon the Britons; the social condition of the subject race the confusion, helplessness and disasters which followed upon the departure of the Romans, and the remains which still exist as evidences of their residence in Britain.

Seventy graduates and ex-cadets of the military college, Kingston, have secured commissions in the imperial army since 1880.

## THE SHEPHERD DOG OF THE PYRENEES.

*Traveller.*—Begone, you, sir! Here,  
Shepherd, call your dog.

*Shepherd.*—Be not afraid, madame, poor Pierrot  
Will do no harm; I know his voice is gruff,  
But then his heart is good.

*Trav.*—Well, call him, then.  
I do not like his looks. He's growling now.

*Shep.*—Madame had better drop that stick. Pierrot,  
He is as good a Christian as myself,  
And does not like a stick.

*Trav.*—Such a fierce look!  
And such great teeth!

*Shep.*—Ah, bless poor Pierrot's teeth.  
Good cause have I and mine to bless those teeth.  
Come here, my Pierrot Would you like to hear,  
Madame, what Pierrot's teeth have done for me?

*Trav.*—Torn a gaunt wolf, I'll warrant.

*Shep.*—Do you see  
On that high ledge a cross of wood that stands  
Against the sky?

*Trav.*—Just where the cliff goes down  
A hundred fathoms sheer, a wall of rock  
To where the river foams along its bed?  
I've often wondered who was brave to plant  
A cross on such an edge.

*Shep.*—Myself, madame,  
That the good God might know I gave him thanks.  
One night—it was November, dark and thick  
The fog came down—when, as I reached my  
house,  
Marie came running out. Our little one,  
Our little four-year-old Louis, so she cried, was  
lost  
I called Pierrot. "Go seek him; find my boy."  
And off he went. Marie ran, crying loud,  
To call the neighbors. They and I, we searched  
All that dark night. I called Pierrot in vain—  
Whistled and called and listened for his voice.  
He always came and barked at my first word,  
But now he answered not. When day at last  
Broke, and the grey fog lifted, there I saw  
On that high ledge, against the dawning light,  
My little one, asleep; sitting so near  
That edge that, as I looked, his red *barrette*  
Fell from his nodding head down the abyss,  
And there, behind him, crouched Pierrot,  
His teeth—  
His good strong teeth—clenching the jacket  
brown,  
Holding the child in safety. With wild bounds,  
Swift as the grey wolf's own, I climbed the steep  
And as I reached them Pierrot beat his tail,  
And looked at me so utterly distressed,  
With eyes that said, "Forgive; I could not  
speak;"  
But never loosed his hold till my dear rogue  
Was safe within my arms.  
Ah, ha! Pierrot,  
Madame forgives your barking and your teeth.  
I knew she would.

*Trav.*—Come here, Pierrot, good dog;  
Come here, poor fellow, faithful friend and true;  
Come, come, be friends with me.

ELLEN MURRAY.

[For the REVIEW.]

## A COLLEGIATE "AT HOME."

The authorities of Acadia College would seem to have taken a "new departure," and to have done so of purpose. It will be remembered that at the time of the late jubilee of the college a grand reception was given by the senate of the institution to its friends and the general public. Hundreds were present, who were at the time in the village from the three provinces represented in the college, and from other parts, which number was swelled by probably as many more from the village and neighborhood. This last was, from a certain point of view, *the special feature of the occasion*, and which commanded special attention, as there had never before been such an intercommunication between the institutions and the inhabitants of the place. The evening was devoted to social intercourse, intermingled with music, vocal and instrumental, given chiefly by the college choir and by certain young ladies of the seminary and the village.

Last Friday evening there was another reception of the same kind, though more local, as there was no unusual concourse, as before, of visitors from abroad; it was given on this occasion by the college faculty. The assemblage was modestly denominated in the cards of invitation an "At Home," and was made up, in addition to those belonging to the college, academy and seminary, chiefly from inhabitants of the village. Here was a repetition of the most marked peculiarity of the reception given by the senate. Between three and four hundred were present on this the faculty's "At Home." The exercises were of similar character to those of the former occasion, and were such as to give general satisfaction and rational enjoyment, and put up to a greater extent than at the senate's entertainment, as the spacious halls of the college were not crowded as at it, but all had breathing room. It is usual in notices of this kind to extol the singing, but as I forgot to invoke the muses of history, poetry, eloquence, etc., I will not attempt anything more than to say that it was eminently melodious, harmonious, scientific, classical, modern and polite, and therefore deserving of all praise!

There is probably a meaning in this "new departure" of the authorities of Acadia College, and it seems to be one not difficult to divine. It is a well-known circumstance that in most towns and villages in which higher institutions of learning are situated, there is a degree of unfriendliness between the students of the latter, on the one hand, and the inhabitants of the place on the other, which disposition sometimes assumes very inconvenient and injurious

proportions, leading to the destruction of property and even to the loss of life. This hostility is symbolized by the expression, "the Town and the Gown." There has not been much of this hostility in connection with the Horton institutions, but there have at times been indications of a latent spirit of antagonism, and possibly the authorities have reached the conclusion that there was not as much friendliness as desirable. If so, we can discern a meaning in these receptions—this new policy, as it may be denominated—but whether such conjectures are well founded or not, this much must be admitted: the occasions referred to were eminently calculated to multiply and deepen kindly sentiments; the influence exerted was in the direction of causing the community more than previously to regard the institutions as *theirs*, and on the other hand to lead the students and pupils of the schools to consider the inhabitants of the villages as *friends*. This would indicate on the part of the authorities a measure of wisdom and philosophy which is worthy of consideration and commendation, and might be offered as an example deserving of being followed, or at least tried, by similar institutions nearer or more remote.

CHRONICLER.

Wolfville, Nov. 26, 1888.

For the REVIEW.]

#### **An Acquaintance with Fröbel's System a Necessary Part of the Teacher's Training.**

The adoption by the Boston School Board of Mrs. Shaw's Free Kindergartens is the educational event of the year. They amount in number to nearly thirty, are well equipped and in splendid working order. They represent the sum of not less than a quarter of a million of dollars, judiciously expended by their noble founders. Boston has been somewhat tardy in accepting this new charge, but, having done so, she is prepared to meet the new responsibility and to discharge its duties thoroughly and with a wise foresight. Henceforth the pupils of the Girls' Normal School will not only study the kindergarten theoretically, and as a part of pedagogic history, but practically, and in its special relations to the common school. The city board has provided for a series of lectures by Miss Laura C. Fisher, who is an accomplished and experienced kindergartner. Three lectures have already been delivered. The Rice Training School, numbering more than a thousand pupils and having over twenty departments, which are accommodated in the two buildings on Dartmouth and Appleton streets, will, in its fine kindergarten, afford full scope for observation and practice. Admission to the normal school depends upon a certificate of having passed the fourth year of the high school, or an examination

or its equivalent, and the applicant must have attained her eighteenth year. Thirteen years of life in the best schools of Boston lie behind some of these girls, who will thus have minds capable of understanding the philosophy of Fröbel's system. With the breadth and culture which comes of long training, they will apply his principles intelligently and not be mere smattering empirics, bringing discredit upon the truth. Dr. Dunton, the head master, is in full sympathy with advanced educational ideas. He is, moreover, fitted, by European travel and lengthened experience, to lead the new enterprise to a successful issue. He was much pleased to hear of our work in Truro, and thought the "short course for teachers" a very wise plan. We do hope that many of our teachers, especially those in the primary grades, will avail themselves of the privilege of observation in a kindergarten than which, in a somewhat extended tour, we do not remember to have seen a better.

C.

Halifax, N. S.

#### **THE SCHOOL DISTRICT AND TEACHER.**

What number of ratepayers is necessary to transact the business of the annual school meeting? This is a question that is often asked, and indeed many notices of meeting have each year to be given needlessly, because this point is not understood. An idea has got abroad in some way that seven ratepayers constitute a quorum. As many ratepayers should be present as can do the business. And let us see how many that need be: There must be a chairman and secretary, and some one to move the resolutions. If the secretary is a ratepayer he can move or second resolutions. In that case only three are required, absolutely, though it is desirable that all the ratepayers in the district should be present. There is sure to be grumbling done concerning the action of the meeting, and in nine cases out of ten the complaint comes from some one who has not attended. Ratepayers who have children to send should always come to the annual meeting, as those who have none and have heavy taxes to pay are pretty sure to be present and either endeavor to vote as small a sum as possible, or nothing at all. It would be surprising to note, if the statistics were available, the number of districts in which the board of trustees is composed wholly of ratepayers who have no direct interest in the support of a school. It is owing to this state of affairs that so many schools are kept in operation during only a part of the year, and that low class and cheap teachers are more in demand than high class teachers. A request to force a school comes with very bad grace from a number of ratepayers who have not attended



the annual meeting to look after their own interests. The secretary of the board is, by law, secretary of the meeting, but this is very often overlooked by the meeting, and an election is held. This is only allowable when the secretary is not present or there is no secretary. The trustees too often neglect to make a written report concerning the educational condition of the district, and fail to place before the meeting an estimate of what will be needed for the ensuing year. When this is left to the meeting there is pretty sure to be an under-estimate made, which cramps the service and renders it inefficient. There are a few districts which always have one year's supplies ahead. In these districts the teachers never have to wait for their pay, and everything being done on a cash basis ensures economy and satisfaction all around. It is a pity that all districts would not adopt this plan.

Auditors are very often neglectful of their duties. Instead of availing themselves of the two weeks allowed by law in which to examine the accounts of the trustees, a cursory glance at them for a few minutes on the morning of the meeting suffices, and the result is not satisfactory. The auditor should not only decide upon the accuracy of the accounts, but also of the legality of the expenditures, and if the meeting fails to decide upon the matter in dispute, it is to be referred to the inspector, whose decision shall be final. It sometimes occurs that the accounts are not audited at all. In this case the meeting usually appoints an auditing committee, and passes upon their report. Each year's accounts should be kept separately, as far as possible, and after once having been passed by the meeting it is doubtful if any after-action can be taken upon them. The inspector is often requested to take action on expenditures which have been made four or five years back, and which have been passed by the meeting. This he can not well do. Each district should have an account book, which is its property, and in it should be kept all the accounts. This is very often neglected, and it renders auditing the accounts very difficult in consequence. After the first annual meeting at the second and third a trustee goes out by lot, then one goes out each year in regular order. A trustee cannot resign at the annual meeting and another one be elected to fill his place. He can only resign with the consent of his co-trustees and the inspector. This point should be carefully attended to, as its neglect would render the proceedings of the board illegal. The newly-elected trustee should take the declaration of office before the chairman, and if the chairman be elected trustee, he must make it before the secretary. In the case of an appointment of a trustee by the inspector, some person shall be named by him to

receive the declaration. The refusal of a trustee to take the declaration of office within ten days of the meeting vacates his office. Where a trustee declines to act another may be appointed by the inspector, upon requisition of seven ratepayers of the district. Where a trustee obtains consent to resign the trustees may call a meeting to elect another. C.

[To be continued.]

It is true that too many—in fact, the majority of our schools—are insufficiently supplied with apparatus. Much can be done by an energetic teacher towards having such deficiencies supplied. Cases have come to my knowledge in which trustees have rendered a cheerful compliance with the requests of teachers for additional apparatus after having proved obdurate to the alleged pleadings of several of their predecessors. The urgency which comes from a desire kindled by a want *really* felt stands a good chance of gaining its object. Trustees wish to be assured that an article will prove useful and not a merely ornamental addition to the school room before investing in it. Again, some teachers, by preparing school entertainments and charging a small admission fee, have realized sums sufficient to add very materially to school apparatus. Comparatively little has been done as yet in the line of "home-made" apparatus. The making of neat cabinets for the preservation of specimens in connection with lessons in nature; the preparation of models of solids, and many other articles useful in the school room, is surely within the ability of some of the larger boys in many country schools. Let the teacher be in earnest and no term need pass without some valuable addition to school apparatus.

R. MACLELLAN.

#### QUESTION DEPARTMENT.

##### Questions and Answers.

S. L. T. W., HAMPTON.—I send you by mail a specimen of animal life found about 18 or 20 inches below the surface of the ground. What is it? Please state in the REVIEW.

One month and two days after the date of your card (Nov. 2nd), the earth in your parcel was poured out for examination. The only conspicuous remains of animal life were two pretty well desiccated specimens of *gordius*. This hair-worm is generally found in water, being parasitic in its earlier stages in the larger aquatic insects. The habitat of your specimens, unless the ground was marshy or occasionally covered with water, might indicate a different species from *gordius lacustris*, Fabr. (the common hair worm)—viz., a hair worm parasitic in some earth-burrowing insect or worm. *Gordius* belongs to the family *Gordiacea*; to the order, *Coclemintha*; to the class, *An. nulata*; to the province, *Articulata*.

### SCHOOL AND COLLEGE.

McGILL UNIVERSITY, MONTREAL.—A prize in books, to be entitled the "Charles G. Coster Memorial Prize," and intended as a tribute to the memory of the late Rev. Charles G. Coster, M. A., Ph. D., Principal of the Grammar school, St. John, N. B., is offered by Mr. Colin H. Livingstone, B. A., to the undergraduates in arts of McGill (men or women), from the Maritime provinces, in April, 1889. It is not restricted to any academic year, and will be awarded to that undergraduate from the Maritime provinces who, in the opinion of the faculty, shall have passed the best sessional examination. In 1890 it is to be restricted to undergraduates of the first year.

Through the efforts of President Harrison and other gentlemen, a room has been fitted up in the University at Fredericton for the students of the Young Men's Christian Association.

The attendance of students at the University of Dalhousie is 200. Fifty-seven are in the law school.

Two hundred and forty students are now in attendance at the Pictou academy.

Sydney Academy has the largest attendance in its history this present term. The same report comes from the New Glasgow High School, Nova Scotia.

Seven thousand one hundred pupils have enrolled in the schools of Halifax during the past year. Teachers, 110.

St. Francis Xavier College, Antigonish, N. S., has six professors in its teaching faculty. Acadia College, Wolfville, has also six.

Two thousand pupils have been taught singing by note last year in the schools of Halifax, as compared with 377 the previous year. The tonic sol-fa system has been principally adopted, which, according to the report of Supervisor McKay, seems to be the best for popular use. Ear-singing is very general in the schools.

### PERSONAL NOTES.

Miss Halbeck, one of the teachers in the Ladies' College, Halifax, is a cousin of the President-elect of the United States.

Miss Annie MacDonald, graduate in *Pianoforte, Harmony and Theory*, of the New England Conservatory of Music, under Louis Maas, St. A. Emery and F. W. Hale, has been appointed music teacher in the art department of the Pictou Academy. There

are three classes in this division of the art department—1, pianoforte; 2, harmony; 3, vocal culture. In this latter the Garcia system of voice development is followed, together with studies in melody by Concone, Bordogni and others.

### LITERARY NOTES.

Ginn & Co., Boston, announce a new edition of Allen & Greenough's Latin Grammar, to be ready Dec. 13th.

D. C. Heath & Co. have just published *Historiette's Modernes*, by Prof. Fontaine, of the Washington (D. C.) High School. The book contains 160 pages of interesting reading matter. Price, 60 cents.

The house issued the same day Leander's *Traumereien*, made up of good, easy German prose, intended for beginners or intermediate classes. 106 pp. Price, 25 cents.

Ginn & Co., Boston, will publish in January two important works, *The Leading Facts of English History*, 448 pages, including full maps and tables; and *The Leading Facts of French History*, with maps and tables.

D. C. Heath & Co., Boston, have in preparation an *American History*, on the same plan as Miss Sheldon's *General History*.

### BOOK REVIEWS.

PROMISSORY NOTES AND DRAFTS, by J. W. Johnson, F. C. A. Published by the Ontario Business College, Belleville, Ont. This is a useful pamphlet of sixteen pages, by one of the best known accountants in Canada, and it contains information which every business man should know.

REPORT OF THE MINING AND MINERAL STATISTICS OF CANADA FOR THE YEAR 1887, by Eugene Coste, M. E., of the Geological Survey of Canada. This work is a most useful compilation of statistics, and is well indexed.

PREPARATORY FRENCH READER, with notes and vocabulary, by O. B. Suder, Ph. D. Publishers: D. C. Heath & Co., Boston. This is a graded course in reading adapted to the wants of teachers who believe in early and copious reading. The author thinks that the best method to read French, or any other language, is *to read*, and certainly in the charming selections he has made, and in the manner he has adapted them to different grades of pupils, he has paved the way to make French more popular.

MACMILLAN'S COURSE OF FRENCH COMPOSITION, by Eugene Fasnacht. London: MacMillan & Co., and New York. This is a work that beginners in French and those who wish to obtain clear ideas in regard to writing French, will welcome. To invite to the study, a string of easy French stories are given, followed by a graded course in French composition. The course is effective because it is practical.

NOTES ON THE MYOLOGY OF *URSUS MARITIMUS* by Edwin A. Kelley, Proc. Acad. of Nat. Sci., Philadelphia. The muscular system of the bear has at last been most thoroughly treated in Mr. Kelley's excellent monograph of some fourteen pages. The work is one of great scientific interest, and is a most valuable contribution to comparative anatomy.

**HISTORY OF PEDAGOGY**, by Gabriel Compayre, translated by W. H. Payne, A. M., and **LECTURES ON PEDAGOGY**, by the same author and translator. Publishers: D. C. Heath & Co., Boston. It is difficult to estimate the importance of these admirable works to teachers. The first, within the compass of some six hundred pages, traces the growth of instruction from the nations of antiquity to the present. No one can fail to be impressed with the judgment, skill and research which the author has brought to bear in selecting from such an illimitable field the material for his work. In his *Lectures on Pedagogy* the author has displayed the same critical taste and acumen. He has selected from the vast field of principles and practice of education those indispensable ideas which should be the common property of all who attempt to educate children. It is a sequel to the *History of Pedagogy*. It is practical, and seems at once to go to the point in everything which it touches. It is written in that spirit which aims to help those who are seeking, through study, experience and personal reflection to become wiser and better teachers.

**LATIN ACCIDENCE AND EXERCISES**, by Welch & Duffield. London: MacMillan & Co., and New York, 1888. A small, cheap hand-book of 75 pages, with easy exercises. Just the kind of book for a young student to master and feel good over.

**OLD SOUTH LEAFLETS**, Nos. 1 to 12; D. C. Heath & Co., Boston. Sixteen-paged pamphlets on such subjects as: No. 1, Constitution of the U. S. A.; No. 2, Articles of Confederation; No. 5, Magna Charta; No. 6, Vanes's "Healing Question"; No. 12, The Federalist. Five cents per copy.

**ON THE HISTOLOGY OF SALPA**, by Chas. S. Dolley, (from the *Proctor of the Academy of Natural Science*, Philadelphia, Sept. 27th, 1887). Dr. Dolley's paper is a very thorough exposition of the histology of this obscure genus. It is illustrated by a fine plate.

**ELEMENTARY STATICS**, by the Rev. J. B. Lock, M. A., senior fellow, assistant tutor and lecturer in Gonville and Caius College, Cambridge, formerly master at Eaton. London: MacMillan & Co., and New York, 1888. This is a neat work of some 250 pages, got up in the usual superior style of the publishers. Of the making of books there is no end, and even elementary statics can furnish an illustration. But this small volume has a reason for existence. First, paragraph and type contribute to make the usually neat definitions and statements conspicuously clear; secondly, the logical steps are short and well directed; thirdly, it gives a capital collection of progressively arranged exercises under each head; and fourthly, it is as well adapted to be an introduction to practical mechanics as to the more advanced theoretical study of physics.

**MONOGRAPHS ON EDUCATION: ENGLISH IN THE SCHOOLS**. Woodward. D. C. Heath & Co., Boston. A capital treatise of twenty-five pages on English in the schools. The plan of publishing such education-monographs should be encouraged by every proper means, as in no way can the best thoughts be more rapidly and cheaply disseminated.

**THE CIVIL SERVICE QUESTION BOOK**, C. W. Bardeen, Syracuse, N. Y., 1888. A capital hand-book of exercises for every teacher. It contains questions in arithmetic, geography, book-keeping, letter-writing, English syntax, United States history and civil government, with historical tables, and the constitution of the United States, and is intended to be a sufficient review in all the subjects upon which questions are asked in civil service examinations. The book contains nearly 300 pages, has full answers to the questions, and gives directions as to applications for examination and position. It will be specially interesting to the Canadian whose cosmopolitan geographical and historical education makes him, as a general rule, a more intelligent individual than the corresponding unit in the aquiline republic.

(1) **INSTRUCTION IN MUSIC FOR THE PUBLIC SCHOOLS**; (2) **NEW FIRST MUSIC READER**; (3) **NEW SECOND MUSIC READER**; (4) **NEW THIRD MUSIC READER**; (5) **THE INDEPENDENT NATIONAL MUSIC READER**. By Luther Whiting Mason; Ginn & Co., publishers, Boston, 1888. There are probably no books in existence which lead the learner more pleasantly and thoroughly to sight reading of the ordinary and universal musical notation. The teacher with simply an ear for music can from them teach himself with the greatest facility, and at the same time learn how to present the art to his pupils in a most lucid and effective manner. Among the changes imminent in the future is a greater attention to musical instruction in our public schools. At present our authorities encourage it. In the near future it may be made compulsory. While the works which we now commend are specially valuable in the hands of our teachers, we must acknowledge that many of the patriotic songs are not such as commend themselves necessarily to Canadians, and no Canadian worthy of the name would endeavor to instil patriotic sentiments directed to a foreign country into the minds of his pupils. But this view presents no difficulties, as distinctively Yankee songs will not be out of place in the book so long as Canadian or British songs are selected in their place for the school room; but for making the reading and practice of music easy, we have seen no course better than the above.

**A TEXT-BOOK OF EUCLID'S ELEMENTS, BOOKS I. TO VI.**, for the use of schools, by H. S. Hall, M. A., formerly scholar of Christ's College, Cambridge, and F. H. Stevens, M. A., formerly scholar of Queen's College, Oxford, masters of the military and engineering side, Clifton College. London: MacMillan & Co., and New York, 1888. This text-book, of 280 odd pages, is also published in two parts, viz., Books I. and II., and Books III., IV., V. and VI. Advantage has evidently been taken of all the good points in former text-books. There is a delightful sparing of words, aided by the resources of paragraphing and typography. The Euclidean method is preserved intact, while particular defects are remedied. The exercises are accompanied at intervals by superior sets of exercises. As usual with the MacMillans, the typography itself is no small merit in the work. It demonstrates about as clearly as the demonstrations.

GRIP'S COMIC ALMANAC. - This well-known annual, for 1889, is now in the bookstores. For ten years Canada's "own and only" Comic Almanac has delighted her people, and the new number is decidedly the best of the lot. The calendar pages are unique and ingenious; the double-page cartoon, "Irrepressible Tug of War," is first-class, while there are several full-page cartoons of no less merit, and any number of side-splitting illustrations. The letter-press is capital reading. Ten cents will secure the book at any newsdealer's—a modest tax for so enjoyable a *mélange*, surely.

### EXCHANGES.

*Science of Photography*, November, has the concluding paper of a series by Xanthus Smith on "Composition in Landscape Pictures." This journal is a fine example of the typographical art. . . . *The Academy*, June, a superior monthly, devoted specially to the secondary education, issued under the auspices of the Associated Academic Principals of the State of New York. . . . *Volapuk*, a monthly journal of the "World Language"; Charles C. Beale, editor, Boston. . . . *The Swiss Cross*, November, has an interesting illustrated article on a lava-flow in the Hawaiian islands. . . . "The Reorganization of the British Empire," by G. R. Parkin of Fredericton, in the December *Century*, should have many Canadian readers. . . . "The Bells of St. Anne" is a finely illustrated article in the *St. Nicholas* for December, containing, among other views, one representing the Parliament buildings at Ottawa. . . . *The Popular Science Monthly* for December contains, among other articles of interest, a very readable one on "Atomic Worlds and their Motions." . . . *Science* of December 7th has an article appropriate for the times on "Pseudo-scientific Humbuggery." . . . *The Illustrated London News* (New York edition) for December 8th is an elegant number of this popular weekly. It contains, among other illustrations, scenes in the Canadian Northwest. . . . *Garden and Forest* continues to maintain its high position. In the number for December 5 appeared an excellent article on the subject, "Do Forests Influence Rainfall?" . . . Every scientific and practical man should have the *Scientific American*. See the advertisement in another column. . . . *Grip*, with the new year, enters upon its thirty-second half-yearly volume, a fact which speaks eloquently for the merits of this unique and favorite Canadian journal. No former attempt in the field of humorous journalism in Canada was ever successful, because in no former case was there the happy combination of elements essential to the success of such a venture. In the first place, an uncommon fertility of invention is required to keep a comic paper abreast of the times, and this must be backed up by an artistic ability equal to the task of interpreting the happy thoughts evolved in a popular manner. Secondly, there must be the solid basis of right principle upon which to build. Truth, honor, fairness and good taste are all as essential to the success of a comic journal as of a magazine of the highest class. All these features have, from the first number, distinguished *Grip* in a high degree. It stands today alongside of the very best productions of its class in the world, and enjoys a fame far beyond the bounds of Canada. To Canadians it ought to

be more and more an object of patriotic pride, and certainly but little can be said for the patriotism of any Canadian who pretends to culture, and can afford the price, whose name is not found upon *Grip's* subscription list. The subscription price is almost ridiculously low, when the rates of similar (and not equally able) journals elsewhere are considered. It is only two dollars a year, although the paper contains sixteen pages filled with bright original humor of pen and pencil, and always gives, without stint, political cartoons on passing events, which for point, power and humor are certainly unsurpassed in any humorous paper of the day. Get it for 1889 without fail.

### Nova Scotia County Academy Entrance Examinations, 1888.

#### BRITISH AND CANADIAN HISTORY.

1. Relate the story of the quarrel between Charnise and Charles de la Tour.
2. Describe briefly (1) Discovery of the Mississippi, (2) Treaty of Utrecht, (3) Capture of Beausejour, (4) Settlement of Pictou, (5) First Rebellion in the Northwest.
3. Give dates for the following events in Nova Scotia history: Founding of Halifax, Expulsion of the Acadians, New Brunswick made a separate Province, Dominion of Canada formed, Visit of DeMonts, Massacre at Grand Pre, Arrival of Duke of Kent, Sir John Harvey (Governor of Nova Scotia).
4. Name the Sovereigns of the House of Hanover, and give the dates of their accession.
5. Describe the character of any one of the following Sovereigns: Henry VIII, Charles I., Elizabeth, George III, Richard III.
6. Name as many of England's naval victories as you can, and briefly describe any one of them.
7. Write a note on the Chartists.

#### GRAMMAR.

1. Write the passage dictated by the examiner, with due attention to punctuation and the correct use of capitals.
2. Give the two plural forms of each of the following nouns explaining the difference of meaning in each case:—*brother, perony, die, index*
3. State the circumstances under which *that* should be used in preference to *who* or *which* in introducing relative clauses.
4. Correct, where necessary, the following sentences:—  
(1) It is fortunate that neither of you were ill.  
(2) You hadn't ought to have asked that question.  
(3) Our M.s P. and M.s P. P. are all good men and true.
5. Name and define the various moods.
6. Parse: Homeward weeping went Nikomis,  
Sorrowing for her Hiawatha "
7. Analyze: Since you are so kind, I shall no longer refuse to tell you why I have come.

#### USEFUL KNOWLEDGE.

(Ten questions will be considered a perfect paper).

1. Describe the formation of coral islands and reefs.
2. What effect upon the soil has the action of earth-worms?

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R. V. JONES, M. A., Ph. D., Professor of the Greek and Latin Languages.

REV. E. M. KEIRSTEAD, M. A., Professor of English Literature, Logic and Psychology.

A. E. COLDWELL, M. A., Professor of the Natural Sciences, and Curator of the Museum.

L. E. WORTMAN, M. A., Professor of Modern Languages and History.

THE NEXT SESSION will open **THURSDAY, September 27th.** Matriculation Examination will be held on **WEDNESDAY, the 26th.** Applications for entrance or for information respecting courses of study may be made to the President.

3. Name and describe the parts of a plant known as the organs of vegetation.
4. How are clouds formed? Name the different kinds.
5. Of what substances is the wheat plant composed?
6. What is wind? Explain how it is produced.
7. Describe the life history of any one of the following: The potato bug, the sheep bot-fly, the clover seed midge, the butterfly.
8. Name the principal forest trees of Nova Scotia. Which do you consider the best for shade or ornament?
9. How do birds differ from reptiles.
10. Tell what you know about the amphibia of this province.
11. What are the chief properties of water?
12. Name the insects which you think are the most injurious to the farmer.
13. How do clothes keep u warm? Which is the warmest clothing, and why?
14. In what different forms do plants yield food for man? Give examples of each form.
15. What animals are considered the lowest of the mammalia, and where are they found?
16. Write a note on any one of the following: Moose, eagle, fox, bear, squirrel, robin

[The following is the answer of a candidate to question 7, above, verbatim:

"The potato bug, which is very injurious to the farmer, is supposed to come down in the rain. The extent of its life is unknown."

The candidate was a young lady from a good agricultural district of the country, and is very probably a farmer's daughter.]

### GEOGRAPHY.

1. Explain the terms, *isthmus, water-shed, continent, volcano, glacier, cape and plain.*
2. Name and locate the peninsulas of North America. Name the rivers of Europe, their direction, and the waters into which they flow.
3. Name the counties of Nova Scotia and Cape Breton washed by the Atlantic, and also state what counties have railways running through them.
4. In a voyage from Port Arthur to Windsor, N. S., through what waters and near what headlands would you pass?
5. Where and what are the following: Blomidon, Escuminac, Saguenay, Galt, Vancouver, Milwaukee, Rimouski.

Roanoke, Matapan, Ladogo, Seine, Hecla, Ganges, Tasmania, Crimea, Congo, Cheviot and Humber.

6. Name the *ten* largest cities of the United States in the order of their size, and also give the State in which each is situated.
7. Describe the surface of the British Isles.
8. What waters are connected, and what lands separated, by the following straits: Gibraltar, Dover, Belle Isle, Hudson, Magellan, Babelmandeb and Bosphorus.
9. Draw an outline map of North America.

### ARITHMETIC AND ALGEBRA.

1. Find the amount of the following bill of goods in dollars and cents, the shilling being worth  $24\frac{1}{3}$  cents:  
 124 yds. grey cotton at  $5\frac{1}{2}$ d. per yd.  
 62 " stair carpet at 4s. 3d. "  
 156 " Brussels do. at 6s. 10d. "  
 96 " Scotch tweed at 4s. 6d. "

2. Add together  $\frac{1}{3}$  of a ton,  $\frac{1}{8}$  of a cwt.,  $\frac{1}{12}$  of a lb. and  $\frac{1}{4}$  of an oz.

3. Find the value of

$$\left(\frac{1}{3} + \frac{1}{4}\right) \frac{20\frac{1}{2}}{3\frac{1}{4} + 2\frac{1}{2}}$$

and state and explain the rule for reducing a vulgar to a decimal fraction, and simplify

$$\frac{2.02 + 6.48}{3.5} (4.27 + 6.6).$$

4. How many bushels of grain will a bin hold, which is 10 ft. long, 4 ft. 6 in. wide, and 5 ft. 3 in deep?
5. If  $1\frac{3}{4}$  bush. of oats cost 60c., what will 25 bush. 2 pks. 4 qts. cost.
6. A wholesale merchant sells goods at a discount of 75 per cent. on the retail price, he then allows a further discount of 25 per cent. for cash, what will he receive for goods the retail price of which is \$200?
7. A man walks a certain distance, and rides back in 3 hrs. 45 min.; he could ride both ways in  $2\frac{1}{2}$  hrs. How long would it take him to walk both ways?
8. Which is the more profitable and by how much, to buy flour at \$5.00 per bbl. on 6 months' credit or at \$4.90 at 3 months' credit, money being worth 6 per cent.
9. Write the principal signs used in algebra, and explain the significance of each.
10. From  $7x^3 - 2x^2 + 2x + 2$  subtract  $4x^3 - 2x^2 - 2x - 14$ , and from the remainder subtract  $2x^3 - 8x^2 + 4x \times 16$ .
11. Simplify  $3a - [b - \{a + (b - 3a)\}]$



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A Gymnasium erected and furnished with all modern appliances for physical development, during the past year, has proved to be an important auxiliary to the educational work. Further efforts will be made during the present year to increase the efficiency of the Institution and to add to the comfort of students.

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MICHAELMAS \* TERM, \* 1888.

The Entrance Examination, the Examinations for County Scholarships, and the Senior Matriculation Examination, will begin on the first day of October, 1888.

The Scholarships in the Undermentioned Counties will be open to competition: Restigouche, Gloucester, Northumberland, Westmorland, Albert, Charlotte, Kings, Sunbury, Carleton, Victoria.

Copies of the new Calendar for the Academic year 1888-89, may be had from the Registrar of the University.

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BY order of the Right Honorable LORD ABERDEEN, the DIPLOMA OF THE ROYAL SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, of which he is President, has been placed in the hands of the Ladies' Auxiliary Committee of the New Brunswick S. P. C. A., who have decided to offer it for Essay Competition to all grades in the Public Schools of New Brunswick outside of St. John and Portland, the subject to be "Dependence of Man Upon the Lower Animals." Essays not to exceed ten pages of foolscap, and to be sent in on or before the last day of June, 1889. Address Miss H. L. PETERS, Secretary to the Ladies' Auxiliary of S. P. C. A., Wright street, Portland, St. John, N. B. FRANCIS E. MURRAY, President.

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Railway Office,  
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