

THE EDUCATIONAL REVIEW.

FOR THE ATLANTIC PROVINCES OF CANADA.

Vol. III.

SAINT JOHN, N. B., JULY, 1889.

No. 2.

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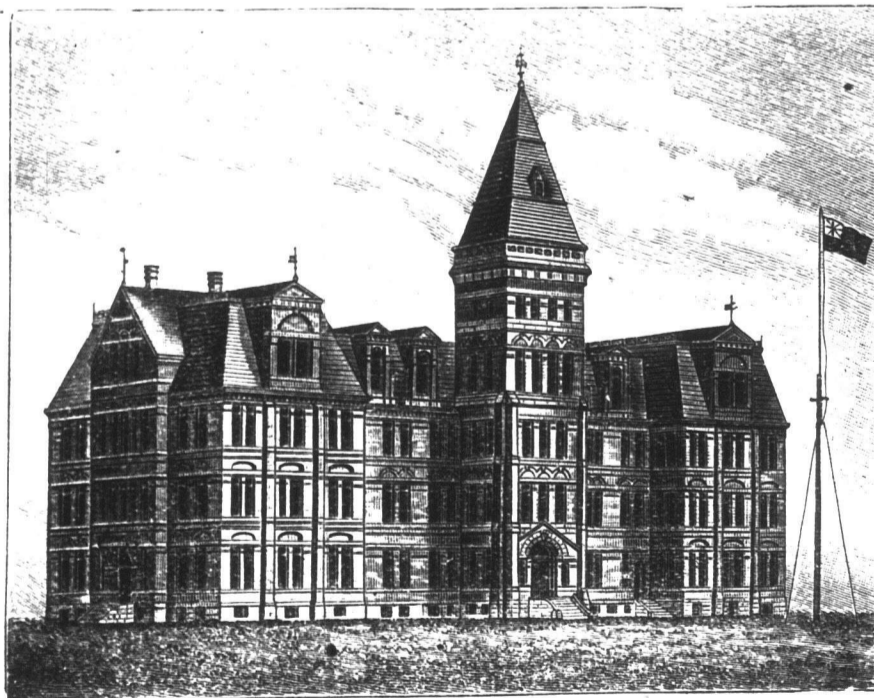
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Notice of Change of Address should be promptly sent to EDUCATIONAL REVIEW, St. John, N. B. The former as well as the new address should be given.

EDITORIAL NOTES.

THERE will be no issue of the REVIEW for August, that month being vacation for most of our teachers. The September number will contain a supplement, giving reports of the educational conventions in New Brunswick and Nova Scotia.

WE want to add largely to our subscription list this summer. The REVIEW has been cordially endorsed at our educational conventions, and will, we hope, receive that material support which it deserves.

THE Encœnia of the New Brunswick University took place on Thursday, June 20th, in the presence of a large number of visitors, who were greatly interested in the proceedings. The year just closed has been a prosperous one, the relations between faculty and students cordial, and the interest on the part of the public increasing.

REDUCED rates have been arranged for on all the lines of travel to the N. S. Summer School of Science at Parrsboro, July 22nd to August 5th.

THE holiday season is upon us; but for our most valued teachers it will not be all merely a playtime. On the 9th July, in Nova Scotia, the Normal School Alumni Association will meet in Truro. On the 10th and 11th the Provincial Educational Association meets to discuss some very important subjects, which we have no doubt will draw together all our speaking and thinking educationists.

ON the 22nd July the Summer Science School meets in one of the most interesting regions of the province—Parrsboro. The attendance last year was very large; but the high character of its graduates, who are much sought after as teachers, and the cordial approval and endorsement of the provincial authorities, as well as the exceptional advantages of the locality, will, no doubt, draw a crowd which will tax the ingenuity of the officers of the institution to accommodate. But they will do it.

THE managing editor, Mr. Hay, sailed for London, Great Britain, on the 25th of June. He will return from his short European tour in about two months. Communications requiring prompt attention should, in the meantime, be addressed EDUCATIONAL REVIEW, Pictou, Nova Scotia.

THE closing day of the Prince of Wales College, Charlottetown, for the academical year 1888-89 occurred on 31st May. The exercises, consisting of teaching by the student-teachers, reading of essays by the students, a valedictory by the graduating class, and the annual report by the Principal, were of a particularly interesting character. Governor McDonald, who occupied the chair, congratulated the students who had obtained an honorable position in the class-lists, and the country upon possessing such an institution as the Prince of Wales College. He referred with pride to the long roll of the names of former students who had distinguished themselves at other seats of learning during the year, and complimented the Principal and his assistants upon the efficiency of the college. Ex-Governor Laird followed with a speech to the same effect. The proceedings terminated with "God save the Queen," sung by the students.

Graduating diplomas were gained by the following students:

1. John McNally, Summerside.
2. Ernest Campbell, Montague Bridge.
3. Andrew Harding, Graham's Road.
4. (Harry Duckmin, Charlottetown.
- (Hedley Ross, Stanley.

Governor-General's silver medal, awarded to the best student—John McNally.

Governor-General's bronze medal, presented to the best student teacher—James Rogerson, Pisquid.

THE closing exercises at the N. B. Normal School took place on Friday, June 7th, in the presence of a large number of visitors including his Lordship the Metropolitan, the Chief Superintendent of Education, professor of the university and others. The work of the term has been very satisfactory. Miss Sarah A. Shenton, A. B., of Woodstock, and Miss Gertrude Hanington, of St. John, were announced as the winners of the Governor-General's silver medals for highest professional standing in the senior and junior classes respectively.

Nova Scotian Bred Carp.

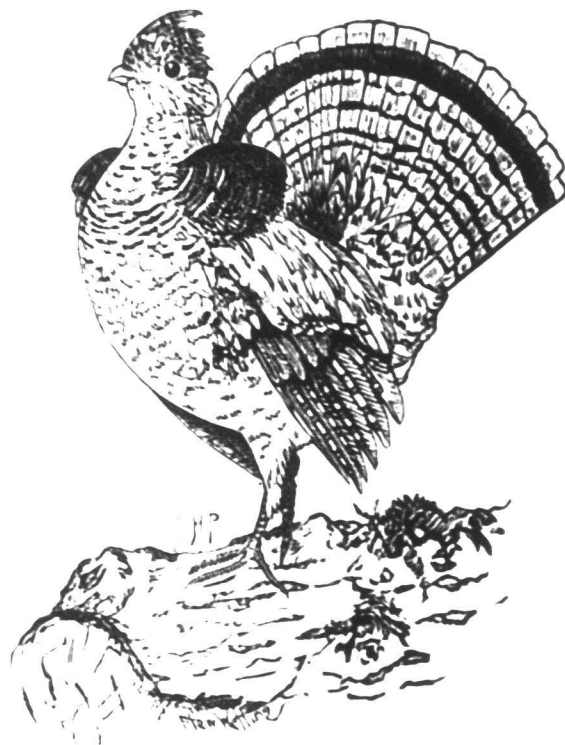
A friend visiting Mr. Macdonald's carp pond, near Durham, Pictou, last week, was allowed a cast for carp, in the interests of science. Instantly a three and a half pounder was hooked, and after a short and sharp struggle was finally landed. Its length was eighteen inches, and girth over thirteen inches. Our scientific editor assisted in the gastronomic test to which it was put. The flesh was very white, not so firm as salmon, suggesting shad, with a flavor of trout. It is without doubt a very fine food fish. Frying produced the most delicious form in which it was served up. Mr. Macdonald has millions of young carp in his ponds already, and quite a great number as large as the one we have been discussing.

The Halifax Summer Carnival.

Halifax, the military city of Canada, with fortifications among the strongest in the world, is going to disport itself. The city will be bombarded for a whole day, during which a fleet of warships and all the forts will take part, and large forces of British regulars, Canadian militia and the mariners will be engaged. The thunder of war, let us hope without any of its casualties, will be good object lessons for our teachers. Each day for one week, up to August 12th, will the empire city by the sea attempt to crowd all the sensations which can attract the world within its own beautiful, if not magnificent, circumference. Its public gardens are among the most beautiful in America, and are of no small interest and value from a natural history and educational point of view.

FERNDALE SCHOOL.

No. XXIV. The Canadian Ruffed Grouse and its Order.



LEPUS AMERICANUS T. GATA. 1894. O. U. I.

From specimen in Provincial Museum, Halifax, mounted by Downs, in "drumming" position.

TEACHER. To what order does this bird belong?

S. It is the "Birch Partridge," and therefore belongs to the "Terrestrial Scratchers."

T. Right and wrong. There are no partridges in the Atlantic provinces. Partridges have *no* feathers on their *tarsi* or shanks; but Grouse have more or less of the shank feathered.

S. This is Grouse, then, as it has feathers on the upper part of the shank.

JIM. "Spruce Partridges" have all their shanks and even their toes feathered. I have seen them often.

JACK. Why, then, they can't be Partridges at all; they are Grouse too.

T. Correctly reasoned. They are both Grouse. And as you have already noticed a difference in the feathering of their shanks you must have also noticed the more conspicuous differences in other respects. Mention another.

S. There is a pair of tufts of blackish feathers on each side of the neck (over twenty feathers in each) and another lower down near the shoulders, in the Birch Grouse, but I don't think there is any on the Spruce Grouse.

T. Very good. These tufts are called ruffs. In our specimen they are very strongly erected, as are the other feathers of the bird, as it is mounted in the position it takes when making that distant, thunder-like noise called drumming. It also has a crest of feathers on its head.

S. What are the best English names for them?

T. For the first, *Canadian Ruffed Grouse*.

S. There are other kinds of Ruffed Grouse, then?

T. O yes. That is why it is named *Canadian*. And the so-called "Spruce Partridge" may be called simply *Canada Grouse*.

S. What are the scientific names, so that we may know them?

T. The Canadian Ruffed Grouse is *Bonasa Umbellus Togata*. The generic name, from the Latin *bonasus*, a "bison," because the "drumming" of the males were supposed to resemble the distant bellowing of the bison. The specific name, from the Latin *umbella*, an umbel or umbrella, referring to the ruffs. The varietal name, *togata*, means dressed in a toga. A second variety is found in the Rocky Mountain regions, and a third on the Pacific coast.

The Canada Grouse is *Canace Canadensis*, the generic name being an old Latin name for a species of game bird, and the specific name means *Canadian*.

JACK. But these birds live on trees. They might be called "arboreal scratchers" as well as "terrestrial."

T. Very true. But they are so closely allied in many respects with our domestic fowls, turkeys, pheasants, etc., which are more decidedly terrestrial, that we must put them in the same order.

S. What is the scientific name of the order?

T. *Gallinae*, which really means "fowl-like birds."

JACK. *Gallinae* is an easier word than terrestrial scratchers. But all these scratchers' feet are not the same. They have three toes and one back toe (hallux) a little higher up. But in some of the barn-yard fowls there is a long, sharp spur quite high up on the shank. Is this a fifth toe?

T. No. It is called a spur; is useful in fighting as a special scratching weapon, and is generally found in the males, although in some old world species they are even found on the female. In some species two or more are found on each shank of the male. The domestic fowl, pheasant and peacock are the spur-bearing natives of the old world naturalized among us, while the turkey is the only spur-bearing, indigenous native of North America.

S. What is the scientific name of the original turkey?

T. After the wild turkey was taken from America into Europe Linnaeus gave it the generic name *meleagris*, which is exactly both the Greek and Latin

old name often applied to the Guinea fowl; and the specific name *gallopavus*, from *gallus*, a cock, and *pavo*, a peacock. *Meleagris gallopavus*, from Mexico, is the original of all the domestic varieties of turkeys.

S. And what is the scientific name of the original of our barnyard fowls?

T. *Gallus bankiva*, found wild in South-eastern Asia. But as our time is short let us turn to our Ruffed Grouse. How long would the bird be do you think, measured?

S. About seventeen inches.

T. Correct. The Canada Grouse is generally an inch or so shorter. How many quills (rectrices) in its tail? You can easily count them in the position given in our specimen.

S. Eighteen.

T. Correct. The Canada Grouse differ not only in the markings of these feathers but in their number, which is generally sixteen. You can count some of the quills called primaries in the wing in our specimen.

S. Why are they called *primaries*?

T. Because they are *secondary* ones and *tertiary* ones.

S. Three different kinds of quills in the wing?

T. Yes. Raise the back of your wrist up to your shoulder and try to droop your hand and fingers downward, making a sort of an M shaped figure with the side of the body. Suppose your hand and fingers to be a shaft as long as an arm bone, the three shafts of the arm would then represent the three shafts of a bird's wing when closed. Stretch the arm and it represents the wing stretched for flight. The long, first shaft—representing the hand and fingers—bears the strong flying quills called the *primaries*, and in nearly all birds these are either *nine* or *ten*. The second shaft bears the strong flying quills called the *secondaries*, and the third shaft—corresponding to the shoulder arm—bears the *tertiaries*. These three kinds of flying quills are called the *remiges*, or flight feathers.

S. And what are the smaller feathers overlapping or underlying the quill feathers of the wings or tail called?

T. The *coverts*. There are wing coverts and tail coverts, upper and lower coverts, greater and lesser coverts. Their names are their explanations.

JIM. Do tell us how the Ruffed Grouse "drums."

T. I will. A person who has often watched the performance describes it thus: The male bird, standing erect, generally on a prostrate, decayed tree, which it usually frequents during the season, raises the feathers of its body in the manner of a turkey-cock, draws its head towards its tail, erecting the

feathers of the latter at the same time, and raising its ruff around the neck suffers its wings to droop and struts about on the log. A few moments elapse, when the bird draws the whole of its feathers close to its body, and stretching out, beats its sides with its wings in the manner of the domestic cock, but more loudly, and with such rapidity of motion after a few of the first strokes as to cause a tremor in the air not unlike the rumbling of distant thunder. In perfectly calm weather this sound may be heard two hundred yards.

ASTRONOMICAL NOTES.

At 5 p. m. (60° time) on July 1st we were at our greatest distance from the sun. How many miles? Well, that depends on the value we use for the sun's mean parallax. The English official value is 8".848. This makes the sun's mean distance 92,381,000 miles, and his distance on July 1st 1,550,000 miles more. Being so much farther than usual from her liege lord, our mother earth will bestir herself in her planetary duty more leisurely than usual. Her mean rate on her annual journey is over 66,000 miles an hour; but on July 1st she was doing 1,100 miles an hour less than that. On August 1st she will be nearly 200,000 miles nearer the sun than on July 1st, and will then be bowling along 135 miles an hour faster.

The change in the length of our days and nights for the next two months is as follows:

SOUTH OF NOVA SCOTIA.

	July 1.	Aug. 1.	Sept. 1.
Daylight,	15½ hrs.	14½ hrs.	13¼ hrs.
Twilight,	4¾	4	3¼
Night,	4	5½	7½

NORTH OF NEW BRUNSWICK.

	July 1.	Aug. 1.	Sept. 1.
Daylight,	16 hrs.	15 hrs.	13½ hrs.
Twilight,	6½	4¾	3¼
Night,	1½	4¼	6¼

Mercury will be morning star all July and evening star most of August. The best time to get a sight of him will be before sunrise about July 20th. He will be occulted by the moon July 26th, very close to Mars on the morning of July 28th, but too near the horizon and the rising sun to be easily seen.

Venus was at her greatest brilliancy on June 6th. She will not be so bright again until October, 1890; but she is still bright enough to be seen at noon in a clear sky until about the end of July by any one who has got her well located during June. It will be an easy job to pick her up in a glass on the afternoons

of July 23 and August 22, as she will then be near the moon. She will be at her greatest elongation from the sun on July 10th. After that she will begin her long, stern chase after the sun, a chase which will last until next February, when she will again become evening star.

Mars. See June notes.

Jupiter will suffer occultation on July 11th, and again on August 7th; but on both occasions the moon will have moved past him before he rises to us. The next time this happens (on September 3rd) the maritime provinces will be favored with a sight of it. A full notice will be given of it in the next number. In the meantime make a note of the fact that you will miss a very interesting sight if you forget to watch Jupiter and the moon between 10.45 and 11 p. m. (60° time) on September 3rd. On July 1st Jupiter was on the meridian at 11.30 p. m. (mean time) and will be at the same place at 9.15 on August 1st. He rises about 4¼ hours before that. He is still moving west in Sagittarius, and will do so until August 25th. After that he will wander eastwards until next June.

Saturn is getting into the worst position for observation. On July 1st he set about two hours after the sun, on August 1st about 40 minutes after. For position in heavens see June notes. On August 16th he will pass to west side of sun and become morning star. He will then be nearly 200 million miles farther from the earth than he was six months ago.

Uranus is also increasing his true distance from the earth and decreasing his apparent distance from the sun, and is now too difficult an object for the average eye, but may still be easily seen in a field glass pointed at Theta Virginis.

There will be a partial eclipse of the moon on the afternoon of July 12th. The first contact with the penumbra will occur at 2.35 (60° time). At that time in our latitude the moon will be rising at Venice. The last contact will occur at 7.13, when she is rising over the Banks of Newfoundland. No part of the eclipse will be visible to any part of the North American continent, but nearly all the rest of the land surface of the globe will see some phase of it.

The new moon, which is going to be born on July 27th, will be about twenty-four hours old at sunset on the 28th. It is pretty generally supposed that so young a moon cannot be seen by the naked eye. With a clear evening on the 28th and a little trouble taken to find out where the moon is, the soundness or unsoundness of this supposition can be determined. There is a naked eye (of good average quality but nothing more) within about ten inches of this page which saw last November's moon when she was only 21½ hours old.

OCULTATION OF JUPITER, SEPTEMBER 3RD.

As the September REVIEW may possibly not be in the hands of all our readers before the 3rd we publish the following predictions:

To the earth generally occultation will begin in British Columbia at 9.13 p. m. (this and all other times in this paragraph are for 60° west longitude), and will end near Cape Sable, in Shelburne County, N. S., at 11.45 p. m. Jupiter will disappear behind the dark limb of the moon. From first contact until final disappearance there will be an interval of two minutes. First contact will occur at Fredericton at 10.50; St. John, 10.54; Dalhousie, 10.55; Charlottetown, 10.56; Yarmouth, 10.57; Halifax, 10.59; Sydney, 11.00. Re-appearance not visible in Atlantic provinces, except in extreme west. At Yarmouth Jupiter will begin to peep out at 11.44½, about five minutes before he sets. C.

[For the EDUCATIONAL REVIEW.]

FORESHADOWED CHANGES.

I would like to emphasize a point made by H. F. in the last REVIEW.

I have seen the course of study for our county academies in Nova Scotia, when attempted to be carried out in them, followed by an exodus of candidate teachers to neighboring advanced schools, to county schools, or to home study, where the high school course could be ignored. Here we see the spectacle of the law encouraging academic education by special provincial grants, and at the same time discouraging them by the lack of a rational co-ordination between the high school course and the syllabus of the teachers' examinations.

The former course was designed, I presume, to give the citizen who could not proceed to the University a well-rounded, general education. The man who intends to be *only* a teacher is not expected, it appears, to have this well-rounded education. The ancient classics and some more modern subjects in the high school course are not at all required to fully equip even the first-class teacher for his diploma.

What wonder is it, then, that we find *firstly*, candidates for teacher's licenses who find that they require all their time for the purpose of cramming subjects that in some cases might be better stowed away in reference books than in their heads, throwing up the regular high-school work and leaving the institution altogether if the prescribed course is enforced. And *secondly*, that the teachers' salary, which is the measure of public appreciation, is becoming lower instead of rising.

If it is a benefit to any class of people to have a knowledge of the structure and vocabulary of the classical languages, it ought to be so to the professional instructor; not for the purpose of teaching them, be it understood, but for the purpose of understanding language and reflecting in speech, ideas and methods a little wider culture than is generally prevalent in the profession. The educational interests of the province, and the pecuniary interests of the profession, both call for some change in the law which handicaps this province even as compared with the smaller province of Prince Edward Island. M. L.

Nova Scotia.

[For the REVIEW.]

N. S. Summer Science School.

Allow me, through the REVIEW, to make the following intimations regarding the Summer Schools, for the benefit of teachers:

1. Ample accommodations for board and instruction will be afforded to all who attend.

2. Applications will be received till July 22nd.

3. Reduced fares to those attending the School have been secured over the following routes of travel: Minas Basin Route, Spring Hill and Parrsboro, Intercolonial and Eastern Extension, and Steamer "City of St. John." Return tickets on the above one first-class fare.

Windsor and Annapolis Railway and Western Counties Railway, one and one-third fares.

It is probable that reduced fares will be secured on the steamers on Bras d'Or Lakes. Tickets on all the above routes will be good from July 17 to August 9.

4. Persons attending the School will find it convenient to have the following articles: 1 hammer, (weighing about 1 lb.); 1 steel chisel, 6 inches long and ½ inch in diameter; 1 insect net; 1 microscope; 1 cigar box (for holding mineralogical apparatus) 1 glass ink bottle, cone-shaped with wide mouth—for alcohol lamp.

The meeting at Parrsboro, commencing July 22nd, promises to be a large, interesting and enthusiastic educational gathering—a veritable Nova Scotian Chataqua. For circular or further information, address J. B. HALL, Sec'y, Truro, N. S.

A prize of \$30, offered by Colin H. Livingstone, Esq., of New York, as a tribute to the memory of the late Chas. G. Coster, Ph. D., Principal of the St. John Grammar School, will be awarded to the student (male or female) from the Maritime Provinces who passes the most successful sessional examination in McGill University, beginning with April, 1890.

[For the REVIEW.]

Dumb Animals

We not infrequently see, in periodical literature, notices of the intelligence of dogs, horses and elephants; and some of the cases are very remarkable. Such a notice appeared in the last number of the EDUCATIONAL REVIEW, selected from some other source. It has occurred to me that undue prominence is sometimes given to the actions of the animals mentioned, calculated to create an impression unfavorable to others. The animals specified may in the exhibition of their intelligence more nearly resemble man; hence perhaps in part at best the arrest of our attention and the excitation of our wonder. We marvel to see them act so much as we would in similar circumstances. Other animals have a different way of showing their intelligence; it may not be so demonstrative, but possibly it reveals intelligence quite as unmistakable and strikingly. Cats would not generally be ranked in this respect with the dog; and most persons probably would hold that they are not so affectionate; it has even been said and written that they may manifest an attachment to places and houses, but that they care little for the persons they live with. That this is an unfounded representation, I think could be readily proved, and I would like in behalf of the species to be allowed to give an example known to myself.

I once owned a pretty tabby cat, which was a great favorite in the family. The language of the prophet's parable of the pet lamb would almost apply to her and the treatment she received. Having occasion to change my residence for a distant part of the province, I left the cat in care of a friend and did not see her again for six months. In visiting my former home, puss was one of the first objects I sought and noticed, she did not recognize me at once, but in a few seconds either my appearance or the tones of my voice recalled the past and she purred to me with every sign of affection and delight. After a little she suddenly left me, thinking, as I supposed, that she had showed me sufficient attention. Such, however, was not the case, for she shortly returned with a mouse and laid it at my very feet. It required a good deal of persuasion to induce her to treat herself to this dainty morsel she had procured for me, but at last she yielded. Could she have displayed greater intelligence or affection if she had assumed the more demonstrative manner of a dog? And so will other animals.

Bees, whose sting is generally feared, become even fond of those who treat them with kindness. Mine are as glad to see me as any dog is to meet his master. They certainly are pleased when I go among their

hives and tell them of their pleasant useful labors. It is not pretended that they understand such words, but beyond question they rightly interpret the tone of voice in which they are addressed. Squirrels are proverbially timid and shy, but I have had them light on my shoulder as I passed beneath their native trees. All I ever did to gain their confidence was to occasionally throw them a handful of grain, as I visited their accustomed haunts, and to drive away the idle, wicked boys that were molesting them. The merry, pretty ways of squirrels are full of intelligence.

We limit the divine power and goodness when we speak of certain animals as alone manifesting extraordinary intelligence; it is our own ignorance which makes us so think of them, and our folly and loss as well. We might make dumb animals generally our friends by kind and sensible treatment, and thus add an element of happiness to life. The pleasure we give to our humble "fellow mortals," as Burns calls one of the class, comes back to ourselves, and is fraught with enjoyment more exquisite in proportion to man's higher order of faculties. The REVIEW is to be commended for its lessons leading to this result—lessons which teachers cannot value too highly.

C. D. R.

Waterville, June 17th, 1889.

The Bull in the Zodiac.

In continuation of the subject of the sign Taurus, touched upon in an editorial last week, the St. John EDUCATIONAL REVIEW continues:

"This would seem to indicate that over 2000 B. C. the elements of astronomy had been studied and formulated and even the same idea of nomenclature, in some points, made common to various peoples. It appears to us most probable that the bull must have been worshipped before he was placed in the sky. His position must have depended upon his popular estimation. Once enthroned in the sky, however, the bull's prestige would be in a fair way to be increased."

Assyriology—more valuable to the student of myths to-day than even Egyptology—leaves little question that the elements of astronomy were studied and formulated at a period of even greater antiquity than 2000 B. C. The bull was a very ancient representative of power and strength, and there is no doubt that Ezekiel's cherubims presented themselves to the prophet's mind in the shape of the Assyrian winged bull. It is, as the REVIEW has intimated, not improbable that the strength and grandeur of the bull may have prompted the idea of making it the first sign of the Zodiac. At all events, once there, it is certain that the constellation in which the sun stood at the vernal equinox dominated all religious myths for a period exceeding its actual duration in that sign. The Bible, as well as the Ninevah Library of Esarhaddon and the Assyrian Scriptures, indicate the full sway of bull worship long after the equinox had passed into Aries. But the old Greek myths, as well as the old Roman reverence for the "great twin brethren," Castor and Pollux, *vide* Macaulay's "Battle of Lake Regillus," plainly indicate the reminiscence of a yet older time when religion was dominated by the sign *Gemini*.—*Halifax Critic*.

NATIVE FERNS.

BY J. VROOM, ST. STEPHEN, N. B.

There are many wild plants desirable in every respect for garden culture. Among the first which the collector will be tempted to introduce will certainly be the ferns. One or two of these, perhaps, among other plants in a garden, may seem out of place, and for want of proper treatment prove very unsatisfactory. Still, it does not follow that ferns should always be grown by themselves. If a shady corner can be devoted to their culture, and the necessary amount of water supplied, mosses and some of the smaller flowering plants might grow among them to cover the soil and keep up that moisture of the air so needful for their perfect growth. No ill-used plant is more pitiable than a parched and stunted fern. Arrange your ferns so that each will show to the best advantage, and do not crowd them. The larger growing kinds need room to expand their graceful foliage, and a few stately plants well grown will be better than a large number with fronds narrowed and distorted for the want of room.

The nature of the soil and the amount of shade and moisture you can give them will, of course, influence your choice of species. In this, an acquaintance with ferns in their native haunts will be the best guide; yet, the collector will be surprised in some instances to find how easily the plants will accommodate themselves to a change of soil and surroundings, and how their beauty will be increased by the care which protects them from accidental injuries.

Of the evergreen ferns, the Hart's Tongue and the curious Walking-leaf will be planted for their botanical interest rather than for their beauty. Some of the Shield Ferns and Spleenworts are evergreens, and even here in Canada their bright green fronds are found unhurt when the snow disappears. This makes them especially valuable for rockeries. For other purposes their evergreen character may be rather an objection, as the uncoiling fronds of the young growth of the non-evergreen species are all the more beautiful for being seen alone.

Among the best of our native ferns is the Maiden-hair. Grown in pots for parlor decoration, no exotic can exceed it in beauty, its only fault being that it needs a season of rest. It is equally desirable for out-door cultivation, and can be grown in masses by itself or in detached clumps, in contrast with stiff and stately Shield Ferns, such as Goldie's Fern and the Male Fern. These all need a rich, open soil, with ample room and plenty of shade and moisture.

Another handsome fern requiring the same treat-

ment is Braun's Soft-prickly Shield Fern. Like the two last mentioned, it grows in the form of a circle or crown. The shape of the upright fronds is particularly graceful, and the golden-brown color of the main stalks is also a conspicuous feature.

The bulb-bearing *Cystopteris* should be mentioned here as delighting in the same situation. It is remarkable for its slender and graceful form, and for its little bulbs on the back of the frond, from which it takes its name. Unlike most ferns, it is none the worse for being closely planted, so as even to hide the moss in which it grows. It is hard to describe the exquisite beauty of this little fern in its native woods. Looking down upon it where it grows, in the deep shade of deciduous trees, the dull green color and the confusion of shape in the interlacing fronds, making it look soft as a bank of feathers, and as you watch it there seems to be subtle changes in depth of color, like the uncertain movements of Northern lights. When you stoop to gather a few of its fronds, you will find it difficult to choose among them, and will probably destroy more than you take; yet, if you have to pass the spot you will go a long way around rather than crush the frail things by walking through them. This was, I believe, the first North American fern thought worthy of cultivation in Europe. It needs protection from the wind as well as from the sun.

For drier situations the Beach Fern and the delicate and graceful Oak Fern would claim first notice, but they are rather difficult to manage. The Hayscented Fern, or *Dicksonia*, will bear almost any treatment. The light, feathery fronds take delicate shades of pale green and brown in the autumn, and its pleasant scent is not the least of its recommendations. It is very abundant here in dry pastures and open woods. The perfume seems to attract insects, but I never could find that it is injured by them.

In the wettest place that you can give it the Royal Fern will grow. It, and the other flowering ferns, will beautify an unsightly swamp, or the margin of a slow stream, and make the spot worth visiting. Of other ferns which grow in swamps, the Chain Fern and the New York Shield Fern are worthy of mention; but the most showy, on account of its large size and elegant form, is the Ostrich Fern. In favorable situations it reaches the height of five or six feet. Growing in large, circular tufts, the curving outer fronds form an enclosure or cup, within which rise the curious fertile fronds, very different in shape, which must have suggested the name of the species.

Beside the evergreen sorts above mentioned, there are many other native ferns suitable for rockwork. A collector could not do better than to visit a rocky woodland, and take them up at random. All are interesting, and none of them devoid of beauty.

Selected for the S. E. C. A. Column

The Captive Squirrel's Petition.

There was a little village maid,
Of manners blithe and free,
A laughing, rosy, playful child
Though born of low degree;
One evening from the autumn woods
Her doting father brought,
For Janet, home a squirrel brown,
All fierce and newly caught.

Her ruby lips she gently pressed
Upon his velvet head,
And many a backward glance she cast,
As she slowly stole to bed;
Light to her pillow balmy sleep
On downy wing descends,
Her happy spirit to her cheek
Unwonted freshness lends.

And in the visions of the night
The little maiden stole
To gaze upon the living toy
Whose image filled her soul.
As softly she took down the cage,
A cry of wonder broke
From her red lips—in plaintive tones
The captive squirrel spoke—

“ Oh, little maiden, pity me,
My home is far away
Where gaily mid the giant oaks,
My bright eyed off-spring play;
Their couch is lined with softest moss,
Within an aged tree,
The wind that sweeps the forest bough
Is not more blithe than we;

“ And oft beneath our nimble feet
The old sear branches shake,
As lightly through the beechen groves
Our merry way we take;
The boundless forest was my home—
How hard my fate must be,
Confined within this narrow cage—
Oh! set your captive free!”

That melancholy, plaintive wail
The maiden's slumbers broke,
And with a sudden start and cry,
The little Janet woke.
The sinking moon a veil of light
O'er wood and valley spread,
When Janet, full of troubled thoughts,
Rose softly from her bed.

With trembling hands she raised the bolt
That held the casement low;
The tears were in her lifted eyes,
As she bade the stranger go.
’Twas but a momentary grief;
The joy that bless the good
Came o'er her heart—she saw him bound
Like wild bird to the wood.

For the REVIEW

Notes for Teaching Music by Tonic Sol-fa Notation.

Music may be enjoyed by all and the power of learning to sing is almost universal.

It is claimed for the Tonic Sol-fa notation of music, when taught according to its true principles, that in it we have a system which enables *any* teacher who gives instruction in the ordinary branches of education to teach his or her pupils to sing correctly, intelligently and tastefully *from note*. These principles and the notation associated with them present so few difficulties, that when this system is used the pupils may find intelligent pleasure in their earliest music lessons, and even get some grasp of that intricate department of music—Harmony, the elements of which are brought before the pupil in the first lessons. The notation is so simple that the time, at the disposal of the teacher, allows him more fully to attend to those points which increase the interest of the pupils, improve the quality of the singing and have a greater refining influence; and this branch, when so taught, has a much higher educational value.

That the music lessons may profit more *physically*, the teacher must attend particularly to the position and breathing of the pupils. Let me give a few hints on these points:

Position. The best posture for singing is standing, but the pupils should not be tired by standing too long, for one of the uses of music in the class room is to give rest after the fatigue of heavier work and to renew the energies for lessons to follow. Draw up the pupils in single lines, in stand-at-ease position, resting more of the weight of the body on the left foot to steady the beating of the heart (which is often disturbed by first efforts at singing), the head erect but not thrown back, the shoulders back (but not up) to allow free use of the lungs. The pupils should breathe with the whole of the lungs, the top, the sides, and the lower part. The lungs or bellows should be well filled, and all filled to work with the best results the little musical instrument in the throat called the larynx.

Frequently give the class breathing exercises, thus, let the class with closed mouth take in a full breath while the teacher counts 1, 2, 3 slowly, then let out the breath while he lowers his hand counting 1, 2, 3, 4, etc. slowly. Be satisfied with little in the first lesson, but look for progress at every lesson till all the pupils can keep breathing out for 20, 30, 40 seconds or even longer, according to age and the strength of the pupils' lungs. Let the teacher see that each pupil in taking in a breath swells out the body at the chest, the ribs and also the abdomen.

This exercise is of very great importance and should be often repeated and in every class.

While the class is still standing let the teacher sing a clear musical note of medium pitch to any syllable, once or twice asking the class to listen carefully and then give the same sound. Many will give it correctly. Let the teacher, passing along in front, encourage these, and deal individually with the others, trying to get them to copy the sound. Wherever there is much difficulty, place the pupil beside a pupil who sings well and ask him to listen *only*, until the teacher has tried him again and finds that he sings in tune. It must be clearly understood that the pupil is not being punished. Mr. Curwen said that those who listened well would come to sing well.

Let the teacher change the pitch of the sound up and down until the majority of the class can readily reproduce any sound well within the compass of the voice—for the voice must never be strained, more particularly soft, young voices.

Next, let the teacher give a low sound, about C, and give the upper octave following it. This is the sound that blends best with the other sound, and when these two are sounded many at first do not recognize two sounds. Tell the pupils that in many respects it is the same note. Next, let the teacher give a low sound about C, and then the fifth note of the scale and try to get the pupils to reproduce these two notes. Then ask them to sing either, using any arbitrary sign to indicate which is wanted, singing them to the syllable *la*.

Next, let the teacher sing two or three notes to *la* and ask the pupils to tell which is the first and then which is the fifth. The name we give to the first is DOH, to the other is SOH. Write them on the blackboard thus:

Develop the mental effects of those notes to the fact that DOH in the first note of the scale, is the strong, firm, bold note, the fifth is the bright, grand, clear bugle note. The pupils' ideas will be more impressive than the teacher's. Give the manual signs: DOH the hand closed knuckles down; SOH the hand opened on its side, little finger downward. Get the pupils to sing these two notes from the manual signs or pointing on the board. Next, get them to sing them to *la*.

Next, tell the pupils to listen for a new note and introduce the third note singing to *la*. Ask the mental effect or character of this new note, the calm, quiet, peaceful, soothing ME which the pupils feel comes between DOH and SOH. Give the manual sign for this soothing ME, the hand open, palm downwards ready to stroke a child or an animal.

Next, ask the children after hearing the pattern to sing DOH, SOH, ME. At first do not give the children the new note ME to sing ascending, only descending from SOH. Give the written signs for these notes, the initial letter d for DOH, m for ME, s for SOH, and d' for octave of d. Give such exercises as the following on the modulator from the manual signs, then on the blackboard first to the note names and then to the syllable *la*. Frequently change the pitch but keep each exercise within the range of young voices.

- | | | |
|-------------------------|-----------------------|-----|
| 1. d d s s m d s s d. | 5. d' s m d d' s m d. | DOH |
| 2. d s m d d s m s d. | 6. d s m m d m s d'. | SOH |
| 3. s m d s m d s s d. | 7. d d m m s s d' d'. | ME |
| 4. s d' s m d s m s d'. | 8. s m d s d m d s. | DOH |

This is the first step. The pupils have learned the principal notes, the pillars of the scale, and in them the notes of the most important chord—the D chord. When three or more notes that blend well are sounded together we have a chord. When these facts are brought before them the pupils have got their first lesson in harmony. If they can hear two or three of these notes together it will help and interest the pupils. Do not attempt to teach the other notes of the scale.

Musquodoboit Harbor,

NOTE.—Apparatus required—teacher's voice, blackboard and chalk. Mr. A. can post calico modulator or teaching chart for seven three cent stamps. Smaller size, three feet long, on paper for three three cent stamps.

NATURAL HISTORY OF ATLANTIC PROVINCES.

(Concluded).

List of Works Bearing Specially on the Natural History of Nova Scotia.

MAMMALIA.

On the Mammalia of Nova Scotia. J. B. Gilpin in Proc. Inst. of Nat. Sci., N. S., in parts from 1865 to 1871. (Some parts out of print).

Papers in the proceedings of the same Society by Morrow, Gilpin, Hardy, etc., on the "Caribou," "Walrus," "Beaver," "Orthogoriscia mola," etc.

The Mammals of Nova Scotia, a synopsis. By A. H. MacKay, in The Academy. Vol. I., Nos. 2, 3, 4 and 6, 1885 (out of print).

AVES.

In the Proceedings of the Inst. of Nat. Sci., N. S., are the following papers:

On the Land Birds of N. S., by Downs. Vol. I., Part 3, pp. 38-51, Vol. I., Part 4, pp. 130-136 (1864-5).

Observations on Sea Birds, by Ambrose. Vol. 1., Part 3, pp. 51-59 (1864).

On Some of the Razor Birds of N. S., by Jones. Vol. II., Part 2, pp. 70-74 (1867).

On the Eagles of N. S. J. B. Gilpin. Vol. III., Part 3, pp. 202-208 (1872).

Golden Eyes or Garrots in N. S. Gilpin. Vol. IV., Part 4, pp. 390-403 (1877).

On the Semi-annual Migration of Sea-Fowl, by Gilpin. Vol. V., Part 2, pp. 138-158 (1879).

Ornithological Notes, by Downs. Vol. VI., Part 4, pp. 326-328 (1885).

On the Birds of Prey of N. S. Gilpin. Vol. V., Part 3, pp. 255-269 (1880).

Birds of Nova Scotia, Downs and Piers. Vol. VII., Part 2, pp. 377-385, (1887). (This is the best list, A. H. MacKay).

The Birds of Pictou, A. H. MacKay, in Academy. Vol. I., No. 6—a list, (1885).

AMPHIBIA.

Amphibia of Nova Scotia, by EDUCATIONAL REVIEW. Vol. I., pp. 233-234. (MacKay).

REPTILIA.

Reptilia of N. S. Jones. Proc. Inst. Nat. Sci., N. S. Vol. I., Part 3, pp. 114-128, (1864).

PISCES.

Synopsis of the Fishes of the Gulf of St. Lawrence and the Bay of Fundy, by Theodore Gill, in "Canadian Naturalist." Vol. II., (new series), paper 16, (1865).

Proc. Inst. Nat. Sci., N. S., the following papers:

On the Gaspereaux of N. S. Gilpin. Vol. I., Part —, pp. 114-128, (1864).

On the Food Fishes of N. S. Gilpin. Vol. I., Part 4, pp. 11-18 and 76-91; Vol. II., Part 1, pp. 104-112; Vol. II., Part 2, pp. 17-26.

Fish of St. Margaret's Bay. Ambrose. Vol. I., Part 4, pp. 33-43; Vol. II., Part 1, pp. 67-76; Vol. II., Part 2, pp. 87-94.

On the Salmon of N. S. E. Gilpin. Vol. V., Part 1, (1878).

Nat. Hist. and the Fisheries, A. P. Reid. Vol. 4, Part 2, pp. 131-137.

List of the Fishes of N. S. Jones. Vol. V., Part 1 (1879).

INSECTA.

Nova Scotian Lepidoptera, Jones. Proc. Inst. Nat. Sci., N. S. Vol. II., Part 3, pp. 78-88 (1868).

Nova Scotian Coleoptera. Jones. Proc. Inst. Nat. Sci., N. S. Vol. II., Part 3, pp. 141-155 (1868).

N. S. Diurnal Lepidoptera. Jones. Proc. Inst. Nat. Sci., N. S. Vol. III., Part 1, pp. 18-27 (1870), and Vol. III., Part 2, pp. 100-103 (1871).

List of Nova Scotian Butterflies. Silver. Proc. Inst. Nat. Sci., N. S. Vol. VII., Part 2, pp. 86-89.

Obit & Lessons on N. S. Insects, EDUCATIONAL REVIEW, Vol. I and II.

MOLLUSCA.

Mollusca of Nova Scotia. Jones. Proc. Inst. of Nat. Sci., N. S. Vol. VI., Part 3 (1887).

Teredo Navalis in N. S. Murphy. Proc. Inst. Nat. Sci., N. S., Vol. V., pt. 4 (1881).

On the Marine Mollusca of Eastern Canada, Whiteaves. Canadian Naturalist. Vol. IV. (new series), Art 6.

PROTOZOA.

On N. S. Fresh Water Sponges, MacKay. Proc. Inst. Nat. Sci., N. S., (1884).

Nova Scotian Fresh Water Sponges, a synopsis, MacKay. Proc. Inst. Nat. Sci., N. S., (1885).

New Fresh Water Sponges From N. S. and Newfoundland, MacKay. Canadian Record of Science. Vol. II., pp. 19-22, (1886).

Fresh Water Sponges of Canada and Newfoundland. A synopsis of what is known at present of them, 1889. Trans. Royal Society of Canada, 1889.

BOTANY.

Diatomacea of Nova Scotia. Notes with a list of recent and fossil. A. H. MacKay. Canada Record of Science. Vol. I., No. 4, pp. 236-244 (1885).

Algae of Nova Scotia and New Brunswick. Hay and MacKay. Trans. Royal Society of Canada. Sec. IV., 1887. Pp. 167-174.

Lichens of Nova Scotia. MacKay. Proc. Institute of Natural Science, N. S. Vol. V., part 3, pp. 299-307 (1880).

Mosses of N. S. MacKay, in Lindsay's Catalogue. Proc. Institute of Natural Science, N. S. Vol. IV., part 2, pp. 184-223 (1875).

Mosses of Nova Scotia. Dr. Somers. Proc. Institute of Natural Science, N. S. Vol. IV., part 4, pp. 362-369; and Vol. V., part 3, pp. 268-271 (1887-'89).

Fungi of N. S. Somers. Proc. Institute of Natural Science, N. S. Vol. V., part 2, pp. 188-192; and Vol. V., pp. 247-253; and Vol. V., part 4; and Vol. VI., part 4.

Nova Scotia Ferns. Ball. Proc. Institute of Natural Science, N. S. Vol. IV., part 2, pp. 146-157 (1875); and Vol. V., part 1, pp. (1878).

Recent Additions to Canadian Filicinæ, etc. Burgess. Trans. Royal Society of Canada. Sec. IV. (1886), pp. 9-18.

Canadian Filicinæ Macoun and Burgess. Trans. Royal Society of Canada. Sec. IV. (1884), pp. 163-226.

Catalogue of Nova Scotian Plants. Lindsay. Proc. Institute of Natural Science, N. S. Vol. IV., part 2, pp. 184-223 (1875).

In Proc. Institute of Natural Science, N. S., the following papers among others:

Lawson. "Ericaceæ of Canada." Vol. III., part 1, pp. 362-369 (1878).

How. "Flora of Nova Scotia." Vol. IV., part 3; Vol. III., part 2, pp. 174-176.

Lawson. "Canadian Species of Rubi." Vol. III., part 4, pp. 364-367 (1873).

Hardy. "Nova Scotian Conifers." Vol. I., part 4, pp. 120-130.

Lawson. "Notes on N. S. Plants." Vol. IV., part 2, pp. 167-179. "Notes on Rare Plants." Vol. VI., part 1.

Somers. "Notes on Compositæ." Vol. IV., part 3 (1876). "Flora of N. S. and Colorado." Vol. IV., part 2, pp. 122-131.

Revision of Canadian Ronunculaceæ. Lawson. Trans. Roy. Soc. of Canada. Sec. IV. (1884), pp. 15-90.

Catalogue of Canadian Plants. Macoun. Geology and Natural History Society of Canada. Parts I., II., III. and IV. (from 1883 to present date).

GEOLOGY.

Dawson's Works and Monographs, in publications of Geology and Natural History Society, of Canada, and in numerous other societies. Honeyman, in Proceedings of Institute of Natural Science of Nova Scotia, which contains articles on mineralogy. Also, Patterson, in Archæology.

There are numerous references and even many papers on Nova Scotian Natural History (particular sections) in such publications as the "Annals and Mogsims of Natural History Society," London; "Proceedings of the Academy of Natural Sciences," Philadelphia; "Naturaliste Canadien," "Canadian Entomologist," "Canadian Naturalist," "Smithsonian Publications," etc., etc.,

Some of the New Brunswick lists, given by Mr. Ganong, will also apply to Nova Scotia as well. I feel that I have not given nearly so complete a list as I could; but in some respects it is unnecessarily extensive for the purposes of the student. I have not referred to popular papers in "Acadian Scientist," etc., etc.,

List of works treating specially of the Natural History of New Brunswick:

The *Mammals* of New Brunswick (an annotated list). By M. Chamberlain. Bull. N. B. Nat. Hist. Soc. No. III., 1884, 37-41. (Also lists by Hinds in "Rep. on Geology of N. B." Gesner, "New Brunswick." Adams, "Field and Forest Rambles," etc.

A catalogue of the *Birds* of New Brunswick. By M. Chamberlain. Bull. N. B. Nat. Hist. Soc. No. I., 1882, 23-68. (Also lists by Gesner, Adams and others, and several lists of special regions by Boardman, Henick and others).

List of *Reptiles* and *Amphibia*. By A. L. Adams, in "Field and Forest Rambles." Gesner, "New Brunswick."

Annotated Lists of the Fishes of New Brunswick.

A. Gesner in "New Brunswick." M. H. Perley, "Descriptive Catalogue (in part) of the Fishes of New Brunswick and Nova Scotia." Gov't. Report, Fredericton, 1852.

INSECTA.—No list.

CRUSTACEA.

Stimpson's Synopsis of the Marine Invertebrata of Grand Manan gives a good list for southern coast.

MOLLUSCA.

"Marine Mollusca of New Brunswick." By W. F. Ganong. Bull. N. B. Nat. Hist. Soc., No. VI., 1887, 17-61.

ECHINODERMATA.

"The Echinodermata of New Brunswick." By W. F. Ganong. Bull. N. B. Nat. Hist. Soc., No. VII. 12-68.

Stimpson's "Synopsis of the Marine Invertebrata of Grand Manan." (Smithsonian contributions, Vol. VI., 1884), gives annotated lists of all groups of invertebrates except protozoa and sponges.

IN BOTANY.

A Preliminary Catalogue of the Plants of New Brunswick. By Rev. Jas. Fowler. Bull. N. B. Nat. Hist. Soc. No. IV., 1885, pp. 8-84, with additions in succeeding numbers. A privately printed list was issued by the same author some years ago.

IN GEOLOGY.

Many papers by Matthew, Bailey and others in various journals and reports.

IN ARCHÆOLOGY.

Papers by Bailey and Matthew in the Bulletins of the N. B. Nat. Hist. Soc.

A FUNGUS INSECT-DESTROYER.—Prof. Arthur, botanist at the New York Experiment Station, discovered, last summer, a fungus that grows upon the Clover-leaf weevil and destroys it in a few hours. It propagates itself rapidly, and there is a prospect that it may be the means of holding in check or exterminating this insect enemy of the clover plant.

PERSONAL NOTES.

There are three vacancies in the staff of the Pictou Academy, caused by the resignation of Principal MacKay, Science Master, to take the Principalship of the Halifax Academy; of Jas. C. Shaw, Classical Master, to take a "Munro" tutorship in Dalhousie College; and of R. M. Langill, Mathematical Master, to enter on the practice of law.

Rev. Dean Gilpin, D. D., Principal of the Halifax Academy, has intimated his resignation at the end of this term, after a singularly long and successful career of forty years in the teaching profession. In this long and busy life he put an impress upon thousands of the ablest minds in our country; and long after he rests from his labors the influence of his genial and literary spirit will be widening its ever progressive sphere. In him the profession have a model of modest, patient and scholarly effort, and the public a man whom they should delight to honor.

D. A. Murray, B. A., (Dalhousie), Truro, N. S., has been awarded the mathematical fellowship of the Johns Hopkins University. It is of the annual value of \$500 for two years.

Gordon Laird, B. A., (Dalhousie, 1889), P. E. I., has just been awarded a fellowship at Cornell University in classics.

SCHOOL AND COLLEGE.

ACADIA COLLEGE.—The following were graduated at Acadia College at the closing exercises in June:

Henry T. DeWolfe, St. Stephen, N. B.; Edward M. Bill, Billtown, N. S.; Hugh S. Blackadar, Halifax, N. S.; O. O. Lyons, Waterville, N. S.; Judson Kempton, Hopewell, N. B.; Walter S. Black, Salem, N. S.; Archibald W. Foster, Bridgetown, N. S.; Leander A. Palmer, Dorchester, N. B.; J. Howe Cox, Cambridge, N. S.; Wilfred B. Crawley, Sydney, C. B.; Fred C. Hartley, Carleton, N. B.; Mockett C. Higgins, Wolfville, N. S.; Charles S. Lyons, Somerset, N. S.; Horace W. McKenna, Kingston, N. S.; Charles H. McIntyre, Springfield, N. B.; Wellington H. Jenkins, Cady's, Queens, N. B.

The members of the class were presented for their degrees in the usual formal manner, by Rev. W. H. Warren, M. A., and received their parchments at the hands of the President.

The degree of M. A. in course was conferred upon Rev. O. C. S. Wallace, and Mr. A. K. DeBlois, who had received the degree of M. A. in course from Brown University, was admitted *ad eundem gradum*. Two honorary degrees were conferred, that of Doctor

of Science on Prof. Wm. Elder, of Colby University, and that of Doctor of Divinity on Rev. Calvin Goodspeed, of the *Messenger and Visitor*, St. John.

The following are officers of the Alumni of Acadia for 1889-90:

President, F. H. Eaton, M. A.; Vice-president, I. B. Oakes, M. A.; Secretary-Treasurer, S. W. Cummings, B. A.; Directors, Rev. A. Foshay, Windsor; H. L. Beckwith, B. A., Halifax; Rev. S. A. Ford, B. A., Fairville, N. B.; E. D. Webber, B. A., Truro; H. A. Lovett, B. A., Halifax; L. S. Payzant, Halifax; F. Rand, Kentville.

QUESTION DEPARTMENT.

Questions and Answers.

F. M. E. Will you kindly tell me the best and most practical way of preserving the *larva* of insects?

Put them for a few days into a bottle of whiskey or alcohol diluted to half strength. Then transfer them to small glass vials about their own size, filled with strong alcohol and secured with tight corks. The dilute alcohol is to prevent too much shrinkage by the abstraction of water before the tissues become hardened. The small vial is to enable the larvæ to be easily examined from every point of view.

To preserve the color of the larvæ some recommend dipping the caterpillar for half a minute into boiling water before transferring to the alcohol.

A method requiring more patience and skill is to eviscerate the larvæ, then inflate its skin by means of a blowpipe, made of a glass tube drawn into a fine point, in a current of dry heated air until the skin dries and hardens into shape. The heated air may be obtained within a sheet iron funnel or tube heated from without by the flame of a spirit lamp.

R. M. PICTOU CO. Enclosed I send you a number of apple twigs with their extremities swollen and the terminal bud dead, so that extensions of the twig can only occur by side shoots from the sides or bores of the swollen part. What is the cause? Is it injurious? And how may it be prevented? Three or four of my young trees are partially affected; and I am informed that several neighboring orchards are similarly affected.

1. It looks like the work of the Apple-bud worm (*Eccopsis malana*, Fernald). The mischief is done by the larvæ which eats the terminal bud in early summer and even burrows into the end of the twig. It is a pale yellowish green caterpillar, sometimes tinged with pink on its back, according to Saunders. Generally, after devouring the bud, it fastens a neighboring leaf down to the twig as a temporary domicile, which it finally deserts to form a yellow woolly tubular cocoon. It now becomes of a dark

flesh color with small bright spots, totally black head and black shield on the next segment. It is now half an inch long, shuts itself up in its cocoon and in a week or ten days emerges as a moth with white fore wings mottled greenish brown. There is a large grayish brown spot at the tips spotted with white, and another spot of darker shade towards the base of the wing. The hind wings are dusky. The egg is next deposited and remains until it is hatched with the bursting bud.

2. It is injurious to the trees, deforming the branches and retarding their growth. Saunders states that recently it seriously injured the orchards of Northern Illinois; but it has not to our knowledge been complained of in Canada.

3. Hand-pick them whenever any leaves are seen fastened down to the twig—or when the cocoon is being formed and before the pupa stage is past. When the moth appears it is too late. If numerous, a spray of Paris green or London paris is recommended—nearly a teaspoonful of the poison to the gallon of water. A small ichneumon fly has been found to be parasitic upon the larvæ, which cause them to die before the pupa stage is reached. Neither the bud-worm nor the ichneumon has yet been observed here. We give this outline description of *Eccopsis malana* to assist those interested in observing. The state of the twigs appears to plainly indicate the author of the mischief.

H. M. F. —Are carp really cultivated in Nova Scotia, by a Mr. Thomas MacDonald, at Durham, as one would infer from your May "Ferndale" article; and if so, has he been successful?

1. They are cultivated as intimated in the said article.

2. Mr. MacDonald answers the second question substantially, as follows:

In the fall of 1884, I received nineteen German Carp from Mr. Baird, Commissioner of Fisheries, at Washington. The largest of the number were about five inches in length, while the smallest were about two and a half inches. They were quite lively after their long journey. Their travelling house was a tin can, holding about one and a half gallons of water if full. But it was only half full on arrival. I gave them some small crumbs of bread which they soon devoured. I then placed them in the pond which I had prepared for them. This was late in November. In the summer of 1886 they had grown to over one foot in length. In the fall of that year I constructed two other ponds. The larger is about two acres in extent, while the deepest place in either pond is four feet.

I sorted the young fish from out of the pond in which the nineteen carp were originally placed after they had been there two seasons. This sorting gave me 2,500 small ones which I placed in the two new ponds. There was quite a number left in the first pond. My calculations, respecting the effects of freshets, however, were not correct, for the new ponds; and, as a consequence, I lost a good many of them during the following winter. But in the winter of 1888 I was more successful, so that now I have tens of thousands of fish in my ponds. There is certainly no fish whose spawning can be controlled which propagate so readily. And from my experience with them, I have no doubt that the raising of them can be made a grand success all over the dominion. They do not eat their young as many fish do. They will live on anything pigs will eat, in addition to the water grasses and weeds which should be kept growing in their wide, warm and shallow ponds.

Their flesh is as delicious for the table as good trout or salmon.

One season they were so domesticated that on several occasions they ate out of our hands. They are in every way extremely interesting and form quite an attraction on the farm.

EDUCATIONAL OPINION.

Inspectors all over the province have repeatedly urged the wisdom of adopting the "one term system." Students who attend college for one-half the year naturally favor a continuance of the existing regime. The law, however, is not supposed to consult the convenience of a class who confessedly make teaching a stepping-stone to professions which are conceived to be of a higher order. And as college faculties everywhere appear to favor an extension of their terminal sessions, students, if so disposed, could teach one year and attend college the next. This measure is entitled to thoughtful consideration.—*Inspector Gunn (N. S.)*

The course of study has been adopted with satisfactory results in most of the schools in the district. With few exceptions teachers are unanimous in their approval of its provisions. The failures which occur in its successful adoption are invariably made by those who could not successfully carry out any course of study. Of course due allowance must be made for irregularity in attendance and other causes which hinder the successful operation of any programme in the schoolroom.—*Inspector Morse (N. S.)*

Sixty-seven of the Cumberland teachers have been engaged in the profession over three years, and eighteen over seven years. Although poorly paid,

our teachers make honest efforts to improve themselves for their position. Their attendance at associations and institutes, and their subscriptions to educational journals, prove this, while I can testify to the good results visible in my half-yearly visits to their schools. I may mention that at least 180 of my teachers are subscribers to the EDUCATIONAL REVIEW.—*Inspector Lay (N. S.)*

Trustees are also discharging their duties more intelligently. In answer to the question which has often been put to me by trustees, "What can we do? What do we know about a school?" I have answered: You can insist upon the room being always kept clean and in good order and look after the repairs of accidental injuries. You can see that books, maps and the register are kept in good condition and supply what is needed, and above all, you may take it for granted, that where there is imperfect control, but little instruction can be imparted, and no good moral influence exercised.—*Inspector Condon (N. S.)*

* * All schools should be required to give positive instruction in the elements of music. No more time is needed than is now used, but the time must be spent in a different way. It seems to me that the times demand this kind of teaching at our hands. The more favored receive some vocal instruction from private teachers; but the masses cannot afford the expense of this kind of instruction, and therefore receive little or no knowledge in the theory of music. The teachers of the public school can enhance the value of their work very much by giving a good drill in reading music.—*Inspector Roscoe (N. S.)*

Considerable fluctuation is shown in the average salaries paid the different sexes and grades, but on the whole there was a slight increase. A curious and not at all gratifying fact is that in Pictou county, the increase was made in the salaries of the lower grades and the decrease in the higher. In this connection I would remark that it is not creditable either to the intelligence or sense of justice in the towns of Pictou, New Glasgow and Truro, that the sums paid the Grade B female teachers are less than those paid the Grade C employed in the corresponding departments of those schools. In no instance does the Grade B receive as much as the Grade C, and in one case in each the amount is less by \$30.00, or exactly the amount of additional grant of Grade B. It might be argued in favor of giving equal salaries to both grades, that the qualifications of Grade C are sufficient for the situation, but to lessen the payment of Grade B is certainly grossly unfair, and simply amounts to the

appropriation by the section of a grant made by the government to the teachers for superior attainments. I trust that this injustice requires only to be pointed out to be remedied, and that any discrimination made hereafter may be in favor of, and not against, teachers of higher grades.—*Inspector McLellan (N. S.)*

The Provincial Normal School, of Nova Scotia, has, since its organization over thirty years ago, devoted a large proportion of its time and energy to academic work. In this regard it has not differed materially from most similar institutions in Canada and the United States. Indeed, in almost all countries in which such institutions exist, the work has been of a mixed character, partly academic and partly professional. The proportion of the two kinds of work, as well as the more or less elementary character of the institutions given in different normal schools, has been governed by the educational condition of the country in which such institution existed. While such a combination of elements was, perhaps, a necessary condition of the existence of the normal school of Nova Scotia at the time of its organization, and for many subsequent years, the conviction is strong in my mind, that the changed circumstances of the present day render the prosecution of academic work, simply as academic work, not only unnecessary, but a wasteful expenditure of energy, and a barrier in the way of progress and the complete fulfilment of the legitimate function of such an institution. The ideal normal school, and that for which the country is now ready, is a more thoroughly technical school, whose true function is to make teachers rather than scholars. The academic and high schools of the province, now so numerous and efficient, on their part should be restricted to the advancement of general scholarship.—*Principal Calkin.*

The Agadic Method.

Pursuing the subject of a note in the *Critic* of 10th inst., we quote the following passage from the EDUCATIONAL REVIEW: "But these simple minded men (the early Christians) could more easily see a great mystery in the remarkable lettering of the word fish, taken from the Greek Testament, than in abstruse astronomical knowledge, so generally unknown even to the comfortable Christian of to-day, who can get it, much of it, even in a free advertising almanac. The Greek for fish is *Ichthys*. There were here, in order, the initials of the name above all names—the name of Him for whom they lived, the name of Him for whom they died, *Jesos Christos, Theou Uios, Soter*, 'Jesus Christ the Son of God the Saviour.'

The fish, *Ichthus*, was therefore the emblem, the symbol of the great name of its attributes, which should not be even lightly spoken." This is, no doubt, true, as well as the zodiacal influence. Peculiar stress was laid by the Jews on coincidences in words, syllables and letters, which they carried to an extreme of superstition. It developed into what is called the "Agadic" method, and the word "*ichthus*" is one of its most remarkable, and at the same time, one of its fairest examples. In another note we give some explanations of this term, and at a future opportunity we will give another striking instance of the influence of the method which is, we believe, but little known to general readers.—*Halifax Critic*.

LITERARY NOTES.

D. C. Heath & Co., will publish at once *The Laws of Health in Relation to School Life*. It is an admirable compend of sanitary science, indispensable to those who are erecting new school buildings or modifying those already existing.

THE HALIFAX "CARNIVAL ECHO."—The *Carnival Echo*, to be issued as a souvenir of the Halifax Summer Carnival, will be a triumph of modern art and journalism. It will illustrate Halifax in a style that has never been attempted before, while its portrayal of the carnival will be unique and brilliant. The book is to be over fifty pages in size, with a cover of original and artistic design, beautifully executed in colors. The engravings will consist of carnival scenes, views of Halifax, its unrivalled public gardens, Point Pleasant park, and other surroundings, and portraits of prominent citizens. The reading matter, furnished by men of acknowledged literary talent, will describe the carnival and its various attractive features, besides special articles on other appropriate topics. The official carnival programme will be printed in it.

D. C. Heath & Co., Boston, will soon issue *De Garmo's Essentials of Method*. The functions of the book is to discover, through an analysis of the mental activities involved in knowing what are the essential elements of good method in teaching. It is accompanied by practical illustrations, showing the application of the general laws of right method to all the branches of the common school curriculum.

GINN & COMPANY will publish early in August, Dumas, "*Les Trois Mousquetaires*," edited by Prof. F. C. Sumichrast, of Harvard, for use in schools and colleges. Prof. Sumichrast, a few years ago the very efficient registrar of the University of Halifax, is well and favorably known in the Atlantic provinces of Canada.

D. C. HEATH & Co., will publish July 20th, *An Introduction to the Study of Shakespeare* by Hiram Corson, Prof. of English Literature, Cornell University. It will be an attempt to indicate to the student some lines of Shakesperian study which may serve to introduce him to the study of the Plays

as plays. The commentaries presented on *Romeo and Juliet*, *King John*, *Much Ado about Nothing*, *Hamlet*, *Macbeth*, and *Anthony and Cleopatra*, aim chiefly to present the points of view which are demanded for a proper appreciation of Shakespeare's general attitude toward things, and his resultant dramatic art.

A *School Iliad with Vocabulary*, edited for schools by Prof. T. D. Seymour, of Yale College, will be published shortly by Ginn & Co., Boston. The introduction presents, in brief, but systematic form, the most important facts regarding Homeric life, the Homeric poems, Homeric style, syntax, dialect and verse. The commentary is adapted to the wants of beginners in Homer. The notes are copious for the first three books. They are less copious for Books IV.—VI., but the commentary on Book VI. is fuller than that on Books IV., V. The vocabulary is illustrated with more than twenty wood-cuts, most of which is new in this country.

D. C. Heath & Co., Boston, have become the American publishers of the *Isaac Pitman's Shorthand Books*. The system is founded on strictly phonetic principles, it is adapted to reporting, to letter-writing, and to general business purposes. It can be learned in six months with only five hours per day practice. It combines the legibility of longhand with the brevity of shorthand.

BOOK REVIEWS.

EAR AND VOICE TRAINING BY MEANS OF ELEMENTARY SOUNDS OF LANGUAGE. By N. A. Calkins. New York and Chicago: E. L. Kellogg & Co. 50 cents. It is so simple that the youngest teacher can at once apply every sentence, and yet it is so thorough that the college professor of rhetoric could with benefit make it a pocket companion. Among the subjects discussed are Speech Training, Comparing the Sounds of the Letters, Vowel Sounds Grouped, Breath and Voice Sounds Grouped, Suggestions for Removing Difficulties of Utterance and Impediments of Speech.

ALGEBRAIC ANALYSIS, Part I. Introduction price \$1.50. Publishers, Ginn & Co., Boston. This work is intended to supply students of mathematics with a great variety of solved examples and unsolved exercises in the application of the fundamental theorems and processes of pure algebra and to exhibit to them the highest and most important results of modern algebraic analysis. It is the work of three practical mathematicians, G. A. Wentworth, A. M., J. A. McLellan, LL. D., Inspector of Normal Schools, Ontario, and J. C. Glashan, Inspector of Schools for Ottawa. It is a revised edition of Wentworth and McLellan's University Algebra, and cannot fail to prove of great value to students.

EDUCATIONAL AND INDUSTRIAL DRAWING; MANUAL TRAINING; Nos. I and II. Largen S. Thompson. Publishers, D. C. Heath & Co., Boston, Chicago and New York. These Manual Training Books, Nos. I. and II., attempt to bridge the gap between the kindergarten and the laboratory and technical school by methods at once educational and practical. The key-note is struck in the following: "The whole universe exists for each child. Each child has space and time relations to this universe, and the universe has the

same to the child. If he would be master of himself he must learn these relations." Teachers who are convinced that "Manual Training" is a necessity, but who do not know "how to begin," will find these books, which are not at all expensive, a safe and easy guide. The introduction is full of suggestion and does not promise more than the book makes good. The handling of models by the children themselves is insisted on, and making is carried on with a great variety of inexpensive material. No. II., in addition to color, folding, pasting and drawing, proceeds to mechanical drawing, clay-modelling and wood-carving. A careful study of this work will convince our earnest teachers that manual training is not of necessity, cumbrous or expensive, or beyond their ability. We commend it heartily as a valuable contribution to the cause of education and as meeting the requirements of those who demand more practical results from our common school work.

A set of drawing books accompany this course, but these two numbers may be used independently and will be found to cover special ground. We shall call attention to following numbers as they appear.

HAND-BOOK OF MUSIC LESSONS, by W. S. Tilden. Publishers, Ginn & Co., Boston. This is a cheap and excellent little work of patterns and directions for teaching pupils of the first year grade. It consists of thirty-eight consecutive steps, the purpose of which is to train the voice and introduce the pupil to a few of the most common musical characters.

CHILDHOOD'S POETRY AND STUDIES IN LIFE, FORM AND COLORS OF NATURE. Emma Marwedel, D. C. Heath & Co., Boston. This book with its charts of form and color, has been favorably endorsed by the "N. A. Froebel Institute," and is an apt illustration of the ability of Froebel's disciples to work out germinal truths, left undeveloped but distinctly suggested, to logical results. Any one who will study the 42 pages will find them full of interest and very helpful in teaching color and the drawing of circular forms. Chart III. in four divisions present shades of colors, analysis of colors, blending of colors and complementary colors. We should like to see this artistic presentation of color not only in the kindergarten but in the nursery and schoolroom. "Sensibility to color is a fair test of art intellect," says Ruskin, and "the man who can see all the greys and reds and purples in a peach, will paint the peach rightly round and rightly altogether."

NOS ENFANTS ET LEURS AMIS; with notes, vocabulary and exercises: published by MacMillan & Co., London and New York. This is one of a primary series of French and German readers, edited by Eugene Fasnacht. There are seven short and interesting stories in this volume, with notes and vocabulary for the translator.

THE EXPERIMENTAL FARMS OF CANADA, being an appendix to the report of the Minister of Agriculture for 1888. This blue book is one of special interest to all interested in the development of agriculture in its widest sense. We have here combined the reports of the Director, Professor

Saunders; of the Chemist, Mr. Shutt; of the Entomologist and Botanist, Mr. James Fletcher; of the Horticulturist, Mr. Hilborn; of the Poultry Manager, Mr. Gilbert; of the Experimental Farms of Nova Scotia, by Mr. Blair; of the North West Territories at Indian Hood, by Mr. MacKay; of Manitoba, at Brandon, by Mr. Bedford. The reports of the Director and the Entomologist will be specially interesting to the scientist as well as to the agriculturist.

GUIDES FOR SCIENCE TEACHING, No. XV., published by D. C. Heath & Co., Boston. This number, containing thirty-six Observation Lessons on Common Minerals, by Henry L. Clapp, of Boston, is admirably adapted for those who would teach successfully the subject of Common Minerals. They are practical, and any teacher who studies this book carefully should arouse a deep interest in classes on this subject.

PUBLICATIONS RECEIVED.

The *Popular Science Monthly* for July contains replies to Huxley, by Rev. Dr. Henry Wace and the Bishop of Peterborough, an illustrated article on Microscopic Fungi, by Prof. McBride. But we cannot specify excellence where all is so good. . . . The *Forum* for July treats of the "Scholar in American Life," by Bishop Potter. "Anti-Darwinian Fallacies," by Romaine. "The Attitude of the French Canadians," by Beaugrand. "Date Theories Concerning Fener," by Dr. Flint. "Organizations of the Discontented," by Hinton. "Domestic Service," by Jennie C. Croly. "The Better Side of Anglo-mania," by Rev. H. Pierce. . . . The *American Naturalist* for February has the usual staple scientific articles, with a remarkably full assortment of notes in the various departments of natural history. . . . *Wide Awake* for July is true to its name. It will keep the old as well as the young quite wide awake until it is all "gone through." . . . *St. Nicholas* for July is good. Among the many the note "How a Battle is Sketched," by Theodore Davis. "Among the Florida Keys," by Holder. "A Narrow Escape," by Planz, etc., etc. . . . The *Microscope* is well filled with general articles and news of microscopic interest—just what the microscopist needs. . . . *Garden and Forest* is as new and as fresh from issue to issue as the landscape of a travelling botanist. . . . The *Scientific American* has no superior in successfully popularizing things scientific. *Le Français*, a monthly review of French, grammar and literature, is published at 21 University Place, New York. It is now in its ninth year, and costs only \$2.00 per annum. . . . The *Budding Novels*, published in New York, No. 2 Spruce Street, at \$1.00 per year, is now in its fourth year. . . . The *Century* of June has a description of the "Convict Mines of Kora," by Kennan. "The Bloodhound," "Early Heroes of Ireland," "Italian Old Masters," "Bird Music," "The Relations of the United States and Canada," "Can the Emperor Forget," "An American Amateur Astronomer," etc., etc., on its list of contents. . . . The *Teacher* (N. Y. City); . . . The *Manitoba Colonist* (Winnipeg, J. A. Curman, publisher); . . . *Waterman's Journal*, Boston, Mass.); . . . The *Pennsylvania School*, (Williamsport, Pa.)

PROVINCIAL EDUCATIONAL ASSOCIATION.

THE Tenth Annual Meeting of the Provincial Educational Association will be held in the Assembly Hall of the Normal School, Truro, on the 10th and 11th July, 1889.

PROGRAMME:

WEDNESDAY, JULY 10TH.

10 a. m. — 12.30 p. m.

Enrolment of Members. Financial Statement

1. *Some Phases of Modern Educational Progress*, by DR. ALLISON, Superintendent of Education.

2. *Educational Obstructions*, by A. MCN. PATTERSON, M. A., of Acadia Villa Seminary.

3. *The Course of Study*, by F. H. EATON, M. A., Prof. of Mathematics, Normal School.

2—5 p. m.

4. *Calisthenic Drill*, by SERGEANT-MAJOR BAILEY.

5. Discussion on *The Course of Study*

6. *Transfer Examinations*, by H. S. FREEMAN, B. A., of Amherst Academy, and A. CAMERON, Esq., of Yarmouth Academy.

8—10 p. m.

7. Public Meeting. *Our Common Schools*, by Hon. D. C. FRASER, M. E. C.

8. An address by the Right Reverend the Lord Bishop of Nova Scotia.

THURSDAY, JULY 11TH.

9.30 a. m. — 12.30 p. m.

I PRIMARY SECTION.

9a. *Kindergarten in the Primary School*, by W. R. CAMPBELL, B. A., Truro Academy, and MRS S. PATTERSON, of Truro.

10a. *Arithmetic in the First and Second Grades*, by MISS N. E. CHURCH, Normal School medalist.

II—COMMON SCHOOL SECTION.

9b. *Language in the Third to Sixth Grades*, by MISS N. A. BURGESS, Windsor

10b. *Duties of Principals*, by F. MCKAY, B. A., New Glasgow High School

III. ACADEMIC SECTION.

9c. *Natural Science in the School*, by PROF. SMITH, Agricultural College, Truro.

10c. *Academic Diplomas*, by GEO MILLER, Esq., Hantsport High School, and N. C. JAMES, B. A., Halifax Academy.

2.30—5 p. m.

11. Balloting for Officers.
12. *Music—Tonic sol-fa*, by REV. JAMES ANDERSON, M. A.
13. *Singing Class*, conducted by Miss W. G. CROWELL, Model School.
14. *Civics*, by Prof. J. F. TUFTS, M. A.
15. Announcement of Officers. Miscellaneous Business

It will be noticed that the subjects selected are of particular interest at the present time, and that they are to be introduced by able and successful educationists. In addition to the special discussion on the course of study there will be opportunity given for a general discussion of all the other subjects. Members of the Association may expect the usual fee or reduced return tickets on the principal lines of travel.

Halifax, 10th June, 1889.

A. MCKAY,
Secretary.

P. S.—I beg to call your attention to the above programme of the Teachers' Convention. A little preliminary reading and study of the subjects coming up for discussion will add very much to the profit and pleasure of the occasion.

Yours very truly,

A. M.

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(2) Virgil, *Æneid*, Book II.

For ordinary matriculation Dalhousie will accept either (1) or (2). In addition to (1) and (2) Acadia will require *Cicero Pro Archia*.

GREEK SUBJECT:

Xenophon, *Anab.* Book IV.

Dalhousie for Munro Exhibitions and Bursaries will require also Xenophon *Anab.* Books V. and VI.

LATIN PROSE COMPOSITION:

Bradley's *Arnold*, Exercises 1-44.

Dalhousie for Munro Exhibitions and Bursaries will also require *Greek Prose Composition* as in Fletcher and Nicholson (A. Baillie, Kingston, Ont.) Exercises 1-28.

FOR 1891 (TO BE USED 1890-91).

LATIN SUBJECTS:

(1) *Cæsar de Bell. Gall.*, Books IV. and V.

(2) Virgil, *Æneid*, Books II.

For ordinary matriculation Dalhousie will accept either (1) or (2). In addition to (1) and (2) Acadia will require *Cicero Pro Archia*.

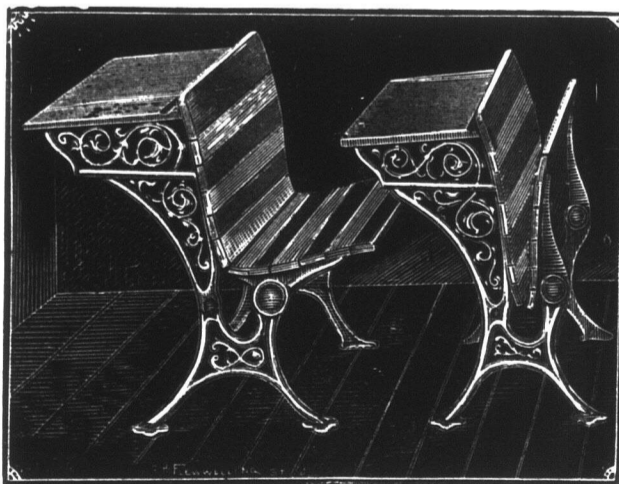
GREEK SUBJECT:

Xen. *Anab.* Book V.

Dalhousie for Munro Exhibitions and Bursaries will require also Xen. *Anab.*, Books VI. and VII.

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The Calendar for the Session of 1889-90 contains information respecting conditions of Entrance, Course of Study, Degrees, etc., in the several Faculties and Departments of the University, as follows:—

FACULTY OF ARTS—Opening Sept. 16th, 1889.
DONALDA SPECIAL COURSE FOR WOMEN—(Sept. 16th).
FACULTY OF APPLIED SCIENCE—Civil Engineering, Mechanical Engineering, Mining Engineering, and Practical Chemistry. (Sept. 16th).

FACULTY OF MEDICINE—(Oct. 1st).
FACULTY OF LAW—(Oct. 1st).
McGILL NORMAL SCHOOL—(Sept. 2nd).

Copies of the Calendar may be obtained on application to the undersigned.
The complete Calendar, with University Lists, Examination Papers, &c., will shortly appear, and may also be had of the undersigned.

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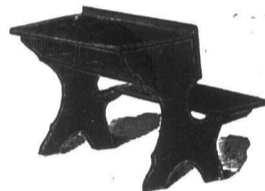
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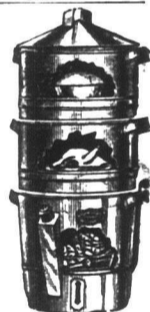
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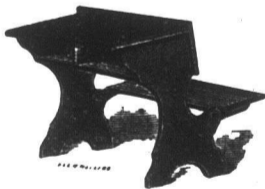
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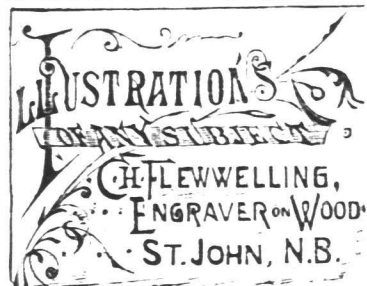
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