

# THE EDUCATIONAL REVIEW.

FOR THE ATLANTIC PROVINCES OF CANADA.

VOL. III.

SAINT JOHN, N. B., NOVEMBER, 1889.

No. 6.

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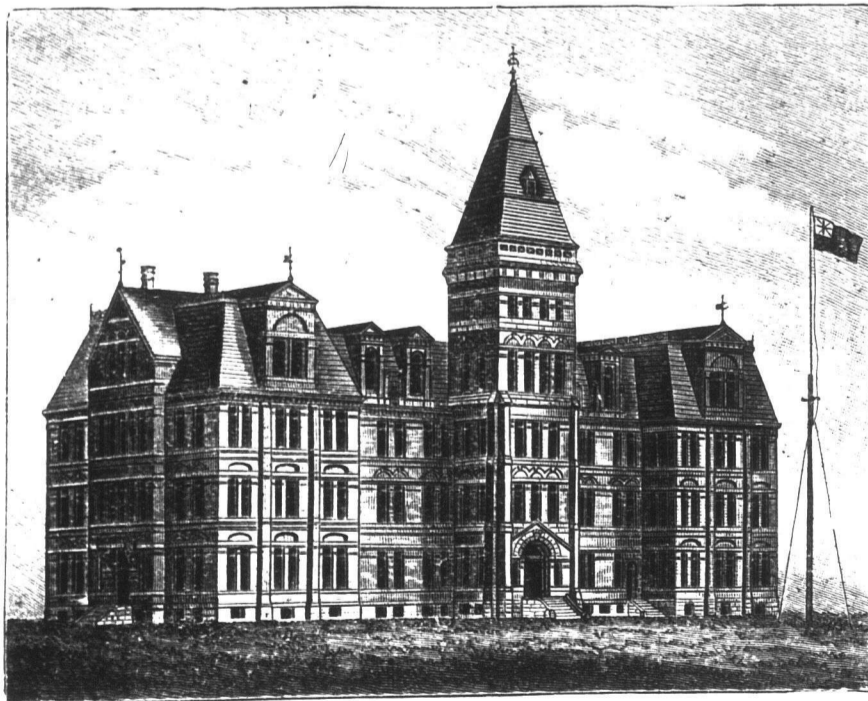
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# The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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## EDITORIAL NOTES.

MCGILL UNIVERSITY, Montreal, has created a new Faculty of Veterinary Science and Comparative Medicine. The course will be a three years' one, and, though less requirements for entrance will be demanded, the course of training will be quite equal to that required for the degree of M. D., and the degree of Doctor of Veterinary Science, D. V. S., will be granted at its close.

THE new course in Civil Engineering in the University of New Brunswick, which is outlined in another column, will commend itself to all who favor a practical turn to higher education. Prof. Strong, who is at the head of this department, is well fitted by talents and previous training to do pioneer work; and the University, while thus meeting the requirements of a practical education, will increase its list of students and send out in the future graduates more fully equipped in the useful arts.

THE sudden death of Rev. David Honeyman, D.C.L., F. R. S. C., F. S. Sc., (London.) by apoplexy at Halifax, in the midst of energetic scientific work, is

a great loss to those provinces. Very few men have done and published more valuable scientific works, especially in the geological department. And a great deal of information was being rapidly put into form for publication, when he was called from the midst of his labors.

COUNTY INSTITUTES were held in Northumberland, Albert and Westmorland in October. York County Teachers' Institute will be held in Fredericton on Thursday and Friday, December 19th and 20th. Each member of the institute is requested to send to the secretary, on or before December 1st, unsigned answers to the following questions, summary of which will be submitted at one of the sessions, no single answer to exceed ten lines in length: 1. How do you train your pupils in morals and manners? 2. How do you open and close your schools? 3. Do you use detention after school for a punishment? 4. To what extent do you assign home lessons, and how do you deal with pupils who do not prepare them? 5. What are you doing to make yourself a better teacher.

DR. FITCH, of London, who made an extensive tour in Canada and the United States in the summer of 1888, recently referred as follows to the schools of Great Britain:

"Englishmen have one habit in which they indulge far more than any other people I know—that of disparaging their own institutions and constantly complaining that in other lands schools are better than in our own. For my part I don't believe it. I have seen many schools on the continent of Europe and in America, and I believe that for accuracy and solidity in acquirement, for mental activity, and for interest in their work, the scholars in the best of our English elementary schools would hold their own, and compare most favorably, age for age, with the scholars in the best schools I have ever visited; while for the general maintenance of a good standard of primary instruction in the remotest and least favored districts in the country, there is scarcely any country known to me—certainly not the United States—which possesses equally efficient provision. Still, there is much room for improvement, and there are many details on which we may learn much from foreign systems."

THE Provincial School of Agriculture of Nova Scotia closed a prosperous session the last of October. The Director of the school, Prof. Smith, gave some very interesting details of the work during the past year: The farm in connection with the school had about paid working expenses. He spoke in high

terms of the enthusiasm with which the students entered into the work. The students took charge of different departments in rotation, and towards graduation they were given charge of the whole farm.

Prof. Smith has worked in the face of difficulties for some years to establish the school of agriculture on a firm basis, and we congratulate him on the success of his efforts. That his success will be still more marked in the near future is very evident when his energy and the entire confidence he has in the importance of the work are taken into account.

IN a recent issue of the *Auk*, the ornithological journal of America, interesting notes of a trip through the Bestigouche Valley are given by Messrs: John Brittain, of the Normal School, Fredericton, and Philip Cox, Jr., of the Newcastle High School. The following description of the river valley is given:

"The greater part of the valley is in about latitude 48° N. The country is undulating, in some places mountainous, and almost an unbroken forest. Winter is very severe, snow falls to a great depth and lingers until May, while chilly east winds, from the Bay Gulf, make spring late and cold. Summer, however, is warm, except near the sea, where it is tempered by cool breezes; yet the nights, even in July, and far up the valley, are occasionally frosty and cold enough to form ice."

The following notes in regard to rare birds visiting the Province will prove of interest to ornithologists:

The *Pipilo maculatus* pine grosbeak, has been regarded as an exceedingly rare summer resident, some ornithologists even doubting that it nests within the limits of the Province. At nearly every camping ground, however, and at other points, we either saw or heard it, and a few miles below the mouth of the Kedgwick found a nest containing one egg and three young. The nest was placed in a crevice of a rock, under a projecting shelf, and was partly concealed by weeds. The location was a cool one, for it was within a few feet of the water, on moist rock, and well protected from the sun's rays.

The *Sporus pinus* pine finch, has heretofore been regarded as only a casual summer resident, but we found it quite common, especially about lumber camps and anglers' quarters, where flocks of ten to fifteen were often seen. It is very tame

#### ONTARIO AHEAD.

The following extracts from a report of the recent changes in the Ontario school system are so much in line with the drift of thought in the discussion at the Nova Scotia Provincial Association meeting a few months ago, on the matter of assimilating the non-professional requirements of our various grades of teachers' certificates with the High School curriculum, that we cannot do a better service than to quote them.

**TEACHERS' CERTIFICATES.**—The examination subjects for Third Class are those now prescribed for the Primary examination; for Second Class, those now prescribed for the Junior Leaving examination; and for First Class Certificates, those now prescribed for the Senior Leaving examination.

Graduation in Arts, after a regular course in any chartered University in the British Dominion, will now be accepted as the equivalent of First Class Certificate non-professional.

The *Northwestern Journal* of Toronto, commenting on this change, in a recent issue, says:

As will be seen by the report, on another page, of the annual meeting of the Ontario Teachers' Association, the proposal to establish a system of "Leaving" Examinations at the termination of the high school courses, has been approved by the high school masters, and endorsed by the Minister of Education. By the way, cannot a better descriptive title be found for these examinations? The change is in the right direction, and we are glad it seems likely to be brought about with general consent.

The scheme outlined by the high school masters includes, if we understand it, three distinct grades of examination papers, corresponding to which three grades of certificates are to be awarded, equivalent respectively to the present Third Class, Second Class and First Class C Certificates. The details of the scheme are given elsewhere. Whether it will involve a discontinuance of the present system, by which the Junior Matriculation Pass and Honor examination papers are used for Second and First C examinations, respectively, whether, on the other hand, these papers will be adopted for the Junior and Senior High School examinations, or finally, whether the university authorities will decide to accept the certificates awarded at the "Leaving" examinations, *pro tanto*, in lieu of their own matriculation examinations, remains to be seen. As the plan now about to be adopted was advocated by the Principal and Professors of Queen's University, the High School certificates will almost certainly be accepted by that institution. Victoria and Trinity have also, it is understood, expressed themselves as in favor of uniform examinations, and will it may reasonably be inferred, accept these as embodying that principle. We confidently assume, of course, that the examiners to be appointed will be chosen on some system that will commend itself to the universities, and inspire general confidence. McMaster has already virtually settled the question, so far as her Arts Department is concerned, by deciding to accept the certificate of the headmaster of any high school or collegiate institute that a given student has satisfactorily completed certain subjects, in lieu of a matriculation examination in those subjects.

We may reasonably hope that the change will prove beneficial to the high schools, and to secondary education in the province. In order to effect this in the highest degree, it is, in our opinion, extremely desirable that the courses and examinations shall be so conducted as to remove, as far as possible, the impression that the one great end and aim of the secondary schools is to prepare students for the universities, and for the teaching and other learned professions. Some of the high school principals, we are glad to see, clearly recognize the desirability of this, though the proposal to make the projected examinations correspond with the requirements of the present teachers' examinations, suggests the opposite idea. The certificates to be awarded should, in each case, represent an educational course more or less complete in itself, and thus suited as a preparation for any occupation or industry. In a word, the high school graduate we do not like that word in this connection, but cannot recall a better, should, even if unable to pursue his studies farther, go forth into the community as a well educated and intelligent man or woman; one whose faculties, perception, rational and moral, have been thoroughly trained, and who is therefore, well prepared for the duties and responsibilities of citizenship in a free, self-ruling state.

**PRIMARY EDUCATION.**

Before primary education attracted the interest and attention of teachers and of the department in charge of public education the little ones in too many cases received but scant justice. Sometimes they enjoyed a share of the teacher's time, but more frequently they were handed over to the older pupils. Pressure of work in the other classes and, perhaps, want of sympathy, precluded the teacher from devoting to them that care and consideration which was their due. Special lessons on the phenomena by which they were surrounded were not dreamed of, far less the pleasant means by which the tedium and irksomeness of school-time are mitigated to the youngest pupils in our modern schools. Monotonous reading and spelling constituted to them the business of the day. In the whole procedure there was nothing to awaken the interest, stimulate the power of observation, or brighten the heart—nothing but the dull mechanical effort to overcome the difficulties of pronunciation and master the perplexing forms of words.

Much has been done in recent years to secure adequate provision for primary instruction. In country districts, where it is necessary, the primary department has its own teacher, and in towns elaborate arrangements are made to meet the demands of a larger population. Children are assembled in infant schools, and are thus, when the mind is very impressionable, brought under the influence of men or women qualified to impart such instruction as is best adapted to their years. And here, at this early age, the work of education begins, and the pupil takes the first step in that course which is intended to prepare him for the duties of life.

The age at which children enter the infant department and are passed on through the other primary grades necessitates work of the simplest kind. We must not, however, be regarded as suggesting the inference that on this account the duties of the infant teacher are light and easily performed. Far from it. Every good teacher cannot successfully overcome the difficulties of such a situation. Special appliances are necessary, and rare gifts in the teacher to enable her to employ them to the best advantage. She must be possessed of tact and judgment to guide her unerringly in the treatment of the children, and of an affectionate disposition to win their confidence and secure their love. She must have a good constitution, be cheerful, patient and active in body and mind, ready of resource and orderly in habits. It is, moreover, indispensable that she be a musician, that she be of good manners, speak with accuracy and distinct-

ness, and be endowed with the faculty of presenting her lessons with vigor and picturesqueness. Where the teacher to whom is entrusted the initiation of the pupils in the earliest rudiments of education is so gifted the school-room becomes a place to which the children repair with pleasure, where the seeds of right principle are sown and the foundation of good habits laid, and the further advancement of the pupils from grade to grade is simplified and rendered satisfactory.

When a teacher exhibits a special talent for primary work she ought to be encouraged to devote herself to it. The habit of promoting teachers to a higher department simply because they have acquitted themselves well in the lower is not always accompanied by good results. The qualities and accomplishments requisite in a primary teacher are not necessarily those which ought to distinguish the teacher in the higher grades. It not unfrequently happens that a good primary teacher is lost by such promotion and her position assumed by one who would be a successful teacher of an advanced class. We would therefore desire to see the teacher of the primary department estimated by the quality of the work she performs, and paid a salary proportionate to its excellence and her period of service. Were this done she would be more willing to remain in that position and unreservedly devote her energies to the perfecting of her methods, while her pupils would reap the benefits to be derived from her deeper acquaintance with the nature of children, greater expertness in their management, and a more discriminating knowledge of their capacity.

Much of the early disinclination to attend school, which used to be observed in children, was doubtless attributed to the bald and uninteresting exercises which occupied their time. Now, happily, this no longer exists or does so only where reasonable efforts are not put forth to devise means by which pleasure may be communicated as well as instruction. Teachers have at last acknowledged by the methods which they have adopted that the age of the children necessitates amusement rather than serious work. They must, undoubtedly, be taught to read and spell and use the slate-pencil, but the lessons ought to be short, and varied by marching, singing, or other exercises in which they take delight. By guarding against the mistake of prolonging any part of the programme until it becomes wearisome, the children continue bright, receptive and happy throughout, and are soon led to regard the school-room with some degree of affection, and the recurrence of school-time with satisfaction if not with pleasure. And this is no trivial gain. It will smooth the way for the child in

the future and secure for it one of the first conditions of success.

But this is not all. The skilful teacher can by short lessons on common things excite curiosity respecting surrounding objects. Trees, rocks, ice, snow, rain, domestic animals, etc., will be beheld with more intelligent eyes and the mind prepared for the explanation of simple natural processes which may be attempted even before the children leave the primary department. And it is remarkable how much useful information may be conveyed in this way and how long the impression then made on the mind will continue. Lessons communicated with spirit and force, and with a certain grace of attractiveness to children at this age, often cling to the memory in after life when the more pretentious dissertations of a later period pass from it and leave not a trace behind. The training of the child to attend to and remember what it hears is undoubtedly one of the most important of all the functions of the teacher. The sooner the habit is acquired the better for the child, and the earlier the discipline is begun excellence will more probably be reached and that by a method natural, continuous and pleasurable.

In this way, too, valuable moral instruction may be imparted. A well told story will produce a more powerful and lasting effect than much discoursing on morals. The narrative is remembered, and, if it be carefully constructed, the incidents can rarely be recalled without the lesson which they were intended to convey.

A primary school conducted in this way becomes a most important link in the educational chain. It prepares the child for more advanced work, it conciliates his good will for school, it educates his faculties of attention and observation, and provides him with a good foundation in morals and discipline. And the teacher who accomplishes this task with success discharges a duty requiring much delicacy, tact and judgment.

I do not, however, by any means maintain, that under these more favorable conditions, the Normal School should do nothing to advance the scholarship of its students. On the contrary, without at all obstructing its technical work, it should both directly and indirectly exert such influence as will greatly promote higher attainments in general knowledge. In my opinion, however, as regards the subjects included under the term "general scholarship," there are two leading ends which the Normal School should propose for itself:—1st. It should review the various subjects of the common school course; 2nd. It should awaken in the students a scholarly spirit.—*Principal Colkin.*

#### THE ECONOMIC MOLLUSCA OF ACADIA.

Mr. W. F. Ganong's treatise, to which we previously alluded as something to be expected and much to be desired, has duly come to hand in the shape of a neatly bound volume of 116 pages. The author has put together in these pages, in a popular way, but with remarkable conciseness and yet with fulness, what is known of the shell-fish of these Atlantic provinces, which are of the most interest to the masses. For the scientific specialist he also gives references to papers bearing on the subject. Thirty species are described and many are figured in excellent cuts which will enable the most unscientific fisherman to identify and name his specimen. This work will not only prove valuable to the teacher who is commencing the practical study of our mollusca, but to the teacher who is in search of interesting, nay striking materials for object lessons, and to every dweller by the sea. We note some points at random, to illustrate the character of the popular information given.

Squid is worth \$4.00 a barrel, and \$124,000 worth were taken for bait in the Atlantic provinces in 1887.

The edible whelk is figured and its habits described. It is a real luxury. One sandy flat in Great Britain, in Whitstable Bay, yields \$60,000 worth annually; and another, the Great Grimsby fishery, is valued annually at about \$100,000. What can Maritime Canadians do?

The dog-periwinkle so abundant on our shores is a member of the group which produced the famous Tyrian purple, so valuable that in the reign of Augustus one pound of wool dyed by it was sold for the equivalent of \$150 of our money. Our dog or purple periwinkle will give a fine unchangeable crimson.

Our common periwinkle is the same species sold in London to the extent of more than 2,500 tons, worth \$75,000 annually. The average selling price is a penny a pint. In France pins are placed beside the plates of diners for extricating the boiled mollusc from its shell. They sell at St. John for about \$2.00 per bushel, and in Halifax for 5 or 6 cents per quart.

A very full account of the oyster is given. They are worth \$13,000,000 annually to the United States.

At \$3.00 a barrel the product of the Atlantic provinces of Canada is over \$180,000 annually.

The scallop is worth \$29,000 annually to the United States. In these provinces they are worth fifty cents per dozen.

The edible mussel is useful for bait, for food, as a fertilizer (mussel mud) and for ornaments. In 1873 about \$1,400,000 worth was exported from Antwerp

to Paris. Price in Halifax market fifty to sixty cents per bushel.

The fresh water mussel, so common in many of our larger streams, is a pearl bearer. A 56-grain pearl found in a brook near Sussex, Kings County, New Brunswick, was sold to parties in Philadelphia for \$450. A 25-grain one found at Coldbrook sold for \$150. A 19-grain one found at the same place sold for \$150. At Little New River an 18-grain one was found which sold for \$110. Several other accounts of pearls from Nova Scotia and New Brunswick selling from \$30 to \$100 are given.

But we have no space to proceed further. If our people thought that there might be little fortunes of from \$100 to \$400 held between the valves of a fresh water clam or mussel in the brook or river running near their houses, the natural history of the ignored bivalve would soon become a popular if not a profitable study.

Mr. Ganong is doing good work in putting together in such accessible form what is known of the natural history of our country. His position at present in Harvard gives him access to much information not attainable were he at home. In a previous paper he did good service in collecting and systematizing what was known of our echinodermata.

His present valuable work may be procured in the Bulletin of the Society of Natural History of New Brunswick, which can be had from Barnes & Co., publishers, St. John, for fifty cents. It will shortly be issued bound in cloth, of which we shall give due notice.

#### ENGLISH GRAMMAR.

How is English grammar taught in our schools, and is it yielding results commensurate with the time and energy expended upon it? Not long since, says Prof. Ladd, in the *Journal of Pedagogy*, an educated man made the attempt to assist his son in the preparation of the daily lesson in English grammar. For some time the boy, who was twelve years of age, and nearly ready for the high school, had been settling into a condition of despair over this particular study. Meanwhile the boy's use of the English language had been, under the influence of the public school, steadily deteriorating. After rummaging a big text-book for more than an hour, the father succeeded in discovering among the so-called "exceptions" what he considered the probably correct answers to most of the questions composing the lesson of the following day. These questions were afterward taken to a distinguished scholar, a student and teacher of language and philology. He could

not answer them in any terms which would have satisfied the teacher of the boy or the author of the text-book on grammar. They were then shown to the very highest authority on such subjects to be found in this country, to a gentleman whose attainments in the science of language are celebrated by the world of scholars. His answer to these questions was a strain of unmixed invective against teacher, text-book, and school system which could tolerate such wasteful folly in instruction.

#### THOSE GERMANS.

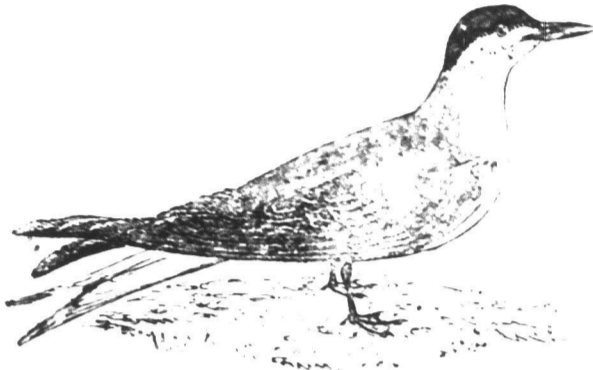
The Twenty-eighth Congress of German teachers was held at Augsburg. Here are the subjects discussed: 1. Modern Education. 2. The Urgency of an Orthographical Reform for the German Language. 3. School Reform. 4. Should Manual Training figure in the Programme of Primary Schools? 5. What can the School do to Advance the Solution of the Social Problem? 6. What Extension Should the Popular School Assume in Germany.—*L'Enseignement Primaire*.

We can understand reasons for such subjects being on the programme with, perhaps, the exception of No. 2. German orthography might be nearly called perfect when compared with the partly phonetic, partly hieroglyphic combinations of English letters. Yet on April 1, 1880, by ministerial decree, certain changes proposed by the "Society for Simplified German," such as the omission of silent *h* after *t*, writing single letters for double ones in certain words, using *f* for *ph*, etc., were made obligatory in text-books for the elementary schools of Prussia, and from April 1, 1885, in the secondary schools also. Most of the other German states, as well as the Austrian government, adopted the same rules. What more can they want, unless it is to discard their eye-torturing alphabet for the Roman?

"THE school of the future must do more than we have done hitherto in the direction of mental development—must furnish better training for the hand and for the senses; must do more for the cultivation of taste and the love of the beautiful; must kindle in children a stronger appetite for reading and personal cultivation; and at the same time bring them into a closer contact with the facts of life, and with the world of realities as well as the world of books. And the public will look to you, and to such as you, to fulfil this ideal. There are many grave problems in education which remain unsolved, and which yet await speedy solution, and the answers will depend largely on the degree in which the experience and judgment of our ablest teachers are brought to bear upon them. We are yet only at the beginnings of a true science of education. Many of the deepest principles and laws of that science have yet to be discovered. It is in the laboratory of the schoolroom, and in a closer study of child-nature by teachers, that the most fruitful discoveries will be made."—*Dr. Fitch*.

## FERNDALE SCHOOL.

No. XXVII.—A LONG WINGED SWIMMER.

THE COMMON TERN. (*Sterna hirundo*, Linn., No. 70, A. O. U.)

Between two seas the sea-bird's wing makes halt,  
Wind-weary; while with lifting head he waits  
For breath to re-inspire him from the gates  
That open still toward sunshine on the vault  
High-domed of morning.

SWINBURNE—*Says of the Sea-birds.*

T. Let us examine this most common of our sea-birds. Is its hind toe connected by a web with the other toes?

S. No; therefore it is not one of the full-web-toed swimmers.

T. Correct. Are its nostrils tubular?

S. No; therefore it is not one of the tube-nosed swimmers.

T. Right again. Are the cutting edges of the bill fringed or finely toothed?

S. No; therefore it is not one of the lamel-billed swimmers or geese.

T. Very good. You clearly remember our previous lessons. Are its legs so far behind that the bird, when standing, is nearly erect as if its feet were placed near the rump?

S. No. It stands horizontally on its feet, which appear to be placed near the middle of its body. What are the rump-footed swimmers called?

T. Very good. The Greek word for "rump-footed" birds is "*pygopodes*." We have called them the diving swimmers, from their expertness in diving. Is our specimen a diver?

S. No. It is not one of the *pygopodes*, judging from the manner in which it stands.

T. Correct. You will notice that its front toes are distinctly webbed showing that it must be a —

S. Lover of the water.

T. Very good; and its tail is longer than its legs (tarsus) and its wings are also —

S. Long.

T. So from two Latin words meaning "long feathered" we get the scientific name of the order *Longipennes*, which may be translated —

S. Long-winged.

T. The long wings and webbed toes of this order of birds fits them for —

S. Flying over long stretches of water.

T. What birds have you observed to be nearly continuously flying over the water by the sea shore.

S. Gulls, Terns, Jaegers.

T. Very good. About twenty different species of this order have been observed in the Atlantic Provinces. The Skuas and Jaegers have three distinct coverings on the hard bill, a terminal hook, a side piece, and another on the ridge of the bill nearly overhanging the nostrils.

S. Our specimen has not these, and must therefore be a Gull or a Tern.

T. Correct. Gulls have their bills thicker at the angle than at the nostrils and their bills are generally more or less curved.

S. This must be a Tern then, because its bill looks thicker at the middle and it is pretty straight. The tail is deeply forked.

T. You are right. Seven Terns have been reported in these provinces; but this one and the Arctic Tern are the only common ones to our provinces. Note the principal points of description in our specimen.

The mantle is —

S. Bluish gray.

T. The tail —

S. Chiefly white.

T. Top of the head —

S. Black (in summer).

T. Is the outer tail feather entirely white?

S. No. The inner web of the feather is entirely white and the outer web quite dusky.

T. Correct. The *Roseate Tern*, seen in Nova Scotia, has both webs of the outer tail feathers white. Our common Tern has a bright vermilion-red color bill, blackish at the tip, and the feet a vermilion-orange. The Arctic Tern has the color a deep carmine red.

T. How long is our specimen?

S. Fourteen or fifteen inches.

T. Length of wing —

S. Ten to eleven inches.

T. Tail —

S. Six inches. Fork, three and a half inches deep.

T. Its nest is usually a depression in the sand. Its eggs, two, three or four, are about one and a half inch by one and one-sixth inch, olive-buff or olive-brownish, blotched with dark brown or blackish, scarcely distinguishable from those of the Arctic Tern, and more or less singular to those of the Roseate Tern.

S. What is its name?

T. *Sterna hirundo*. The specific name is the Latin for swallows. It is often called the sea swallow.



### The Crayfish in the Atlantic Provinces.

The only species of Crayfish, or "fresh-water lobster," at present known to occur in the waters of Eastern Canada is *CAMBARUS BARTONII*, (Fabr.) Gir., formerly called *ASTACUS BARTONII*. It was first reported, so far as we know, by Dr. Bell, of the Canadian Geological Survey, who found it, prior to 1859, abundant in the Metapedia, Restigouche and Metis Rivers. He tells us also (*Canadian Naturalist*, IV., 1859, p. 210) that he found a specimen in the Quiatchouan, a river flowing into Lake St. John in Quebec. In 1865, Professor Hind (*Preliminary Report on the Geology of New Brunswick*) reported its presence in the Upsalquitch,\* a branch of the Restigouche. We have found no other references to its occurrence in our waters until the appearance of Dr. Faxon's splendid monograph of this group, the *Revision of the Astacidae* (Cambridge, Mass., 1885) in which, in the Dominion of Canada, it is reported from St. John, N. B., from the Aroostook Valley, and doubtfully from Montreal. But in 1887, a short article appeared in the *Bulletin of the Natural History Society of New Brunswick*, No. VI. (p. 74), in which attention was drawn to its occurrence in the St. John River and its tributaries, and additional testimony given as to its presence in the Restigouche and branches, and also in the Miramichi. It was predicted that it would be found also in the Nipisiguit and St. Croix.

Since that paper was published but few additional facts have come to light, and it is to call the attention of the readers of the REVIEW to this interesting question, and to ask their co-operation, that the present notes are written. Its presence in the Metis and Restigouche has been confirmed by Mr. J. W. Bailey and Mr. Philip Cox respectively, though the latter has not seen it in his trips on the Miramichi. The present writer has looked for it in vain in the St. Croix, and he cannot find that any one has seen it in the Nipisiguit, nor in fact in any rivers or streams, other than the above-mentioned, in the Eastern Provinces.

In explanation of the occurrence of this crayfish in branches of Lake St. John, Quebec, it may be suggested that it will probably be found widely distributed in the waters between that place and Montreal.

It is probable that it has spread into Eastern Canada, south of the River St. Lawrence, in late

\*He mentions a Micmac belief concerning this animal that is of considerable interest. "In walking up this stream I observed one of the Micmac Indians take a little crawfish and place it carefully on the bank, about two feet above the then level of the water. On enquiry, he stated that his object was to 'get a freshet' so that we might go down the Nipisiguit without difficulty. 'The little crab would bring it, and make the water rise just as high as he pleased.' He remarked that this was an old Micmac superstition, 'and a very good one.'" (p. 130).

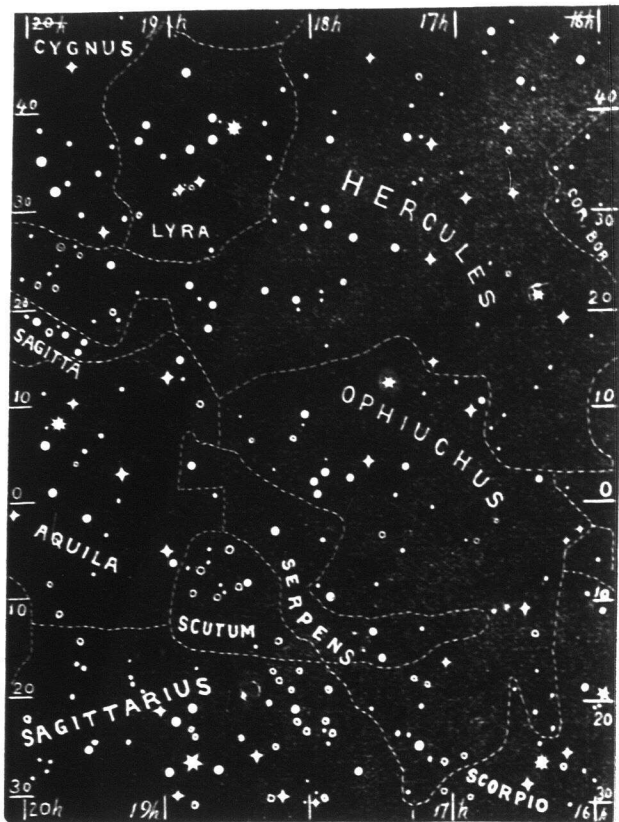
post-pleiocene times, by way of the head-waters of the Kennebec, Penobscot and St. John. Not only do the waters of the two latter rivers very closely approach each other at more than one point, but in Telos Lake and Webster Pond\* they actually mingle; and there is also a close approximation of Penobscot and Kennebec waters. These animals can easily pass the low and swampy portages and perhaps even high and dry ones of not too great a length, and hence doubtless it is that they have spread into the Restigouche, via Grand River, and into the Miramichi by way of the Beccaguimec, Shiktehawk or Nashwaak, or perhaps through branches of the Tobique. It probably reached the Metis by way of the Patapedia, the head waters of these two streams closely interlocking. We should expect to find it also in the Nipisiguit, the Richibucto, the St. Croix and other streams connected by easy portages with the branches of the St. John. But as it cannot live in salt water, we do not expect to find it in Nova Scotia or Prince Edward Island. Its most northern point, then, so far as known, is the Metis, and its most easterly the Miramichi. Will any reader of the REVIEW, who can learn of its occurrence in either of the latter Provinces, or at any new localities in New Brunswick, kindly communicate the fact to the editors?

The Crayfish cannot be mistaken for any other animal. It lives in fresh water only, and is the exact picture of a small lobster. It grows to a length of about three or four inches, and is of a dark ashy-brown color. It forms burrows in alluvial lands. This species is not used for food, though some southern and western species are of considerable value for this purpose. On the other hand, it may do considerable damage to meadows where it is abundant, its burrows loosening the soil and making it more easily washed away. It is also called "Crawfish."

While we have probably but a single species, it is not impossible there may be more, particularly if they should be discovered in Nova Scotia or Prince Edward Island. The editors would be very thankful for specimens from any locality, which will at once be placed in the hands of a specialist for exact determination. They may either be preserved in alcohol, or by placing them in alcohol over night and then subjecting them to gentle heat over a stove until dry. The latter way does not give as good specimens for determination as the former, but they can be more readily sent by mail.

It is such questions as this that our teachers can profitably bring to the notice of their pupils. To ask their assistance in a definite inquiry of this sort about animals which may live in their own brooks, must have some effect in stimulating powers of observation. We propose, in future numbers of the REVIEW to call attention to other problems of a similar nature, which may be utilized in the same way.

\*Thoreau, *Maine Woods*, pp. 36, 250.



#### THE HEAVENLY HARP.

To know the constellations and the principal objects of interest in them, all the help that is really needed is a star-map. With that and a few hours study on a few clear evenings one can easily get such a general knowledge of the geography of the heavens as will add largely to his general stock of pleasure and will enable him to read books and articles on astronomical subjects with more intelligence and far more enjoyment.

Many of the readers of the REVIEW have already scraped an acquaintance of this sort with our celestial neighbors, and we hope many more will be helped to do the same by the maps which we begin again to publish in this issue. If something better than our maps is wanted, a good star-atlas is easy to get and does not cost much. Proctor's smaller one costs five shillings, and the English edition of Klein's seven and sixpence—the New York edition costs \$2.50. Larger and fuller ones are better, of course—and cost more—but these are quite sufficiently good for all the purposes of the amateur star-gazer.

Some of our readers would probably like to know a little more about some of the stars than can be gathered from looking at them on a map or in the sky. To supply a supposed want of this kind, and at the same time to put our readers in the way of

making a small collection of some of the most interesting of all the sorts of celestial objects within the reach of the naked eye or of such a small glass—spy, opera, marine or field—as almost everybody nowadays can buy or borrow; with these objects in view we propose to publish from time to time a series of articles of which the following one on Lyra is the first, and the general character of which will probably be pretty much like it.

Lyra is only a small constellation, but it is interesting in several ways. The lyre painted over it on celestial globes is Orpheus' or Apollo's or Mercury's or Jubal's or somebody else's. That's an interesting thing to those who take an interest in such things. Then the constellation contains one of the brightest stars in the heavens, a star which, in the dim and distant future, will be the pole star. It contains also one of the most famous double stars, one of the most remarkable variable stars, and one of the most curious nebulas.

For naked eye and small glass observation the chief objects of interest are Alpha, Beta, Gamma, Delta, Epsilon and Zeta. On our map Alpha is the eight-point star, Beta and Gamma the four-point ones. Beta on the right, Epsilon and Zeta are the two to the left of Alpha, Epsilon the upper one. Delta is next left of Zeta. Between Beta and Gamma is 57 Messier, an annular nebula. Left of Delta is Iota, above that Theta, and then Eta. At the top is R. To the right of Alpha is Mu, below Mu is Kappa. The one above Mu and the one at the bottom I don't know. Ditto for the one at the lower left boundary line, unless it is meant for 56 Messier.

In our latitude Lyra is above the horizon for nineteen hours out of the twenty-four. Therefore at any given hour—say 9 p. m. it may be seen somewhere in the sky on every night for about nine months in the year. (Weather permitting, of course—this is always understood in such matters.) It rises at 9 p. m. towards the end of March, and sets at 9 p. m. at the beginning of January. If 9 or thereabout is your star-gazing hour you will know from this in what months to look for Lyra, and whether to look towards the north-east, the zenith, or the north-west. In November evenings it will be coming down from the zenith towards the north-west. If you do your star-gazing at odd times anywhere between sunset and midnight, you may pay your respects to Lyra on every night in the year, for it rises at midnight on the 1st of February and sets with the sun on the 1st of March. Early in February you may see it set in the north-west after sunset and rise again in the north-east about midnight.

Its principal star—what astronomers call its *lucida*—is one of the four brightest stars that we ever see. There is no other one nearly as bright anywhere near it, and there are two small ones quite close to it making an equilateral triangle with it. This makes it a very easy object to distinguish. Its constellation name is Alpha Lyrae, but it is sometimes called simply Lyra. It is one of the few stars which still keeps its old Arabic name. This is sometimes written Vega and sometimes Wega.

Vega is first magnitude and more. That is, it is brighter than the average first magnitude star; twice as bright in fact, and so its magnitude is properly 0.2 instead of 1. (If that “and so” bothers you drop us a card; and so with any other botheration you find in these articles.)

During November there are two average first magnitude stars in sight, with which you may compare Vega; and there is another one above the average. Whether this one or Vega is the brighter you will have to settle for yourselves. And while you are at it, you may as well settle also what the colors of the four are. On this matter astronomers seem to be quite well agreed, but amateur star-gazers are not. The four are Vega, Altair, Aldebaran, and Capella.

Take a celestial globe or a suitable star-map and find the position of the pole of the ecliptic. It is on the XVIII. hour line of right ascension and about  $23\frac{1}{2}^{\circ}$  from the north pole. With this point as centre and its distance from the north pole as radius describe a circle. This circle is the path in which the north pole of the equator is moving around the north pole of the ecliptic. At present the former north pole—the north pole of ordinary speech—is near what we call the pole star, Alpha Ursæ Minoris. That is the pole star now, has been so for a long time, and will be so for a long time to come. But it has not always been so, and it will not always be so. Run your eye along the circle towards Draco, and you will find that the curve passes very near Alpha of that constellation. That was the pole star when the Pyramid of Cheops was built. Run round still farther, and you will pass near Vega. That's where the north pole was about 14,000 years ago, and where it will be again about 12,000 years hence. And then Vega will be the pole star.

And what a grand pole star it will make! More than five times as bright as our present one, which is only second magnitude. And perhaps by that time Vega will be far brighter than it is now, for it lies in that quarter of the heavens towards which the solar system is moving. But on the other hand, perhaps it will be far fainter than it is now, for there are lots of things about the stars that we know

nothing about. Perhaps, indeed, it will have ceased to exist before then. Perhaps it has ceased to exist now, for the light by which we now see it started on its journey to us about the time that the Prussians and Austrians were fighting at Sadowa.

That's its distance in light-years according to the latest determinations of its parallax. One of the early determinations brought out a negative parallax. According to that, Vega must have been, as was said at the time, “somewhere on the other side of nowhere.”

One more item about Vega. Taking its brightness and its distance, and doing a little figuring with them, you will find that if it was as near us as the sun is it would give us *seventy* times as much light as he gives; and, if the sun was as far from us as Vega is, he would be only a fourth magnitude star to us.

Now go out and look at Vega, and think of these things as you look.

Then take a good look at the two small stars forming the triangle with Vega. One is Epsilon and the other is Zeta. If the night is dark, and the sky is clear, and Lyra is well up from the horizon, and if moon or street or window-light don't interfere, you should see one of the two not as a mere point of light but a slightly elongated streak. That one is Epsilon. If your eye is very good you may see it split into two stars. If not, point your glass at it and you will easily double it. It is a pair of fifth magnitude stars—a very close pair to the best eye, but a very easy pair to the poorest glass. With a good telescope of three-inch aperture or more each member of the pair is doubled. So Epsilon-Lyrae is doubly double, and as it is the best known of this kind it is called the Double-Double Star.

The two members of a pair may or may not be physically connected. If not, if they seem double simply because they lie nearly in the same direction from us, they are said to be *optically* double. If there is some physical connection between them as between the sun and the earth, if one revolves around the other, or both around a common centre, then they are *physically* double, and the pair is called a binary star. Each component of Epsilon Lyrae is a binary with periods of about 300 and 500 years, and the two components form a grand compound binary with a period of probably many thousands of years.

Zeta is also double but not so easy to split as Epsilon. Epsilon's components are  $3\frac{1}{2}$  minutes of arc apart, Zeta's only three-quarters of a minute. But a good field glass will show the two when the conditions are favorable. If your's won't do it the first time, it may some other time. Besides the

greater closeness in Zeta's case you will notice another difference between its components and Epsilon's.

If a three-quarter-minute pair is really too close for your glass, try it on Nu Draconis not far from Lyra. That's a one-minute pair and a beauty—a couple of twin stars exactly alike in size and color and almost kissing each other. These two stars—Zeta Lyrae and Nu Draconis—are two of the prettiest doubles for a field glass in the whole heavens. An astronomer with a big telescope would hardly call them doubles at all, his special pets of this kind being only a few seconds or even only a fraction of a second apart; or, like Vega, they are doubles consisting of one very bright and one very faint star. For Vega is double too, its companions being three-quarters of a minute distant, but it is only of the eleventh magnitude and so is quite beyond the reach of a small glass.

A line from Vega through Zeta will find Delta, another double, but too easy to be very interesting.

Zeta and Delta are at two of the four corners of a parallelogram, the other two corners being occupied by Beta and Gamma, brighter than any other stars in the constellation except Vega. Beta is diagonally opposite Delta, and Gamma is opposite Zeta. Near Beta is another easy double, Nu, and Gamma is a still easier one—a treble if you like, but when a small glass throws the stars as far apart as in Gamma's case, perhaps it is just as well to stop talking about doubles. We must draw the line somewhere.

Between Beta and Gamma lies the Ring Nebula of Lyra, the finest object of its kind. Its position you will find marked on the map, but you won't find it in the sky with a field glass. Still it is something to know where such a curious object is situated. You will likely find a cut and a description of it in your astronomy book. If your book is Newcomb's Popular Astronomy you will find the cut on page 469 and the description on page 461.

Look at Beta often and compare its brightness with Gamma's and Nu's. It is a variable star and a very peculiar variable, very different from Mira and Algol. (For Mira see Astronomical Notes in September REVIEW, for Algol see Notes next month—perhaps—or see your book.) Of Beta Lyrae, Newcomb says, "It is remarkable for having two maxima and two minima of unequal brilliancy. If we take it when at its greatest minimum, we find its magnitude to be 4½. In the course of three days it will rise to magnitude 3½. In the course of the week following it will first fall to the fourth magnitude, and increase again to magnitude 3½. In three days more it will drop again to its minimum of magnitude 4½; the period in which it goes through all its changes being

thirteen days. This period is constantly increasing." So far so good; that's about what all the books say. It is very interesting, but it would be more interesting to the star-gazer if a date were given for one of the phases. The "greatest minimum" should fall about 8 p. m. on Nov. 14th. Compare Beta on that evening with Gamma and the nearest Nu. Then at the intervals mentioned above compare them again, and see if you can observe any change.

The star at the top of the constellation on our map is also a variable, but its range is only about half a magnitude. Its name is R Lyrae, its period is 49 days, and its next minimum is due on Nov. 21.

FOR THE REVIEWER

#### Marking Absent Pupils.

On registering tardiness and school standing, I agree with "An Old Teacher," who expresses his opinion in the last REVIEW; but must take exception to his ideas on the third point to which he refers.

I believe there are teachers who occasionally allow their scholars to take, for other purposes, part of a day that is registered as taught, having a clear understanding with them that, as they prefer it to attending school on Saturday, all the time thus taken is to be made up by working after school hours.

And they occupy the time thus at their disposal with some interesting, useful work which can be made a pleasure rather than a weariness.

And instead of the Government paying for work which is not done a greater number receive the benefit than would by the school being in session on Saturday. For many children cannot attend that day as their help is required at home (especially girls); and some do not attend, as they feel they should have that day for other purposes.

Therefore, I can see no good reason why teachers should not be at liberty thus far to consult the pleasure and convenience of their scholars, exercising in all cases a wise discretion.

J. B.

WE are glad to notice in the October number of the official Nova Scotian Journal of Education that the Council of Public Instruction has introduced Latin as an optional subject for the grade B diploma. This is certainly a step in the right direction. We expect among other changes in the near future that Latin will be made imperative. If any man should be an all round scholar it should be the professional teacher; and his knowledge should be much more extensive than the smaller range which he is expected to communicate effectively to his pupils. If the remuneration of the profession is to advance it can only be by the education of the scholarship and skill of the teachers as a body. No other method can be shown to have any possible chance of bettering the financial standing of the profession.

### How to Influence the General Reading in Public Schools.

BY EDWARD MANNING, A. M.

At the inception of the public school system the trustees in this city made laudable efforts to improve the style of reading among our pupils. The personal labors of Prof. Munro here are not yet forgotten, and his Manual leaves little to be desired in reference to this subject. Midway in the interval of time that has since elapsed, Dr. Rand dealt with this department of education more than once in the Educational Circulars—the loss of which is much to be regretted by teachers. And, from the beginning, the minds of old educational conservatives were startled by the novel modes of the *look and say* method in the primary departments of the new schools. Altogether we may say, that more attention has been paid to this study than to any other, and rightly so I think, for it is in various ways the most important of all studies. If the advocates of the narrowest view of education insist on “the three Rs” to the exclusion of other studies for the mass of the people, there is a further step possible, namely, to insist on this one R; for if you only enable the masses to read, the obvious interests of everyday life would compel them to acquire the other two. The days, however, have long gone by for any such narrowing to be dreamt of.

If I do not enter on the initiatory departments of the study it is because I feel, that remarks to you upon it from one who has never come much into contact with this part of the work, would be out of place. I will, therefore, only notice at this stage of the subject, that some of the modern innovations of method are not quite so new as they seem; a remark that will apply even to some of the devices of the kindergarten. Erasmus, the great humorist and scholar of the Renaissance, says that “the ancients moulded toothsome dainties into the forms of the letters, and thus as it were made children swallow the alphabet.” And we rather unexpectedly find the stern Jerome writing thus: “Put into the hands of Paula (a little girl) letters in wood or in ivory, and teach her their names. She will thus learn while playing.” About 1650 the Jansenist teachers of Port Royal laid down the maxim that “it is best to teach children the letters only by the names of their real powers, to name them by their natural sounds,” which has ever since been called the Port Royal method. A generation later the gentle Fenelon (whose delightful prose epic of *Telemaque* would be enough in itself to tempt one to learn French, if only to enjoy it in the original) says: “I have seen certain children who have learned to read while playing,” and then urges teachers to mingle instruction with play. “Let wisdom,” he elsewhere says, “appear to them only at intervals, and then with a laughing face.” So also his contemporary Locke recommends instructive plays for reading and the first exercises of children. “They may be taught to read,” he adds, “without perceiving it to be anything but sport, and play themselves into that which others are whipped for.” So Rollin, the historian, also urges that reading and spelling be taught by the use of games with pasteboard cards arranged in pigeon holes, and pleaded that school books should be illustrated, herein anticipating some of the ideas of Pestalozzi.

Turning from this retrospective glance at some of the premonitions of our primary system we come to the methods pursued in the intermediate stages. Munro's Manual asso-

ciates with his instructions in reading, exercises for improving the vocal organs, and what may be called school hygiene. These exercises prepare for the production of a firm, good tone. In this connection I may add that a very good time for the reading lesson is after recess—as the lungs are then in a good state for this exercise. This is especially suitable in a school where the physical drill which Munro advocates is not carried out. The first point is to insist on a clear, distinct articulation; giving the pupils in this your own example. Younger classes profit more by imitation—precepts and principles may come in later. Fortunately for the Canadian teacher, the social condition of the great mass of our people is that of the happy medium prayed for by Agar; so that he has to combat comparatively few of the grosser errors in pronunciation of the very lowest class, nor yet those of fashion or affectation among the higher. The most inveterate faults I have found, are a disposition to clip the words too short, to neglect certain consonant endings, to avoid the use of *ave* and *ah* sounds, and to lose sight of the fact that there are two distinct forms of the aspirated dental, and consequently mispronounce such words as *thither*, *booth*, *blithe*. There is a collection of the most commonly mispronounced words in the Teachers' Edition of the Speller. Every teacher, however, might make a collection of his own on a fly leaf of his reader; and thus be kept in mind of these frequent offenders. He will find that they mostly admit of classification into Anglicisms, Scotticisms, Hibernicisms, and Americanisms. They are not numerous, but occur very often, and should always be dealt with when they do.

The great secret of pronunciation is in finishing off the syllables distinctly; and here constant and patient drill, both individually and collectively, is necessary. In this drill other things also are to be aimed at—as a pleasant tone, a comfortable pitch of voice, a flexibility in expressing the different emotions, as the class rises in intelligence and is able to appreciate and understand the phrasing of the sentence—that is, its divisions into small groups of words of connected meaning, and distinct in some measure from other groups.

As we advance into the higher grades, we can go further. In poetry, the scholars are to be cautioned that the ends of the lines are not always the places for pausing, also that, both in prose and poetry, there are stops without pauses, and on the other hand pauses without stops. Thus we put a comma both before and after a parenthetical connective and a vocative, but we pause only after it in reading. For example, “I cautioned him, however, that he must not open the box,” and again in the Benedictus: “And thou, child, shall be called the prophet of the highest.” To be always correct as to pause, modulation, and emphasis is no small matter; and for this as for other reasons no one can afford to neglect the preparation of his reading lesson. Bell makes emphasis depend on the three principles of novelty, contrast, and suggestion. Emphasize, therefore, the words that bring in a new idea, and any put in contrast with each other, which in a few cases affects not only the emphasis but also the natural accent, as “He must increase, but I must decrease.” Qualifying words, of course, are more emphatic than the words qualified. Demonstratives are naturally emphatic by way of contrast. In old style the personal pronouns were often so used, as is often seen in the Bible and the English Prayer Book. Indeed the third personal pronoun is called by some grammarians a demonstrative, as in Latin. Of course when the personal pronouns are so used, they are emphatic. A personal pronoun qualified by a relative

clause is emphatic for the same reason, as the song in the Pilgrim's Progress

"He that is down need fear no fall,  
He that is low no shame."

Bell adds that emphasis is one of the few points in which all good readers agree: one has to be sure, however, that he is a good reader.

Two papers in the Educational Circulars before referred to are from the pen of this writer, and are most valuable for teachers. Another by Legouvé, of the French Academy, is a delicious literary morsel—often egotistic, sometimes hyperbolic, but always dramatic, lively, and brilliant—after the manner of the Gallic mind. He dwells on the preponderating importance of the middle register of the voice, while conceding the advisability of cultivating also by careful practice the upper and lower registers, on the benefit of managing the breath so as never to be left without a certain store of it, and shows how one's position in reading affects this; asserts that a clear articulation may go far to atone for other vocal defects, lays down the sound maxim in questions of pronunciation that the rule is, to be always understood but never remarked, and illustrates at great length the phrasing pauses before referred to. He acknowledges that one should read as he speaks—but on condition that he speak well—whereas almost every one talks very ill. To speak in the sense used by Shakspeare in the famous advice "Speak the piece, I pray you," etc., needs an accomplished reader indeed. And even then the task is sometimes next to impossible. The reader may be excused for being at fault in places such as that instanced in this very paper of Corneille, who, on one occasion, could not explain one of his own lines, or in the kindred case of Campbell, who could write a ringing popular ode if any one could. "Tom," said one of his literary chums, "what did you mean by these lines?"

"But the might of England flushed  
To anticipate the scene."

"I'm sure I don't know now," said the poet.

Legouvé places the highest value on reading aloud, asserting that a skilful reader is a skilful critic, and that a good reading of a passage is a sort of translation of it. Blunders that the eye may miss are brought to light by the detective power of the sensitive ear, and the revealing power of the sympathetic voice. The whole article is an intellectual treat.

Permit me another short digression. There is more connection between reading and music than most persons imagine. In commencing music you are taught to notice three things about a note, namely, its length—indicated by its shape, its pitch, marked by its position on the staff; and the sentiment, indicated by the marks of expression, *piano*, *crescendo*, *sforzando*, etc. Now these are the very things to be noted in reading. The range is narrower in speech than in song, it is true, though not so much as many fancy. We think an octave a great interval in melody, but an equal interval may easily occur in animated dialogue, only it is reached by a slide. Take, for instance, the answer of Brutus to Cassius in the well known quarrel scene. "O gods, ye gods must I endure all this," and Brutus answers, "All this, yea more. Fret till your proud heart breaks," where we have a slide of a full octave on one short mono-syllable.

Above all a feeling of sympathy with the writer must be arrived at. If this is wanting, really good reading is impossible. Slovenliness, affectation, monotony, and indifference vanish before sympathy, when the reader is absorbed in his

subject, his voice taking on the thrill which communicates itself to the nerves of the listeners, till reader and hearers are beguiled out of themselves. Every one has now and then, alas! only now and then, heard such reading, and felt its witching charm. Some are so constituted that they cannot attain to this. Such persons can never become really fine readers. Apropos of this, it is said that the great Siddons was once drilling a young actress in the part of a deserted lover. The rendering did not please the queen of tragedy, and she said, "Think how you would feel under the circumstances. What would you do if your lover were to run off and leave you?" "I would look out for another," said the philosophic young lady. "Leave me!" said Mrs. Siddons, with a gesture of intense disgust and would never give her another lesson. You see that the damsel was in the position of a would-be artist who was color blind, or an aspirant to the opera who had what is called no ear. Some wisecrackers think that any one can be taught anything, if the teacher be only competent, but we teachers by sad experience know better. It is to be hoped, however, that not many parents are quite so wise as a patron of a boarding school, who, when told by the mistress, driven to bay, "I am afraid that your daughter has not capacity," promptly answered, "Then, I wish, Mrs. Blank that you would import her one."

A word on our text books here. I cannot agree with the complaints uttered against them at the late meeting of the Provincial Institute. When we call to mind those very Sahara's of dryness, Town's Readers, Murray's English Reader *et hoc generosum*, where one might hunt in vain from cover to cover for a drop of mental refreshment or invigoration, and then turn to ours, we may thank God that our scholars live and learn now, and not a generation ago. The Fourth and Fifth Readers to my mind are perfect gems. If only a few lessons, say half a dozen, were taken out, with some of the miscellaneous matter belonging more strictly to the province of a speller, room could be made for lessons of more local interest, provided it were from pens of classic excellence. Perhaps more than this could be done in the case of the Sixth Reader, in which some selections are hardly so happy as in the others mentioned. The Nova Scotia edition has supplementary lessons at the end, and we also, if judged desirable, could have them, but I doubt if the series would be much improved thereby, and my doubt is strengthened by the character of these very supplements, as well as by a careful examination of some newer series, as the Maritime Readers, and other recent rivals. The fact is, that a teacher gets attached to a text book he has long used, as to an old pair of slippers or an old house, ideas cluster round it, till there is scarce a page unassociated with some happy hit, and at last he hates to change it. A newer one might be better in the abstract, but not better for him. In this connection I will venture the suggestion that if our prescribed British History is to be made the best of, it should be used as a supplementary reader, for it is of high literary style, requiring careful attention to make it properly understood and appreciated by young people. And parts of the reader which elucidate it should be read in connection with it.

It can hardly be necessary at this time of day to suggest to trained and experienced teachers how to use these books. To do so would be to drop into trite commonplace. The home preparation and school drill, the simultaneous exercising of the children's voices in imitation of, or in concert with their instructor, beguiling the dilident out of their timidity at the

sound of their own voice, and merging the over forwardness of the bold in the general mass, the fixing of the sense by composition exercises vocal or written, and so on—these are daily in full swing in every school house in the land, and need not occupy much of the time of a Teachers' Institute. Some writers have proposed elaborate variations—one in my possession as many as fourteen: Concert reading, one pupil naming pauses; individual reading, class naming pauses; reading to a mistake; reading in couples; giving parts in dialogues; choosing sides, as in spelling matches, the class imitating one pupil; naming one pupil to read till another name is called; voting for best reader, dictating a lesson to be read next day; medley reading, like a round in singing; volunteer reading; and giving examples from playground talk: some of which may be novelties, but open to the objection made to one of those smart people who are always seeking to astonish us: "What is true in all you have said is not new, and what is new is not true."

The great thing is to secure intelligent interest, by seeing well to it that the school understands, appreciates and sympathizes with the lesson studied, which in our text books we can certainly do.

The title of this paper may, however be said to cover wider ground than the reading lesson in school. The conscientious teacher will endeavor to influence the reading of his scholars outside of the school course. The flood of cheap publications which appears in the windows of every business street, shows that reading habits are vastly on the increase; while the greater frequency of myopia in young persons reminds us of one part of the price we pay for it. A teacher should read to the pupils weekly some valuable passage suitable to their age and interests. Older pupils may be directed where to go for information on any special subject. School libraries deserve a more generous support than they obtain. High class poetry and oratory should be committed to memory and recited. There is no valid objection against deepening impressions of historical fact by the use of historical fiction. Therefore Scott, Irving, Dickens, Thackeray, Kingsley, Lytton, Reade and Blackmore, and again in poetry, Shakspeare, Scott, Gray, Wordsworth, Longfellow and Tennyson may be recommended to a senior pupil where they will assist his work. The same may be done in other departments. In science, for instance, the pupil may be directed to Wood's charming books on Natural History, to Faraday's Lectures, Wilson's "Five Gateways of Knowledge," the various Science Primers or the Boston Guides to Science Teaching. Some of these may be procured at public, church, or school libraries, others purchased by the pupils themselves. A prevalent tendency is to magazine reading, which often fritters away the time to little purpose. A promising pupil should be urged to read in some special direction, and not wander purposeless through everything that comes in his way.

Boys hanker after books of adventure. Lead them then to discriminate between the good and the bad. Defoe, Marryat, Thomas Hughes, Ballantyne, Mayne Reid, and Kingston can be safely trusted in their hands. Excellent biographies abound, inciting emulation of great men. It to is be regretted that works on Canadian life are so few. But Canada as a whole is not yet a quarter of a century old, and I think we may soon look for this field to be occupied.

In reference to the shoals of books of the lower class, both teacher and parent should point out their impractical views and false estimation of life and character, and their neglect to

supply any guiding principles of conduct. The safest antidote, however, is the cultivation of a taste for reading which is better. In these efforts we have need of patience and hopefulness unbounded, and when we have done our utmost, we form only one of many educational influences. We have further need of the sympathetic aid of parental solicitude, of the press, the pulpit, and society in general. It is a hopeless task to pull against the strong current of public opinion. If bad literature lies on the table at home, the young will suffer from it. If the journals familiarize their minds with details of crime and jests on vice, they will presently be led by each flippant phrase into cynical indifference as to right or wrong—with what results we know only too well. To guard them in this direction, however, is the province of the parent—the teacher has done his part if he has striven so to occupy the soil with good crops, that the weeds may find little room for growth. And having rough hewn our ends aright we must leave them with trust in the abler hands of the divinity that shapes them.

#### Teachers of District No. 10.

In accordance with my usual custom, I desire to call your attention to the following plan of science work for the winter term. The book used is in the "Science Primer" series (Physics by Balfour Stewart), and costs thirty cents. The Roman numerals refer to the weeks, beginning with Monday, Nov. 11, and the Arabic to the paragraphs in Primer. It is intended that three lessons per week, of from ten to fifteen minutes, be given. The oral lessons for remaining two days can be on "health," "natural history," as in pages of REVIEW or "Nature Readers," or any subject you may fancy yourselves. I trust to find you, on my visit, doing the work of that particular week. Make yourselves thoroughly familiar with the lesson before coming to class. Take part of every Saturday afternoon to provide for simple experiments. The subject is an interesting one, and pupils will be interested just in proportion to your energy and facility in teaching, both of which will come with thoroughness of preparation. With care the illustrations will interest all. Encourage pupils to experiment themselves at home or in school. The plan is merely an outline, to be filled in according to time and resources:

- I. Motion and force, with ex. 1-3.
- II. Gravity, etc., 4-7. See also Calkin's Geography, p. 2.
- III. Centre of Gravity. The Balance, 8-10. You can probably bring both scales and steel-yards to school-room to illustrate these lessons.
- IV. The three states of matter illustrated. Ex. to show properties of solids, 11-15.
- V. Properties of liquids, 18-22. Where experiments are impracticable, illustrate by diagram on blackboard.
- VI. Pressure and buoyancy of water, 23-25. Carefully illustrate this. Improvise example of your own.
- VII. Same, 26-28.

- VIII. Pressure and weight of air, 29-30, and Geography, p. 19.  
 IX. Barometers, 31-32.  
 X. Air pump, illustrated by diagram.  
 XI. Water pump, do., and, if possible, make a model. Attempt it, anyway, all of you.  
 XII. Work and energy.  
 XIII. Sound, 40-43.  
 XIV. Mode and rate of motion of sound. Echoes.  
 XV. Nature of heat. Expansion.  
 XVI. Thermometers.  
 XVII. Further lessons on expansion.  
 XVIII. Latent heat, 58-60.  
 XIX. Evaporation. Try example 42. Show expansion of water when converted into ice, and contrast with contraction of metals by same cause.  
 XX. Illustrate condition and connection of heat by examples 46 and 47. Radiation of heat.  
 XXI. Velocity and reflection of light. Illustrate the bending of rays of light in water. Geography, p. 19.  
 XXII. Prisms, lenses and magnifying glasses. Bring glass pendants from hanging lamps, spectacles, etc., to school room.  
 Wishing you all a prosperous winter,  
 I am sincerely yours,

E. J. JAY.

Amherst, Oct. 28, 1889.

#### New Course in the N. B. University.

The following, taken from the calendar of the New Brunswick University for 1889-90, is an outline in full of the new course in civil engineering.

##### CIVIL ENGINEERING AND APPLIED MECHANICS.

The course of instruction in civil engineering will consist of the following:

Mechanism, and the art of constructing various engineering works, as railroads, bridges, etc.

Under Applied Mechanics the subjects treated of will be:

Hydraulics, embracing the structure and use of hydraulic machines, the investigation of the laws which govern the flow of water from reservoirs, and the flow of water in rivers, canals and conduit pipes, and the use of water as a motor.

Mathematical calculation and graphical representation of the strains upon framed structures; strength of materials used in construction; estimation of resistance due to friction and rigidity; work; inertia; energy.

The course of instruction will include the general description of the steam engine, and the theory of heat with its application to heat engines.

Students will also prepare, under the personal supervision of the Professor, designs of plans, elevations and sections, with specifications and estimates, of such works as are usually undertaken by engineers.

##### DESCRIPTIVE GEOMETRY AND DRAWING.

This part of the course will include: A knowledge of the use of the various drawing instruments; geometrical drawing; orthographic projection, including penetrations, sections, developments, etc.; tangent planes and normals; graphical determination of spherical triangles; orthographic, stereographic and other projections of the sphere, with their applications to map drawing; axometric and isometric projection; shades and shadows; mathematical perspective, with the perspective of shades and shadows.

Students will be required to make accurate drawings to scale from measurements taken during actual surveys. Special attention will be paid to neatness, lettering and colorings of such plans and drawings.

##### SURVEYING AND PRACTICAL ASTRONOMY.

This course will comprise practical work in the field and observatory with explanatory lectures.

The object in view will be to impart a thorough knowledge of the use and adjustment of the transit, theodolite, level (dumpy and Y), compass, sextant, and other field instruments.

The field work will be carried on under the personal supervision of the Professor, and will consist of: A chain survey, an angular survey, a contour survey, the location of a line of road, including preliminary surveys, ranging of curves, levelling and setting out work. Students are required to take topographical notes from which plans of these surveys are afterwards drawn, and the usual quantities taken out as in actual practice.

Instruction will also be given on the use of the meridian transit instrument, the altitude and azimuth instrument, in the determination of time, latitude and longitude (by lunar culminations).

In addition to the above, the lectures will contain a consideration of the instruments and methods employed in geodetic surveying, geodetic levelling, barometric levelling and hydrographic surveying.

##### MATHEMATICS AND MATHEMATICAL PHYSICS.

The course in these subjects will be the same as is taken up in the ordinary arts course, with the addition of portions of the honour course, selected with the view of preparing the student to understand more clearly the higher branches of engineering.

##### NOVEMBER.

The clouds are putting out the sun; they've shut off all his heat;  
 The frozen ground in heavy thuds complains of passing feet;  
 The meadow brook runs still and dark, the tree-tops sway forlorn,  
 But in the barn with merry shouts, the boys are husking corn,  
 E. L. Benedict, in *Treasure Trove*.



**AMONG THE SCHOOLS AND COLLEGES.**

The County Academies and many high schools in Nova Scotia are rapidly becoming colleges in one sense of the term. That is, for the same students there are two, three or more teachers, each having his own special class of subjects to teach. To the Truro Academy we notice the appointment of an additional collegiate teacher, Mr. Homer Putnam, B. A., (Dal.) In New Glasgow, a third collegiate teacher has been added to the High School staff—Miss Antoinette Forbes, B. A., (Dal.)

The Pictou Academy under its new principal, Robert McLellan, Esq., has opened with a large attendance.

In the Halifax Academy the Roman or phonetic pronunciation of Latin has been adopted. Howard Murray, B. A., (Lond.), late Munro Tutor in Dalhousie College, is the Senior Classical Master, and W. T. Kennedy, Junior Classical Master.

Edward Fulton, B. A., (Dal.) leaves the Hants County Academy with public praise to enter upon the duties of the English Mastership in the Truro Normal School, in the place of Dr. Hall.

J. Smith, M. A., (Mt. A.), late principal of the Digby Academy, takes charge of the Hants County Academy at Windsor.

Graham Creighton, Esq., has been appointed to the principalship of Morris Street School; W. A. Creelman, Esq., to the second department; and E. Ross, Esq., to the second department of Albro Street School.

**BOOK REVIEWS.**

**HANDBOOK OF GEOLOGY**, for the use of Canadian students, by Sir J. William Dawson, C. M. G., LL. D., F. R. S., etc., Principal of McGill University, Montreal. Dawson Bros., publishers. That distinguished scientific worker, Sir Wm. Dawson, has found time amid pressing duties to publish a work of convenient form and especially adapted for Canadian teachers and students of geology. The first part relates to the general principles of the science with examples as far as possible from Canadian rocks and minerals. The second part gives an outline of geological chronology, illustrated by Canadian rock-formation and fossils. The third part gives details as to the physical geography and geology of Canada. The author's world-wide reputation, and his great experience and knowledge of this subject, makes the work of the greatest value to students and geological enquirers.

**AN INTRODUCTION TO ENTOMOLOGY**, by Prof. J. Henry Comstock, Cornell University, published by the author, at Ithaca N. Y. We cannot speak too highly of this work as a text-book on entomology. It is not yet completed. The present part takes up the orders: I, Thysanura; II, Pseudonoptera; III, Orthoptera; IV., Physopoda; V., Hemiptera, and VI., Neuroptera, leaving Orders VII. (Lepidoptera), VIII. (Diptera), IX (Colcoptera) and X. (Hymenoptera) for the second part. It is particularly marked by clearness, the selection of common type specimens, new illustrations, with the most systematic arrangement. It will enable the student to classify insects with the facility which the best botanical primers enable him to do with plants. The key to classification is one of the most striking and most useful features, as without classification there is not likely to be collection or observation on the part of many possible entomologists. If it is concluded as it has been begun, it will be the best, if not the cheapest, book for those who commence the study of our insects.

**ELEMENTARY PRACTICAL PHYSICS**, a Guide for the Physical Laboratory, by H. N. Chute, M. S., teacher of Physics in the Ann Arbor High School. D. C. Heath & Co., Boston, New York and Chicago. 1889, XX+ 387 pp., 80 cents. This is not a text-book for pupils so much as a handbook for the teacher of physics. As such it will prove invaluable, especially if he has not had a practical training in physics in some of our more modern universities. Where Gage's Physics is used in our schools Chute's Practical Physics will be very often beneficially suggestive to the teacher. Where there is no good text-book it will be found still more useful. It will enable the untrained physical teacher to train himself in experimental manipulation. And that is a merit of no ordinary value.

**COMMON SCHOOL SONG READER**, a Musical Reader for Schools of Mixed Grades, by W. S. Tilden, teacher of Music in the State Normal School, Framingham, Mass. Boston: Ginn & Company, publishers. 176 pp., 65 cents. The typography is as plain and beautiful as can be wished for; the instructions are ample and clear to the most satisfactory degree; and the musical exercises and selections appear to be very appropriate. It could scarcely be improved upon for use in our common schools unless it were in the tonic-sol-fa notation—the only notation which experience has generally proved to be readily mastered by young people and the masses.

**TEACHERS' MANUAL OF GEOGRAPHY**, by Prof. J. W. Redway. **TOPICS IN GEOGRAPHY**, by W. F. Nichols, A. M. Publishers, D. C. Heath & Co., Boston. These are the latest contributions to geographical literature. In the first the author has shown us how fascinating the study may become if we take nature chiefly as the text-book. The work is highly interesting and the author punctures many statements and theories of current text-books on the subject. In Topics of Geography the author has arranged in convenient form suggestive model lessons for different grades.

PAGE'S CHOISIES DES MEMOIRES DU DUC DE SAINT-SIMON, edited and annotated by A. N. Daell, Professor of Modern Languages, Massachusetts Institute of Technology. Boston: Ginn & Company, publishers, 1889. Pp. 236, 75 cents. A most interesting picture of the life and times of Louis XIV., by one of the most powerful French writers.

THE PATHFINDER SERIES. The Pathfinder Series of Temperance Text Books, published by A. S. Barnes & Co., New York, have been noticed before in these columns. They are three in number, finely illustrated, and written in an interesting style. For further particulars teachers may correspond with Mrs. R. H. Phillips, President of the W. C. T. U., Fredericton, N. B.

INTRODUCTION TO THE STUDY OF SHAKSPEARE, by Hiram Corson, LL. D., Professor of English Literature in Cornell University. Boston: D. C. Heath & Co., publishers. The author indicates certain lines of Shakspearian study which he thinks will lead to a truer and juster appreciation of the plays. In his commentaries and notes he includes Romeo and Juliet, King John, Much Ado About Nothing, Hamlet, Macbeth, and Antony and Cleopatra. These commentaries furnish a careful analysis of each play, and we have also chapters on Shakspeare's verse, the Shakspeare-Bacon controversy, distinctive use of verse and prose in Shakspeare's plays, Latin and Anglo-Saxon elements. The work throughout is keenly critical, and displays a wide knowledge of Shakspearian and English literature.

MILTON'S L'ALLEGRO, &c., with introduction and notes by W. Bell, M. A. London: MacMillan & Co., publishers. The poems comprised in the volume before us embrace L'Allegro, Il Penseroso, Arcades, Lycidas, sonnets, etc., all the English poetry written by Milton between 1630 and 1660. With the introduction and notes it forms a valuable addition to the student's library.

TEN DIALOGUES IN RHYME, for Primary Schools. Price, 15 cents. Boston: Eastern Educational Bureau, publishers. These dialogues, bright and interesting, will be found admirably adapted for Friday afternoon exercises.

LAW OF CHILDHOOD AND OTHER PAPERS, by Prof. W. N. Hailmann. Published by Alice B. Stockham & Co., Chicago. Postpaid, fifty cents. To comprehend aright the law of childhood as identical with the law of organic growth is the line of Prof. Hailmann's thought in this book, which is characterized by a lucid presentation of sturdy opinions. His name is a sufficient guarantee that the spiritual meaning of life has not been overlooked.

THE CHILD AND CHILD NATURE, by the Baroness Marenholtz-Buelow. Syracuse, N. Y.: C. W. Bardeen, publisher. This book has for its object the promotion of a more thorough and universal understanding of the theories and philosophy on which Froebel's educational system is based. It is valuable not only to the kindergarten teacher but to parents and to primary teachers.

SHAKSPEARE'S TEMPEST, with introduction and notes by K. Deighton, B. A. London: MacMillan & Co., and New York. This volume, a companion to others by the same editor, gives us in convenient form and with valuable critical notes one of Shakspeare's most admired plays.

#### RECEIVED.

THE HISTORY OF THE EASTERN NATIONS AND GREECE; GRAMMAR. Easy Latin for beginners. Publishers, Ginn & Co., Boston.

HISTORICAL AND PRACTICAL POLITICS, by Woodrow Wilson, Publishers, D. C. Heath & Co., Boston.

#### PUBLICATIONS RECEIVED.

The *Canadian Educational Review* for November begins the twentieth year of this magazine whose popularity is now world-wide. Several serial stories are begun, which promise to be of great interest. Mark Twain's contribution to this number, "A Connecticut Yankee in King Arthur's Court," is one of the most daring of the inventions of this most famous of American humorists. George Kennan has a chapter of "Adventures in Eastern Siberia." *St. Nicholas* for November appears in larger and plainer type. One of the cleverest things in the number is the short drama, "Sir Rat: A Comedy," written and illustrated by Oliver Herford. In *Wide Awake* for November, Mrs. White's Public School Cooking Series, in closing, tells how young women may get their training as teachers of school cooking. *The Popular Science Monthly* for November has a portrait and sketch of Prof. Le Conte, of the University of California. *The Bookmart*, of Pittsburg, Pa., has a scholarly essay on an Octogenarian Poet Laureate. Among the many interesting articles in November *Bookman* are "Modern Claims upon the Pulpit," by Archdeacon Farrar; "The Cost of Universities," by President David J. Hill; "Wendell Phillips as an Orator," and "The Domain of Romance," by *Garden and Forest*, published by D. A. Munro, N. Y., grows more and more interesting every week. The leading articles in the issue of November 6th, "The Utility of what makes Life Interesting," is a gem in its way. In the same number is a fine drawing and sketch of *Eleonora, la tarantula*, one of our most beautiful shrubs. *The Spectator American* for November 9th gives drawings and sketches of the great Manchester Ship Canal. *Treasure Time* for November has an exceedingly interesting table of contents. *The Dalhousie Gazette*, N. B. University *Monthly*, *Acadia Atlantic*, *Sackville Argo*, are all gladly welcomed after the long summer vacation. *Grip's Comic Almanac*. There are few people in Canada who do not see this entertaining annual. It has just made its appearance for the eleventh year; and in many respects the new book is ahead of any predecessor. The illustrations are abundant; and all of the contents are of a very amusing character. A new feature is the calendar of "Remarkable Events," which runs through the year, and which, alone, is worth far more than the price. This book contains thirty-two pages, and sells at all bookstores at the old price, ten cents; or, send to publishers, Toronto, and receive the book, postpaid, by return mail.

# Educational Works

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**High School German Grammar**. By W. H. VanderSmisson, M. A., and W. H. Fraser, B. A. Price, \$1.00.

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# McGILL UNIVERSITY, MONTREAL.

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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