

**PAGES**

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# The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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(Please mention this paper.)

## THE EDUCATIONAL REVIEW.

G. U. HAY, St. John, Managing Editor  
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THE N. B. University opened on the 1st of October, with an attendance of seventy students. After a year's absence Prof. Stockley is again at his post. Prof. Murray will fill the Alumni chair of Mental and Moral Philosophy and Political Economy, and Prof. Hatt that of Civil Engineering. Prof. Duff has made additions to the Physical Laboratory by purchase of improved apparatus. The University is thus better equipped for work than ever before and its friends confidently look for a new era of prosperity.

THE act of the New Brunswick Assembly of last year constituting the Chief Superintendent of Education president of the University has gone into operation. Chief Superintendent Inch therefore becomes the head of the entire educational system of the province, and Dr. Harrison becomes Chancellor of the University.

UNIVERSITY extension classes will be formed in St. John next month in Natural Science, English Literature, History and other subjects. The design is to bring within the reach of those who are unable to attend a university the advantages of its learning. The senate of the N. B. University has warmly approved of the movement; the Natural History Society of St. John, with its well equipped museum, will extend its aid, and lecturers from the university and specialists in different subjects have engaged to give instruction during the coming winter. The movement is receiving the hearty support of leading citizens of St. John.

MR. J. W. WILSON, vice-principal of the Leinster street school, St. John, has been appointed to a position on the Canadian Geological and Natural History Survey, to which he has been attached as assistant to Mr. R. Chalmers during the past three summers. Mr. Wilson will be a great loss to the public school service, and to the New Brunswick Natural History Society, of which he has long been a valuable member. He has been a zealous student of geology and mineralogy, and to some extent of other branches of natural science. His habits of close observation, combined with an excellent judgment and unremitting industry, will make him a valuable member of the Survey. To his associate teachers he has always been ready to extend assistance in their work; and from the classes in mineralogy, which he has conducted so efficiently in the Natural History Rooms the past few years, much good has resulted in enabling teachers to give more systematic and practical instruction in elementary science. While the REVIEW regrets Mr. Wilson's retirement from the school service, it congratulates him on such a tangible recognition of his abilities as a naturalist.

IN a recent number of the *McMaster University Monthly* there is a characteristic and finished article entitled *Limæ Labor*, by Dr. Theodore H. Rand.

The action of the Canada Pacific R. R. in refusing to the Charlotte County teachers attending the Institute any reduction in fare was a selfish one. Under other management reduced rates were always accorded and considering the amount of subsidies which the present owners have drawn from the coffers of the country a little return to some of the people might reasonably be looked for. Such action on the part of the road will only have the effect of preventing future meetings of the Institute from taking place at points only reached by that railroad.

The recent utterance of Dr. Inch at Alma will be received by the teachers with satisfaction. As the matter now stands a longer summer vacation is taken, in many districts, than is sanctioned by the regulations and the teachers are not only the losers in the matter of district earnings, but of the government money as well. This, independent of the desire of many teachers for a longer vacation, makes it a proper question to be brought up at institutes as was done in Albert county. As the option of longer holidays is to be left to boards of trustees, it may be advisable for teachers not to take too active a part in obtaining the extension as they may be misjudged in some quarters where boards are apt to go by contraries. We hope that it will be enacted that when once applied for, the extension shall be permanent in that particular district.

#### PRINCE EDWARD ISLAND.

Our exchanges tell us of the dismissal of the School Inspectors by the new government, and later still of the Superintendent of Education, and at a season of the year when it is too late for him to expect any other educational opening. We do not profess to know all the facts of the case, and accordingly reserve judgment. But we may say generally, that if school officers are appointed for any other reason than their special fitness for the positions held, the teaching profession should unanimously support a new government in the unpleasant duty of giving the posts to the proper men. But on the other hand, if efficient officers should be removed simply to make way for no better men who thus want payment for their political services, the government should receive no quarter.

The public interests demand, especially in education, that appointments be made solely on account of the fitness of the individual. If political considerations should be shown to determine these, it is a

direct request by the government, that the able men of the profession who seek promotion, should do so, not by endeavoring to excel as educationists, but to intrigue as politicians. What would be the effect of such a stimulus, on our already staggering educational advancement? It is sad to contemplate. There are many reasons why, under ordinary circumstance, teachers should completely repress partizanism. In order to protect the profession from malign government influence it should be done. The less partizan a man is the more his influence is felt when the occasion for its exercise arises. With the teachers of our Provinces as a unit in favor of a true educational policy independent of other political questions, a steady and continuous improvement in our educational conditions would, normally, always exist. Let us in the meantime hope that the drastic treatment of the educational department in our island Province has for its object the appointment of the very best men in its service to the important posts of inspectors and superintendent of education.

#### ACCURACY IN FIGURES.

We cannot too emphatically call the attention of those who have charge of the promotions in our graded schools to the necessity of the accurate as well as rapid manipulation of figures by pupils from the very beginning. The great majority of mathematical failures in the common and higher schools is due to the lack of thorough initial training. A boy makes a "slip" in work, he finds, when he comes to look at the answer. He goes over the work and soon discovers the mistake, and the answer then comes out all right. The "slip" is considered of little consequence. But is it? When he goes up to examination he makes only one "slip" on an average in each question. That may mean, that he has not one correct, because he has no answer to refer to indicating error. This explains why a 40 per cent. candidate will make only 40 per cent. after a year's study—remain a forty-percenter perhaps through the university. Every "slip" he makes is an education; and as he advances he grows in blundering, *pari passu*. Such persons cannot help "hating" arithmetic and algebra; because when they even understand the principles, they fail in the execution, and conclude they can understand nothing.

The most serious feature of this blundering evil is, that if the habit is once formed it goes on perpetuating itself, and the older the pupil the less hope there is for him. The operations of addition, subtraction, multiplication and division, must be performed mechanically, with rapidity and unerring accuracy for success in mathematical work. Rapidity comes

from much drill. And if in this drill "slips" are looked upon as very serious evils accuracy is developed. In some of our best graded schools teachers appear to think the essential thing for young children is to comprehend the values of all the numbers they manipulate. They are taught to add, subtract, multiply and divide these small numbers. Before mechanical accuracy and rapidity are acquired in any one operation they are initiated into a confusing complexity of four or more operations. This is a case of a half truth theory worse than the old one it displaced. A boy who waits to comprehend mentally that 7 times 9 are 63, before the figures 63 come before his mind, should not be advanced from the multiplication table class; and the boy who would say "63, put down 3 and carry 6," should be subjected to such drill at once, as will cure the habit — or else the teacher should be considered a fit subject for dismissal.

#### PROVINCIAL EXHIBITION AT HALIFAX.

Owing to the intelligent and energetic management of this exhibition by those having it in charge and the magnificent weather, it has been one of the most successful ever held in these provinces. As we are specially interested in the educational side of it, we must express the pleasure with which we have observed the classification of ordinary, educational, artistic and scientific subjects. Many of these have not drawn a worthy response, such for instance, as ostiologal, conchological, paleoantological and even entomological collections; sets of home made apparatus for illustrating the principles of electricity and magnetism, mechanics, chemistry, photography and engraving and the like. The reason is not far to seek. Attention had not been directed to these subjects. But the exhibition commissioners have given a hint to the rising generation. That is what was intended, we presume; as a few months are nowhere in developing work of such kind. The impetus has only been given. At the next metropolitan exhibition we may see the first fruits of these few strokes of the pen.

But since the previous exhibition a very considerable development is observable in the character of the school-room exhibits. Kindergarten work from the Halifax and Dartmouth schools was a striking and new feature. Also the natural history collections in connection with all the leading schools. Mineralogical, botanical and even zoological collections were sent up from some schools. The Manual Training department of the Academy was in operation for only a week before, so that its influence will not appear until

a future occasion. But there were some ingenious electro-magnetic and physical apparatus and devices shown. The whole exhibit indicates that our public school work is becoming something more than a drill to prepare pupils for clerkships or literary professions. Hand labor has a value set upon it, which invests it with some dignity; and the practical application of science to the development of industrial occupations are coming to be considered as respectable and worthy of attention as the old-fashioned gentlemanly linguistic studies. And art in form, color and music is more or less fostered everywhere. Teachers should now begin to prepare for the next game of exhibits, distant though the date may be. This game is one which is well worth the candle.

#### TEACHERS' INSTITUTES.

##### CHARLOTTE COUNTY.

The largest and one of the most enthusiastic and profitable institutes ever held in Charlotte County met at St. Stephen on September 24th and 25th last. The enrolment was 95. Mr. L. M. Johnston of St. George presided. After enrolment the institute was addressed by Inspector Carter and Provincial Secretary Mitchell. Mr. Wallace Broad, a member of the St. Stephen School Board, welcomed the teachers to St. Stephen. In response to an invitation from the chair, Rev. John Anderson briefly addressed the institute. Mr. W. T. Kerr of Milltown then read a very thoughtful paper on "Proper incentives to study and how to apply them." The discussion which followed this paper was participated in by Messrs. Vroom, Brodie, Carter, McFarlane, Lawson, McCutcheon and others. At the close of the discussion Mayor Vroom of St. Stephen, who was present, addressed the teachers.

The afternoon session began with singing. Miss Rifa Clarke presided at the organ.

Miss Wilson and Messrs. Vroom and Robertson were appointed a committee to examine and report upon the manual work exhibited.

Dr. Inch, Chief Superintendent, having arrived, was cordially received, and briefly addressed the teachers. Mr. P. L. McFarlane, A. B., then read a very interesting paper, "To what extent should a pupil's advancement depend upon written examinations?" F. O. Sullivan opened the discussion, and was followed by Miss McGowan, Messrs. Kerr, Carter and Dr. Inch.

Miss Bessie Howard of St. Andrews read an excellent paper upon "Primary Number." The discussion was opened by Miss Alice Black and continued by Mr. H. W. Robertson, Miss Laura Morrell, and

others. Mr. Geo. J. Clarke of the St. Stephen School Board also spoke. The session adjourned with the national anthem.

A public meeting was held on Thursday evening in Milltown. The hall was crowded and many could not gain admission. Owing to the temporary indisposition of President Johnston, Inspector Carter presided. Addresses were made by Dr. Inch and Messrs. E. H. Balkam, James Vroom, Ashley St. Clair (Calais Milltown) and P. G. McFarlane. An excellent musical programme was carried out, consisting of two choruses by Mrs. W. T. Kerr and a company of school girls, and solos by Mrs. Kerr, Mrs. F. W. Grimmer and Mr. Hall of Calais. The meeting closed with the national anthem.

On Friday morning after routine Mr. J. L. Lockray read a good paper on "Physical Geography." An animated discussion followed, which was taken part in by Miss M. J. Kerr, Misses Dibblee, Moore, and Messrs. Sullivan, McFarlane, Sutherland, Lawson and others. At the close of the discussion short addresses were made by Rev. O. S. Newnham of St. Stephen and E. H. Balkam of Milltown.

Inspector Carter extended an invitation to the teachers to be present at the St. John County Institute, which promised this year to be more than usually interesting.

Questions taken from the question box brought about a very general and profitable discussion, and regret was expressed that there was not time to deal with them all. The remainder will probably be discussed next year.

Mr. Wallace Broad gave a practical talk about minerals, illustrating by specimens recently presented to the St. Stephen schools by the geological department at Ottawa.

The Friday afternoon session of the institute began by singing the doxology.

The committee on manual work reported. Graded schools at Milltown, St. Andrews, St. George and North Head, and ungraded schools at Oak Bay, Tower Hill, Pomroy Ridge and Mascarene participated. The work was excellent, and in the opinion of many who were in a position to judge, was fully equal to any exhibited at the exhibition in St. John a year ago.

The election of officers resulted as follows: President, W. T. Kerr, Milltown; Vice-President, J. B. Sutherland, A. B., St. Andrews; Secretary-Treasurer, Miss Annie Richardson, St. Andrews. Members of Executive, Mr. Wm. Brodie, A. B., St. Andrews, and Mr. J. L. Lockray, St. Stephen.

The meeting then resolved itself into a very pleasant social gathering. Solos were sung by Mrs. F. W.

Grimmer and Mrs. Dr. Todd, and two little girls, Misses Iyy Smith and Lorena McCully, sang a duet, Birdie's Ball, with auto-harp accompaniment by the latter.

The institute then became the guests of the St. Stephen teachers, who served a most bountiful repast of ice cream and cake; and so ended a very pleasant meeting. All the teachers will be present again in St. Stephen.

North Head is spoken of as the next place of meeting, if suitable arrangements can be made. A field meeting will be held under direction of qualified instructors, and for this purpose there could be no more suitable locality than Grand Manan.

#### ALBERT COUNTY.

The 14th annual session of the Albert County Teachers' Institute convened at Alma, September 10th and 11th. In the unavoidable absence of the president, Mr. T. E. Colpitts, Inspector Smith presided.

The first session was occupied with enrolment and routine business.

At the second session W. B. Jonah, A. B., read an excellent paper on "English Literature," which was generally discussed. Miss Flora Steeves read an interesting paper on "How to awaken an interest in study." The paper was followed by a discussion.

In the evening a public meeting was held in the Methodist church. Inspector Smith presided. Excellent music was given by the choir, after which a paper was read by Rev. Mr. LePage. The chairman then introduced Chief Superintendent Inch, who had arrived to attend the meeting, and who was very attentively listened to.

Friday morning was occupied with a geological excursion under the direction of Mr. W. B. Jonah, after which a paper was read by W. M. Burns. This paper was discussed by W. B. Jonah, Ralph Colpitts, Dr. Inch and Inspector Smith.

Friday afternoon was taken up by a paper on Patriotism by Ralph Colpitts, which was discussed by Rev. Mr. LePage and Dr. Inch.

The election of officers resulted as follows: T. E. Colpitts, A. B., President; Ella K. Moore, Vice-President; Wm. M. Burns, Secretary-Treasurer. Maud Thompson and Mary L. Daly, members of executive.

The institute by unanimous vote memorialized the Board of Education to extend the summer holidays. Dr. Inch stated that the matter was under the consideration of the board, and that next year it would probably be at least in the power of the board of trustees to give two weeks extension.

After votes of thanks to those who had participated in the work of the institute, to the people of Alma for their hospitality, to Miss Clara Foster for securing places for the teachers, and to the Salisbury and Harvey Railway, the meeting adjourned to meet next year at Hillsboro.

## NORTHUMBERLAND COUNTY.

The 15th annual session of the Teachers' Institute was held at the Academy, Newcastle, on the 17th and 18th September. Mr. O. H. Hildebrand was appointed temporary chairman. The enrolment was sixty-four.

The election of officers resulted as follows: G. H. Harrison, A. B., Chatham, President; Miss E. McLachlan, Newcastle, Vice-President; W. J. Loggie, Chatham, Secretary-Treasurer. Mr. Philip Cox, A. B., Newcastle, and Miss Lizzie McIntosh, Chatham, members of the executive.

Miss A. G. McIntosh then read a paper on "How to teach best the matter of prescribed books on temperance." The paper was discussed by Messrs. Cox and Hildebrand.

At the second session, owing to the absence of the writer, Miss E. Hickey, the paper on "Drawing from objects" was not presented, but the subject was introduced by Inspector Mersereau. Mr. W. J. Loggie discussed the subject and gave a lesson on objects.

Mr. A. K. Neales then gave a carefully prepared paper on "What can be done to increase parental interest in schools." The discussion was taken part in by Messrs. Cox, Hildebrand, Clarke, Miss Annie Miller and others.

The morning session of Friday was begun by a discussion, opened by Mr. Harrison, on "The best means of teaching the geography of a country." The discussion was continued by Miss McLachlan, Mr. Cox, Inspector Mersereau, Miss Kate McLeod, Miss A. McIntosh, Mr. Loggie and others.

The next question discussed was: "Is social culture properly emphasized in the schools?" Misses M. Miller, E. McLachlan and others took part.

At the Friday afternoon session the subject of Reading was discussed, and Mr. Cox discussed the question of "The practical utility of the arithmetic of Grades V. and VI."

After the usual votes of thanks the institute adjourned to meet at Chatham next year.

## KINGS COUNTY.

(Full reports of this meeting are not to hand.)

Kings County Teachers' Institute met at Hampton September 24th and 25th. About 40 teachers were

enrolled. A public meeting in connection with the institute was held in Smith's Hall on Thursday evening at which Mr. R. D. Hanson, A. B., presided. Miss Peters presided at the organ. Addresses were given by Mr. John March of St. John, and the Rev. Mr. Paisley of Hampton.

The Friday morning session was occupied by the reading and discussion of a paper on "Reading" by R. D. Hanson. The discussion was taken part in by W. T. Goodwin, J. W. Richardson and others. The remainder of the morning session was spent with the question box.

On Friday afternoon Mr. A. H. Sherwood read a paper on "Moral teaching in our schools."

It was decided to hold the next session of the institute at Sussex on the second Thursday in September, 1892.

After the usual votes of thanks the meeting adjourned.

## GLOUCESTER COUNTY.

The Gloucester County Teachers' Institute met in Caraquet, October 1, at 10 a. m. Mr. McIntosh presided.

The election of officers resulted as follows: B. D. Branscombe, President; Fred L. Legere, Vice-President; J. E. Lanteigne, Secretary-Treasurer. James McIntosh and Miss Ahern, additional members of committee of management.

The president made a few remarks on the importance of holding institutes, and urged the teachers present to make this one a success by each taking an active part in it. This was followed by a paper on Physics by Mr. Allain. It was discussed by Messrs. Branscombe, McIntosh, Legere and Paulin. Next Messrs. Branscombe and Lanteigne showed their methods of using the ball-frame in teaching multiplication tables.

A lecture on "How to teach to English pupils" was given by Mr. Boudreau. Discussed by Messrs. Brison, Allain, McIntosh, Boudreau and Paulin. This was followed by a paper on "Singing," prepared by Miss Erb, and read by Miss Stout, which was discussed by Messrs. Branscombe and McIntosh.

A paper on "Memory" was read by Mr. Branscombe.

Next a lesson on "Dictation" by Mr. Lanteigne, which was discussed by Messrs. Branscombe, Boudreau, Lanteigne and Paulin. This was followed by a paper on "School Discipline" by Mr. Brison. Discussed by Messrs. Lanteigne, Basque and others.

Mr. Boudreau gave a "Lesson on Reduction," which was discussed by Messrs. Branscombe, Allain, McIntosh, and Miss Edgar. It was followed by a

discussion on Payne's Lectures, in which many teachers took part.

It was resolved to hold the next institute at Grand Anse.

#### RESTIGOUCHE COUNTY INSTITUTE.

The Teachers' Institute of the county of Restigouche met in Campbellton, on the 24th, and was in session for two days. Mr. C. Edgett was elected President; Miss Thompson, Vice-President, and Mr. C. P. Steeves, Secretary-Treasurer. Nearly all the teachers in the county were enrolled. Reports of committees were received and approved.

Mr. Edgett read an excellent paper on The Teaching Profession and Teaching. A lively discussion followed. Mr. McLatchy, one of the trustees, formerly a teacher, gave an admirable address.

Deep sympathy was expressed for Mr. Steeves, Principal of the Superior School, Campbellton, who was unable to be present on account of illness, and who has done much to make the institute a success. Miss Helen Galt read a paper on "The Teaching of Science in Common Schools," which was followed by a practical lesson. Both were freely discussed and highly applauded. Miss Surrey read a paper on "Regular Attendance at School, and the Best Methods to Secure It." Miss McKinnon read another on "How to Teach Current Events," which were followed by interesting discussions.

A lesson on fractions was taught by Miss Kerr, which she illustrated by means of pieces of cardboard. Miss Galt took a number of square pieces of wood and showed how fractions could be illustrated by them to young children. The teachers assembled were much interested in these exercises.

Mr. C. H. Edgett, of the Superior School, Charlo, taught a lesson on square root. He purposely selected a class of pupils who had no previous knowledge of the subject. With pieces of wood he gave his pupils a true conception of a square. By reference to plants he gave them an idea of a root; then combined the two ideas square root. He then taught his pupils how to find the square root mentally of any number to 100. He then taught on the black-board, in detail, and not in the abbreviated form given in arithmetics, how to work questions of any number of squares exceeding 100. He illustrated the pieces by diagrams on the black-board. He then instructed the pupils how to build up the square-root, with a great number of squares of wood of different colors. The lesson occupied 40 minutes, was admirably done, and created quite an enthusiasm among the teachers.

The institute adjourned to meet in Charlo, first week in September next year.

#### TEACHERS' INSTITUTES IN NOVA SCOTIA.

A rousing public educational meeting was held at Amherst on the evening of 3rd October, in connection with the teachers' institute. Messrs. Ross and Scanlan, teachers, Inspector Lay, Rev. Messrs. Strothard and McGregor, Messrs. A. R. Dickey, M. P., T. S. Rogers, and others. Very excellent music was furnished during the evening by Prof. Barnaby, who was ably seconded by Mr. Monroe and the Misses Gates, Miles and Pride. A choir from the schools of the town, under the direction of Mr. Ford, delighted the audience, too, with some beautiful songs.

This meeting brought to a close a series of institutes throughout Cumberland and Colchester. These institutes, of which there were 11, have been attended by about 400 persons, 250 of whom were teachers, each lasted three days, and in each instruction was given by the inspector and others, chief of whom were Principals Ruggles, Craig, Dechman, McKenna and MacTavish, in elementary science as required by the course of study, and in the general work of the school-room. These were brought to a close by this one, a description of which will suffice for all. A class of 50 assembled in the academy here on September 30, October 1st and 2nd. The teachers received personal instruction from Inspector Lay, in the elements of mineralogy, botany and entomology, while the tonic sol-fa methods of singing was taught by A. S. Ford, of the Amherst Academy. The lessons in the three first named were all practical, being fully illustrated by specimens of plants, minerals and insects, which specimens were put into the hands of the teachers. In addition to this, there were general discussions on school work, keeping the registers, returns, etc.

In nearly all, instruction was given in the Tonic Sol-fa method of singing, and teachers were carried far enough in that subject to introduce it into their schools. This teaching has been done by the Misses McCart (Folly Village), Travis (Parraboro), and Pappard (Springhill), and by Messrs. Ross (Tatamagouche), and Ford (Wallace, Pugwash, Oxford and Amherst).

These institutes take the place of inspectorial visits during the summer term and have proved a grand success. Inspector Lay, to whom the credit of originating the idea is due, is to be congratulated. The teachers attending the institute are loud in their commendation of his painstaking perseverance, and for the interest he always manifests in their work.

It is expected that as a result of these meetings educational matters in this portion of the Atlantic provinces will be much improved.—*Ex.*

## Astronomical Notes.

## ALGOL.

"The one on the right is the brighter."

"Of course it is."

"Why, certainly it is."

"To my eye the two seem about the same."

"Me, too."

It was on the evening of September 20, quite early in the evening. They were looking at a couple of stars in the north-east. The first three speakers were ladies, as might be guessed from the positive and emphatic forms of their verdict.

The stars were the two brightest in the head of the Gorgon Medusa, which forms a part of the constellation Perseus. The one on the right was Rho Persei, the other Beta Persei. Beta is better known by its Arabic name Algol and is one of the most famous of the variable stars. Our observers had happened to catch Algol at his most interesting phase, when his brightness was at his minimum. Two hours later they all agreed that Algol was decidedly brighter than Rho, and in another hour or so the variable shone out with three to four times the brightness of its neighbor.

Very curious and interesting is it to watch the changes in this star. And there is more than curious and interesting in it to some observers. Given at this late age of the world's history there are those who cannot shake themselves free from an uneasy feeling that there is something eerie and uncanny in a phenomenon of this kind. In earlier ages this feeling was much stronger, a baleful influence was ascribed to the changing aspect of the star, and, from the destruction and calamity which they thought it threatened, the Arabs called it Algol, the Demon-star. The Greeks—or whoever else it was—who placed it among the snaky locks of the frightful and fatal Gorgonian head would seem also to have looked upon it as a death-dooming portent. Until a couple of years ago astronomers looked upon it as a riddle to be read.

Algol is situated between the Pleiades and Cassiopeia. The constellation it belongs to—Perseus—is easily recognized by the J which a number of its stars form. Alpha Persei, the brightest star in the constellation, is in the middle of the down-stroke of the J. The brightest of all the stars in the same quarter of the heavens is Capella. A line joining Capella and Alpha Persei makes a right angle with the line joining Algol and Alpha, and this last line makes another right angle with the line joining Algol and Gamma Andromedæ. Having found Algol, look for its companion Rho. On a clear moonless night the eye can see have-a-dozen or more small stars quite near to Algol. Rho is the brightest of those near it on the

side farthest from the J. The distance between Algol and Rho is  $2\frac{1}{2}^\circ$ , between four and five times the moon's diameter. Most of the time Algol is from three to four times as bright as Rho. According to photometric observations made by Pickering, of Harvard, the magnitude of Algol is 2.31 and that of Rho 3.68. This makes Algol 1.37 of a "magnitude" brighter than Rho, and this is the same as saying that Algol's brightness is three and a half times that of Rho.

This degree of brightness Algol maintains, except for about nine hours out of about every three days. During the first half of these nine hours its light gradually decreases until, as happened with two of our observers on Sept. 20, Algol and Rho seem equally bright; or, as happened with the other three, Algol sinks below the brightness of Rho. There it stays for a quarter of an hour or so. Then, during the next three or four hours, its light gradually increases until it rises once more to the grade of a star of magnitude  $2\frac{1}{2}$ , and there it remains for the next two days and a half.

The exact interval between one minimum and the next is, according to the latest catalogue of variable stars, 2 days, 20 hours, 48 minutes 55.43 seconds. Given this period and the date of any one minimum, it is an easy matter to calculate the dates of future minima. But as the period is slowly shortening there is no use in carrying your calculations too far into the future; and an elaborate degree of precision in the calculation is not at all necessary to enable the stargazer to enjoy a sight of this very interesting phenomenon.

On September 20 minimum occurred at 7.16 (60° time). From this and the period as given above it will be found that the dates of the only minima that fall between sunset and midnight from now to the middle of November are October 10, 9.00; October 30, 10.40; November 2, 7.30. If possible, and if convenient, you should take observations at intervals of half an hour or so for two or three hours before or after (before and after is better still) the given dates.

Of all the two hundred and more stars that are known to be variable there are only ten that vary in Algol's peculiar way. Most of them are continually varying, either waxing or waning. But those of the Algol type maintain a constant brightness for the greater part of the time, and then during a small fraction of their period they dip down to a minimum and rise again to their normal lustre.

What is the cause of this strange conduct on their part? Until two years ago astronomers could only guess. Some preferred one hypothesis and some another. Some backed Zöllner's spots and others



swore by Pickering's dark satellite. The advocates of each theory generally succeeded better in proving the unfitness of the other one to explain all the facts than they did in proving the fitness of their own. Towards the close of 1889 Prof. Vogel and Dr. Scheiver settled the question in favor of the dark satellite theory by means of the spectroscopic apparatus in the astronomical-physical observatory at Potsdam. Now we know that there is a dark sun circling around Algol. Its period of revolution is exactly the same as that of Algol's variation, which was first determined over a hundred years ago. Once in every revolution it passes between us and Algol and cuts off part of the light. And even more than this was revealed by the Potsdam spectroscope. The whole system—Algol plus his dark companion—is moving towards our solar system, and this accounts in a quite satisfactory way for the observed shortening of the period of variation.

And so the old mystery of Algol's demoniac wink has been removed, but only to be replaced by the new mystery of a dark sun. But a wink that takes nine hours from start to finish is still a thing well worth looking at when you get the chance.

A. CAMERON.

Yarmouth, N. S., September 25th, 1891.

#### Social Recreation for Teachers.

The lady teacher has peculiar need of a restful, comforting rhythmic, sympathetic social life, and she is liable to find it peculiarly difficult to secure. She spends the active hours of life with fifty children, more or less, who naturally make a heavy drain upon her nervous energies. They are asking questions, directly or indirectly, indefinitely. She has to watch them incessantly, to correct the way they sit, stand, speak, look, act, read, write, cipher, etc. Such are the demands of modern methods and exacting supervision that she may easily spend every out-of-school hour in getting ready for school, and in examining exercises, compositions and test papers. She is away from home, and is liable to board in a house or family that gives her no social opportunities. More teachers are worn out by lack of a rhythmic social life than from the wear and tear of the school room. The young teacher owes it to herself to secure and enjoy a genuinely healthful and helpful social life. Her intelligence, tastes, character and employment give her opportunities of the highest social standing in the community. She cannot, it is true, give all her time to social life—she can enjoy none of its dissipations, must have the courage to keep good company, good hours, and retain economical tastes; but all of these things characterize genuinely good society everywhere.—*American Paper.*

For the REVIEW.]

#### The Progress of Volapuk.

To the great majority of your readers, probably, who know little of the progress of the new international language, the published reports of the convention recently held at Chautauqua would occasion not a little surprise. I have read such reports, more or less full, in the press of half a dozen American cities and towns, including such papers as the *New York Tribune* and the *New England Journal of Education*, from the latter of which a few extracts are given below.

This was the second annual meeting of the North American Volapuk Association, organized about two years ago, in Boston. Four public sessions were held, besides others of a more private character. Addresses were given and papers read by several prominent gentlemen whose names are given. These dealt with the history of the language, its grammatical structure, its value, its present widely extended practical use, the propriety of teaching it in the public schools, etc.

It may not be generally known that during the last two years, Volapuk has been taught in the evening High Schools of Boston, where hundreds of pupils have gained a working knowledge of the language.

Part of a session "was occupied with an examination by the audience of a very rich exhibit of Volapuk ware, consisting of charts, textbooks, works on topics literary, scientific, ethical, and fiction, with a display of Volapuk newspapers and periodicals, printed in over twenty countries and numbering nearly fifty, some of them having been continuous in issue during eight or ten years,—the entire exhibit affording the most substantial proof of the actualness and great extent of the use of Volapuk all over the world."

At another session, Col. Sprague, the President, gave an interesting lesson lecture. "He began by stating that the vowels were the same as the English vowels, but with the European sounds, and that they played an important part in the inflection of Volapuk, affording as terminals the case-endings of nouns, and as prefixes the tenses of the verbs, and showed that as these vowels were used for these purposes in the order of *a, e, i* for cases and of *a, e, i, o, and u* for tenses; the declension and conjugation were matters of no difficulty whatever. Indeed, he demonstrated the simplicity of Volapuk by actually familiarizing the audience with the construction of sentences in his three-quarter-hour talk, so that it was not surprising to hear Mr. Post, who followed Colonel Sprague, tell how a certain college professor mastered the principles of the language in twenty-seven min-

utes, and a young lady student reached perfection in its use in five lessons, all within ten days from commencing the study.

Mr. Charles Currier Beale, of Boston, gave a very interesting account of the *raison d'être* of Volapuk, of its conception, formulation, period of ridicule as a chimera, ultimate approval by learned men, and then its course of propagation until now it has been accepted all the world around, being in many places in very extended practical use, and bidding fair to be everywhere used within a few years as a medium of international communication. Mr. Beale laid great stress on the fact that the popular impression was wholly unauthorized, that Volapuk is intended to supplant existing languages or any of them. No such thought has entered the minds of the inventor or his followers. The thought is only to *supplement* the many languages whose irregularities, incongruities, and idiomatic difficulties embarrass busy men, and to offer a simple, phonetic, easily pronounced, and single accented language as a convenient substitute for the many natural languages which compel the business man, tourist, and student of science to trust to interpreters or to spend weary years of study in order to familiarize themselves with tongues for which the simple Volapuk abundantly answers.

Among the literary products of the language shown were the complete Prayer Book of the Roman Catholic Church; the Oriental travels of the late Prince Rudolph (a volume challenging competition in its make-up with any similar work in the principal natural languages); Lessing's *Minna von Barnhelm*; Grimm's *Fairy Tales*; the Gospel of St. John; the Proverbs of Solomon, and a hundred or more grammars and dictionaries for people of every language and dialect — all in Volapuk.

After the revelation of this convention there can be no doubt that this language, which has received the approval of Max Muller, Alexander John Ellis, and other such philological authorities, is destined to fulfil its mission of simplifying international intercourse on the language side, and this is all it aspires to do."

HERBERT C. CREED.

For the REVIEW.]

#### Grammar School License in N. B.

"Advance" makes a good suggestion in regard to Grammar School License. While the subject is being discussed why should not Modern Languages, French and German be considered equivalent to Latin and Greek?

STUDENT.

For the REVIEW.]

#### Concerning Daily Marks.

In our school work, we are preparing children for life's duties. Are we implanting a proper principle when a reward is given for each piece of work, and when the workers strive on only for the sake of getting marks?

I have tried the Daily Marking System and find that much time is spent in giving marks which, I think, could be used for a better purpose.

Would not a better method be to have a monthly examination, reviewing work done during the month. Then we could properly estimate the scholarship of each pupil.

Would some teacher please give me an opinion regarding what I have stated.

LADY TEACHER.

Queens County, N. B.

For the REVIEW.]

#### Kindergarten Methods in Primary Schools.

##### EIGHTH PAPER.

The eighth gift consists of sticks of different lengths. Madam Kraust Boelte divides this gift into three parts, the connected slats, the disconnected slats, and the sticks; but others speak of them all as one gift.

We have built with blocks making solid forms of life, knowledge, or symmetry, and have also made pictures of them with tablets. The sticks bring us another step to the abstract — the stick being the embodied line of the surface. Sticks one inch long are cut from a tablet, the two-inch sticks are the length of the cube of the second gift and besides these other lengths are used. Squared sticks are preferable as they sit so firmly on the table.

The language lessons here are very important. Long talks are held about what the sticks are made of, about trees, different kinds of trees, their trunks, branches, barks, etc., also how the trees were cut down, and the way they were cut up into sticks. The children see then the amount of labor required to get these sticks for them.

Having given one stick to each ask what it looks like to them. One will say a match, one a pencil, another a flagstaff and so on. These names may be woven into a pretty story. We notice the color of the stick, that it will not bend, and that it will burn if thrown on the fire. We change the position several times from back to front, left to right, slanting, etc., and then give two sticks to each child. Proceeding gradually with the lesson we are able to give any number to each and easy lessons in numbers are taught by means of them. Whole sentences letter

by letter may be laid although this is not their normal use. Stick-laying is really a kind of drawing. We make shapes of objects and call them forms of life. The symmetrical forms generally begin with a square for the centre.

The child learns number here, it learns to represent outlines of objects which strengthens the faculties of memory and representation, and comparison is exercised.

As we proceed parallel lines are laid, square angles are made and noticed and so the dictation of forms is made easier. We place two sticks to form two right angles, and so to form four right angles. We make a number of objects with any given number of sticks. Large sticks might represent strokes and small ones signs then the tables could be laid as  $| + | = ||$ . Roman numerals are made and the face of the clock taught. Umbrellas, chairs, tents, steps, and hundreds of other pictures may be made and there is always variety.

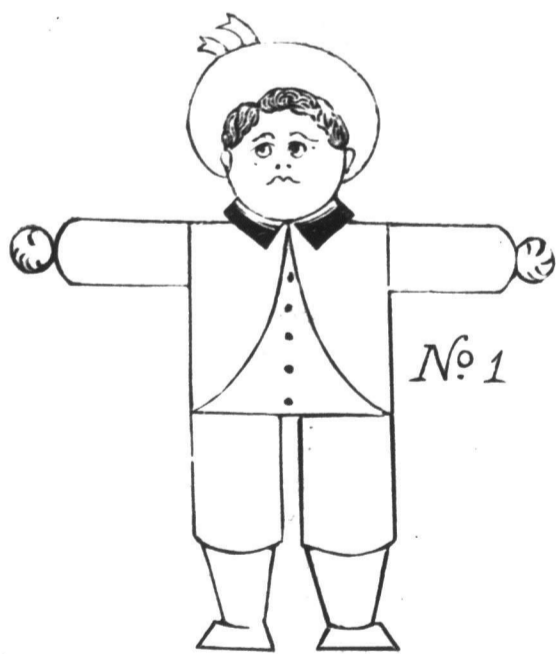
This gift is indispensable to primary teachers. After the introduction of the gift we might have a lesson as the following:—A short exercise in addition, subtraction, multiplication, or division at the beginning say for five minutes—then dictate a chair, boat, house, or something about which all may join in a little talk—lastly dictate a symmetrical form which all may go to the board and draw. D.

For the REVIEW.]

#### Primary Department.

##### FORM.

As soon as the children can model a sphere, lead them to evolve other objects based on that form. The



return-ball is always interesting, and is easily made by attaching elastic to the sphere; let them play with the toy, and excite interest by telling them about the man who invented it, and the fortune made from such

a simple idea; boys like to hear of successful men, and are spurred on to try something themselves. The modelling of apples, oranges and marbles gives practice, and widens the child's views regarding the use of the sphere. At the close of every lesson ask for a drawing, and do not expect a work of art. The crudest outline will express the child's conception of the subject, and that is all that is required; skilled work will be done later on.

Let the children talk freely to you while modelling and drawing, but keep them to the subject; help them to overcome difficulties and listen to their suggestions—often very wise and original. Make the work pleasant for them by working with them, and always (in form lessons) keep the fingers busy. Rouse an alert, expectant feeling by developing something new with every stroke of the crayon.

An outline drawing of the sphere is not interesting in itself, but certain alterations or additions are full of pleasing possibilities. From straight lines and an inner circle turn the meaningless outline into a wheel; two wheels and an axle are speedily connected and a cart is the result, often a shaky vehicle, but always a source of pride to the little builder. Then take another circle, furnish it with a spout and handle, place a knob on top, and a teapot is made from the outline. Take still another circle, mark in a set of grotesque features, and the man in the moon beams upon the tiny artists. The children see that the circle has great possibilities, and are led to try little designs of their own; the creative faculty, dormant in every child, wakens into life and becomes a source of good or ill, just as the teacher directs it. Now, when the little folk are keenly alert, is the time to turn their thoughts on another model, to find out where it resembles and where it differs from the last one; work speedily accomplished by the wonderful fingers and eyes of childhood; then its uses and possibilities are entered into; the cube gains a tangible value as it becomes a factor in daily life; the little potters who moulded the teapot discern the making of a stove in the cube-outline, and interest increases; new ideas come up and are worked out with childish energy till the cube becomes thoroughly familiar, when it may be combined with the sphere. New features are thus introduced and the interest kept up. Then present the cylinder; the trained sight readily detects rollers, mugs, pencils and mallets hidden in the outline. Work them all out and review constantly, thus keeping previous lessons before the mind's eye.

For review work I found the children much pleased with the original designs accompanying this paper. They are so simple that little explanation is needed.

Each child cut and folded the parts for the figure, each part when cut was placed in an envelope bearing the worker's name; when all the parts were ready they



were fitted together on the desk, the little ones working from dictation and a blackboard drawing. I looked at the work, and suggested any necessary changes before brushing with mucilage, after which the children lifted the parts carefully and pasted them on a sheet of brown paper. The result was very satisfactory; of course there were errors, such as placing the limbs too high or too low, but no one made the glaring mistake of putting two arms or two legs on the same side of the body. After the parts were pasted the children drew the features and other necessary lines, and the picture (as they called it) was completed.

Use gay colors for paper-work, and have a box of paints at hand; give the little folks as much freedom as possible; let their ideas expand, and never fail to encourage those who wish to put forward thoughts of their own. Teach them to be thorough in the smallest detail, inculcate pride in skilled labor, and lead them to see that each one must do his part well to form a perfect whole; the primary school is the gateway through which millions of children must pass on their road to knowledge; throw it open wide, make the little travellers welcome, and smooth the way before them; after a time they can walk fearlessly, and will not be so easily discouraged. Primary work must be made interesting and attractive or it will surely fail to be instructive.

M. B. O'SULLIVAN.

QUESTIONS to be answered by the pupils from their own observation and reflection or upon suggestions of the teachers:

How does man get food from the earth?  
 How does man get clothing from the earth?  
 How does man get fuel from the earth?  
 How does man get shelter from the earth?  
 How does man get tools from the earth?—*Ec.*

For the REVIEW.]

#### Hints on Teaching Geography.

Let us suppose the lesson assigned is the surface, rivers and lakes of one of the provinces.

Tell the pupils that for preparation they must draw an outline map of the Province, and insert the rivers, lakes, etc., until they can place them from memory.

Before the hour for recitation arrives have an outline map drawn on the black-board. (Either draw it yourself out of school, or get two of the pupils to do so.) Then commence your lesson by having some of the pupils lay down the rivers, but not the names of them. The teacher should draw attention to errors and make corrections when necessary. From the source and direction of the rivers the pupils will be able to locate the water-shed and name the slopes. Next have the lakes marked and require some pupil, who did not place any of the rivers, to name the rivers flowing into a certain lake, or, if the lake is merely an expansion of a river, require him to tell in words where the lake is situated. Lead the pupils to see that most lakes are expansions in the bed of rivers, as Grand Lake of the Salmon river, or hollows into which rivers flow, as the Great Lakes. Get a statement of the situation of each river, lake, and mountain system, after it has been drawn on the map, but not before.

When pupils take their seats, cover the map on the board and require them to draw it from memory, printing the names of lakes, etc., no names having appeared on the black-board map. Examine work, and uncover map for corrections, when needed.

Keep the map on the board until all of the geography of the Province has been learned, pupils marking railroads, cities, etc., as they come in the order of the lessons.

A. F.

Lower River Hebert, N. S.

#### Bird Trades.

The swallow is a mason,  
 And underneath the eaves  
 He builds a nest and plasters it  
 With mud and hay and leaves.

Of all the weavers that I know,  
 The oriole is the best;  
 High on the branches of the tree  
 She hangs her cosy nest.

The woodpecker is hard at work,—  
 A carpenter is he,—  
 And you may hear him hammering  
 His nest high up a tree.

Some little birds are miners;  
 Some build upon the ground;  
 And busy little tailors, too,  
 Among the birds are found.

—*Our Young Folks.*

For the REVIEW.]

## "L' UNIVERSITÉ."

The institution thus spoken of in France is so great, and yet so distinct from other "Universities" that we may well recall once again what it is.

*L' Université de France* means the whole state department of higher education, including not only the faculties — that is the universities almost, as we should say — of Paris, Lyon, etc., but also the *lycees*, the higher schools, whose teaching embraces much of the teaching of our colleges.

There is, then, no such entity as the "University of Paris," as by a slight error an article was lately headed in this REVIEW. There is the Faculty of Paris, *l' Académie de Paris*, as there is the one of Lyons or of Bordeaux, and, I think, fourteen in all. The old universities of France were suppressed at the new modelling under Napoleon. But now after nearly a century of this post-revolution continuation of pre-revolution centralizing, a great change is coming. Independent universities are to be formed out of *l' Université*, and again there will be really a University of Paris, and a rivalry in intellectual things between separate living bodies at other large towns of France. There is felt to be something unreal and forced in the life of these portions of the great centralized institution. This may have had its work to do in the bringing of uniformity into French public life; but the best tendencies now are towards diversity. May this and other long-suffering common school-countries feel these tendencies more and more. There is hope, when even the logical French feel that system is but a means to an end.

One other thing may I say? The writer in the REVIEW said that the Catholic faculty of theology in Paris is no longer paid by the State, while the Protestant one is. Quite true. But the reason is not far to seek. The Catholic church in France as in America has not acquiesced in the severance of State teaching from dogmatic religion. And in this refusal she has, as is well known, many Protestants on her side. In France the Protestant church is tolerant of dogmatic differences, even to toleration of Unitarianism, and naturally then falls in with a secular, but not immoral State. But the State in France would not refuse to pay the Catholic faculties of theology, if the Catholic church was willing to acquiesce to the State's attitude towards dogmatic religious teaching — a thing of course impossible. W. F. STOCKLEY.

The largest gold coin in circulation in the world is stated to be the gold "loof" of Annam, the French colony in eastern Asia. It is a flat, round piece, worth about sixty-five pounds sterling. The next in size to this unwieldy coin is the Japanese "obang," which weighs rather more than two ounces and a half, about equal to ten English sovereigns.

## TOPICS FOR THE SCHOOL ROOM.

The expedition of seventeen of the graduates of Bowdoin College, under Professor Lee, to the Labrador coast, has just returned *via* Halifax, where the explorers were generously entertained by the local government. A small party was detailed to explore the Hamilton River up to the Grand Falls, reported to be 2000 feet high — the grandest in America. After great fatigue two reached the Grand Falls, which is estimated at less than 200 feet in height. The canon of the river is magnificent, far beyond Niagara, 500 or 600 feet of a vertical cut in hard Archean rock. There are a number of smaller falls and rapids from the edge of the plateau, which may give altogether nearly the reported total of 2000 feet of a fall.

An American vessel has been seized by the Russians in Behring Sea. The Americans will either have to acquiesce in this or acknowledge the British contention that Behring Sea is not a *mare clausum*.

A party of British seamen pic-nicing on the island of Mitylene, about sixty miles from the entrance to the Dardanelles, caused a great sensation in Europe. It was reported that the British had seized the island in order to checkmate Russia.

The recent quick passage (20 days) of Canada Pacific mail steamers on the Pacific ocean has attracted world-wide notice. A British regiment returning from China to England is to make the trip eastward by the way of Canada. This will be the first actual test of the capabilities of Britain's new highway to the east. What other routes are there? Why is the Canadian route preferable?

A great famine is prevailing in Russia owing to the failure in the crops. There is great distress in many places and some of the people are actually starving. What are the chief exports of Russia?

Rich gold mines have been discovered in Alaska. To whom does Alaska belong and how was it acquired?

The insurgents have completely defeated Balmaceda's (pronounce Bal-ma-tha-da) forces and the ex-president committed suicide at Santiago. Indemnity for losses will be demanded by foreign residents.

There is a war scare in Europe. The recent visit of the erratic German Emperor to the British and Austrian courts, coupled with the hobnobbing of the French and Russians, has caused general uneasiness. Russia has disregarded all treaties and her warships now navigate the Dardanelles; her objective points are Constantinople and India. France is smarting over British occupation of Egypt and German occupation of two of her Rhine provinces. Should a war break out the active contestants would probably be France and Russia on one side and Germany, Austria, Italy and Great Britain on the other. What is the meaning of the different allusions in the above? What is meant by the "eastern question?" Should such a war take place where would be the probable battle grounds?

The St. Clair Tunnel Railway, which was opened in September runs under the St. Clair River and connects the railway system of the United States and Canada. It is about three miles long, and has cost something in the neighborhood of two millions and a half of dollars. Practically, it connects 14,000 miles of Canadian railway with 165,000 miles of United States railway. It is twenty feet in diameter, and the first work of the kind constructed on this continent to carry a railway under a river. What two towns does it directly connect?

Baron de Geer, State Geologist of Sweden, is visiting the Atlantic Provinces of Canada, observing the results of glacial action, the raised sea-beaches and other geological phenomena. What evidence is there that some land, which is now much elevated, was once under the sea?

The death of Charles Stewart Parnell, Hon. W. H. Smith, first Lord of the Treasury, and Sir John Pope Hennessy within a few hours of each other, makes a great breach in the House of Commons in England.

### Dalhousie Matriculation Examination.

#### ENGLISH AND CANADIAN HISTORY, AND GEOGRAPHY.

Examiner: President Forrest.

1. Give brief account of History of England during 14th century.
2. Give leading events of reign of Charles II.
3. Act of Settlement 1701.
4. Sketch character of James I. What was his policy foreign and domestic?
5. What foreign alliances did England make in reign of George I.?
6. Give brief account of Chartists.
7. Write short account of Indian Mutiny.
1. "He is properly said to be the founder of the French dominion in Canada." Who is referred to? Give a short account of his work.
2. Write a short history of Port Royal.
3. Give an account of the United Empire Loyalists.
4. Give a short account of the Maroons.
5. What changes took place in the boundaries of Nova Scotia from 1760 to 1825.
6. Washington Treaty Reciprocity Treaty.
7. When and how did Canada gain possession of North-West Territories.
  1. Define plateau, delta, steppe, bight, lagoon, glacier.
  2. In what zones are the following places: Italy, Florida, Bermuda, Corsica, Japan, California, Peru, Patagonia, Manitoba, Alaska.
  3. Locate the following places: Hamburg, Bremen, Dantzic, Delhi, Havana, Melbourne, Shanghai, Mt. St. Elias, Mt. Everest, Mt. Chimberazo.
  4. Bound the following: Switzerland, Germany, Vermont, Hants Co., Albert Co., Kings Co., P. E. I.
  5. Give mountain ranges of Europe, Coast waters of Asia, Chief rivers of North America, Leading cities of South America.
  6. What are the chief products of Java, New Zealand, Peru, Portugal, Sweden.
  7. What are the physical features of Holland, France, British Columbia, Newfoundland, Egypt, Abyssinia.

#### ENGLISH.

N. B.—For matriculation only the first four questions and any one of the others.

1. Write Passage (Macaulay, p. 193, The celebrated — soldier).
2. Analyse to "constituents."
3. Parse 'almost,' 'who,' 'happy,' 'was made,' 'right' (before).
4. Write a composition on The Present Political Situation in Canada, or recount the plot of any story you have read.
5. Reproduce in simple prose the ideas contained in the following lines:—

Once idly in his hall King Olave sat  
 Pondering, and with his dagger whittled chips;  
 And one drew near to him with austere lips,  
 Saying, "To-morrow is Monday," and at that  
 The king said nothing, but held forth his flat,  
 Broad palm, and bending on his mighty hips  
 Took up and mutely laid thereon the slips  
 Of scattered wood, as on a hearth, and gat  
 From off the embers near, a burning brand.  
 Kindling the pile with this, the dreaming Dane  
 Sat silent with his eyes set and his bland  
 Proud mouth, tight-woven, smiling, drawn with pain,  
 Watching the fierce fire flare, and wax and wane,  
 Hiss and burn down upon his shrivelled hand.

6. Write notes on the versification and plot of *Evangelina*. What is the historic basis of the poem?
7. Discuss the syntax of the following sentences, correcting where necessary:—
  - (a) When David came into the presence of Saul, he threw a javelin at him.
  - (b) 'Twas love's mistake who fancied what it feared.
  - (c) I do not think he was the thorough villain, which biographers have allowed themselves to represent him.
  - (d) If this be him we mean, let him beware.
  - (e) By a telegram received this morning the prince had arrived and is in the castle.
  - (f) Every one of us talks worse English every hour of our lives.
  - (g) *Than* governs both the nominative and the accusative cases.
  - (h) I have no reason to think other than well of you, nor do I think other, believe me.
8. Explain how the following plurals are formed: Oxen, swine, kine, brethren, feet, mice, phenomena, banditti.
9. Distinguish between transitive and intransitive verbs. Give examples.

#### JUNIOR MUNRO COMPETITION—ARITHMETIC AND ALGEBRA.

Examiner: Professor Macdonald.

Time, 3 hours.

1. An African traveller divided a load of 6 cwt., 1 qr., 10 pounds, into packages suited to the strength of his porters, who were 4 men, 5 women and 6 boys. Each woman carried  $\frac{2}{3}$  of a man's load, and each boy  $\frac{1}{4}$  more than a woman's load. What was the load of each man, each woman and each boy?
2. When you reduce a Vulgar Fraction to a Decimal, you annex cyphers to the numerator, etc. Explain the reasons of the rule, taking  $\frac{7}{16}$  as an easy example to work with.
3. Divide  $x^3 + y^3 + z^3 - 3xyz$  by  $x + y + z$ ; and show that if  $x + y + z = a$ ,  $x^2 + y^2 + z^2 = b^2$ , and  $x^3 + y^3 + z^3 = c^3 + 3xyz$ , then  $a^3 + 2c^3 = 3ab$ ?

4. Show that in finding the "highest common factor" of two algebraic expressions, the usual method of successive division *does* give it.

5. Find, by factoring if you can, the least common multiple of  $8x^3+27$ ,  $16x^4+36x^2+81$ ,  $6x^2-5x-6$ . (The answer may be in factors.)

6. Solve the equation,  $\sqrt{4a+x} + \sqrt{a+x} = 2\sqrt{2a+x}$

7. Simplify the fraction

$$\frac{(a^1b^1+c^1d^1)^2-(a^1c^1+b^1d^1)^2}{(a^2-d^2)(b^2-c^2)}; \text{ and,}$$

without altering the value of the fraction, rationalize the denominator of

$$3 \frac{A}{\sqrt{x^{2m}+3}\sqrt{y^n}}$$

8. A person went  $d$  miles on foot at uniform rate, and then  $c$  miles by railway. He found that had he gone  $c$  miles on foot and then  $d$  by rail, he would have saved  $1n$  hours; and had he gone the whole distance by rail, he would have saved  $n$  hours. Find his uniform rate of walking.

$$(\text{Ans. } \frac{2d(c-d)}{nc-(m+n)d})$$

9. Prove  $(\sqrt{-1})^{4m+3} = -\sqrt{-1}$ .

10. If  $2y = s + \sqrt{s^2-4}$ , prove *directly* that  $y + {}^1y = s$ .

11.  $x+y+z=a$ ;  $y+z+w=b$ ;  $z+w+x=c$ ;  $w+x+y=d$ . Find the value of  $x$ , and infer the values of  $y$ ,  $z$ ,  $w$ , from symmetry.

12. If any even multiple of 5 be taken, the difference of the squares of the natural numbers *adjacent* to it is divisible by 40; but if an odd multiple of 5 be taken, then the same difference is divisible by 20.

#### SCHOOL AND COLLEGE.

Mr. J. W. Brehaut, B. A., of Dalhousie, has gone to Harvard, where he will enter the fourth year in arts. Six other Dalhousie graduates — Fred. McLeod, Ambrose McLeod, J. C. Shaw, D. D. Hugh, R. Burkett, E. Fulton — will also attend Harvard this winter. Five of these young men belong to Prince Edward Island, and four of them took graduate scholarships at Harvard this year in competition with graduates from all the leading universities of the continent, including Harvard itself, there being four candidates for every scholarship offered.

Pictou Academy has its staff again fully reorganized. Principal Robert McLellan (Dal.) classical master, H. M. McKay, B. A. (Dal.) science master, and the new men, A. O. Macrae, B. A., (Dal.) English master, and A. C. L. Oliver, B. A., (Dal.) mathematical master.

There are yet accommodations for only thirty boys in the manual training department of the Halifax Academy; but before long the accommodation will be increased three fold. Two hours a week is the time allowed in the curriculum.

Mr. H. F. Perkins, for a long time principal of the Fairville schools, has retired to take a college course. Mr. Edgar M. Brundage has succeeded him.

Miss Jessie K. Sutherland, who was looked upon as one of the most successful and thorough of the teachers in St. John and who some time ago obtained leave to attend a normal school in the United States, has returned and will probably seek further service in this province. She is much impressed and feels greatly benefited by the course of study she has been pursuing.

Miss Agnes O'Sullivan who retired from teaching to enter more fully into literary work has gone to Boston. Miss O'Sullivan's work in this direction is not new, but already has received recognition and been highly commended.

The poems of C. H. Acheson, a young teacher of Charlotte Co., are attracting some attention and those competent to judge say he will yet make his mark.

The teachers of Welchpool, Campobello, have for some time been energetically working for a school library and their efforts have been highly successful. Principally by private subscription they have raised about \$120 and hope to raise this amount to \$200. The summer visitors to the Island have been generous contributors to the fund. The teachers are Mr. A. W. Hickson, Mr. H. W. Robertson and Miss Myra Lambert.

The Charlotte County Teachers' Institute is indebted to Mr. Jas. Vroom, of St. Stephen, for his co-operation. Mr. Vroom though not now engaged in active teaching has never lost his sympathy for the teacher's work and is always ready to assist.

The vacancy on the teaching staff of the Halifax school for the blind, caused by the resignation of Miss Hunter, has been filled by the appointment of Miss. J. E. G. Roberts, of Fredericton.

A very successful opening of the fine new school building at the Rolling Dam, Charlotte Co., was recently held. Beside a large attendance from the surrounding districts there were present Provincial Secretary Mitchell, Inspector Carter, four of the St. Stephen school board, Messrs. Ganong, Clarke, Broad and Deinstadt, Collector Graham, Mr. Jas Vroom and Dr. Blair, of St. Stephen. Two of the trustees, Mr. Robt. McKinney and Wm Scullin, occupied seats on the platform. Mr. McKinney presided. Speeches were made by many of the gentlemen present in which all heartily congratulated the trustees and district upon the excellent character of the grounds and building. The school grounds which are among the finest in the county were given the district by Mr. McKinney. The St. Stephen contingent of visitors presented the trustees with a handsome flag for the school building. Mr. J. W. Richardson, of St. Andrews, was engaged as teacher, but as he was soon after offered a more lucrative position he was relieved by the board and Mr. Vernon Clarke, an energetic young teacher, engaged in his stead.

Of the 389 colleges in the United States, 238 are co-educational.

The Halifax Ladies' College has had the old board of governors re-elected. Over \$4,000 of improvements have been made on the buildings during the summer vacation.

Miss Annie Crewdson, the active and earnest teacher at Mace's Bay, Charlotte Co., by means of a recent school concert has not only succeeded in supplying the school with much needful apparatus, but has laid the foundation for a school library which she hopes to add to from time to time. The people of the district manifest the greatest willingness to assist, and have added to the attractiveness of the school surroundings by handsomely painting the school house.

The Halifax County Academy has organized a rifle cadet company under the militia law. The uniform is quite a handsome one and is supplied at a very low cost. Independently of the company, all the 300 students of the Academy receive military drill combined with calisthenic movements and music twice a week.

Dalhousie is reported to have its first year class the best in the history of the institution. The Law students have already held more than one mock parliament, which is becoming a sort of favorite institution among them.

The teachers of St. Stephen and Milltown combine at some of their monthly meetings. The idea is a good one and might be followed with advantage in other similarly situated localities.

The Halifax Academy is also commencing the formation of a museum of the Natural History of the province. Hope to have reports from other Academies and High Schools. Pictou has the largest, New Glasgow perhaps comes next from the reports of material received in our exchanges.

Miss Isabella Higgins, the teacher at Little River, Simonds, St. John Co., recently had a school entertainment for the purpose of starting a school library. Many visitors were present from the city notwithstanding the unfavorable nature of the weather. About \$40 was realized and a very good start will be made. Saving a library the Little River school is one of the best equipped in the county.

Miss Travis and Miss Cameron, of the Girl's High School, St. John, have entered the arts course in McGill University. Miss Travis has won an exhibition, valued at \$100.

Miss Bina Henry, a recent graduate of the New Brunswick University, has gone to Michigan University to take a medical course.

Inspector Mersereau expects to be able to visit all the ungraded schools in the parishes of Beresford, Bathurst, New Bandon, Caraquet, and Shippegan, in Gloucester County, N. B., during the month of October.

At the matriculation examination in the University of Dalhousie, the following were the successful winners. Exhibitions worth \$300 each, and Bursaries worth \$200:

SENIOR MUNRO EXHIBITIONS.

W. Logan,	.....	Pictou.
E. W. Forbes,	.....	Dartmouth.
G. E. Ross,	.....	Halifax.
H. Rose,	.....	P. E. Island.

SENIOR MUNRO BURSARIES.

A. Martin, (conditionally)	.....	P. E. Island.
T. C. McKay,	.....	Dartmouth.
Ida G. McDonald,	.....	Sherbrooke.
A. D. Robinson,	.....	Sussex, N. B.
A. Barnstead,	.....	Halifax.
G. Arthur,	.....	P. E. Island.

JUNIOR MUNRO EXHIBITION.

Jennie W. Ross,	.....	P. E. Island.
Geo. Butler,	.....	Yarmouth.
H. P. Duchemin,	.....	P. E. Island.
Henry C. Dickson,	.....	Colchester Co.
Thos. Lawson,	.....	Waterville, Kings Co.

JUNIOR MUNRO BURSARIES.

E. P. Robins,	.....	P. E. Island.
Bertha B. Hebb,	.....	Bridgetown.
J. Sterling,	.....	P. E. Island.
Emma Hay,	.....	Vancouver.
W. Y. Woodman,	.....	Digby.
A. D. Archibald,	.....	Halifax.
J. S. Layton,	.....	Elmsdale.
J. J. Doyle,	.....	Halifax.
E. E. Jordan,	.....	P. E. Island.
Blanche Macdonald,	.....	Hopewell.

Total value of the prizes, \$5,900.

Words to be Distinguished.

BETWEEN AND AMONG.

"Between" applies to only two persons or things.  
 "Among" applies to more than two persons or things.

Fill each one of these blanks with the proper word.

1. He walked the six miles ..... here and the village.
2. He fell ..... thieves.
3. I saw the lame boy as soon as I came ..... the children.
4. There are many weeds ..... the flowers.
5. The river flows ..... its banks.
6. .... them all there was not one sound apple.
7. He placed the paper ..... two of the leaves of his book.
8. The two boys could not divide it ..... them.



### The Girl Who Teaches.

Sound health is a prime necessity for any worker in the world, no matter what the line of work may be, but it becomes of the greatest importance if the work is to be carried on in the school-room, writes Caroline B. Le Roy, in the September *Ladies' Home Journal*. There, not only the physical, but the nervous and mental forces are taxed to the utmost. The young graduate has hitherto gone to school to sit comfortably at her desk; to stand occasionally for recitations; to use her voice but little; to have constant variety in her work; to enjoy her recess with perfect freedom and in congenial companionship. As a teacher she goes to school to stand upon her feet all day long; to use her voice incessantly, perhaps, too, in a large room filled with the tumult of the street; to keep noisy, and, very likely, rebellious and disobedient children not only quiet, but interested, and to spend the recess in care of them in the halls and the yard. Besides this she is to stimulate their brains, and a certain amount of time—usually prescribed by a board of education, the members of which know little of the capacity and possibilities of the youthful mind—is allotted her, in which she must somehow or other succeed in teaching them a certain number of facts—no allowance being made for the slowness, stupidity, or disorder, which increases the friction of the work and delays the doing. No matter how complete the education, or how enthusiastic the spirit, the power of physical endurance is absolutely necessary.

### QUESTION DEPARTMENT.

G. M.—The REVIEW is worth preserving. What would binding of several volumes probably cost?

Volumes of the REVIEW neatly bound are worth preserving and will become more and more valuable as serving to indicate our educational progress from year to year. J. & A. McMillan, St. John, will bind single volumes (12 numbers) for 75 cents.

N.—If a hole was made through the centre of the earth from one side to the other and a ball dropped in, where would it come to rest at?

The ball would move nearly to the other side of the world, then come back nearly to its starting point, and continue oscillating backward and forward with decreasing amplitude according to the character of the resistance or friction retarding the motion, until, eventually, it would come to rest at the centre of the earth.

SUBSCRIBER, Newfoundland.—Would you kindly publish a solution of the accompanying problems in the September—if possible—or October issue of your educational journal?

To me the REVIEW is a valuable and highly prized exponent of competent views on educational questions, and a practical instructor; and I am sure when its true value is understood its circulation here will become much more extensive. By complying with the request above written I shall feel ever grateful to you.

NOTE.—A solution by arithmetic of the first two—they being arithmetical problems—would be preferable. But the last one, I believe, is algebraical. However, solve them how you may.—A. S. V.

No. 1.—James Harper has a large jewelry store which, with its contents, he insures in the Citizens' Insurance Company for two-thirds its estimated value, at  $3\frac{1}{2}$  per cent. This Company immediately insures one-half its risk in the Phoenix Company at two and a half per cent. After two and a half years the store and contents were destroyed by fire, when it was found that the Phoenix Company lost \$2,925 more than the Citizens' Company. Reckoning 6 per cent. simple interest on the premiums the owner paid, what would be his entire loss?

No. 2.—Mrs. A., Mrs. H. and Mrs. R. bought cloth and laces. Each person bought as many yards as she gave cents per yard. Each lady paid 63 cents more than her daughter, and of the daughters Jane bought 23 yards less than Mrs. A. and Eliza 11 yards less than Mrs. H. The third daughter was named Ann. Whose daughter was each of the girls?

No. 3.—A says to B, if the number of my apples squared be added to yours it will be 40. But says B to A, if the square of mine be added to yours it will be 22. How many apples had each?

No. 1.—Property worth \$300 was insured for \$200 at  $3\frac{1}{4}$ %. Premium \$6.50. \$100 of the same was reinsured by the "Citizen Co." in the "Phoenix" at  $2\frac{1}{4}$ %, for which the "Phoenix" received \$2.50 and the "Citizen" had remaining only \$4.00 of the premium first received. Premiums being paid in advance, in  $2\frac{1}{2}$  years, three premiums would be paid—the first bearing 6% interest for  $2\frac{1}{2}$  years, the second for  $1\frac{1}{2}$  year and the third for  $\frac{1}{2}$  year. The "Citizen" would therefore have retained premiums worth, at the time of the fire, \$4.60, \$4.36 and \$4.12—equal to a total of \$13.08. The "Phoenix" would have, in like manner, the premiums \$2.875, \$2.725 and \$2.575, equal to a total of \$8.175. The companies having to pay \$100 each, the net loss of each would be—the "Citizen" \$6.92, the "Phoenix" \$91.825. The "Phoenix," therefore, loses \$4.905 on every \$300 of property.

If the excess of loss of \$4.905 represents \$300 property, then

\$1. "  $\frac{300}{4.905}$  "

and " \$2925 "  $\frac{300 \times 2925}{4.905}$  "

The jeweler loses property worth  $\frac{300 \times 2925}{4.905}$  and his premiums worth \$13.08 + \$8.175 on every \$300 of his property, which is equal to  $\frac{21.175}{300}$  on every \$1.00, and therefore equal on all property to  $\frac{21.175 \times 300 \times 2925}{300 \times 4.905} = \frac{21.175 \times 2925}{4.905}$

$$\begin{aligned} \therefore \text{total loss of jeweler} &= \\ &= \frac{300 \times 2925}{4905} + \frac{21.175 \times 2925}{4,905} \\ &= \frac{2925}{4905} (300 + 21.175) = \frac{2925 \times 321.175}{4,905} \\ &= \frac{2925 \times 64235}{981} = \frac{975 \times 64235}{327} = \frac{325 \times 64235}{109} \end{aligned}$$

No. 2.—We give to our readers for experiment.

No. 3 forms an equation of the fourth degree; and the only general method for the solution of such equations is by "approximation" methods, *e. g.*, Howe's and Newton's, which are given in many elementary books. From the nature of this problem only integral values are required. The simplest method, then, is to find the integral roots of the equation by the methods used for determining a linear factor of a polynomial. The equations are:

$$\begin{aligned} x^2 + y &= 40 & (1) \\ x + y^2 &= 22 & (2) \end{aligned}$$

$$\text{from (1). } y = 40 - x^2 \quad (2)$$

$$\text{Sub. (3) in (2). } x + 1600 - 80x^2 + x^4 = 22 \quad (4)$$

$$(4) \text{ Transposed, } x^4 - 80x^2 + x + 1578 = 0 \quad (5)$$

$$(5) \text{ Factored, } (x-6)(x^3 + 6x^2 - 44x - 263) = 0 \quad (6)$$

$$(6) \div \text{by polynomial } x-6 = 0 \quad (7)$$

$$\therefore x = 6 \quad (8)$$

$$\text{Substitute (8) in (3) } \therefore y = 40 - 36 = 4 \quad (9)$$

2nd method.—A convenient method for finding an integral root of such equations as  $x^4 - 80x^2 + x + 1578 = 0$  is the substitution of integral numbers for  $x$  beginning with unity until the equation vanishes. It vanishes for  $x=6$ ,  $\therefore x$  is a root required.

ANTAGONISH.—Grade "B" papers not at hand and cannot be obtained in time before going to press. Will give answers next month. Thanks for your note.

### BOOK REVIEWS.

THE BOTANICAL COLLECTOR'S GUIDE; a manual for students and collectors; containing directions for the collection and preservation of plants and the formation of a herbarium, by D. P. Penhallow, B. Sc., F. R. S. C., Professor of Botany, McGill University. Cloth, pp. 125, 4 by 6½ inches, 75 cents. E. M. Renouf, publishers, Montreal, 1891. This little volume was written in response to an evident want respecting the methods of collecting plants and forming a herbarium according to a uniform standard as based on the best practice. The object in view is to meet the requirements of pupils in the public schools and students in college. It is well printed and illustrated, giving even specimens of drying paper, mounting paper, cover paper, moss packets, etc., bound in the volume. Just the book for the members of the Botanical Club of Canada.

ACADIA UNIVERSITY, 1891-92. This calendar gives a short sketch of the rise and constitution of the college, in addition to the usual information about the curricula of the college.

BEGINNER'S LATIN BOOK, by Collier and Daniel and ALLEN & GREENOUGH'S LATIN GRAMMAR, are now published by T. C. Allen & Co., 124 & 126 Granville street, Halifax. Purchasers will thus be saved the duty on imported books.

THE CONVERSATION SCHOOL OF MODERN LANGUAGES, H. Lothair Boher & J. Victor Plotton, Halifax, N. S. (58 Bedford Row); paper, 16 pp. This little pamphlet shows what these able modern exponents of the Comenian system are prepared to do in the teaching of modern languages.

THE MEDALIST, or the Laws of Rational Conviction. A text-book in formal or general logic, by Edward John Hamilton, D. D., Albert Barnes, Professor of Intellectual Philosophy in Hamilton College, N. Y. Pp. vi. + 331, 8 by 5½ inches; cloth. Ginn & Co., Boston, U. S. A., 1891. We would not venture to say that the author has done anything strikingly new. That could hardly be expected in such an ancient and favorite department. But there can be no doubt that he has treated his subject in very good form and in an interesting manner. The titles of his chapters will best indicate to our readers the scope and intent of this neatly printed volume: I. Logic Defined. II. Belief, or Conviction. III. Logic Divided. IV. Entities and Conceptions. V. General and Individual Notions. VI. Predicative Notions, the "Categories." VII. Predicative Notions; the "Predicables." VIII. Definition of Notions. IX. Logical Division. X. Propositions and Predications. XI. The Categorical Predications. XII. The Illative Proposition. XIII. Inferential Sequence. XIV. Orthologic Inference. XV. Homologic Inference. XVI. Inductive Reasoning. XVII. Hypothetical and Disjunctive Reasonings. XVIII. Probable Inference. XIX. The Opposition of Propositions. XX. The Conversion of Predications. XXI. Contingency and its Conversion. XXII. Syllogisms. XXIII. Syllogistic Moods. XXIV. The Pure or Dogmatic Syllogisms. XXV. The Reduction of Syllogisms. XXVI. Fallacies. XXVII. Fallacies in Catenate Inferences. XXVIII. Exterior Catenational Fallacies.

HIGH SCHOOL HISTORY OF ENGLAND AND CANADA, 427 pp. Price, 65 cents. Publishers, the Copp Clark Company, Limited, Toronto. This book which has been authorized by the Education Department of Ontario is the product of two authors. The History of England is by Arabella B. Buckley and has been before the public for several years. It is admirably written and is full and interesting enough to take the place of every other school History of England. The History of Canada has been written by W. J. Robertson, B. A., LL. B., of St. Catharines, Ont. The leading events alone have been sketched, and this rather meagre outline is intended to be supplemented by the intelligent teacher.

PRINCIPLES OF POLITICAL ECONOMY, by Chas. Gide, of the University of Montpellier, France. Price, \$2.00. Publishers, D. C. Heath & Co., Boston. American and English readers will welcome this translation of Prof. Gide's work which has produced a profound impression on French students of political economy. It is plain and just in the treatment of the subject and should have a wide circle of readers on this continent.

**MECHANICS FOR BEGINNERS, Part I., Dynamics and Statics.** By Rev. J. B. Lock, M. A., fellow and bursar of Gouville and Cain's College, Cambridge. Clothboard, pp. viii. + 264, 4½ by 7 in., 3s. 6d. MacMillan & Co., London and New York, 1891. A capital little book. We don't know a better book for the beginner—very clear, systematic and modern in its treatment of the subject.

**PICTOU ACADEMY,** course of study for the year 1891-92 and catalogue for 1890-91. This annual comes out in good style as usual. 231 students have been enrolled during the past year. Its staff represents more scholarship than some institutions which are called colleges, as its catalogue represents more students.

**SHORT ANALYSIS OF ENGLISH HISTORY,** by T. F. Tout, M. A. Price 1s. MacMillan & Co., London and New York. This little primer will be useful to teachers, as it presents in chronological order the chief facts of English history concisely stated. It forms an excellent companion for larger text-books, helping students to acquire a precise acquaintance with the facts of history.

**SCOTT'S LAY OF THE LAST MINSTREL,** with Introduction and Notes by G. H. Stuart, M. A., and E. H. Elliot, B. A. Price 2s. Publishers: MacMillan & Co., London and New York. Readers of Scott's poetry will be glad to have placed before them this favorite piece in such a convenient and readable form.

#### Current Periodicals.

*St. Nicholas for October* has an account by Margaret Bissell of "A Curious Relic," namely, a part of the figure-head of the old frigate "Constitution." Another novelty is a short letter from Meredith Nugent explaining where grasshoppers and crickets tried to hide their ears until Sir John Lubbock rummaged them out for us. There are poems and bits of verse in plenty; Crandall's "Three Tree" being a fair presentation of the poetic, while Malcolm Douglas's "Cuckoo Clocks" is notable for its jolly rhythm, and "White Marie," by Virginia Woodward Cloud, is as dainty

a bit of lyrical fancy as any child might hope to find.... *The Popular Science Monthly* for October opens with the first of a series of Lessons from the Census, in which is traced the growth of the census, and shows that it has come to be a somewhat unwieldy instrument. Under the title *Metamorphoses in Education*, Prof. E. Dolbear traces the necessary connection between the new character which human life has taken on and the rise of scientific education. .... *Littell's Living Age* for September 26th and October 3rd contain memoirs of Prince Tallyrand, *Edinburgh Review*; Private Life in France in the Fourteenth Century, *Fortnightly Review*; The American Tramp, *Contemporary Review*; Some Recent Studies on the Solar Spectrum, *Month*; Sir John Macdonald, *Blackwood's Magazine*; Goethe's Friendship with Schiller, *Fortnightly Review*; Maiden Speech, *Murray's Magazine*; Our Dealings with the Poor, *Nineteenth Century*; Names in Novels, *Blackwood's Magazine*, and other interesting articles. For fifty-two numbers of sixty-four large pages each (or more than 3,300 pages a year) the subscription price (\$8) is low; while for \$10.50 the publishers offer to send any one of the American \$4.00 monthlies or weeklies with *The Living Age* for a year, both postpaid. Littell & Co., Boston, are the publishers.... *The Century* for October has the closing one of Mr. Kennan's series, and is entitled "My Last Days in Siberia." He describes his experiences among the Kachinski Tartars and the political exiles of Minusinsk, and with the "plague-guard" quarantine, and narrates the journey by way of Tobolsk and Tiumen to St. Petersburg.... *The American Naturalist* for August has the description of a new "Jumping Mouse" from Nova Scotia and New Brunswick. This animal now rejoices in the name *Zapus insignis*, Miller. It is not really new to Nova Scotia, however, as it was taken near Halifax more than a third of a century ago, and was described by Dawson (*Edinb. N. Phil. Jour.*, III., 1856), under the name *Meriones labradorius*, Rich.... *The Toronto Educational Journal* contains a capital portrait and sketch of Principal Geo. M. Grant, of Queen's University, Kingston.... *Garden and Forest* for the past four or five months has had a series of very interesting articles on "How we Renewed an Old Place."

**THE KINDERGARTEN MAGAZINE** gives to primary teachers practical helps: "Typical Primary Lessons," Sarah E. Griswold, Cook Co., Normal; "Color and Form," Josephine C. Locke; "Science Sessions," Edw. G. Howe; and other articles by best writers, adapting kindergarten methods to primary work. One year, \$1.50; 3 months' trial, 30 cents. Kindergarten Pub. Co., 277 Madison St., Chicago.

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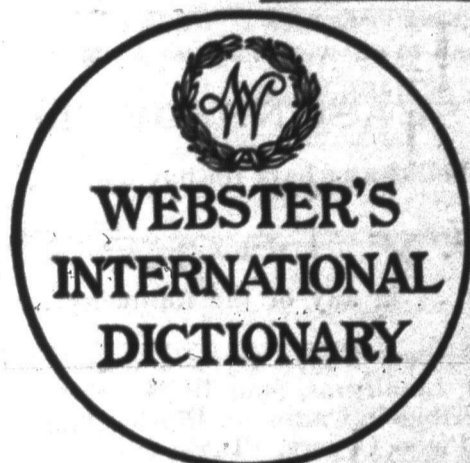
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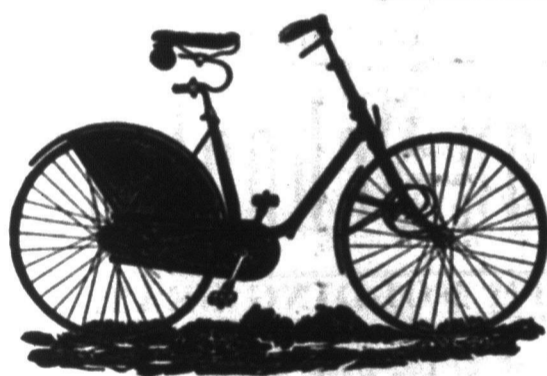
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The Calendar for the Session of 1891-2 contains information respecting conditions of Entrance, Course of Study, Degrees, etc., in the several Faculties and Departments of the University, as follows:—

- FACULTY OF ARTS—(Opening September 14th, 1891.)
- DONALDA SPECIAL COURSE FOR WOMEN—(September 14th.)
- FACULTY OF APPLIED SCIENCE—Civil Engineering, Mechanical Engineering, Mining Engineering, Electrical Engineering and Practical Chemistry—(September 15).
- FACULTY OF MEDICINE—(October 1st).
- FACULTY OF LAW—(September 7th).
- FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE—(October 1st).
- McGILL NORMAL SCHOOL—(September 1st).

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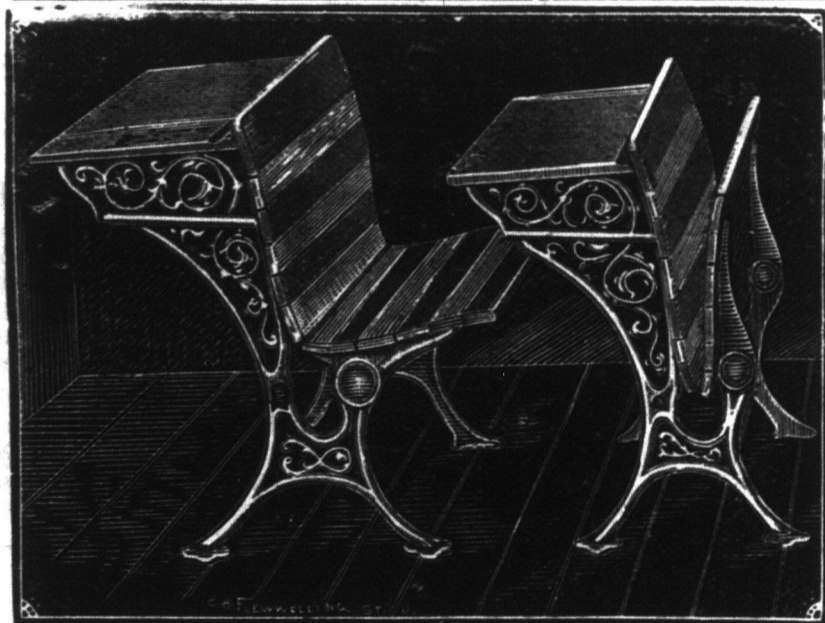
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