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# The Educational Review.

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G. U. HAY, Ph. B.,  
Editor for New Brunswick.

A. McKAY, Supervisor Halifax Schools,  
Editor for Nova Scotia.

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Subscribers should promptly notify the REVIEW of change of address. Communications from New Brunswick and Prince Edward Island should be addressed EDUCATIONAL REVIEW, St. John; from Nova Scotia and Newfoundland to W. T. Kennedy, Halifax.

THE report of Dr. Inch, Chief Superintendent of Education for New Brunswick, for the year ending June 30th, 1891, is at hand. The whole number of pupils enrolled during the year was 68,992, an increase of 469 over the previous year. St. John County made the highest per centage of attendance, and among the incorporated towns St. Stephen made the highest average for the year, though surpassed by Woodstock during the second term. The total amount expended for education was \$419,546.75, or an average cost per pupil of \$6.08. There was an increase of \$24.11 on the average salary of first class male teachers; a small decrease on second and third male and first class female, and a slight increase on second and third class female teachers' salaries. There were forty-nine superior schools in operation the first term and forty-six the second term, and there were thirteen grammar schools in operation during the year. More advanced work was done in the superior schools than in a majority of the grammar schools. "These facts," the report states, "indicate unmistakably the neces-



sity of a re-organization of the grammar and high schools of the province so that results may be obtained more commensurate with the expenditure, and that the common schools, high schools, the grammar schools and the university may be so articulated as to become a constant source of strength and growth to each of the others." A change is suggested in the law relating to grammar schools, viz.: that a standard be fixed both in regard to equipment and the number of advanced pupils, falling below which a school would cease to rank as a grammar school.

Mr. MONTAGUE CHAMBERLAIN, formerly of St. John, and now assistant secretary of Harvard University, has published a popular hand-book of the Ornithology of the United States and Canada, based on Nuttall's Manual. The work, which is published in two volumes, consisting of nearly 1,000 pages, with admirable pictorial illustrations, is a monument of Mr. Chamberlain's industry as a naturalist.

Mr. WILLIAM TYNG RAYMOND, of Hampton, a graduate of the U. N. B., class of 1883, formerly of the Sunbury County Grammar school, and later a student and scholar in classics at Harvard, has received the appointment of professor of classics at the State Normal School at Cortland, New York, and entered upon his duties February 15th. We congratulate Mr. Raymond upon his appointment to this most desirable position, and at the same time we consider that the school is fortunate in securing the services of so thorough a classical scholar and so competent and experienced a teacher.

THE Harvard Summer School of Botany will open at the Botanic Garden, Cambridge, June 30th, and close on August 3rd. A course in phanerogamic botany will be given by Mr. W. F. Ganong, assisted by Mr. G. J. Pierce, and a course in cryptogamic botany will be given, covering the same time, by Mr. A. B. Seymour, at the Lawrence Scientific School, Cambridge.

A COURSE of twelve lectures on botany, in connection with the Mt. Allison extension schemes, has been opened in Charlottetown. The lecturer, Mr. Francis Bain, has done much to make known the natural history, especially the botany, of Prince Edward Island, and it is expected that this course of lectures will do much to popularize the subject in Charlottetown.

THE serious illness of Mr. F. H. Hayes, Superintendent of Schools, St. John, has called forth a general expression of regret from all classes of citizens. Mr. Hayes had a severe attack of la grippe some months ago which was followed by pleurisy about a week since, from the effects of which he has

suffered acutely. The Board of Trustees granted him a fortnight's leave of absence in January, but he remained at his post, although not fully able to attend to his duties. Mr. Hayes has devoted himself earnestly to his work since his appointment, attending to the minutest details with a faithfulness that secured for him the esteem of the trustees and teachers of St. John. His recent severe attack, which was probably brought on by the heavy strain upon him in attending to his duties when he required rest, has created very general sympathy for him.

#### CANADIAN EDUCATIONAL ASSOCIATION.

This association was organized at Toronto in July, 1891, by Canadian teachers in attendance at the National Educational Association. A provisional executive committee was formed, with Hon. G. W. Ross, Minister of Education for Ontario, as President, the Superintendents of Education in the several provinces as Vice-presidents, Rev. E. I. Rexford, of Montreal, as Secretary, and E. W. Arthy, Montreal, as Treasurer.

At a meeting of the executive, held in Montreal on the 26th of January last, it was decided that the first meeting of the association should be held in Montreal the first week in July, extending over four days (July 5th to 8th). The following is the general programme decided upon: (1) That the first day should be occupied with a meeting of welcome in the afternoon, and a conversazione in the evening. (2) That the remaining days should be occupied with (a) general morning meetings (9-12); (b) afternoon meetings in sections (2-4); (c) evening public meetings of a more popular character (8-10). (3) That the association should be organized for its first meeting in five sections, namely, (1) Kindergarten, (2) Public School, (3) High School, (4) Normal Training and Inspection, (5) University. (4) That there should be a scholastic exhibit in connection with the meeting of the association, including specimens of school work, school appliances, text-books, etc.

Local committees have been organized in Montreal to make preparations for the meeting, which will form the educational feature of the celebration of the 250th anniversary of the foundation of that city.

The National Educational Association of the United States meets at Saratoga during the second week in July, giving ample opportunity to attend both meetings and enjoy the scenery of the St. Lawrence, Lake Champlain and adjacent mountain and the Hudson River—a grand programme.

The Canadian managers of the National Educational Association include Supt. Inch, of New Brunswick, Supt. A. H. Mackay, of Nova Scotia, and Supt. D. J. McLeod, of P. E. Island.

The formation of a Canadian Educational Association has been advocated by the REVIEW, and it is to be hoped that the first meeting will exert such an influence as will make the association permanent.



**GRANTS FOR EDUCATION.**

It is to be hoped, nay it should be confidently expected, that whatever may be the need of larger revenue in New Brunswick, there will be no further interference with the amount devoted at present to education. That the common schools are by far the most important charge of the Local Legislature no intelligent person will dispute. Any interference with their revenues cannot fail to cripple them accordingly. It may be argued that *this* Province gives more or *that* Province gives less toward the support of its schools, but it has been the privilege of the people of New Brunswick to receive stated amounts in aid of education and any curtailment would be a most unpopular measure. Can it be expected that railroad after railroad can be subsidized and permanent and expensive highway bridges be built, and the grants to the roads remain unimpaired? If a few colleges had been endowed, or the high school grants been largely increased, the common schools might be expected to share the expense, if the needs of the revenue required it. There has been no increase, save the natural one, which has been small for some time, in the expenses of the school service. There has been an increase in nearly all the other departments.

In connection with this subject it may be noted that the *Charlottetown Patriot* makes the following comparison between the grants to education in New Brunswick and Prince Edward Island.

"Let us first note New Brunswick's government grant for education. For teachers' and inspectors' salaries, school libraries, and \$8,844 for the provincial University, her expenditures for education amounted to only forty-three cents per head of the population. Ours in the same year was \$113,626, or \$1.04 per head of the population.

Do the people of New Brunswick therefore pay less for education than Islanders? By no means. Here is what was given from three sources of support for paying New Brunswick teachers' salaries in 1890. Provincial \$137,410. County Fund, \$94,504. District assessment, \$183,636. Total \$415,550.

This sum amounts to \$1.29 cents per head of the population of New Brunswick. In 1890 our Government paid toward teachers' salaries \$90,756 and the districts paid in supplements only \$9,348. This makes a total of \$100,104 for teachers' salaries, or only ninety-one cents per head of our total population. We therefore pay thirty-eight cents per head of our population less to teachers than they do in New Brunswick. But our Government pays eighty-three cents per head of this amount, while the people in the districts, on an average, pay only eight cents per head for teacher's salaries, in comparison to about eighty-seven cents per head paid directly by the people of that Province. If the Island Government only paid the same rate for education per head as the New Brunswick Government, their expenditure under this head would only be \$52,000, instead of \$113,000. Such a reduction in the vote for education would leave our Government without a deficit, but we could not advise such a course."

**THE BATHURST SCHOOL TROUBLE.**

Considerable attention has been attracted to the Bathurst schools of late by reason of correspondence in the papers relating to them. The grounds of complaint seem to be that the trustees of Bathurst have engaged some of the Sisters of Charity to teach in the public schools; that they have placed in charge of the primary department of the Protestant (so called) school an inefficient teacher, inasmuch as she has only had a short term's training at the Normal School; that more teachers are employed than there is any necessity for. Exception is also taken to the manner in which the sisters are licensed, they not being required to attend the Normal School.

In employing sisters to teach, the trustees have only done what many boards of trustees throughout the province have done with satisfactory results. Since 1874 members of any religious order who make teaching a life work as the Sisters of Charity do, have been permitted to undergo examination for license without actual attendance at the Normal School. The schools taught by the Sisters receive no religious instruction during school hours, follow the same course of instruction as other schools, and like them are subject to government inspection.

The trustees of Bathurst seem to have acted in some respects in an arbitrary and impolitic manner. It is quite within their rights to employ sisters to teach, but it certainly is not fair to the ratepayers to employ more teachers than are necessary. They also have discharged a teacher who gave satisfaction, to make room for a cheaper teacher and one licensed with the implied intention of teaching in poor districts. The spirit of the school law is that no teacher should be employed who is not suitable to the needs of a district, and the trustees should be notified accordingly, if it can be shown that the teacher in question is not competent.

The whole question seems rather of local than provincial significance.

**TALKS WITH TEACHERS.**

Have your agreement sealed. It is proper and business-like and implies no want of faith in either party. Some teachers and some trustees are very lax in the matter of agreements, and difficulty has been caused in consequence. Do not make an agreement in any other than the prescribed form. Above all things beware of engaging by the month, as by so doing you are making the trustees a present of the holidays which the law allows you. When your agreement is by the term, of which perhaps you have only taught four months, do not accept two-thirds of a term's pay, but reckon it in the same way as your government money is computed. The law will allow you this.



Where a teacher engages for a fixed sum in a "poor district," she is entitled to the additional government aid coming to her in consequence of the district being "poor." But teachers should not take advantage of any want of knowledge of the trustees regarding this. There should be a fair understanding all around regarding this. The poor allowance is for the benefit of the district, not of the teacher.

It has been noted before in the REVIEW, but it is not generally understood, that "poor districts" employing local licensed teachers do not receive any poor allowance. This provision is a very fair one to the licensed teachers, and will tend to discourage the employment of untrained teachers.

Carry out your course of instruction as far as possible in its entirety. It is your great safeguard against the demands of ignorant ratepayers. Do not let winter pupils come to school to dawdle over the three r's, and thus waste one half their time. They will know just as much of the three r's in the spring, if they study such subjects as history, geography and grammar. They are not now luxuries but necessities.

A slight girl is not supposed to administer corporal punishment to unruly big boys who attend school in the winter. If they behave like rowdies, they should be treated as such, and shown the door for the trustees to deal with. If the trustees refuse to act, report the matter to the inspector.

#### A USEFUL LINE IN POETRY.

Every student of nouns, pronouns and verbs knows the necessity of transposing language for the sake of ascertaining its grammatical construction. The following shows twenty-seven different readings of one of Gray's well-known poetical lines, yet the sense is not affected :

The weary ploughman plods his homeward way.  
 The ploughman, weary, plods his homeward way.  
 His homeward way the weary ploughman plods.  
 His homeward way the ploughman weary plods.  
 The weary ploughman homeward plods his way.  
 The ploughman, weary, homeward plods his way.  
 His way the weary ploughman homeward plods.  
 The ploughman, homeward, plods his weary way.  
 His way, the ploughman, homeward, weary plods.  
 His homeward weary way the ploughman plods.  
 Weary, the ploughman homeward plods his way.  
 Weary, the ploughman plods his homeward way.  
 Homeward, his way the weary ploughman plods.  
 Homeward, his way the ploughman weary, plods.  
 Homeward, his weary way, the ploughman plods.  
 The ploughman, weary, homeward plods his way.  
 The ploughman, homeward weary plods his way.  
 His weary way, the ploughman homeward plods.

His weary way, the homeward ploughman plods.  
 His way, the ploughman, weary homeward plods.  
 Homeward, the ploughman plods his weary way.  
 Homeward, the weary ploughman plods his way.  
 The ploughman, weary, his way homeward plods.  
 The ploughman plods his homeward weary way.  
 The ploughman plods his weary homeward way.  
 Weary, the ploughman his way homeward plods.  
 Weary, his homeward way the ploughman plods.

—Troy Times.

The above item has been going the rounds of the newspapers lately and has been credited to the *Troy Times*.

We cut it out and gave it to our devil, who is a remarkably intelligent and thoughtful lad for his years, and told him to take it home and study it. He came back next morning and said the *Troy Times* was a disgrace to the noble profession of journalism. We asked him to explain. He did. He first pointed out that the twenty-seven were not twenty-seven at all, but only twenty-six, as two of them were exactly alike; and then he handed us a roll of manuscript containing the genuine twenty-six and 226 more. He looked as if he expected us to print the whole lot, but we can't do that this month. We have read them all, however, and every one of them satisfies the test of not affecting the sense. It was this that so riled the devil—to have the *Troy Times* parading a pitiful twenty-six (and calling them twenty-seven) as a great literary achievement, and receiving the compliment of reproduction by so many other papers, when he (in half-an-hour, he says), got more than a couple of hundred new ones.

Some of the new versions are, considered as specimens of sentences, rather more broken-backed and cacophonous than the worst of the *Times'* quarter hundred, but that is not surprising; the *Times* had first choice, and there is a big difference between twenty-six and two hundred and fifty-two. On the other hand, in point of both structure and rhythm, a full score of our devil's productions are quite equal, if not superior, to the best of the Troy man's. And, talking of rhythm, there is another twenty possessing the peculiar characteristic of turning the line into five trochees instead of five iambs, as it is in the *Elegy*. These twenty versions we found the most interesting of the lot. We feel strongly tempted to present them to our readers, but in doing so we might spoil the sport of those who would rather find them for themselves. Perhaps, also, there may be some who would like to try to beat the devil on the general problem.

U.

The Acacia Villa School, Horton, has reopened with a large attendance. The handsome and commodious new building, and the addition of Messrs. Coffin and Higgins to the staff of instructors, show that Mr. Patterson is determined to make his school one of the best in the provinces.—*Exchange*.



## Astronomical Notes.

What a busy and exciting month February has been for those whose affections are directed heavenward! we have had a conjunction of the two brightest planets, a new star, an enormous sun spot, an auroral display of unsurpassed grandeur, a terrestrial cyclone that swept from the Rocky Mountains to the Carpathians, and now at the close of the month an announcement of the discovery of a new solar system. All this in one month, and that the shortest month of the year; and all this in addition to the usual programme of regular and orderly celestial phenomena. It is little wonder that the month has been one of unusual bustle and excitement to astronomers and star-gazers; it has been so also to astrologers and sign-seekers; and some of these have been predicting, for the thousand and oneth time, that we are rapidly approaching the beginning of the end or the end of the beginning, or something or other of that sort.

To do anything like justice to so many important and interesting matters belonging to the past month, and at the same time to point out as usual the principal phenomena falling due in the month ahead, would require the whole of this issue of the REVIEW; we have here only two small columns and what are these among so many? A few scrappy notes must suffice, and these chiefly by way of answers to questions that have been asked.

The conjunction was a grand affair; it drew heavenward many eyes that don't often look in that direction; many of the accounts of it said it was a very rare event, and some enquirers want to know what "rare" means in this case. I don't know whether I know or not, but I do know that "rare" is put to some very queer uses. One of our provincial papers told us a year ago that it was "a rare occurrence" to find the month of February treating the days of the week so impartially as it did in 1891, having "four and no more of each, that is four Sundays, four Mondays, four Tuesdays and so on." As this is true of every February except in leap-years, that is probably the most extraordinary use to which the word "rare" has ever been put. Its use in the present case is much more orthodox, but still it is apt to lead—and it has led—to misapprehension. A conjunction between two planets is not at all a rare event; it is a very poor month that can't show, at least, half-a-dozen of them. Perhaps this is not what was meant, perhaps it is a conjunction of the two particular planets, Venus and Jupiter, that is the rare thing. Well, even that is not so very rare, it happens about once a year and sometimes oftener. In 1888 there were two—one in January and one in November—but there had been none in 1887, and there was none in 1889. Since 1889 there has been one each year. The last one happened on April 7th, 1891, the next one is due on April 29th, 1893. But though thus comparatively frequent the event does not always come off under such favorable circumstances as accompanied it this year. At last year's conjunction the two planets were morning stars, and so the show passed unnoticed by a general public, living according to the rules of modern civilization. Next year there will be no show at all except to astronomers with telescopes, for the planets will then rise and set with the sun. That the event happened this year when Venus and Jupiter were evening stars, and far enough to the left of the sun to be seen for a couple of hours after sunset, this was one of the features that made this conjunction a rarely fine sight. In this respect there has been nothing like it since the conjunction of November, 1888. But at that time the two planets were a degree and a half (three moonbreadths) apart at their nearest

approach; whereas, this year they got as close together as the scales on Job's crocodile, although unfortunately they could not be seen from this part of the earth. It is these favourable attendant circumstances that make the late conjunction so rare an event.

While we were still watching the lovely couple draw slowly apart after their *tete-a-tete*, there came the startling news that there was a new star in the sky. The form in which the fact was announced was nearly as strange as the fact itself. We were told that the stranger had been visible since early in December, that it had been brightest on January 20th and had been fading ever since then, and that it had been first seen about the beginning of February. Visible in December, brightest in January, and yet not seen until February—how could that be? It was rather puzzling, and from the queries received it seems still to puzzle some.

The star was first seen by some Scotchman whose name is not known. He notified the Royal Observatory at Edinburgh by post card, but did not give his name. The chief astronomer there, Dr. Copeland, looked for and found the star on the evening of Monday, February 1st, and at once telegraphed the news to the *Centralstelle fur Astronomische Telegramme* at Kiel, an international station for the distribution of astronomical information. From Kiel the stranger's arrival was telegraphed to all the chief observatories, among others to that at Cambridge, Mass. At this observatory there is a photographic telescope which has been employed for some years back in calling the roll of the heavenly host. It does this by recording on its plates the position and brightness of every star that is visible to the naked eye, and the plates are then carefully laid away for future examination and reference. On receiving the telegram announcing the appearance of Copeland's Nova, the Cambridge astronomers turned over their collection of plates and found that the stranger had recorded his presence on December 10th, and that he had continued to make his mark with increasing brightness down to January 20th, and that after that his brilliancy had gradually decreased. This is how we happened to know the star was visible nearly a couple of months before it was seen.

At its brightest it must have been nearly if not altogether of the fourth magnitude. When it was first seen here—on Sunday, February 14th—it was distinctly brighter than its near neighbour Chi Aurigæ, which is a standard star of the fifth magnitude. On the 15th it was fainter than Chi and about equal to twenty-six Aurigæ, a five and a half magnitude star a little to the east of it. On the 17th it seemed to have brightened up a bit, but it fell away again after that. On Friday the 19th, it seemed to the eyes of a party of Yarmouth star-gazers to be fainter than twenty-six; on the following Friday it seemed to the same eyes to be brighter than twenty-six. These ups and downs in the brightness of a new star, after passing its maximum, were not altogether unexpected. They have happened in connection with new stars before now, especially in connection with the last one which appeared in September, 1885, and faded away in the following spring.

It is not difficult to find Nova. Pick out Capella and Betelgeuse and look for the brightest star between them, about half way between them, that is El Nath or Beta Tauri, near it on the north side the easiest star for the naked eye is Chi Aurigæ. The new one is between Chi and Beta, a little to the left of the line joining them and nearer to Chi than to Beta.

\* \* \* \* \*

The big sun spot was first seen on Friday the 12th, and the grand auroral display came off on the evening of the 13th.



That evening was cloudy here, and we saw nothing of the splendour of the spectacle except the descriptions in the newspapers. Here is one of them:—

"At first sight the whole north-western sky was aglow with a deep rose-red light, changing to pink as it reached the zenith. Then what at first seemed to be a solid bank of flame seemed to contract, narrow, grow deeper in color, and then in a moment it burst out into columns, pillars, ribbons, banners, shooting away to the north, then in flickering, fluttering, shimmering waves of scarlet, claret, rose-pink, and greenish-yellow, rising, falling, trembling, waving, disappearing for a moment, and then bursting forth with a new glory of color and symmetry of motion. It was a sight never to be forgotten. The display lasted about an hour, ending with a deep pinkish-red spreading over the whole northern sky and lasted until dissipated by the silvery light of the rising moon."

\* \* \* \* \*

Whatever you don't do during March, in the star-gazing line, be sure to do these two things:—(1) Watch Uranus closing up on Lambda Virginis and afterwards drawing away from the star, and (2) look for Mercury in the evening sky and try to how late a date you can still see him there.

A. CAMERON,

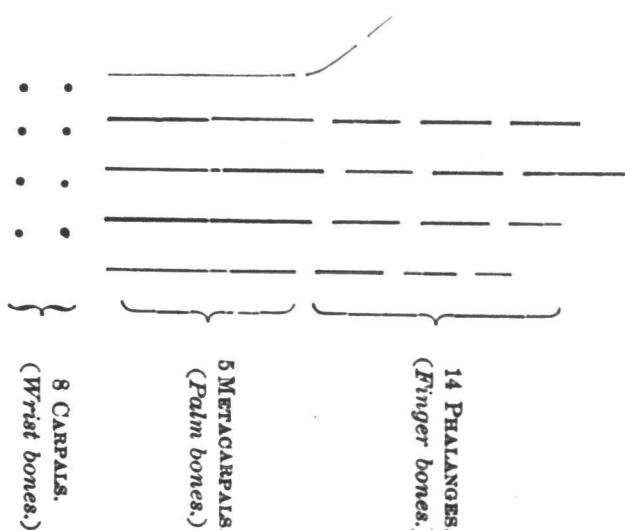
Yarmouth, N. S., February 28th, 1892.

For the REVIEW.]

### NATURE LESSONS.

#### SCHOOL-BOY ZOOLOGIST — No. III.

##### A SKELETON HAND



built up by the typesetter here shows the number and position of the bones of the human hand.

The same diagram will do to show the bones of the human foot, by simply changing the eight wrist bones to seven heel bones, (two bones joining to form one) which in our last lesson, we saw were called "tarsal" bones; the five palm bones to five instep bones, called by anatomists "metatarsal" bones, and the fourteen finger bones to fourteen toe bones, the same in number but the joints shorter.

It is very curious to see that the foot and the hand are built up so much on the same plan—about the same number of bones in the same positions, but with differences in their size and shape which make one a hand and the other a foot. The anatomist has not such hard work after all in remembering all the

bones of the body by name, if he makes such comparisons, for every boy who can draw this little figure knows the number of bones in the two hands and two feet of a man.

**EXERCISES:** Feel the five palm bones of one hand with the fingers of your other hand. Feel the five instep bones in the foot at the first convenient opportunity. Which of the metacarpal bones is the shortest and most movable? Feel the three joints in each finger and the two in the thumb. Do the same with the toes when you can. Notice the broad nails and the rate at which they grow.

But the zoologist can remember the bones of the paws or feet of all our mammals quite easily if he only notices that they are all built up on the same plan. We cannot very well dissect animals in school or at home; but we can notice and feel the paws and feet of many animals about the house or farm without any trouble. By changing the shape and size of the bones in our diagram, we can construct the skeleton of the foot of the dog, the cat, the pig, the cow, the horse, the flippers of the seal or of the whale and the wings of the bat.

The dog and cat walk on their fingers and toes, but their thumbs are jointed to so short and small a palm bone, that they do not touch the ground when they walk, and the instep bone to which the big toes should be jointed, in the cat especially, is so small a splint of a bone, that cats have no big toes at all, and therefore have only the second, third, fourth and fifth toes, the first toe bone being reduced in size to zero nearly. Compare their nails with those of man. Compare the sheathing claws of the cat with those of the dog.

The pig has its thumb and big toe wanting; its second and fifth so short and small that they scarcely reach the ground, they walk principally on their third and fourth fingers and toes. Their nails are shaped into hoofs.

The rhinoceros, which is a foreign animal, may be mentioned here, because he has only three fingers and toes, the first and fifth being wanting.

The cow, the sheep, the goat and the moose have only two fingers and toes to walk upon, the thumb and big toe being entirely wanting, and the second and fifth being so small and invisible that the rudiments of them can be found only as small bones, by careful dissection. Their nails are decided hoofs.

The horse walks on a single finger nail or toe nail for each limb. The finger and toe bone each have three joints in them, as in man; this single finger is the third. The palm and instep bones—the long bone right above what some wrongly call the heel—is the third in our diagram, supported on each side by two



small splints representing the second and fourth bones, while the first and fifth of these bones are entirely wanting.

The bat has its finger bones extremely long. They serve to stretch out a great membrane like the ribs of an umbrella. This membrane serves the purpose of a wing, and extends to the feet, the bones of which are not extended. The thumb is short and its nail becomes a hook.

The whales have generally five sets of finger and toe bones in their paddles, some of them having more than three joints. The seals also have the five sets, the thumb being longest in the fore flippers and the big toe and "small toe" the longest in the hind flippers.

What a difference between the man, the cat, the whale and the bat; and still how much are they alike! How many facts in the following table can you prove by examination?

Bones in	FORE LIMB			HIND LIMB		
	Carp.	Meta C.	Phal.	Tars.	Meta Tars.	Phal.
Man	8	5	14	7	5	14
Cat	8	5	14	7	5	12
Dog	7	5	14	7	5	12
Pig	8	4	12	7	5	12
Ox	6	2	6	5	2	6
Sheep	6	2	6	5	2	6
Goat	6	2	6	5	2	6
Horse	7	3	3	6	3	3

PLANTS.

No. I.—BUDS AND BRANCHES.

Have you ever tried to interest pupils in buds and branches? If not begin now, and you will be surprised to find how interesting it is if pursued in the right way.

Let us begin with a branch of the beech tree, a foot or so long. Such a branch as is here pictured may be given to each pupil, and the lesson will be interesting and profitable to primary pupils as well as to advanced.



Branch of *Fagus ferruginea* (American Beech) with buds and dead leaf. a, Leaf-scar. b, Bud-scar.\*

Give the branch to the pupil ten minutes or so before the lesson, or better, let him take it home the evening before the lesson, and study it, and find out all he possibly can about it. At the beginning of the lesson question the pupils on what they have found out, or if they have made any drawing, and written

down the result of their observations—which is a good plan—ask them to read these. They may be

able to tell you a great deal or a very little: that will depend much on the few hints and suggestions you gave when the branches were first put in their hands. A few leading questions like the following should then have been given to set them thinking and working: 1. What is a bud? 2. When did these buds make their appearance where they are? 3. What is the position of the buds on the branch? 4. Carefully—with a needle or pen-knife—remove all the coverings of the bud, and see if you can answer the first question. 5. What do the cluster of rings at *a* mean? 6. The removal of the covering of any bud will help you to answer No. 5. 7. What are the scars at *b*? 8. Do the leaves found on any beech branch in winter help you to answer No. 7? 9. What is the color of the outer bark? 10. Of the inner bark? 11. What are the spots on the outer bark? etc., etc.

If your questions have stimulated your pupils,—and they will if you have made a diligent and thorough study of the branch before putting it in their hands—they will be prepared to answer intelligently many of your questions, and will be so interested in what you have to tell them that the half hour will pass all too quickly. Indeed, if the time is exhausted, as it probably will be, in hearing the answers to your questions, in reading their papers and examining the drawings, it would be a better plan to put off further study for a second lesson.

At the second lesson the answers given at the first may be supplemented by a fuller investigation in which the following facts may be elicited by leading questions, or explained to the pupils: The bud at the end of the branch is called the *terminal* bud; those at the side are *axillary* buds. The scar *a* shows where a *leaf* has been last season. In the angle between this leaf and the branch, a bud began to appear early last summer, grew during the season, and at the approach of cold weather began gradually to put on its winter clothing of dry scales. In the beech these scales are altered stipules—(what are stipules?)—arranged in alternate pairs; that is, the two forming a pair are opposite each other, and on the same plane. Removing each pair, a succession of circles round the branch is seen. Farther down the stem at *b* and at other places is seen a cluster of circles. At *b* is seen the place where the bud of the winter of 1891 was situated. From *b* to the bud at the end of the branch shows last season's growth. What was in last winter's bud at *b*? Evidently the undeveloped part of the branch between *a* and the terminal bud, with the leaves that have fallen. Then what is a bud? It is an undeveloped branch or a part of one. A part of one? Yes. Look along the branch and you will see other rings. The distance



between any two clusters of rings marks a season's growth. But the distance between rings is in some places short, in others long; what does that mean? That it grew faster one season than another. Does that indicate the character of a season? Perhaps so.

Then a bud is an undeveloped branch; and conversely, a branch is a developed bud or series of buds. Examine carefully the buds after taking off the scales. You will find inside some object nestled in soft silky hairs to keep out the cold. Examining this carefully after putting aside the hairs, you will find a minute green leaf, then another and another, from all of which the hairs proceed, folded together and surrounding a minute rudimentary tip of stem or branch.

Let the pupils make measurements of the different year's growth on their branches, and compare results.

Examine for other lessons branches of elms, ashes, cherries and other trees. Put branches in water and keep in a warm place until the buds unfold. The unfolding of lilac buds is especially interesting.

Plant seeds of sunflower, squash, pea, bean, corn, etc., in boxes or flower pots to be ready for the April lessons in REVIEW.

For the REVIEW.]

### Talks About Coal.

(For Grades I, II, or III.)

#### MONDAY — COAL AS ALREADY KNOWN BY THE CHILDREN.

As far as possible we should enlarge on the experience of the children; hence, the first talk consists in having them tell what they already know of the subject, and, by the teacher's guidance and questioning, add to this knowledge.

This is attainable by a conversation similar to the following:

"Can anyone tell me what this is?" asks the teacher, holding up a piece of soft coal.

"It is a piece of coal."

"What color is it?"

"Black."

"John, you may take it around and let the children see and feel of it."

John does so and brings it back.

"Did you find out anything about it, except that it was black?"

"It is shiny," says one.

"It is hard," from another.

"It made my fingers black." "It is rough;" and various other properties will at once be noticed.

"Children, do you think it is very hard? See, I have broken a piece off quite easily with my fingers."

"No," will answer some bright little voice, "that must be soft coal."

This last idea is quickly taken up, and some child says, "We have some hard coal for our hall stove."

"So have we," will chime in the ever-ready chorus.

Now that the children themselves have introduced the subject of hard coal, a piece is shown them, and an effort made to break it.

"See, children, can we break this piece, as we did the other? Does it rub off on my hands, as the first did? No! Well, then, what kind of coal must it be?"

"Hard coal."

"Yes, it is hard coal. Now tell me if it is exactly like soft."

"No, it is more shiny."

"And something else; when it burns does it look like soft coal?"

"No, the hard coal only gets red, and does not have flames as the soft has."

"That is right, Jeanie, and the reason is that hard coal is older than soft, and has had that, which makes it burn with a flame, driven out of it."

#### TUESDAY — HOW COAL IS FORMED.

"Many, many years ago, more than any of the children could count, the earth, that we live on, was not as it is now. Jack Frost did not make visits then, so it was very warm, as it is down south, where the birds go in winter, all over. There were a great many swamps then, in which mosses and trees grew; and these mosses, instead of being very short and thin, as we see them now, were very thick and large, and there was a great quantity of them.

"After these mosses had grown they would sink down under the water in the swamps and a new lot would grow up through the water. This happened over and over again until the moss-bed became very deep, and by and by the sea rolled in and brought stones and earth, which covered up the swamps with the mosses and trees, and pressed down very heavily on them.

"Now this pressure and the heat of the earth, for it is very warm in the centre, turned the moss-bed into coal. You remember when we talked about peat, we said it was made from moss; so you see coal is only very old peat, that has been pressed for years and years, becoming harder and harder, and blacker and blacker,—that means it was getting better and better for us to use."

"Does anyone remember which coal I said was the older, hard, or soft?"

"You said hard was."

"Yes. The trees and mosses, that the hard coal was made from, grew before those from which the soft was made, and had that, which makes soft coal burn so brightly, all pressed out of it."

By showing specimens of coal, where the fibre is still traceable, we can prove that it is formed from wood. Such saamples are very easy to find.

As many illustrations as possible should be used, especially those showing the strata of coal.

#### WEDNESDAY — COAL MINING.

"Who can tell me what we were talking about yesterday?"

"We were talking about coal."

"That is right, and this morning I am going to tell you how it is taken out of the ground and brought here for us to burn."

"If people think that there is some coal in the ground, they take a long instrument, that is very sharp at the end and hol-



low like a tube, and bore it away down into the earth; then they draw it up, and, if they find any coal among the earth and stone that remain in the tube, they have then discovered a coal mine, that is a place where we get coal."

"They then begin to dig. At first you would think they were digging a well, but it keeps getting deeper and deeper, much too deep for a well, until they come to the coal, or seam of coal, as they call it.

"Now that they have reached the coal, what do you think they do?"

"Bring some up."

"That is so, Katie, but they have a great deal of work to do before they can bring some up. The men that go down into the hole, or shaft, as we call it now, take large pick-axes with them, and, in both directions from the bottom of the shaft, cut a long street; then off this main street they cut smaller ones, that run parallel to each other. It is just like a little town, under the ground, only there are walls of coal, instead of houses, on either side of the streets.

"As the men cut these underground streets, the coal, which they cut away, is put into little carts, called trucks, and drawn into the big street, where they are all tackled together, as you do your sleighs, and horses draw them to the bottom of the shaft.

"The coal is then put into a tub, not all at once, and pulled up to the top of the earth by an engine. Then the cars and steamers bring it to us to keep us warm."

Illustrations should be the principal feature of this talk also. They are easily drawn, and give impressions that are so difficult to convey to the children in words.

#### THURSDAY — PRODUCTS.

This morning I want to tell you some of the things we get from coal.

"When the sun goes down and we can't see to play or read, what do we do?"

"Put our books and toys away," says Alice.

"But suppose, Alice, that your big brother had so much study to do that he could not put his books away, what would he do?"

"Light the gas, so that he could see."

"Can Marion tell me where gas comes from?"

"From the gas house."

"But where does the gas house get it?" Well I shall tell you.

But first I want the children to watch, very closely, what is going to happen.

"What is this white thing I have in the fire?" I shall take it out for a moment so that you may see it all.

"It is a pipe."

"What is that brown stuff in the pipe?" asks some little curious one (encourage curiosity).

"That is some clay, with which I covered up some coal, that I put into the pipe." Do the children see the smoke that is beginning to come out of the end of the pipe? Now watch what I shall do with this lighted match. What is it?

"You lit the pipe."

"Or rather, I lit what was coming out of the pipe. Did ever see anything burn like this before?"

"It looks like gas," says John.

"It is gas, but we could not make enough for all the houses and stores of Halifax in this way, so I will tell you how they make so much gas.

"At the gas house they put a great lot of soft coal into a place called a retort, and make a large fire under it. This retort is perfectly tight, except a pipe which leads from the retort to a big room called the gasometer. As the coal gets hot the gas out of the coal goes through this pipe, as it went through the pipe stem, and goes into the gasometer. Now all the gas we have in our houses comes through these pipes into our chandeliers, where we can light it if we wish to."

For older pupils the process of purification might be explained.

"We also get tar, naphtha, mauve and pink dyes, and many other things which we have not time to talk about now. We will tell you about them again."

#### FRIDAY — USES.

"This is the last morning that we shall talk about coal for some time, so I think we shall try to tell how many things it does for us—that is, we shall find out some of the uses of coal.

"What does coal do for Willie?"

"It keeps me warm," is the reply.

"Yes, it makes fires to keep us warm."

"It cooks my dinner for me," says Hattie.

"They put coal in the engine to make the train go," adds Ralph.

"It helps to make the steam that drives the engine," corrects the teacher.

"Gas comes from coal."

"Yes we must not forget the gas, and I am glad the children remembered it.

Let us see if we find as many things that coal does for us as we have fingers on our right hand. Now all count.

"First—It helps to keep us warm."

"Second—It cooks our food."

"Third—It makes steam for the engines that bring coal to us."

"Fourth—We make gas from coal."

"Fifth—We get tar to roof our houses with."

"Let us now see how much we can tell about coal. What is coal made from, Katie?"

"It is from trees and mosses."

"Yes, from wood. Where do we get it from?"

"Out of the ground," answers John.

"Willie, what is the place where we get coal from called?"

"A coal mine."

"And the men who work in the mine, are called—"

"Coal miners."

"That is right, and we must not forget how very happy and comfortable coal makes us, especially now that Jack Frost is here."

HELEN T. WOODS.

Halifax, N. S.

ALL but nine states out of the forty-four in the United States now make scientific temperance education compulsory in their common schools. There are between twelve and thirteen million children in America, of whom the laws says that they shall be taught the truth against strong drink and kindred narcotics. In the majority of these States no teacher who has not passed a satisfactory examination in the subject is granted a certificate or authorized to teach.



For the REVIEW.]

**Notes for Teaching Music by the Tonic Sol-fa Notation.**

EIGHTEENTH PAPER.

It is difficult to over-rate the importance of the pupils pointing on the modulator. In the established notation the singer is aided by the position of the note on the staff. In the Tonic Sol-fa system he is guided by the mental effect of the tone he is to sing, which is brought before him by the letter note suggesting the tone syllable and by the position that note has on the modulator. Begin as soon as the pupils can sing a simple first-step exercise from memory. If the pupils have first-step modulators, use them; or let the desk before the pupil represent one. Suppose *d* at the lower edge of the desk, *m* a little higher, *s* still higher, and *d'* at the upper edge of the desk. Tell the pupils to sing on the desk such an exercise as the following :

<i>d m s d'</i>	<i>d m s d'</i>	<i>s s s m</i>	<i>s s s m</i>
<i>d' s m d</i>	<i>d' s m d</i>	<i>s s s m</i>	<i>s s s m</i>

While the pupils are singing let the teacher move about to see that all the pupils are pointing correctly. Do not leave the exercise until every pupil can do this. Next use a more extended modulator on card board, or on the slates, and in the same manner teach an exercise including *s*<sub>1</sub>, then one with *m*<sub>1</sub>.

Key G—

*d s<sub>1</sub> d — s m d — d m s — s<sub>1</sub> s<sub>1</sub> d—*

Key C—

*s m d — s d' m' d' — s m' d' s — s m s d --.*

If this first step modulator be well mastered, little further difficulty will be felt when the two new tones of the second step are introduced, and the strange mistakes made by somewhat advanced pupils in learning tunes on the modulator will be avoided.

It is well that the teacher should know by heart a number of good school songs. If a fairly good singer, the performance of one of these will enliven the pupils when dull, will interest and profit the children, and will encourage them by indicating the goal to which their exercises are leading. The learning the notation of tunes will be very helpful to the teacher in fixing what he has learned — for ear exercises and for voluntaries on the modulator. The teacher should know what to point and how to point on the modulator. Stand to the right side of the modulator. Do not tap the notes, but glide by a curve to the right from the note being sung, returning to the column at the next note to be sung. The rate of movement should be varied, not heavy and sluggish, and not more rapid than the pupils can follow with ease. Vary the lengths of individual notes, introducing a

two or three pulse note after three or four phrases, as we have in written music.

Reports are still reaching the *Musical Herald*, London, of Tonic Sol-fa jubilee celebrations from various parts of Britain, Cape Colony, Adelaide and Melbourne, Australia, Ceylon, etc. Mr. Sankey recently wrote: "I find a most wonderful change in the singing in Scotland, even in the short time since my last visit, choruses everywhere, and nearly every single person using the Tonic Sol-fa Notation. I am fully persuaded that if we had it well introduced into America, there would be more singing, and, I think, better singing than we have now."

Hampton, N. B.

JAS. ANDERSON.

For the REVIEW.]

**Vague Spelling — A Cause (?)**

The instances given by Mr. Stockley in the February number of the REVIEW, of vague spelling, deserve more than a passing notice. The repetition and nature of the mistakes suggest a single cause. Evidently the writers have paid some attention to spelling and have acquired a certain knowledge of the word. The defect is the same in each case and seems to be due not so much to some mental infirmity as to vicious method.

The instances given—*angle* (angel), *dose* (does), *propechies*, *wierd*, *peots*, (poets), *paly* (play), *thier*, etc., show that the writer has an image of the word as a whole, that he has no accurate idea of the order of the parts of the word. Evidently in learning the word he has grasped it as a whole and paid little attention to its parts. His attention has been directed to the parts of the word as *being together*, existing side by side, but little notice has been taken of the *succession* of the parts. He thinks of the word as a picture; but he never thinks of it as a *succession of sounds*. Evidently his teachers have trained his eye and not his ear. He has been taught spelling by writing, not orally.

We see things together, or hear them in succession. We rely on sight for our knowledge of space forms; on our hearing for our knowledge of time forms. The peculiarity in the defect pointed out by Mr. Stockley was want of appreciation of the succession, or order of the letters.

The "look and say" method of teaching reading appeals more strongly to the eye than to the ear. We become familiar, by this method, with the words as groups of visual symbols, not as succession of sounds.

One might suggest as a remedy for such vague spelling more exercise in vocal spelling. The ear



should receive more attention. It should be expected to give more assistance to the eye.

Very many of the methods recently suggested for primary teaching seem to err in appealing almost entirely to the eye. If a subject can be represented diagrammatically, nothing more is attempted. The blackboard has become the greatest if not the only instrument for teaching.

In no subject is this more painfully apparent than in history. Tables and diagrams of facts and events seem to constitute history as taught. The pupils are taught to *see* rather than to *think*. No doubt they become quick and ready, but they are deficient in depth. Historical events can never be understood as a group of things existing together. They must always be studied as a succession. Without development there can be no true history. Now, development cannot be satisfactorily represented by diagrams. In fact any attempt at such representation almost renders it impossible to think of events as moments in a development. We cannot restrict our thinking to visual images. According to Mr. Lang's confession in a recent number of the *London News*, even the descriptions of places and persons given in novels are not always *imaged*.

It would seem that any method which trains the eye at the expense of the ear, or both at the expense of thought, or reflection as contrasted with seeing or hearing, must prove unsatisfactory.

University, Fredericton, Feb. 13th, 1892.

W. C. MURRAY.

For the REVIEW.]

#### One or Two Suggestions for Grade II.

To the earnest, thoughtful teacher the following questions are continually suggested. Am I doing the best possible work, or am I wasting precious moments, time alike valuable to both pupil and teacher? Alas! indeed, it is a lamentable fact, that in this age of progress, so many hard working, conscientious teachers plod on, day after day, month after month, year after year, in the same daily routine irrespective of the various needs of the pupils entrusted to their care, and accomplishing such poor results. Is it to be wondered at, that parents become dissatisfied and children disheartened at the slow progress that is made. It behooves those who are interested in the cause of education to arouse themselves and devise some means by which the present methods of imparting instruction may be improved.

The success of our schools depends greatly on the work of the lower grades; and not till the time arrives when teachers awaken to the fact that the hours spent in the schoolroom should be devoted to real,

live *teaching* and not merely *lesson-hearing*, will there be any marked improvement.

Take for instance pupils who have entered upon the second year of school work and the same will apply to the other grades. In many cases when the reading is taken up, a book is placed in the hands of the child and a lesson which has been assigned the previous day is supposed to be read. There has been little preparation and a few bright children will manage to read, but to the majority of the class only a word here and there is familiar. Probably thirty minutes have been spent over such a recitation, and in the end what benefit have the little ones derived? In my opinion, very little. Would not that same time have been more profitably and pleasantly spent in studying the words of the lesson from the blackboard or book? and when thoroughly drilled in this way, would not the pupils be better prepared to take up the reading lesson?

How should writing be taught? To me it appears as if this important branch in some of the primary departments of our schools is practised as a convenient means of giving employment to one class while the teacher is engaged with another. I have watched little children toiling over their slates half an hour at a time copying words from the board, and on inspection found it was unknown to many of them how to form the letters correctly. When the work *resembled* the copy they were imitating, the teacher felt satisfied, never for a moment thinking what injustice was being done to the pupils.

If the object in giving young children so much slate work is solely to keep them occupied and amused, could not something else be substituted for writing?

When children first take up writing, I consider that they should be taught on the blackboard under the supervision of the teacher, so that the whole class may benefit by the instruction, and not till they become familiar with the proper way of forming the letters should they be allowed to practise on their slates.

I hope the suggestions I have offered will be of some use to the inexperienced teacher. I urge that it is the duty of every teacher to ponder over and seriously consider the question,—How can each minute of the time spent in the schoolroom be utilized so that the pupils may derive the greatest benefit from the instruction given?

TEACHER.

Halifax.

The first of a course of lectures to teachers on Kindergarten work, was given in Alexandra School, Halifax, recently, by Mrs. Harriman. This lady is an enthusiastic and talented kindergartner, and these lectures will do much to arouse an interest in this work in the public schools of Halifax.



For the REVIEW.]

**Kindergarten Talks for Primary Teachers.**

I

At the present time a great deal of attention is being given to the introduction of kindergarten principles and work into the primary schools. It is a wise step, accompanied by the best of results, for not only does it make easier the step from home to school, a step so hard for the little feet to take, but it renders far better results to the children, and through variety, makes the teacher's work of greater interest to herself. But the introduction of kindergarten work involves a certain responsibility, and should not be undertaken unless the principles which underlie it are recognized, for unless the reason is clear to the teacher's mind, the practical work, such as modeling and folding, will fail of educational value, and degenerate into mere amusement. Let us then examine the principles of this kindergarten system which all modern educators agree in designating as the foundation of all true education; and when we remember how important a part the foundation played in the old story of two builders, one of whom founded his house upon the rock, the other upon the sand, we appreciate its importance in rearing such a stately structure as education.

What is this system and to whom do we owe it? Doubtless all will associate it with the name of Fröbel. Has it been discovered, arranged and perfected by one mind, and taken for granted by others? Not at all; it is the ripened fruit of a slow healthy growth, beginning as far back as the time of Socrates, when we hear of him teaching by the conversational method. Then we find Aristotle, a century later, insisting upon self activity, leading his pupils to find out the why and wherefore by themselves, rather than accepting another's statement. Another long step brings us to the sixteenth century, and reveals to us Comenius at work upon the first picture book, *Pictus Orbis*. His claim was that the object should come before the word, and when the object was not at hand, the picture of it. Here we see the beginning of object teaching. Then a century later Rousseau, unpractical in the extreme, yet insisting upon one most practical thing, individuality, as a result of natural development. He rebelled against educating the child for the church or state, wishing him to be considered as an independent organism to be developed under circumstances which would favor the most perfect growth.

Then came Pestalozzi, a name familiar to all in the teacher's profession, insisting upon production for the relief of the want which so afflicted his countrymen. So schools were founded for teaching trades, a trace of it being seen even now in the Swiss wood-carving.

And last of all comes Fröbel, well called the "apostle of childhood," gathering together the best of all preceding ideas, formulating and providing practical means for carrying out the ideas, and taking for his watchword *production*, but with a meaning very different from that of Pestalozzi, viz., production simply as an aid to human development. But Fröbel did not claim to have perfected the work, but left it for others to carry on, to prune out any ideas which failed to fit an ever-changing civilization, and to add others as might seem wise.

Thus the first claim for considering the kindergarten as the basis of true education is its growth through minds acknowledged everywhere, as eminently wise and far-seeing.

In considering Fröbel it is necessary to go back and view his surroundings in childhood before we can fully understand his views. We see a little motherless boy left wholly to himself, with no companions but the birds, bees, and flowers. Day after day he spends with these learning their secrets, the laws of existence and development; especially is he pleased with the harmony existing throughout nature, and contrasts it with the want of unity in the human family. He grows to manhood and after several years of aimless endeavors along other lines, he enters the ranks of educators, and finds his true vocation. It is now we see the effect of his early life, for in plant life he saw a perfect plan for the education or development of children, and laying aside all books in which he found only conflicting themes, he went to his early friend, nature.

After looking at plants he saw that "if in the spring, the hard coverings of plants are to burst open, that the leaves and blossoms may be set free, air and sunlight, rain and dew must be supplied. The inner forces will be sufficient if outward conditions are not wanting. So, too, the inner conditions for development, all healthy children bring with them into the world, the outer ones must be supplied through education."

We can carry out this analogy further, and can only wonder at the truths stored up in vegetable life applicable to our own.

Physically we see the tender skin of the child change to the dark swarthy one of the man, just as the tender green of the young plant changes into the heavy bark of the tree.

The seedling can easily be transplanted and the young man can change his vocation, but a greater degree of development in either case renders a change difficult and dangerous.

We see the young plant and child at the mercy of the wind, or the more fearful blasts of evil, while the strong tree and man withstand them, or in case of



failure, the trouble can be traced to some early deficiency—in the one case, the proper food for vegetable fibre, in the other for moral fibre.

And just as we bring different flowers together under the care of a skilful gardener, so Fröbel would have us do with human flowers, surrounding them with the sunshine of love, giving each the care necessary for its best development.

Thus its accordance with nature is the second reason for considering the kindergarten system the basis of all education.

But nature was not the only mirror which revealed truths which made Fröbel's system seem the right one. He also traced an analogy between the development of the child and that of the human race from barbarism to civilization.

The greatest need of the infant race was food, and we see all its activity expended for this end, caves serving as homes, herbs and fruits of the woods as food, and the providing for the satisfaction of the physical nature also developed it. Parallel with this we see the little child happy, if only his physical wants are attended to, and in his seemingly aimless activity we see nature's first lessons in gymnastics.

Baby expresses his opinion by cries; and how expressive is the Indian's grunt. The savage adds gesture as a means of expression, and baby expresses his dislike of strangers by shaking his head.

Miss Amelia Edwards tells us that the Egyptian hieroglyphics are really symbols of gesture; and how similar to them are the child's first attempts at drawing. And what is it but the agricultural instinct cropping out when the two-year-old settles his tiny self in the dirt, sticking up twigs for trees and planting little round stones for seed. Again we see the boy like the savage, settling his disputes by physical strength, until reason prevails over instinct.

And now for the analogy in mental growth. How did the savage gain his knowledge. Did he gain it from books or was he told? Not at all. He simply learned through his senses, and was educated by his environments. He noticed individual cases and generalized from them, and finally applied his knowledge to the work of his hands. He found that certain substances produced death and he added to the effect of his arrow by applying the poison to it. He observed that certain woods were elastic and utilized them for his bow. Each collected knowledge for the benefit of others, and at length we have books from which all eagerly learn that which they have found no opportunity to observe personally. And the child, who through observation of suitable material has gained a certain stock of ideas, will readily and gladly learn from books when his interest awakened through observation finds no satisfaction elsewhere.

Thus we see the third reason for considering Fröbel's method the right one is that it is the same which the Father above has provided for his children, the human race.

S. S. H.

Halifax.

For the REVIEW.]

#### Pensions for Teachers.

The following is an abstract of a lengthy letter recently published in several Nova Scotia papers and signed "Teacher." It will be of interest to the readers of the REVIEW.

Over forty years have passed since that grand act became law, giving to our fruitful land the benefit of a public school. Many changes have taken place since then, until today we find ourselves side by side with New England teachers and towering head and shoulders above our ancestors across the waters.

Academies, a normal school, a school of agriculture, science schools, have been opened, and still the tide of improvement is not stemmed. Reforms are being agitated and changes made to the end that we may have perfection.

And what is the outcome of all this? The college youth, principals of our academies and high schools, and many a cultured man and woman bring their acquired knowledge to bear upon the rising generation. The demand of the day is for *live* teachers, and the cry grows louder year after year.

Unfortunately, many of our best teachers have left the work for other employments which will yield a richer reward for the same expenditure of brain and muscle. How may this exodus be prevented? Some suggest an increase of salary. But how can it be obtained? It seems a long way off.

Perhaps no surer method can be found of keeping our best teachers in the service than by granting them pensions after long service.

By a pension policy as outlined below the amount would be so trifling if divided among the 1,600 sections and 2,000 teachers of Nova Scotia that the former would not refuse to vote the mite required of them, and the latter would certainly be only too glad to form themselves into a mutual protection society for the purpose.

The idea of pensioning teachers will perhaps raise the following questions: First, Why should teachers be pensioned? Second, How can this be accomplished?

The reasons that are advanced for the pensioning of government officials, soldiers, and ministers hold equally good when applied to teachers.

The teacher into whose hands are placed the little ones who are the objects of our dearest affections and whose future welfare is so largely shaped by the instructor, should feel that their future is safe if they faithfully do their duty. The present rate of pay is too small to allow any live and progressive teacher to save up enough to provide properly for old age.

The writer's plea for the consideration of the teachers by the public can scarcely be condensed. It must be read to be appreciated. We therefore pass to the second question—as to how the problem may be solved.

It is not of course advisable to lay down any particular plan without consent of those in authority. It is suggested, however, that the fund be raised as follows: First, the teachers to pay either a fixed sum or a percentage of salary; secondly, the sections to be required to pay in a small sum each; thirdly, the government to vote a sum each year proportionate to that raised otherwise. The government should, of course, have control of the fund.

If this were done an impetus would be given to education that would act and react on every industry in the province. Our youth would remain at home to develop our own wealth instead of enriching other lands. The demands on the



pension fund would not be excessive, as many leave after a few year's service, and leaving would not regret the amount contributed. No teacher would wish to retire for the sake of the pension.

Few people can imagine the drain on the teacher's purse. Associations, science schools, periodicals, institutes, travelling expenses and the usual etceteras, besides board and clothing, so reduce the small salary paid that the live teacher can never lay up much for a rainy day or for old age.

We are not state officials, so cannot expect to be so well cared for as our more fortunate fellow-workers in Germany, where they are held in high esteem. To quote from a leading American journal, "They are not tossed into the street when old age or disability comes, but have a pension awaiting them." And who can dispute the breadth of the German teachers and their success in the schoolroom.

Philadelphia has a fund. Ontario has taken the lead in the Dominion, and in no part of Canada have we better schools. We should have like provision made in Nova Scotia. There should be no trouble in providing for it. It must come.

Dartmouth, N. S.

H. S. C.

[The subject opened up by "Teacher" is worthy of careful and immediate attention. In the majority of civilized countries — in nearly all — teachers after a certain period of faithful service are entitled to a yearly retiring allowance proportioned to the time of service and status in the profession. Worn out teachers are neither suffered to waste the precious school days of the young, nor are they disgracefully thrust upon the cold charity of an unfeeling world. Our schools would be much more efficient if the teachers were not harassed by the spectre of a penniless old age. Our best teachers would then be content to stay in the profession and be free to give their best thoughts and energies to their work.— ED.]

### Psychology for Teachers.

PROF. SETH, DALHOUSIE UNIVERSITY, HALIFAX.

#### LECTURE II.

There are two methods of psychological study, *viz*: the Direct or Introspective method and the Indirect or Objective.

We investigate psychological phenomena like all other phenomena by *analysis* and by *synthesis*. By the analysis of mental phenomena we must break the mental operations into parts. The scientist does the same. The botanist first analyzes the flower, and then knowing each of its parts he knows it thoroughly. In mental phenomena we can do the same. For example, take my mental state as I explain to pupils a fact which they do not yet understand. This is a complex mental operation. I have in my mind, first of all, the knowledge I wish to convey; then I endeavor to present it in such a way as to produce a certain impression; besides I must raise my voice to a certain pitch that they may hear me. I must use a language which they understand, and I might show many minor points also which enter into this mental operation. So much for psychological analysis. The psychologist does not rest here. To stop at the analysis would be like resting at the study of anatomy in science. Anatomy analyzes the human body into muscles, nerves, bones, etc. Physiology reconstructs the living organism as a whole.

The first and characteristic method of psychology is *Introspection*. This is the direct or subjective method. I must look inward and observe my own state of consciousness. The difficulties of introspection are great. The first difficulty arises from the *complexity* in *unity* of mental phenomena. Again, in psychological observations the subject becomes its own object, and to force a subject to look in upon itself as an object is not easy. A child views outward things. An introspective child is an unhealthy child, and is deprived of the peculiar charm of childhood, *viz*: simplicity or naturalness. The first instincts of a child are to look upon outward things, but in school he begins to acquire the power of reflection. The mind knows nothing without relating it to itself, so that this introspective task is neither impossible nor unnatural.

Another difficulty is the extreme delicacy of mental phenomena. I can examine a natural object and return to it again, and again, but as soon as I begin to examine a mental state it vanishes, and the state of investigating it remains. This difficulty is largely obviated by the aid of memory. We can remember a mental state and examine it after it has passed. Memory also aids in another difficulty, *viz*, the evanescence or fleeting change of mental states. When we begin to reflect on a mental state it has already vanished, but we can recall it in some measure, and reflect on it as a past fact.

Another difficulty is the limitation of our mental observation to a single mind, and this seems the greatest difficulty of all, but it, too, admits of much alleviation. Certainly the only mind I have under my direct mental gaze is my own. I am to myself the only subject. However, I suppose that all others who have a mental state are subjects like myself, although to me they are only objects or ejects.

We must always discern between persons and things. Although I am the only subject to myself, I infer from analogy that all other beings like myself are subjects. I discover in them the same behaviour as in myself, and therefore I infer that their conduct comes from minds like my own.

The second method of psychological study is the Indirect or Objective. It takes several forms:

1st. Observation of mental products. In history we can learn much of the mental life of man. We can also study language, and by that discover how the people of different countries thought. We can study the literature of different countries, of different centuries, of different minds. We can compare civilized nations with uncivilized; we can compare the different civilized nations with one another; the civilization of our own century with that of the past.

2nd. Comparative philology. We can compare what we call mind in the lower animals with the human mind. Above all we can study the simple undeveloped mind of childhood, and what a field this presents to the teachers of the young! We can watch the mind growing, see the simple ideas becoming complex, these again becoming more complex, and as the child adds element to element behold the mental state attaining maturity.

3rd. We have *abnormal* psychology or pathology. This is the study of the minds of those who are insane and who at some point depart from the mental condition of the sane.

4th. We have physiological psychology or experiments on the mind through the body. We find by experimenting on the lower animals that voluntary movement comes from the brain. Remove the cerebrum from a frog and it lies motionless. Touch its leg and it will be drawn back. Reflex motion is still there although the voluntary motion is destroy-



ed by the removal of the brain. It can no longer originate motion; it can only react upon movements from without.

#### DIVISIONS OF PSYCHOLOGICAL PHENOMENA.

In every mental state there are three elements, knowing, feeling, willing; or cognition, emotion and volition.

Cognition is *objective*. I must know an *object* as something outside myself.

Emotion is *subjective* because it is *my* mental state. I feel somehow.

Volition is *subjective* and *objective* because it is the realization of a purpose—the carrying out of an idea.

By psychological analysis we separate these three elements, and name the mental states by whichever one predominates. We call a man intellectual, emotional or energetic. We speak of the Germans as an *intellectual* nation, or a people of the *head*; the French are as a nation *emotional*; the British are a *practical* people, or a people of the *hand*.

The ideal mind exhibits the perfect harmony of these three faculties, and the ideal education ought to aim at developing such a complete or symmetrical mind. Of course intellectual development is usually aimed at directly in education, rather than the formation of character; but the development of the emotional and energetic elements of the mental life is a most important function of education. The emotional and æsthetic sides of our nature are inextricably bound up with the intellectual and moral, and should be included in education, although usually much neglected. Moral and æsthetic influences are indirect, and although we must aim at the direct end of education, *viz.* that of training and developing the intellect, yet we must never lose sight of the threefold nature of the mind, but must endeavor to produce complete harmony in the minds we are called upon to form, by developing each power in its proper time, place and degree.

#### Halifax Public Schools.

The following are extracts from Supervisor McKay's report:

There were 5,734 pupils enrolled in the winter term. The returns give 1,304 new pupils for the summer term, making a total of only 7,038 different pupils enrolled during the year, or 40 less than 1890. For the last eight years the average increase per annum, of enrolled pupils was about, 250, whereas this year there is a decrease of 40.

The sanitary conditions of the school rooms and play grounds have been greatly improved. The commissioners, secretary and teachers have been unremitting in their attention to these matters.

ALEXANDRA SCHOOL—This probably is the best school building in the maritime provinces. Architectural beauty had to be sacrificed to the irregularities of the site. There are 14 large and well lighted departments, with commodious halls, all warmed and ventilated by the Smead system. The vitiated air of the rooms is entirely replaced by pure warm air every seven or ten minutes. Consequently, the air does not deteriorate when the rooms are occupied. The pupils are free from that lassitude and those headaches so common in all other school rooms. The sanitary arrangements connected with the system are about perfect.

Nearly all the teachers are following the prescribed course of study very closely, but in lessons on nature, language, com-

position, drawing, hygiene, music and calisthenics there is still more or less confusion. To recognize these defects and look for their causes will perhaps help in finding a remedy.

1. The lessons on nature as given in the prescribed course are not sufficiently differentiated as to their subjects. Instead of making some advance in every grade, it would be better, so far as it can be done without violating the laws of mental growth, to make each grade responsible for a definite part of the wide field of science. This would prevent the confusion arising from a multiplicity of subjects. For example, passing over the first four years of school life let the fifth year deal with the simpler problems in physiography only. Let the summer months of the next two years be spent with plants, and the winter months in the study of animals. Let the eighth year be confined to the elementary principles of physics and chemistry. It will then be an easy matter to hold each teacher responsible for her own part of the work.

2. Defining the work in Tonic Sol-fa, drawing and calisthenics, in a similar manner, will help to do away with some neglect chargeable against many teachers on these subjects.

3. LANGUAGE AND COMPOSITION.—The place of these important subjects is now usurped by grammar. Aside from the development of faculty no school acquisition is of more value than the ability to use one's mother tongue correctly and readily. This power is acquired only by constant exercise both in speaking and in writing—an exercise that requires to be conducted with skill and great watchfulness. To establish a pupil in the best usages of our language, and to fix them as habits, the teacher must avail himself of the principle that we learn to do by doing. To overcome bad habits formed from other associations than those of the class room, what is needed is constant practice—every spoken answer full and complete, every written exercise in good English.

A knowledge of subjects, predicates, modifiers, strong and weak verbs and verbs of incomplete predication, gerunds, pronominal adverbs and adversative conjunctions may bewilder or make youthful pedants of the ordinary boy of twelve—these things will do but little to give him facility of expression, or to create in him a taste for the noble and ennobling literature of his mother tongue. Let us take up formal grammar in the academy only, where it properly belongs, and if we must have some grammar, let us have a simple text book of a few pages for the common schools. The time spent in parsing is needed for practice in good English, spoken and written. I am not condemning our present text book in grammar. I am only pointing out that it is entirely misplaced when it is found in the seventh or eighth grades of our common schools, and that a much more profitable study—an essential study—should be substituted for it.

HYGIENE—In my report for 1889 I recommended a regularly graded course of lessons in hygiene, including under that heading the teachings of science regarding temperance. At the request of the board I examined carefully a large number of text books on these subjects, and recommended for the common schools the Pathfinder series as published in Baltimore, and for the academy Martin's physiology. The council of public instruction, however, declined to authorize their use as text books in our schools. This I regret chiefly for two reasons:

1. With the book now authorized it is useless to expect the best results in training the pupils to a knowledge of the facts and laws of health or of the poisonous effects of alcohol on the human system and its blighting effects upon society.



This teaching and these or similar graded text books are prescribed for more than nine-tenths of the schools of the United States. Why should they be denied to our children? Although there are very few who live up to their knowledge, yet knowledge has a very great influence upon our manner of living. We may reasonably hope that if our children are taught the facts about alcohol, its influence for evil will cease with the next generation. I hope therefore the board will continue their endeavors to place temperance books in the schools better suited to their requirements.

2. By the use of these and other books as supplementary readers, the quantity and variety of the pupils' reading would be greatly increased. In the opinion of our best educationists this is an important improvement on our old system of having

pupils pore over one book until they become wearied with the monotony of the exercise. We know nothing correctly until we have seen it from many points of view. We know the full force and real meanings of words, only when we have used them in very many different relations to other words. Children who in their homes read a great many books make very satisfactory pupils compared to those who are restricted in their use of books. A child may be altogether unfit for advancement, and yet as the complaining parent often says he may know his reader by heart. In such a case the only way is to put the child into another book of the same grade. Seeing the same words in new combinations sheds a flood of light upon them. His interest is aroused and he makes rapid progress. For this reason our teachers should be allowed the use of supplementary readers.

Time-Table for a School 6, 7, or 8 Grades.						
Recitations.	Hours.	Time.	STUDY.			
			D Division.	C Division.	B Division.	A Division.
Opening Exercises	8.50- 8.57	7 min.				
Roll Call	8.57- 9.00	3 "				
D Reading	9.00- 9.15	15 "		Reading	Reading	Arith
C Reading	9.15- 9.30	15 "	} Copying Lesson with help of an older pupil* }		Reading	Arith
B Reading	9.30- 9.50	20 "		Copying Lesson		
A Lang. or Read	9.50-10.10	20 "	} Busy Work }	Arith	Arith	Lang. or Read†
D Number	10.10-10.25	15 "		Arith	Arith	Write notes on Les.
<b>Recess 15 Minutes. 10.25 to 10.40.</b>						
C Arithmetic	10.40-10.55	15 "	Reading		Language	Arith
B Language	10.55-11.10	15 "	Read to Tutor*	Arith		Geog. or Hist.
A Geog. or Hist.	11.10-11.25	25 "	Writing	Arith	Arith	
D Reading	11.25-11.50	15 "		Arith. with Tutor	Geog. or Hist.	Map Drawing
Singing taught	11.50-12.00	10 "				
<b>Noon 60 Minutes. 12 to 1.</b>						
Roll Call	1.00-1.03	3 "				
B Geog. or Hist.	1.03-1.25	22 "	Number	Lang		Arith
C Language	1.25-1.45	20 "	Read to Tutor*		Map Drawing	Arith
Singing	1.45-1.50	5 "				
Writing or Drawing	1.50-2.20	30 "	Nat. Les. to Teacher.			
<b>Recess 10 Minutes. 2.20 to 2.30.</b>						
D Reading	2.30-2.45	15 "	} DISMISS. }	Reading	} Write outline of Geog. or Hist }	Alg. or Arith
C Reading	2.45-3.00	15 "		Copy Lesson		
B Arith	3.00-3.20	20 "				Geom.
A Geom. or Arith.	3.20-3.40	20 "				
A and B Nature Lessons.	3.40-4.00					

\* In a large ungraded school it will be necessary frequently to utilize some of the older pupils as tutors. Let it be looked upon as a privilege, perhaps the reward of good work.  
 † For the highest class, reading three times a week, and language or grammar twice, will be sufficient. So, also geography, three times a week, and history twice. Writing and drawing the same, alternately.  
 NOTE.—It will sometimes happen that the 6th Grade can work with the 7th in history or geography. In various circumstances many minor changes of that kind may be desirable.

**Time-Tables.**

If you have a large school of 6, 7, or 8 grades, divide the pupils into four sections, basing your classification in a general way on the course of study which is intended only as a general guide.

No teacher can do good work with more than four sections, nor having a large miscellaneous school, in

less than six hours. The younger pupils should be dismissed at 3 p. m.

By analyzing the time-table above, it will be found that the teacher's attention is fairly given to each class and to each subject.

Nova Scotia teachers will confer a favor upon their fellow teachers by criticising any glaring defects in this time-table and forwarding their objections to the editor of the REVIEW at Halifax.



## TOPICS OF THE TIMES.

Dr. Smith, in charge of the Lazaretto at Tracadie, N. B., reports that on January 1 there were 23 lepers under treatment in that institution, 11 males and 11 females. During the year six new cases were admitted and two patients. He states that for several years no lepers have been admitted from Tracadie districts, the new cases being from outlying districts, to which the relatives of leprous persons in Tracadie had removed years ago. They were ferreted out by the doctor, and removed in the face of determined opposition. Dr. Smith thinks that leprosy has been finally stamped out in the Tracadie district, so long its home, and attributes this result entirely to segregation.

Among the recent deaths is that of Charles H. Spurgeon, the great London preacher. He did not have a college education, but won his high place by strong natural ability. In figure he was short and chubby, and rather awkward than otherwise. His features had a round Saxon cast, such as would lead one to regard him as capable of a rude strength, of a dogged power of endurance. He spoke good idiomatic Saxon in the pulpit, such as the people could understand. Spurgeon had the faculty of making his lessons into pictures, as the pious mother and her sinning child, the distressed believer and his great enemy, etc. He had no doubt as to the truths of the Bible and the constant presence of God in the world. Winning his fame early, he died in his prime at the age of fifty-seven years.

The World's Fair buildings are rapidly taking shape. One million dollars a month is being expended in the buildings alone. It is expected to be ready to dedicate in October, 1892, the anniversary of the landing of Columbus at San Salvador.

## The Silver Thaw.

There came a day of showers  
Upon the shrinking snow;  
The south wind sighed of flowers,  
The softening skies hung low.  
Mid-winter for a space  
Foreshadowing April's face,  
The white world caught the fancy  
And would not let it go.

In re-awakened courses  
The brooks rejoiced the land;  
We dreamed the spring's shy forces  
Were gathering close at hand.  
The dripping buds were stirred,  
As if the sap had heard  
The long-desired persuasion  
Of April's soft command.

But antic time had cheated  
With hope's elusive gleam;  
The phantom spring defeated  
Fled down the ways of dream.  
And in the night the reign  
Of winter came again,  
With frost upon the forest  
And stillness on the stream.

When morn in rose and crocus  
Came up the bitter sky,  
Celestial beams awoke us  
To wondering ecstasy.  
The wizard winter's spell  
Had wrought so passing well  
That earth was bathed in glory  
As though God's smile were nigh.

The silvered saplings bending  
Flashed in a rain of gems;  
The statelier trees attending  
Blazed in their diadems.  
White fire and amethyst  
All common things had kissed,  
And chrysolites and sapphires  
Adorned the bramble stems.

In crystalline confusion  
All beauty came to birth;  
It was a kind illusion  
To comfort waiting earth—  
To bid the buds forget  
The spring so distant yet,  
And hearts no more remember  
The iron season's dearth.

—Chas. G. D. Roberts in *March Century*.

## An Excellent Spelling Exercise.

While visiting the public schools of Chicago the other day, I witnessed a valuable spelling exercise which, while not altogether new, might be practised to advantage in all schools, whether of the country or city.

The pupils are given half an hour each day for spelling. On Monday morning the teacher places on the board a list of words chosen from the reading lessons of the previous week. This is left on the board all the week, and each day the first ten minutes of the half hour for spelling is devoted to the forming of oral sentences by the pupils, in which the words in the list are used.

On Friday, paper is passed, and all the words but ten are erased from the board; these ten are used each in a written sentence.

On Monday, fifteen minutes of the time for language is used in reading and discussing the sentences which have, in the meantime, been corrected by the teacher.

The child not only learns how to spell the word, but how to use it at the same time, and it enters into his vocabulary as a means of expressing thought, and not, as is too often the case in our teaching of spelling, a mere combination of letters. — "E," in *Public School Journal*.



### BUSY WORK IN NUMBER.

1. How many pupils in the schoolroom? If there were ten more how many would be there? If there were eight less?
2. How many panes of glass in one window? How many in all the windows?
3. Write the name of the month. How many days in the month? How many days in last month? How many in next month?
4. How many hours in a day? In two days?
5. Draw five lines across your slate, and draw five more lines across them. How many blocks on your slates?
6. How many children in the row you sit in? How many feet have you all? How many fingers? How many noses?
7. There are three bones in each of your fingers, and two in your thumb. How many bones have you in one hand? in both hands?
8. Draw a clock on your slate. How many numbers on its face? In how many ways can you write the numbers? Make the hands say four o'clock, Make them say noon. Midnight. Six o'clock.
9. How many meals do you eat in one day? How many in three days? How many in a week?
10. How many Sundays in this month? How many days, not counting the Sundays? How many school-days?
11. How old are you? How old will you be in 1895? In 1900?
12. How many eggs in a dozen? In three dozen? What is the difference between two dozen and a half dozen?—*The Primary School.*

### SCHOOL AND COLLEGE.

Inspector Mersereau's many friends are glad to hear of his convalescence after an illness extending over several weeks.

Miss Beatrice Duke is teaching at Letete, Charlotte County.

The benefit of improved school accommodations is strikingly illustrated at Rolling Dam, Charlotte County. Mr. Vernon Clarke's school there is now one of the best in the county, and compares very favorably with some of the superior schools.

The people of Coldbrook, Pennfield, Charlotte County, are very proud of the appearance of the interior of their school room. It has been painted, newly furnished and well supplied with excellent blackboard surface. This has all been provided through the efforts of the teacher, Miss Annie M. Prescott, assisted most liberally by the people of the district. Miss Prescott is greatly esteemed in Coldbrook. Few districts fail to respond to earnest and disinterested efforts on the part of a teacher.

At Truro the following have obtained elementary certificates in the Tonic Sol-fa course: G. L. Borden, Bessie McNeil, Gertie Schaffner, Annie H. McKenzie, Juliet D. McCully, Eva C. Smith, Ella Rettie, Matilda W. Calnek, Sadie A. Murray, William A. Cunningham, Edna E. Coleman, Edith Hennigar, Etta Ross, Ida Hiltz, Bessie Webber, Florence Black, Jessie Hiltz, Jean McLeod, May Bates, Mary Ann McElhinney, Mrs. Thomas Archibald, Libbie Cruikshanks, Lemont Givan, Andrew Allan, Jane Allan, John Lorn Allan, Katie Campbell Allan. Intermediate—William A. Cunningham, Juliet McCully, May Emma Bates, Jean McLeod, Aggie H. Hamilton, E. W. Poile. In Miss Hamilton's class, Willow St., Truro, seventeen pupils have taken the Junior certificate.

Dr. Wesley Mills of McGill University, Montreal, will deliver the oration at the Encenia at the New Brunswick University in June next.

The pupils of the Grammar School, Shediac, N. B., gave a public literary and musical entertainment, on Friday afternoon, Feb. 26th. These entertainments, which are given each month, are attended by the parents and friends of the children.

The opening of the new academy at Digby took place on Feb. 15th. It is a fine structure and admirably adapted to the educational wants of that city.

The St. Stephen High School was opened on Monday, Feb. 29th, after having been closed two weeks on account of scarlet rash in the family of Principal P. G. McFarlane. — *Courier.*

A sad accident is reported from Chester, N. S. While crossing from Iron Bound Island to Blandford in an open sail boat, Ruben Wynacht, school teacher, was run into and instantly killed, by the schooner Jewel, Capt. Mosher, of Mahone Bay. — *Windsor Tribune.*

The Bass River schoolhouse was destroyed by fire recently. It was built in 1867, remodeled in 1890, and made into two departments at a cost of \$700. Miss Martha Clarke was teacher in the primary department, and Miss Jessie Davisson in the advanced department. No insurance. Loss about \$1200. Cause of fire unknown.

Miss Addie Calder has taken charge of a school in Canterbury, York county,

The Colby Oracle for 1891, contains a fine portrait and a short sketch of Prof. Wm. Elder, Sc. D. In the article, the learned educationist, who spent some time at Acadia, though he did not graduate here, is spoken of in very complimentary terms. He has filled professorships at Acadia, Harvard and Colby, and has spent many years at the latter place. He has ever been an active worker, and his summers have been invariably spent in geological and mineralogical work, and other scientific investigation. He is highly spoken of not only as a professor, but also as a Bible instructor and friend to the students. An attack of bronchitis compelled him to go last winter to South Carolina and Virginia, but when the Oracle was published, it was expected that he would return early to Waterville.—*Acad. Ath.*



## QUESTION DEPARTMENT.

1. Why do the "Northern Lights" always appear in the North or Northeast to us?

The aurora is an electric discharge passing from one magnetic pole to the other and following the terrestrial magnetic curves. This discharge leaves the North pole in the form of clouds of electrified matter, which float southward through the atmosphere at the height of forty miles or more from the earth. It need create no surprise that it is generally invisible in the intermediate Zone of low latitudes, since this is well accounted for, not only by the large surface over which it is spread at great heights, but because this part of its course is at right angles to the line of sight, while in higher latitudes we look at the streamers "end on" and thus have before our eyes a very great depth of luminous gases. [Ency. Brit.]

2. Explain: "The half is greater than the whole".

Hesiod makes use of this epigram when showing the very great advantages of simplicity of life. A moderate income is generally accompanied with more true enjoyment than a fortune.

3. Where could a person obtain a book on book-keeping that would fit him to take charge of the books of an extensive mercantile establishment?

Mr. J. C. P. Frazee recommends Goodwin's improved Book-keeping and Manual, twelfth edition. J. H. Goodwin, 1215 Broadway, New York City. Order from the Halifax or St. John booksellers. Price, \$3.50.

4. How would you deal with the words "cease" and "are" in Dalglish's Introductory English Composition, page 22, Ex. 14, par. 5?

In the indirect form these words remain unchanged, because they refer to classes which still exist.

## BOOK REVIEWS.

THE PERFUME HOLDER: A Persian Love Poem by Craven Langsworth Betts, New York, formerly of St. John. Saalfield & Fitch, publishers, New York. For sale by J. & A. McMillan, St. John. It has been said that whatever transports us from our present surroundings into the imaginary realms of the future, or into the shadowy regions of the past, is a help, a benefit, a gain. If this be so, then ought we warmly to welcome this dainty poem by Mr. C. L. Betts, "The Perfume Holder", with its pathetic tale of love and sorrow. Rarely do we find ourselves so quickly and so completely isolated from modern experiences, so thoroughly absorbed in the varied phases of oriental life, as when we are reading Mr. Betts' smooth musical verse. We would especially emphasize the scenes in the bazaar, its bright-hued crowd, its hot noon-tide when

"Silence with its solemn reverent grace  
Softly down spreading from reposeful space  
Rested an hour upon the market place."

The truly oriental heroine in her "white cymar" and her lover, the dark eyed Selim, are graceful figures, but we doubt whether the widest interpretation of eastern etiquette would have allowed her to remain so long in the brass-worker's booth. The ride across the desert in "the breeze of early evening" and the visit to the astrologer afford good instances of word-painting, and very vivid is the picture of the rich luxuriousness, and yet utter emptiness of Zenana life behind the fated "Pardah."

The poem closes with a description of ruthless oppression and bitter suffering, the hideousness of which is not softened even by the poetical language in which it is related, but the whole volume is pervaded by the sweet incense-aroma of undying love, the enjoyment of which is greatly enhanced by the quaint oriental "Perfume Holder" in which it is presented to the reader.—FRANCES E. MURRAY.

GOLDTHWAITE'S UNIVERSAL ATLAS for 1892 is exceptionally full, complete and accurate. The maps are clear, the lettering distinct and easy to read. Every country on earth is shown; and in addition some parts not on the earth, which appear in the astronomical charts and maps, and a history of astronomy. Geography, history and astronomy are the subjects treated of in the book, which is a regular encyclopedia of useful information. A very interesting feature is a compendium of history for the last thousand years, relating to the discovery, settlement and political events of North America and the States, with maps elucidating and explaining the text, presented in a novel and instructive way. A lot of colored diagrams are also given, showing in an attractive and comparative form, a wealth of information and statistics from the recent census. A good atlas, like a good dictionary, is daily needed in every home, school and office, for reference and study. The Universal Atlas is cheap enough for any one needing such a work, to be able to buy it, and we think it is good value, and a desirable work for all classes to have. The Goldthwaites, Geographical Publishers, 132 Nassau Street, New York.

ELEMENTS OF STRUCTURAL BOTANY, with special reference to the study of Canadian plants, by H. B. Spotton, M. A., F. L. S., head master of Barrie Collegiate Institute. Revised edition. Cloth. Price \$1.00. Published by W. J. Gage & Co., Toronto. This book, which is coming gradually into use in the Atlantic Provinces among teachers and students of elementary botany, is an excellent work in many ways. It introduces the student at once to the practical part of botany—the examination of plants. After a careful and minute study of these, selected as types of the more important families, the elements of Botany are taught, briefly it is true, but systematically, furnishing a good groundwork for further study. In the revised edition, chapters are given on morphology, histology, and the principal features of cryptogamous plants, ferns, mosses, fungi, etc. The manual portion, which is bound with the elements, contains about 200 pages descriptive of plants commonly found in Canada, with key for their identification. Many of the common plants of the Atlantic Provinces are not described, which is a serious defect, but one which is most capable of being remedied in future editions.



LA FAMILLE DE GERMANDRE, par George Sand, edited by Augusta C. Kimball of the Girl's High School, Boston; "Madame Thérèse" by Erckmann-Chatrain, edited and annotated by George W. Rollins, of the Boston Latin School. Cloth. Publishers Ginn & Co., Boston. Two excellent stories for students of French, neatly printed and evidently carefully edited.

RACINE'S ESTHER, edited with introduction and notes by I. H. B. Spiers, Philadelphia Paper. Twenty-five cents. Published by D. C. Heath & Co., Boston. This contains several appendices, explanatory of the metre of the French verse, and grammatical difficulties found in the text.

#### BOOKS RECEIVED.

EUCLID'S ELEMENTS, arranged for beginners. MacMillan & Co., London, England.

NUMBER LESSONS, for second and third year pupils. D. C. Heath & Co., Boston.

ACADEMIC ALGEBRA, for the common and high schools and academies. D. C. Heath & Co., Boston.

Gage & Co.'s educational series, embracing Gage's SCHOOL READERS II-VI; SELECTIONS FROM TENNYSON; Scott's LADY OF THE LAKE; MEIKLEJOHN'S ENGLISH GRAMMAR; Kirkland & Scott's ELEMENTARY ARITHMETIC; Cæsar's GALLIC WARS. Published by W. J. Gage & Co., Toronto.

#### Reports.

The *Nova Scotia Provincial Government Crop Report* for 1891 has been received from Prof. Lawson, Ph. D., secretary of agriculture. It is full of interesting information to agriculturists.

*Contributions from the United States National Herbarium*, volume III, No. 1; A Monograph of the grasses of the United States and British America by Dr. George Vasey, Botanist, Department of Agriculture, Washington. This is not a mere report, but a valuable work for botanists and agriculturists, being the first part of a general work on the grasses of the United States, undertaken by a highly competent authority. The remaining portion of the work will be published in a few months.

The Canadian Pacific Railway Company has issued a very tempting circular describing and giving particulars of cost, etc., of a trip round the world on this now well known route.

#### Current Periodicals.

*Goldthwaite's Geographical Magazine* is always a welcome visitor, and if possible each number is better than that of the preceding month. In this age of cheaply produced literature, it is a wonder how so much good value can be given for two dollars a year. In a journal having for its object the presenting to its readers of short, terse articles from the best writers of the world, about whatever is of interest geographically on this earth on which we live, we naturally expect much, and our expectation is more than realized. Every subject chosen is of general interest and well treated. The February number is full of attractive and readable articles, including among others, "Coaling Stations and

Trade Routes," "Columbus and his Times," the second of a series of articles especially valuable in the year 1892, "The Women of Samoa," "The Geographical Distribution of Animals," "Chile and the Chileans," which is a comprehensive and instructive description of that country, its people and productions, "The Cannibals of Herbert River," "Spelling of Geographic Names," "Alaska," "The Coffee Plant," "The Obongo Pigmies." Of the topics contained in each monthly edition, that on "Hints to Teachers" is alone worth the price of subscription to every teacher. It is a useful magazine for students as well as teachers, an educational power which should find a ready entrance where sound and full information is needed. . . . *Garden and Forest* for February 24th has for its leading article "The Tree as a Schoolmaster,"—a thoughtful essay which shows how this silent but wise instructor has been influencing man throughout the ages. . . . The *March Century* begins a series of essays on poetry by the well known Clarence Edmund Stedman. . . . In *March St. Nicholas* Arthur Howlett Coates throws some needed light on the construction and use of "The Boomerang," by the Australian blacks; and his directions are so plain that there seems no reason why Young America should not make boomerangs for itself. . . . In *March Popular Science Monthly* are several interesting articles in "Moral Educability," the possibility of educating the moral faculties is discussed by Edward P. Jackson. The latest important discovery in zoology, that of "The Australian Marsupial Mole," is described, with illustrations, by Dr. E. Trouessart. This animal furnishes a connecting link between the ornithorychus and pouched animals like the opossum and kangaroo. There is a very spirited autobiographical sketch of Justus von Liebig, which contains valuable observations on methods of teaching science. . . . The *March Wide Awake* has a timely opening story, "A March Mood," with a beautiful illustration, with other pictures and poems suitable to the season. The *New England Magazine* for March has an illustrated article on "Clubs and Club Life at Harvard." "America in Early English Literature" is an interesting sketch. . . . All teachers and those interested in higher education will be attracted by the paper in the *Atlantic Monthly* for March, by Professor Geo. H. Palmer, of Harvard University, entitled, "Doubts About University Extension." The writer has given this subject a most careful study and relates the history of the movement in England and in the United States. He speaks of the difficulties of making it a success in America, owing to the different social conditions of the two countries, and suggests plans by means of which the system may be made a possible success on this side of the water. . . . The *Scientific American*, published by Munn & Co., New York, presents weekly to its readers the best and most reliable record of various improvements in machinery, while the scientific progress of the country can in no way be gleaned so well as by the regular perusal of its pages. . . . The numbers of the *Littell's Living Age* for the weeks ending 20th and 27th February contain Gothic and Saracen Architecture, *Westminster*; The Making of a Mandarin, *London Quarterly*; English and American Flowers by Alfred R. Wallace, *British Administration in West Africa*, The New Astronomy and its Results, and Victor Hugo: "Dieu," *Fortnightly*; Impressions of Rome, *New Review*; Jamaica and Mauritius, and A Corner of Essex, *National*; Bernardin de Saint-Pierre, *Temple Bar*; A Glimpse of Asia Minor, *Cornhill*; The Fall of Balmaceda, *Blackwood*, etc.



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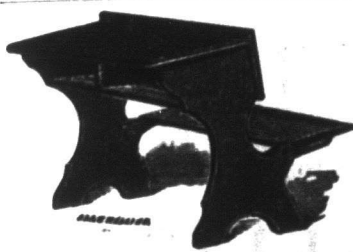
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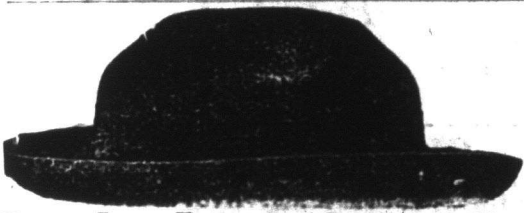


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FACULTY OF APPLIED SCIENCE—Civil Engineering, Mechanical Engineering,  
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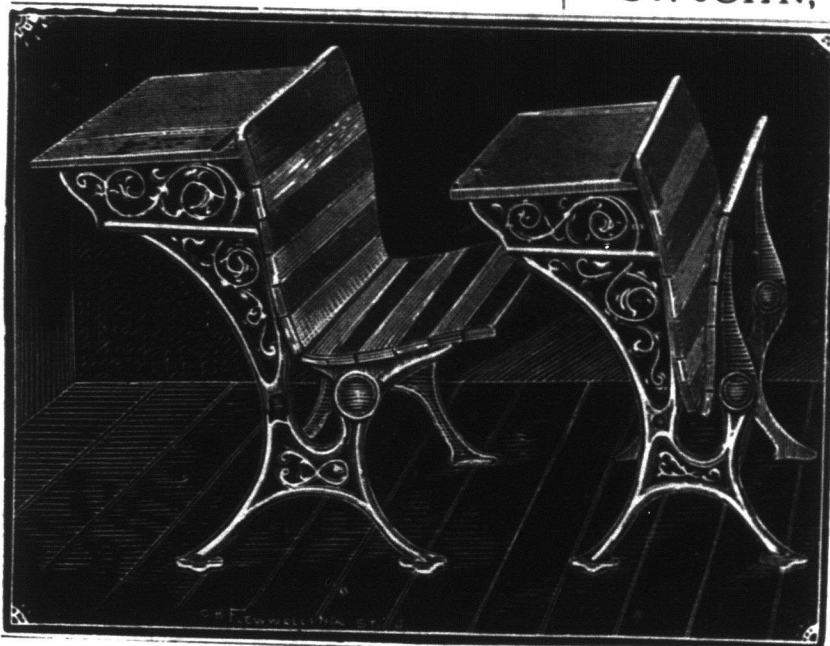
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