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MISSING

The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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We give up a large portion of space in this issue to reports of teachers' conventions. Although the merest outline of the proceedings is given in each case, this will, at least, preserve a record of these meetings that will be of some value in our educational history. The readers of the REVIEW will be interested in comparing the plans of work in the different institutes. In some, papers and discussions filled the programme, in others a variety as well as a practical turn was given by teachers instructing classes before the institute. This is an admirable plan, and we hope to see it more generally carried out in the local convention. At the Provincial convention, in educational works, in school journals, the teacher comes in contact with enough of theory. Just how to present a subject and come in touch with a class is what is of value to hundreds of teachers. A lesson to a class by one who has been successful in a certain subject will quicken the educational pulse far more than the most carefully prepared paper, and give to many a teacher practical hints which could be obtained in no other way.

His Excellency, Lord Stanley of Preston, Governor-General of Canada, has, with praiseworthy energy and most admirable endurance, paid much attention to educational matters in his visits. In Halifax, for instance, he visited the University of Dalhousie, the Convent School of the Sacred Heart, the Halifax Ladies' College, St. Patrick's High School, and the Halifax County Academy. At the latter institution he gave a very able address, worthy of any professional educationist, which, while directed to the students, was, of course, in many points meant for instructors and the public moulders of our system as well.

A NOTABLE MEETING.

The annual convention of the College Association of the Middle States and Maryland, held at the close of last year, was in many respects a notable meeting. From the volume of proceedings before us, we notice that forty-six presidents and professors, representing twenty-three colleges and universities, assembled to read papers and exchange views on some of the problems which are most urgently demanding solution in the educational world.

Of these subjects the papers on technical education are characterized by wisdom and moderation—particularly that of President Adams of Cornell. No one has had better opportunities of studying the working of a technical college as a department of a great university than he has had in the Sibley College, at Cornell University; and he expresses the view that it is an unmistakable advantage for technical studies to be prosecuted in touch with those of the other faculties—that there is produced "a certain cosmopolitanism which cannot be found in an institution when they are isolated from all others." And emphasising his objection to narrow specialization he continues to say: "While it ever remains true that the professional man must learn his profession thoroughly, it is equally true that he will not practise his profession with the greatest success unless he knows also a great many other things. He must know human nature; he must know what is going on in other fields of learning; he must have that breadth of view, that spirit which I have called cosmopoli-

tanism in education, which will take away from him that arrogance that is apt to result from too narrow a specialization." President Sharpless of Mansford College, while advocating co-operation between the smaller colleges and properly equipped technical schools, enters an indignant protest against the action of those who would degrade the course of study to meet the demand for what is called a practical education. He says "It will be a sad day for America if utilitarianism usurps more than its proper place. The proper balance of ideas demands that the exponents of pure scholarship should not abate one iota of their claims. The colleges are their special working grounds and they must not surrender them unduly to intruders. While recognizing that a scientific course may produce a valuable culture, they must make good their title to being the real educators of the American people, and force an acknowledgement of the fact that for all men, whether working for material or intellectual results, their courses are an invaluable preparation." The drift of opinion tended to the advisability of making technical teaching a university rather than a college work, and of insisting on a large measure of culture study in connection with the technical courses.

The proposal to examine candidates for admission to the university in one or two English classics is one in which, if we mistake not, many advanced teachers in these provinces will heartily sympathise. The work which is set down for a high school department is largely determined by the requirements of the college matriculation examination. But the great majority of those who enter the high school complete their studies there, and must, therefore, enter upon the duties of life with such preparation as it provides. We cannot, however, accept as an adequate outfit in English, such a knowledge of grammar, including parsing and analysis, and such very elementary composition as is often required of matriculants to college. A higher standard of excellence in English composition ought to be fixed, and certain books selected from English classical authors, in the same way as we choose books from the Latin and Greek classics, should be prescribed for thorough study and careful examination, and manifestly the energies of the pupils would not be overtaxed if to this we were to add an elementary acquaintance with English literary history of the last three centuries. Were this done pupils would leave school more rationally trained than they are at present, somewhat cultured as to literary taste, and with the desire to read for themselves evoked and stimulated. And we feel assured that professors of English in our colleges would be delighted to escape the elementary work which must at present be the occupation of the first year's students in English, and devote the time thus rescued to pursuits more congenial to themselves, and more inspiring to those who are committed to their care.

THE FAILURE OF EDUCATION.

Under this heading we find a tart article by LeSuer in the *Toronto Week*. "How empty of all results a five or six years' course of schooling may be, hundreds of parents are daily forced to acknowledge. The conclusion that we draw is that in general the physical trainer knows what he is about while the intellectual trainer does not." This is the burden of his wail. And too much truth there is in it. But there are other parents, and other children, and other teachers.

Again:

"State education is and always will be book-education, if only on account of the uniformity that must necessarily characterize it. What is wanted at the head of an educational establishment is a strong and an original personality; when you have that you must allow it scope — more scope than it can ever have under the regulations of any department of education. A really rational system of education, moreover, would necessarily be much in advance of average opinion, and could not, therefore, be administered by the state, which in all things can only go as far as average public opinion permits."

But what if at the head of an educational department there is a strong and original personality? Would not that be as good for the state system as it would be for the private school? And would the results be considerably more extensive in their development?

He strikes the nail on the head, among his random blows, in the following paragraph:

"Every teacher in the land who divorces words from realities and thoughts from things, who puts meaningless or evasive reasons into the mouths of pupils, who fills the mind with abstractions before the perceptive and apprehensive faculties have had any proper exercise. Every teacher, we might almost say, who follows the ordinary method of the schools is inducing stupidity, more or less, in the minds of his or her pupils. The worse than nullity of the intellectual discipline in such cases is masked by the fact that a certain amount of positive knowledge has been communicated; and parents, who unfortunately judge of schooling by what their children seem to have learnt in certain recognized branches of study, are sometimes satisfied though more often not. "My child seems to be learning absolutely nothing at school!" is an exclamation not unfrequently heard. We should not advise the parents of such children to despair, however. Barring cases of vicious obstinacy, the child who seems to be learning nothing at school may, perhaps, be keeping his faculties unimpaired for future use; while the boy who is the teacher's pride may be surrendering up his own individuality, in a most hurtful degree, to the will of another, and taking an impress of artificiality and intellectual dependence that he will not free himself from for the remainder of his days. Not often is the winner of many prizes at school the winner of the great prizes of active life."

IS NOT SOME IMPROVEMENT POSSIBLE?

The late education act, fixing the sum total of the government grant to Nova Scotia teachers, was so crudely called into existence, as to cause a great deal more mischief than what our teachers generally complain of. As the sum total of the grant has to be divided to each teacher in proportion to his grade of license, and the number of days taught, every teacher must remain without his money until all the school sections in the province send in their returns. The whole province must wait on the most backward county, which in turn must wait for its most backward sections. Then follows a tremendous operation of figures by which the sum total is torn into some two thousand irregular fragments; and the inspector who should be attending to his duties as an inspector, is basely turned into a sort of Babbage's calculating machine. The teacher, besides having his grant reduced, must lose a month's interest on a large portion of his salary twice a year. The schools must go without inspection, and the inspectors must pass through a non-purgatorial torment, which, while it pains much, purifies them not and saves not an iota of anything imaginable for the use of the country. Why cannot a certain amount for each grade be fixed each year in advance, based on the results of a previous year? If \$60 cannot be given to a B teacher per term, make it \$59 or \$58, or any other round number which will probably fall within the estimates, or revise the figures every four or five years. A teacher could then calculate exactly what salary he is going to work for; and the difficulties referred to might, in a great measure, thereby be obviated.

There are other practicable changes possible, we think, which would reduce the amount of invaluable and necessary time taken from inspectorial duties, changes which would result in gain in several respects, and loss in none. Say for instance, the centralizing of the functions of paymaster. A cheque can travel as safely from Halifax, and as rapidly nearly, to the uttermost border section, as if it started from a county town. We offer the suggestion. Some of our readers can judge better, we have no doubt, of the advantages of the proposed modifications. The simpler the machinery, the more completely is the power transferred, and the less is the cost of wear and tear and friction.

THE free scholarships offered the Halifax Academy by the Victoria School of Art and Design, were awarded, after very close competition, to the Misses Moody, Belcher and Fairbanks.

Teachers' Associations.**ANTIGONISH AND GUYSBORO COUNTIES, N. S.**

The teachers' association, for this inspectorial district, met, according to an excellent programme previously published, in the fine convocation hall of St. Francis Xavier College, on Tuesday and Wednesday, October 9th and 10th. Ninety-six members were enrolled, which shows an educational enthusiasm in this district inferior to none in our provinces. It was resolved that the association should meet annually. Rev. Dr. McNeil, President of St. Francis Xavier College, gave an able opening address on "The Art of Teaching." Joseph A. Wall, of Guysboro Academy, gave a practical illustrative lesson in language, a department in which he specially excels, to a class drawn from the schools of Antigonish. D. C. Gillis followed, with a lesson on grammar, to a more advanced class. Miss Aggie H. Hamilton led on the second day, with a paper on reading, followed by a lesson, selecting a passage from Whittier. Charles F. Hall, Principal of the Canso schools, gave a clever address on "The Teacher at Home," that is, in his school-room. In the afternoon, Miss Mary A. Hamilton, the brilliant instructor in charge of the Dartmouth Public School Kindergarten, gave a sketch of the life of Froebel, and a charming practical lesson, with the "gifts," "occupations," and songs, all brought into play, with an infantile Antigonish class. A very important lesson was finally given in elementary arithmetic, by Mr. Martin McArt. He very aptly illustrated methods of inducing young pupils to put their mathematical knowledge into practical work, which at the same time gave a stimulus to the development of mathematical power in the abstract.

Several important matters of local and of general interest were discussed. We can only refer to a unanimous resolution, after discussion, passed in favor of having the school year consist of one term, instead of two, as at present. We are glad to see the east so clearly decisive on this question, and, if we mistake not, District No. 6 has taken the lead. We are sorry space compels our account to be so brief. The points we have noted, however, will become a part of our provincial history, by having them collected in our columns. The officers elected are as follows: President, Inspector A. G. MacDonald, M.A.; Vice-president, the Principal of Main Street school, Antigonish; Secretary, Martin McArt, of Havre au Bouche, to form an executive committee with Principal Longley, of Guysboro Academy, Principal Hall, of Canso, Principal W. A. Chisholm, of St. Ninian Street school, Antigonish, and the Principal of Sherbrooke school.

The most successful institute ever held in this section of the province, was then duly and appropriately closed, with "God Save the Queen."

DISTRICT X., NOVA SCOTIA.

The teachers of District No. 10 met in the high school room at Pugwash, on Tuesday, October 28th. About eighty were enrolled; after which followed an address to the teachers by Inspector Lay, on "The Practical Work of the School-room." In the afternoon a lesson was taught by D. A. Ross, of the Amherst Academy, on physiology. Then followed a lesson on calisthenics, by Miss B. McKay, of Brule, and a paper on "Practical Aid to the Purpose, on the Duties of the Teacher," by Principal Calkin. In the evening a large meeting was held in the Methodist church, at which music by the choir and band was rendered; an address of welcome from Dr. Mackintosh, and speeches by the chairman, Councillor Wilson, Revs. McKenzie and Giles, Principal Calkin, and Inspector Lay. The chairman, on opening the meeting, read the following telegram:

PUGWASH, OCT. 28, 1896.

Sir Charles Tupper, London:

First passenger train arrived here to-day, carrying teachers' convention, a confidence that happily crowns your work for free schools and railways in your native province.

Signed A. WILSON.

LONDON, via ST. JOHN'S, N. B.

October 29, 1896.

A. Wilson.

Thanks. Delighted to learn line open and so fittingly inaugurated. Wish Pugwash every prosperity.

Signed CHAS. TUPPER.

Great cheering followed the reading of the telegrams. A pleasing incident was a resolution of regret by the teachers at the withdrawal of Messrs. Slade, Byers, and Johnson, from the teaching profession.

Other papers were read by Miss Cameron, of Parrsboro, on "Morals in our Public Schools"; by Miss McDonald, of Amherst, on "Kindergarten work, and the materials that may be used in our Public Schools"; and an interesting lesson on decimals was given by Inspector Lay.

CARLETON COUNTY, N. B.

The Carleton County, N. B., teachers' institute was convened at Woodstock, October 16th. There were sixty-eight teachers present. It was one of the most interesting and profitable institutes ever held in the county. A very full programme was carried out. The public meeting, on the evening of the 16th, was well attended, and much interest was manifested. The following is the programme of the various sessions: First session—Routine business; address by President, R. P. Steeves, M. A.; address by Inspector

Bridges, M. A. Second session—Paper, "Res Scholastica," by J. Howe, M. A., followed by Principal Steeves, who reviewed the paper at considerable length. Third session—Public meeting, addressed by L. P. Fisher, Esq., chairman of Woodstock School Board, and by Rev. Wm. Dobson. The first speaker made a strong argument in favor of compulsory education. Fourth session—Paper, "Value of Experiments," by Miss Sarah Sharp, of Woodstock, followed by an experimental lesson by Mr. McLean; Paper entitled "Home Lessons," by Mr. Benn, followed by a discussion. Fifth session—Paper on reading, by Miss Wheeler, followed by discussion. The following officers were elected for the ensuing year: President, Mr. A. Plummer; Vice-president, Miss Wheeler; Secretary-Treasurer, Mr. Farley; Committee of Management, Miss Sharp and Miss Good.

NORTH-MIDDLELAND COUNTY, N. B.

The fourteenth session of this institute was held at Chatham, October 16th and 17th; sixty-six teachers were present. The following papers were read: by Miss Ullock, on teaching composition; by Miss Miller, on science teaching; by Miss A. G. McIntosh, on reading; Mr. F. P. Yorston, on derivation; Mr. J. F. Onens, on the teaching of geometry to beginners; Mr. Cox, on the development of character. Misses Crighton and Ullock read extracts from THE EDUCATIONAL REVIEW on Kindergarten work; and Miss Thompson stated the aims of the Kindergarten. The child is to be trained early for his later study and life. The eye and hand chiefly are trained, the inventive and imaginative powers are cultivated, accuracy and neatness of work are required. Recess plays are regarded as very valuable, for in them the child reveals his true self. Miss Brown read an excellent paper embodying her views on the training of children in the Kindergarten. Inspector Mersereau showed to what extent he considered Kindergarten work could be done in the primary schools.

Election of officers resulted as follows: President, J. F. Onens; Vice-President, Miss Bessie Ullock; Secretary-Treasurer, G. H. Harrison. Additional members of committee of management, P. Cox and Miss A. G. McIntosh.

GLoucester COUNTY, N. B.

The fourteenth annual meeting of the teachers of Gloucester was held at Bathurst, on Thursday and Friday, October 9th and 10th, Inspector Mersereau in the chair. Forty-five members were enrolled. Papers and addresses were given by Mrs. S. Williamson, Miss Lamont, Miss Edgar, Miss Barry, Mr. Branscombe, C. H. Cowperthwaite, A. B., Mr. Jerome Boudreau and Miss Hodgins. One important feature

at this institute was the number of lessons given to classes before the institute. The following officers were elected: James McIntosh, President; Mary Nicol, Vice-President; J. E. Lanteigne, Secretary-Treasurer; C. H. Cowperthwaite, A. B., and Theodore Langis, additional members of managing committee.

VICTORIA AND MADAWASKA, N. B.

The second meeting of this institute was held at Edmundston, on the 23rd and 24th of October, Thirty-seven teachers were present. Inspector O'Brien in the chair. Papers were read by Mr. Henderson, Mr. Brundage, Miss Truswell and Miss McGill. They were thoroughly practical and showed careful preparation. Some spirited discussions were engaged in, and the institute, which is the first held in the county of Madawaska, was a decided success. On Thursday evening a public meeting was held, and addresses were made by Inspector O'Brien, Rev. Mr. Armstrong, Dr. Cameron, B. R. Plant, Esq., and others.

The following officers were elected: Inspector O'Brien, President; Mr. Henderson, Vice-President; Miss McGill, Secretary-Treasurer, and Miss Costello and Mr. Martin, additional members of committee of management.

ST. JOHN COUNTY, N. B.

The St. John County teachers' institute met in the Centennial School, St. John, October 30th and 31st, President, Edward Manning, M. A., in the chair. 160 teachers were present. Papers on "Animal Life", as taught in the first four grades, were read by Miss O'Sullivan, Miss H. D. Gregg, Miss Belle Thompson, and Miss C. M. Hogan. Mr. Manning read an excellent paper on "Physical Geography"; Miss Grace Orr read a paper, "Gleanings from Glen Falls, N. Y."; and Miss Murphy, Mrs. Dieuaide, and Mr. Hay gave an account of the work done at the summer school at Parrsboro, N. S. A resolution, moved by Inspector Carter, favoring compulsory education, was unanimously adopted. Chief Superintendent Crocket was present and took an active part in the proceedings of the institute. The following officers were elected: President, James Barry; Vice-president, Miss Etta Barlow; Secretary-treasurer, W. C. Simpson; additional members of committee of management, Miss Grace Orr, W. H. Parlee.

The Kings County, N. B., teachers' institute was held at Sussex, October 30th and 31st, but we have received no account of its proceedings.

Astronomical Notes.

Somebody sends the editor the following question, and the editor has sent it to me:

On Oct. 21, by a St. John almanac, the sun sets at 5 o'clock, and is 15m. 21s. fast. What time should the clock show?

The answer to what I take the question to mean is 5 o'clock. But I don't feel at all sure that I know just exactly what it is that the inquirer wishes to know.

There are a few assumptions associated with my answer. As to the almanac, I have assumed that, since it is a St. John almanac, its "sunsets" are calculated for the latitude of St. John, and are given in St. John mean time. And as to the clock I have assumed that it is expected to show St. John mean time. It is with some reluctance that I make this assumption about any clock in this civilized age, but as late, at least, as last August I found the clocks of St. John and Fredericton still keeping this old-fashioned time, and I have not heard since that any change has been made.

With an almanac and a clock, as assumed — and supposing the almanac man to have done his figuring correctly — it ought to be clear that, at the moment of the happening of what the almanac calls "sunset" on the given day, the clock should show 5 o'clock.

That the sun was 15m. 21s. fast on that day has nothing to do with this matter. That does not mean that the sun sets 15m. 21s. before it should set. It means that on that day the sun passed the meridian of St. John 15m. 21s. before the St. John clock showed 12 noon: or, if it suits you to be very precise, it means that when the St. John clock showed 12 noon, the sun dial at St. John — or those clocks there, which are so wonderfully constructed as to keep true sun time — showed 12h. 15m. 21s. That the sun takes such liberties with the St. John meridian at this time of the year must not be taken as an insult specially directed against that city. He does the same sort of thing — and does more of it — even with those cities that have adopted standard time. How it is that he comes to behave in this way is a something you will not fully understand until you have given some time and thought to the study of what goes by the name of the equation of time.

The question above — or something like it — is one that may at some time or other have occurred to more than one reader of the REVIEW. As I have said, I am not quite sure that I know just what it was that the inquirer wished to know. I don't know who he or she is, and there is not time to make inquiries through the editor. So, I have done what

seemed to me the next best thing. I have submitted the question to half a dozen of my friends, and asked them to tell me what they thought it was that the querist wished to know, so that I might be in a better position to tell him what he wanted.

A says he thinks the inquirer wants to know if he can use the "sunset" column of his almanac as a test to regulate his clock by.

B says the inquirer has found the "sunfast" column alongside the "sunset" column in the almanac, and thinks the entries mean that the sun would set at 5, if he were a well behaved body, but does really set 15m. 21s. before 5.

C thinks the inquirer has been reading up about the *mean* sun and the *true* sun, and that he wants to know if it is the *mean* sun that sets at 5 and the *true* sun 15m. 21s. before 5, or *vice versa*, or how.

D says the question is one that used to puzzle himself in his younger days, until his minister explained the matter to him. The explanation is this: The sun does really set on that day at 5, but owing to the acceleration of the equinoctial he is 15m. 21s. fast, and, therefore, at the time of his setting the clock should show 15m. 21s. to 5.

E treats the matter as a joke, and F says he gives it up.

D's minister's explanation — so far as it is within my mental grasp — seems much the same as B's view of the matter; and this has been noticed in a previous paragraph. It may be worth while to add that if the entries in the "sunset" column here given in *apparent* time (that is, in true sun time), then the entry in the "sunfast" column would have to be taken into account in answering the proposed question. But in the computation of the "sunset" entries for almanacs now-a-days the "sunfast" business has been already allowed for in the reduction to *mean* time.

As to C's view of the difficulty it should be sufficient to say that it is always the real sun whose settings are recorded in the almanac. The *mean* sun sets at 6 o'clock mean time always and everywhere — refraction being neglected.

A seems to think the inquirer has the idea that his clock should have showed the almanac hour of the almanac "sunset" at the time when he observed the sun to set. If inquirer and his clock are in St. John, and if he knows exactly what it is that his almanac calls "sunset," and if he can manage to observe this particular "sunset," then the above idea is correct. But if any of those three *ifs* are not satisfied — and to satisfy the third one exactly would probably be rather difficult — then the idea is not correct. If not in St. John but at some other place in

the same latitude, the time of almanac sunset on that day would be the same as at St. John, viz., 5 o'clock; but this 5 o'clock would not be 5 o'clock St. John time. If not in St. John but at some other place in the same longitude, the sun would set by St. John time, but the hour of its setting on that day would not be 5 o'clock.

The conjunction of Mars and Jupiter on November 13 will probably be past before the REVIEW is out, but the two planets will be near each other for some time after. They have not been so close together as on the 13th since June 1889, and will not be so close again until — will somebody kindly figure it out?

A month or two ago it looked as if Venus would overtake Mars long before he could overtake Jupiter. But just an hour before the conjunction between Mars and Jupiter she came to a dead stop in her eastward journey among the stars. During the next six weeks she will have to back up to where she was in the middle of October. This set-back will handicap her so badly that she will not catch up with Mars until towards the end of next August. The conjunction then will be a very close one, so close that the eye will not be able to see even a streak of sky between them; but they will not then be well placed for observation.

I wish some of the REVIEW readers would try how late in November they can still see Venus, either during daylight or in the evening, and either with the eye or with a glass. If you do, please send me your latest date, with particulars as to the *others*.

If any of you would like to look up Neptune in a field glass during the next six months, drop me a card to indicate your wish, and I will try to give you some help in the next REVIEW.

A. CAMERON.

Yankee, N. S. N. content 1890

MCGILL University has again made another rapid stride in scientific education. A few days ago the corner stone was laid of the technical and mechanical buildings that the governors of the college are enabled to erect owing the liberality of two public spirited citizens of Montreal — Mr. W. C. McDonald and the late Thos. Workman. In establishing such institutions McGill will extend its usefulness by providing for Canadian students that instruction which they have been compelled to seek in technical schools abroad.

COMPULSORY education is receiving a large share of attention both in the press and on the platform throughout the Maritime Provinces. Chief Supt. Crockett, in a recent address before the St. John County Teachers, intimated that when the government perceived that there was a strong sentiment in favor of compulsory attendance it would add a clause to the education act giving power to enforce it. He complimented the teachers of St. John County that they unanimously passed a resolution favoring compulsory attendance at schools, even though they knew it would add materially to their labors.

FOR THE REVIEW

Practical Chemistry.

J. BRITTAIN, NORMAL SCHOOL, FREDERICTON.

Pierce a cork which will fit an ignition tube directly through the middle, with the pointed handle of a round file. Then reverse the file, and enlarge the hole (being careful to make it perfectly round) until it is only a little smaller than the glass tube which was bent. Insert the end (*a*) of the tube into the hole, and carefully work it through the cork. It is now ready for use as a delivery tube.

Another glass tube of the same diameter, 6 or 8 inches long, should be slightly bent, not far from the middle. When the end of the longer part is passed through a cork, and the other end inserted into a close-fitting rubber tube 16 inches long, the whole will form another useful delivery tube.

Take one of the large corks which fit the 6-oz. wide-mouth bottles, and make a $\frac{1}{4}$ inch hole through it with the cork-borer, and a $\frac{3}{8}$ inch hole with the round file. Cut off a piece of $\frac{1}{2}$ inch glass tubing, 9 inches long, and work it through the cork so far that, when the cork is driven tightly into the bottle, the lower end of the tube will be $1\frac{1}{2}$ inches from the bottom of the bottle. Bend a piece, 6 inches long, of $\frac{3}{8}$ inch tubing, at such a point that when passed through the cork the bend will be at the same height as the upper end of the $\frac{1}{2}$ inch tube. This piece of apparatus will be used in generating gases in the 6-oz. bottle.

Heat equably the middle of a small glass tube, for an inch or more, in the flame of the spirit lamp. When sufficiently soft, gently stretch the glass until the diameter at its middle point is about equal to that of a darning needle. When cool, break the tube evenly at its narrowest part, with the help of a triangular file. You now have two tubes drawn to a fine point. Their sharp edges, and those of the delivery tubes, should be rounded in the flame.

LESSON I.

What is in this cup? Air. If we were to take the air out, without letting anything else in, what would then be within the cup? Space. Where is the space now, which would then be within the cup? It is now in the cup. How do we express the fact that both the air and the space are within the cup? We say that the air *occupies* the space. Fill the cup with water. What can we say now? That the water occupies the space within the cup.

Anything which will occupy space is called *matter*. Mention several kinds of matter besides air and water?

The various kinds of matter are called *material substances*. The amount of space occupied by a portion of matter is called its *volume*.

Take a wooden cylinder. Place it in a vessel not cylindrical in form. What is its form now? It is still a cylinder. How much space does it occupy? The same as before; its *volume* is unchanged.

Pour some water into a cylindrical vessel. What is the form of the water? It is a cylinder. Pour the water into a funnel which has had its neck filled by a cork. What is the form of the water now? It is a cone. What is its volume? The same as at first. The wood retained both its form and volume, when placed in a vessel of a different form; the water retained its volume, but lost its original form; it conformed to the vessel in which it was placed.

Procure a small bag, made of very thin oiled silk, or other soft, flexible material, impervious to air, fill it half-full, or more, of air, by means of a small glass tube, and then seal the tube. Drop the bag into a bottle somewhat larger inside than itself. Cork the bottle tightly with a stopper, through which a $\frac{3}{8}$ inch glass tube has been passed. Insert the glass tube into a rubber one. Take the free end of the rubber tube in the mouth, and draw air from the bottle into the lungs. The air in the bag will increase in volume, and tend to assume the form of the bag. A body which, when placed in a vessel of a different volume and form, tends, like wood, to retain its form and volume, is said to be a *solid*, or in the *solid* state. One which, like water, tends to retain its volume, but not its form, is called a *liquid*. One which, like air, tends to increase its volume and to assume the form of the vessel containing it, is called a *gas*.

LESSON II.

Fill a test-tube with water, which may be colored with red ink, and insert a cork which has had a small glass tube passed through it. Take the test-tube in the wooden holder, and hold it, slightly slanted, in the flame of the spirit lamp. Move it slowly up and down in the flame, so as to heat it evenly throughout its length, without boiling the water. The water will rise in the small tube, while the test-tube remains as full as at first. The water seems to occupy more space. How can that be? Is there any more water? No; for no more was put into the tube. Place a number of marbles, or other small objects, on the table, half an inch apart. How can they be made to occupy more of the table? By placing them farther apart. Do so. If the marbles had been little pieces of water, how could *they* have been made to occupy more of the table? By placing them farther apart. How, then, can we explain the

fact that the water occupied more space in the tubes? By supposing that it was made up of little pieces of water, and that these little pieces were moved farther apart by the heat. Heat the end of a brass or iron bar, or rod, which will, when cold, just pass through a hole in another piece of metal. It will not enter the hole now. Why? The metal has been expanded by the heat; that is, the little pieces of metal have been driven farther apart. The small particles of water, and of metal, which were driven apart by the heat, are called molecules.

Drop a bit of starch, as large as a pea, into a test-tube. Cork the tube loosely, and hold the bottom of it in the flame, close to the starch. Soon there will be a black solid—carbon or charcoal—in the bottom of the tube, and liquid drops—water—on its sides. If we heat this water gently, as we did the water in the first experiment, it would occupy more space, but would still be water. If, however, we were to heat it until it became a gas—steam—and then pass it through a very hot iron tube, the water would be broken up into two gases, quite different from steam, called hydrogen and oxygen. We would then have obtained from the matter of which the starch is composed, three different substances—carbon, hydrogen, and oxygen. Now, the smallest particles of starch—the molecules, are starch, and nothing else; whence came these substances? Each molecule of starch must have been made up of a little carbon, hydrogen, and oxygen, and the carbon in the bottom of the tube is made up of the carbon which was in all of them.

Now, although starch can be broken up into these three substances, no one has ever been able to break either of them up into unlike substances. The chemist has been able to divide the carbon contained in one molecule of starch into six parts, and no more. Each of these smallest portions of carbon is called an atom. Similarly, a molecule of starch has been found to contain ten atoms of hydrogen, and five of oxygen.

We will, then, henceforth regard every piece of starch, or other matter, as a heap of molecules, too small to be seen, even with the microscope; and each molecule, as a system of atoms. If the molecules of a substance are made up of atoms of different kinds, as in the case of starch, we will call it a compound substance; but if they are made up of like atoms, as in carbon, we will call it a simple substance, or an element. We will call the force which binds the atoms together to form a molecule, chemical affinity.

NOTE.—Add to the list of apparatus given last month: a 1-oz. Glass Funnel, 15c.

Notes for Teaching Music by the Tonic Sol fa Notation.

TENTH PAPER.

In our last paper we spoke of transition into the first key to the left—the first flat key—Key F. If we go on to the second, we find that f again becomes d, and that d has been brought down an octave and one tone, by two removes. Disregard the octave, and think of two removes to the left as bringing down the pitch one tone, i. e., to B (flat). We may then say:

- 2 removes or 2 flats gives us key B flat
- 4 " " 4 " " " " A flat
- 6 " " 6 " " " " G flat
- 1 " " 1 " " " " F
- 3 " " 3 " " " " E flat
- 5 " " 5 " " " " D flat

On the modulator you see that when we use instead of any note, the sharp of that note, we put the vowel e after the consonant. Thus:

- d sharp is de f sharp is fe
- r " " re s " " se
- l sharp is le

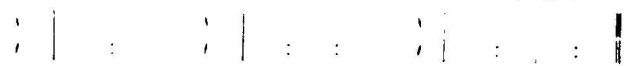
Again, when we use instead of a note, its flat, we put the vowel a after the consonant. Thus:

- r flat is ra l flat is la
- m " " ma t " " ta

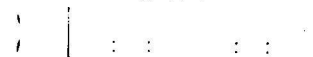
To distinguish la from lah, pronounce lay.

TIME.

Two Pulse Measure. Three Pulse Measure. Four Pulse Measure.



Six Pulse Measure.



Six pulse measure is made up of two measures of three pulse measure, where every second strong accent becomes a medium accent, just as four pulse measure is made up of two measures of two pulse measure.

d : — : d | d : : d | d : — : — ||
 taa—aa taa taa saa taa taa — aa — aa

d : — : d | d : d : d | d : : d | d : d : d ||
 taa—aa tai taa taatai taasai saa tai taatai taa

d : d, d : d, d, d | d, d, d, d | d : d : d, d, d : d, d, d ||
 taa te fe ta fa tai ta fa te fe taa fe sa fa te fe ta fa te se

In the above we have the time names under the respective notes.

EAR EXERCISES.

These should begin sufficiently simple for all the class to take part. The first step is to get the class, and also individuals, to imitate two or three notes, sung to the syllables. Then imitate a few notes sung to figures, or to lah. Next get the class to recognize one particular note—say d—when singing to figures, or the syllable lah. Then s may be distinguished; next d and s; then m; and afterwards, any of the notes of the doh chord. These exercises should begin with the first lesson. Get every pupil to answer individually. Ask a section of the class to stand, and let each pupil sit only after he has answered a question. The first answer that some of the pupils may be able to give may be simply to distinguish between two notes, a third, a fourth, or a fifth, apart, as to which is higher, or, of two notes, which is the longer; and gradually lead the dullest pupils up from this low point. In this way the pupils that think they can never learn ear exercises will soon be delighted to find that they can actually take part. Now let the teacher sing two or three notes of the doh chord to lah. Ask the class to copy it. Ask the class again to sing to lah, but this time making the manual signs. The teacher, at first, to help and to encourage the class, may make the manual signs with the class, and notice what proportion are making the signs independently.

In grades one and two, the class may be considered to do well if they can tell the notes of the doh chord, in simple phrases of not more than three notes: or to copy such phrases as below, without being asked to tell the names of the notes, when sung to lah.

m r d || s f m || m f s || d r m || l t d¹ ||
 d t₁ d || m r m || s l s || d¹ t d¹ || s s m ||
 d m r d || s m f s || s l s m || f m r d ||

After the pupils sing these phrases to the syllable lah, let them sing them with the teacher, to the tone syllables, the teacher pointing the notes on the modulator (which should be before the class during the ear exercises), or the teacher and the class making the manual signs.

The teacher should take few answers from the bright pupils. Frequently work with and encourage the backward pupils.

Grade three will do well if they can name the syllables of the simpler of the above phrases after they have been sung carefully by the teacher, twice, to the syllable lah.

CORRECTIONS.—In last paper, page 76, second column, near middle, read "note ta" instead of "td"; three lines down, read "fah" instead of "lah".

J. ANDERSON.

Musquodoboit Harbor, N. S.

[For the REVIEW.]

High School Studies.

Sir John Copley (afterwards Lord Lyndhurst), was once retained for the defence of a patent right held by the inventor of a machine for making lace. The great lawyer confessed that he could not understand the brief without first mastering the details of the invention. He placed himself in the lace loom, and did not leave it till he could make a piece of bobbinet and explain the principle of the machine. Every lawyer of large practice has thus to grapple with practical questions. It may be the joints or tendons of a horse, the action of an electric current, or the strata of a mine. And lawyers are not alone in this. Everyone engaged in useful work has need of scientific information. Based upon this undeniable fact is the tendency to make our school curriculum more and more scientific. This, however, should not be the controlling consideration in the drawing up of a curriculum. When a man has to decide and act in any important matter, he needs two things, as far as mental equipment is concerned, namely a trained mind and information. Of these, the former is by far the more important. Men of sound judgment are more in demand than men of varied knowledge. Information can be had as occasion requires, if the mind has been trained; it is of little use in the absence of that training. We all admit, in theory, that "of education, information itself is really the least part"; but, in practice, we too often reverse the order of relative importance. For instance, we sometimes require a student to undertake too many different branches of knowledge at once. There is a limit, beyond which the number of branches ceases to be educative, and becomes confusing. In the October number of THE EDUCATIONAL REVIEW, I find this sentence: "Time is now frittered away on so many subjects that nothing is well done, and with the most disastrous effects on the habits of the learner." Where this applies, there is no solid culture of mind. Educationists in Nova Scotia are now engaged in forming a course of studies for high schools, and I beg to suggest a preliminary question. It is this: How many different studies can a pupil profitably take in one year? The *profitably*, here, has reference to thought, not to future use. The process of thought requires time in any one branch. The evil of attempting too many subjects does not usually consist in overtaxing the mind, but in the absence of genuine thinking, as the student skips quickly from branch to branch. The new course is more likely to require too many studies, than too few. In the first year of the arts course at Dalhousie College, the ordinary studies for B. A. are, three languages, mathematics, and in-

organic chemistry. For B. Sc., botany is substituted for Latin. Here there is room for intellectual work. The present requirements for grade B. teachers' license are: one language, mathematics, chemistry, physics, physiology, history of the world, and British history, geography (with particular attention to astronomical and physical geography), and book-keeping. French may be taken instead of English literature, and Latin instead of physiology. When all these studies are attempted in one year, the work is, as a rule, superficial. It is memory work, not intellectual work. The mathematics alone requires two hours per day of class work. In his convocation address, last year, Sir Daniel Wilson, President of Toronto University, recalled an utterance of the late Matthew Arnold on this subject. Arnold was for many years an inspector of schools, and when reviewing his experience as inspector, he remarked, with reference to pupil-teachers, "I have been much struck, in examining them towards the close of their studies, with the utter disproportion between the great amount of positive information and the low degree of mental culture and intelligence which they exhibit." What we need in the teacher is the very reverse of this. A few branches at a time, thoroughly studied, will give it. Many branches attempted in each year of the high school course, can only give us teachers who will in turn stuff the pupils of the common schools.

ARIZONISH, N. S.

N. McNEIL.

For the REVIEW.

Teachers' Work.

I think THE EDUCATIONAL REVIEW for September is a good practical copy. Many of its suggestions can be carried out in our primary schools with beneficial effects. A few, however, would be attended with some difficulty. The reason of this, to a great extent, can be attributed to the age of our school system. In looking over the course of instruction, many subjects present themselves to the old time teachers who have acquired their position without them; and when the progressive teacher introduces those subjects into the schools many parents look upon them as useless.

For example: Something less than five years ago, I had agreed to teach a certain school. Although I taught that school for four years, I came very near losing it at the end of the first term. Many of the children came with reader, arithmetic, slate and copy, thinking they had all the books required for their several grades. Had I given those scholars with fifth, fourth, and third readers, three reading lessons a day, I would have been looked upon as a teacher good enough, but if I had given them six reading lessons a day I would have had my salary increased at the beginning of the second term.

Such subjects as geography, grammar, history, useful knowledge were looked upon as all very well for those who had a taste for such things, but was not considered a lesson or task; and such subjects as composition, drawing, printing, or anything that would crowd out a reading lesson was considered as so much time thrown away.

In grade IV, and even in grade V, I found pupils who could not tell how much four tubs of butter, each weighing 52 lbs. at 18½ cts. per pound, would bring. Or that fifteen pence was 1s. 3d.

In such schools, and we find many, the teachers have hard and difficult work to get all the subjects arranged to please both pupil and parent. He must please as well as instruct, if he hopes to retain the school more than one term, for if he does not teach longer, he cannot introduce the several subjects found in the course of instruction to much profit. Hence the propriety of trustees engaging teachers for the year instead of six months.

A. M.

QUESTIONS, N. B.

For the REVIEW.

Kindergarten Methods in Primary Schools.

SECOND PAPER.

The second gift consists of a sphere, cube, and cylinder made of wood. The ball of the first gift described in the last REVIEW, is soft, rough, light, and almost soundless; the sphere, cube, and cylinder are hard, smooth, heavy, and resonant. The cylinder and cube differ from the ball in form, the sphere is like it. The sphere and cube are opposites, while the cylinder forms the connecting link between the two, as it partakes of the appearance of both. In this gift contrasts of motion and form are at once detected. The cube will slide, not roll. The cylinder will slide and roll. All the differences are observed by the child, and the contrast of the straight line with the curved at once perceived.

The ball delighted the child, but the sphere, because of the noise it will make, has a greater charm. Children enjoy making their playthings speak, and in dropping hard substances, or knocking them against the table. To them "noise is life." All the ball games can be used with the sphere, and I create some rhymes.

For the sphere:

1. The sphere fills up my little hand,
The cube within it cannot stand,
2. If nothing holds the little ball,
To the ground we see it fall.
3. Round and round, 'tis my delight,
From right to left, from left to right.

For the cube:

1. The cube is now resting, it stands on its face,
And standing so firmly, cannot lose its place,
2. The cube can't stand on edge, 'tis clear,
It tumbles there, it tumbles here,
3. With a stick through my centre, I rapidly run,
And my corners and edges delight in the fun,
To you they are hidden, but there they remain,
And when I stand still you will see them again.

For the cylinder:

1. With a stick through my centre I turn round and round,
And look like the roller that rolls on the ground.

These plays bring out the child's active nature.

The sphere should be at first compared with other objects, and the child might be blindfolded and a ball, apple, or potato given in its hands, to notice difference or similarity. The cube is studied in all its parts: faces, edges, corners, and conceptions received of up, down, back, front, left, and right. The child finds out that only three sides can be seen at one time, and by holding it up by a string, pulling it along by a string, or revolving it on its different axes the idea is given of different kinds of motion. When quickly turned on axis of faces it presents a cylinder, on axis of edges a wheel, and on axis of corners a double cone. Its surfaces are compared with those of other objects in the room. Level smoothness is noticed in opposition to sharpness of edges. Lines of the surfaces are taught by comparison and illustration, and shape of surfaces taken up later. The cube is compared with a square stone, a block, bale of cotton, box, table, house, etc. The cylinder is taken up now, and at once gives ideas of rest and motion. If turned quickly it presents to the eye the sphere and double cone. And the law deduced from these revolutions is that the sphere is contained in, and contains all the forms of these bodies in itself, as it appears in the cylinder, and the cylinder and cone appear in the cube. The cylinder is compared to the trunk of a tree, the arm, finger, neck, etc.

In the first lesson the red ball of the first gift and the wooden sphere are shown. If possible let each child have one in its possession. Ask for the shape of the ball, with which all are familiar, and of what each is made. Hold a conversation about trees to find out how much the pupils know, leading them to think of how they have to be cut down, about the lumber which is cut up in the mill, and who made the balls. There is a pretty story, with good illustrations, in *Babyland* for November, 1889, with which some little folk I know were delighted. The teacher drew the pictures on the board, and taught them the story:

THE STORY OF BABY'S CRIB.

There was once a tree, baby dear,
And it grew and grew,
Till the sky so blue
Seemed right at its top, baby dear.

A man brought an ax, baby dear,
And he chopped and chopped,
Till the branches dropped,
And crash! fell the tree, baby dear.

Away to the mill, baby dear,
Did the tree go then,
And the busy men
Sawed it into boards, baby dear.

The carpenter worked, baby dear,
With a saw again,
And his hammer and plane,
And made you a crib, baby dear.

Papa brought it home, baby dear,
And so, from the tree
There has come, you see,
Your own little crib, baby dear.

The picture of the tree, of the woodman cutting it down, of the ax, saw, plane, hammer, nails, etc., gave the children a number of things to think about.

By rolling the red ball we find out it makes no noise, and we compare it with wooden ball which makes a noise. Why does it make a noise? Feel the wooden ball. It is smooth. What shall I call this part of it? The outside, some one says. Put your hand on your head, on your face. What do we call the front of our head? The face. Well, we shall call the

outside of the ball its face. How many faces has it? Just as many as we have. How many have we? One. Tell me the name of some objects which have only one face. What shape is this face? Show me some objects that have round faces.

We do not lay any stress on the name of *sphere*, but as the teacher uses it the children learn to say it when speaking of the wooden ball to distinguish it from the woollen one.

In the second lesson we take the block or cube, and by comparison give ideas of its flat faces. The teacher holding a sphere up between her thumb and finger of the left hand, asks the child to do the same with his, and also to turn it over with the pointer finger of the right hand. Ask of one to tell what he is doing, and of another the name of the part touched. Repeat this exercise with the block, or cube. As the teacher uses the name *cube* they become familiar with it and use it too. Have all touch the face of the cube (which some may call sides.) Speak of what this cube is made. Have all close their hands around their sphere, and ask of one what kind of a face it has? Let all feel the face of their desk. Is the face of one the same as face of other? Show with pointer how much of sphere can be seen at one time. Why cannot all be seen? Show the part seen and the part not seen. How do you know that part is there if you cannot see it? Touch it. Compare the face of sphere with face of desk and other objects in the room. Move hands along the face of the desk, place them at right side, at left, on top, etc. Moving the hands slowly over the top of the desk, find out what kind of a face it has, and ask which it is like—the sphere or the block. It is flat like the block. Find flat faces of other objects in the room, and also round faces.

(To be continued)

For the REVIEW].

A Teacher's View.

The following is a good sample of the vigorous letters we receive on the docking of teachers' grants:

"* * * * I, for one, am getting tired of tamely submitting—but the action may please you less than the submission. However, such as my opinions are, I offer them for the consideration of your readers.

"One reason, I think, for the inaction, is the smallness of the amount which each teacher loses yearly. No one cares to bestir himself very much for five dollars a year. But if we do not mind the loss of the amount, let us show our resentment to the principle of cutting down educational grants.

"In these days of strikes, labor unions, etc., no one, I believe, has heard of a strike among school teachers to raise their meagre salaries. Perhaps this is owing to the tameness of which you complain, as there can be no doubt that they have been oppressed.

"To be sure, the lesson which we learn from strikes in general, is that they do not pay, and that they are better left alone. But I do not see why a well-organized and sufficiently large union of teachers should not be able to force the government to do what they are not likely to do until they are forced, viz., repeal the obnoxious clause, by refusing to teach

until this is done. There can be no doubt that such a body would have a great deal of power, for it is a serious thing to have our schools closed.

“Though no one may agree with my views, I have at least shown that one teacher is imbued with the spirit of
ACTION.”

[“Action” is right in his reference to the unsatisfactory nature of remedy by “strikes”. And if the action of the government is sustained by the country, that is the end of the matter, under constitutional procedure. It is also the beginning, for if the teacher can make it evident to the majority of the people that the people’s interests in the long run are injured by the arrangement, then the remedy is near. The teacher must become a more influential personality in each section of the country. That consummation will gain for us this and many other reforms. Let us continue stimulating each other, in every possible direction which can be suggested, providing the directions finally converge to make us better, and therefore more truly powerful. But there is a reform in connection with this same matter in Nova Scotia, which the government should make instantly, which will be to the advantage of everyone, which will do away with a great abuse of time and energy, and which, therefore, the government will make, as soon as it is pointed out.—Ed.]

FOR THE REVIEW

Mr. Editor.—As your subscribers have had the opportunity offered of forwarding to THE EDUCATIONAL REVIEW such suggestions as may be thought useful in order to make it a more beneficial paper for the teachers, I avail myself of the opportunity. I am of the opinion that your paper may be made more useful in the hands of a majority of the teachers in the following ways:—

First, that a column in each issue be given for the purpose of asking questions in connection with school work. Second, that a column or so be given for examination papers set by teachers of different standards. In regard to the first it would be of great benefit to teachers to send questions and have the opinion of others more capable of forming a judgment than themselves.

In regard to the second suggestion I think teachers would be pleased to see papers set by other teachers for the purpose of comparing the work of the same standards in order to secure greater uniformity and to indicate the lines which different teachers take in teaching the same subject.

H. W. MURRAY,

Shelburne, N. B.

[There is already a Question Department in the

Review, and we are always glad to have questions proposed, especially those that show that an earnest teacher is earnestly grappling with some difficulty. There are others who have met and overcome the same difficulty, and who, if questioned will furnish from their experience what will aid others, especially in school management. Let there be a freer interchange of opinion in these columns. In regard to the second point proposed by our correspondent—examination papers, or better still, plans of conducting a lesson, such as that given by a Northumberland County teacher in the October REVIEW, would be of great service.—Editor.]

Mannerisms.

Teachers cannot be too often reminded that the man is greater than the schoolmaster. A physician of education has recently said in the *Mail and Express* that “one of the first things that impresses itself on the mind of one visiting some of the schools of this city is the peculiar school-room manners that are assumed by the principal and teachers. It seems as though one had stepped into an altogether different world than his own. The principal welcomes his visitor with an impressive professional smile. His accent and the tone of his voice is altogether different than is found on the street or in business life. The visitor feels that it would be highly inappropriate to undertake any kind of conversation but one upon school topics. He is impressed with the idea that the teacher has an entirely one-sided culture. This is the way I have felt upon entering a school room. I have had principals courteously escort me through the recitation rooms in their various schools. Every room they entered they followed the same formula of saying, with the same peculiar combination of accents and inflections, ‘Good morning, girls,’ or ‘Good afternoon, boys.’ Every time the class would answer with the tone and inflections as used by their principal. ‘Good morning, Mr. Blank.’ Then occasionally the principal stops in his tour of inspection and devotes a little time to putting a class through their paces. With a nursery voice he chirps, ‘Now children, let me have your attention for a moment. I am going to give you a little talk. Do you know what I am going to talk about?’ And the class, in their school-room voice, chime in, ‘Yes, sir.’

“Now, of course, this is a small thing to criticise, but I don’t like these ways of principals or teachers. In my estimation a teacher ought to be as practical a man as can be found in any other business. I don’t think nursery methods should be used with school children that are not very young. The school room

ought to be a practical and every-day affair. Personality should be given every chance to develop. A teacher ought to be a person of sufficiently broad culture to understand that teaching does not consist in making the students all diminutive copies of himself.

"Narrowness or mannerism should not be cultivated in the schools. Teachers should, in my estimation, strive to be more practical and not get into a peculiar rut of their own. I think that boards of trustees ought, in hiring teachers, to have an eye to securing those who are practical as well as educated.

Discipline in Schools.

Complaints are frequently heard of the rigidity of discipline in the public schools. Children are expected to obey without questioning and to do their work like automatons, in the most mechanical way. Instructions once given to a class are not to be modified. If the teacher be so weak and inconstant as to change her mind, it is assumed that her authority will be at an end. Her personal infallibility is a dogma of modern education. She makes no mistakes either in sums of addition on the blackboard or in any details of administration. No precocious lad or demure little miss must ever be allowed to catch her napping or to trip her up in her talk. If there is untimely controversy from the benches, there is vigorous application of the everlasting marking system. The inquisitive child gets ten marks for deportment, and is thereby taught to hold her tongue. Children must be taught to do everything mechanically and to conform not only to the general regulations of the school-room, but also to the caprices and whims of the powers that be. Arnold of Rugby never worked across the grain of a sympathetic boy's affections. It was the type of teacher that excited the lamented Matthew Arnold's most cynical sarcasms in his active career of educational inspection in the English schools. He could not tolerate heartlessness. If there be one place above all others where his gospel of sweetness and light needs to be taught, in season and out of season, it is in the school-room.—*New York Tribune*.

Interest Your Pupils.

We say to teachers, above all things seek to interest your pupils. This is not always an easy thing to do and may now and then be next to impossible, but we are strongly inclined to think that the fault is oftener, much oftener, in the teacher than in the pupils. He who teaches perfunctorily and who looks forward to the end of the day with longing because it brings a

cessation of school work, will generally find his pupils in the same frame of mind. Almost all young persons as well as old take greater interest in some subjects than others, but the less interesting can be so managed that they will be taken hold of with alacrity if it be only to get them out of the way of something that is more agreeable. Broad culture and a wide range of knowledge in the teacher places within his reach a variety of resources that will almost always enable him to accomplish the desired object. Genuine culture is not within the reach of all, whether teachers or not, but it is the teacher's own fault if he does not daily add to his stock of knowledge. "Many a little makes a mickle," and those who are best informed are not as a rule those who have the most leisure but those who know best how to turn every opportunity to some useful account.—*Journal of Pedagogy*.

Educational Opinion.

I cannot impress too strongly on the minds of students whose bent may be towards mathematics, or metaphysics, or natural sciences, the importance of giving a considerable part of their time to languages, and at any rate to that sometimes neglected, but always noble, English tongue in which it is our privilege to speak. No man should quit our halls without a competent acquaintance with our own language, without learning to appreciate and so to love its literature, and clearly to express in it his thoughts by tongue and pen. Especially should the art of expository composition be cultivated. What you know is of but little use unless you can communicate, and explain, and enforce your knowledge. * * * Beyond all utilitarian advantages is the enormous gain of acquiring, what such studies will surely give, a love for English letters, a love which will grow with use, and will secure to you the cheapest and most satisfying, the highest and most enduring, of earthly pleasures and consolations; so that, whether we look to success or to enjoyment, we find one course chalked out.—*Hon. Edward Blake's Toronto University Address*.

It is thought by some teachers that the study of chemistry, botany, and kindred subjects, as well as farming and practical management of soils and agriculture and horticulture, will give pupils common sense. We don't believe it. A boy is just as likely to go out with strong common sense from a thorough classical course of study as from a farm. It all depends upon how he has been taught. If his early education has been so conducted as to divorce from him all attention to the world of action as it is, he

will be very likely to be deficient when he comes into the arena of life. Common sense comes from hard work, usually. It is a very good thing for a boy to do a good deal of hard manual work; it fits him for hard thinking and sound judging.—*School Journal*.

It is to very little purpose that we establish fine public schools at very considerable expense and assess ourselves large sums of money for their maintenance, if any considerable section of the population refuses to send their children to them. The only remedy for this state of affairs seems to be to adopt the compulsory school system, and make it necessary for a parent to send his children to school a certain number of days every year, unless prevented by illness or other causes which cannot be removed.—*Edin. Courier*.

Ladies must take their places at teachers' meetings, not as learners, but as teachers; they must preside at such meetings and discuss educational questions as men do; they must read papers and give utterances to their opinions; if they have ideas they must express them, for if they do not do so, they cannot censure the public for mistaking their silence for ignorance. Ladies must do as gentlemen do in these respects before they can hope to occupy the same position. This they cannot do without undergoing the same process of training that men undergo to fit them for public duties.—*Winning School Times*.

Teachers are frequently heard to complain that they have no time to devote to their own mental improvement, because school duties occupy it all. There is a way in which the preparation for school duties, however humble or elementary, may conduce to the teacher's own improvement. But generally when a teacher has no time for "outside reading" or "outside study", it is because he has not learned how to utilize the spare moments and has but little desire to do so.—*Journal of Pedagogy*.

Eighteen words have come into the language—probably temporarily, most of them—to denote the act or state of electric killing. They are as follows: Electromort, thanelectrize, thanatelectrize, thanatelectrize, electrophon, electricise, electrotony, electrophony, electroctony, electroctasy, electricide, electroponize, electrothease, electroed, electroctiom, flumen, voltaeuss and electrostrike.—*Garratt, in Scientific American*.

About \$4,000 has been raised after a public meeting in New Glasgow, N. S., as a part of the new fund of \$50,000, required for current expenses in Dalhousie College.

School and College.

Frank R. Haley, B. A. (Acadia), 1884, B. A. (Harvard), 1886, has been appointed to the new chair of Physics and Astronomy at Acadia, Wolfville.

Rev. W. A. Young was appointed to the staff as instructor in English Literature, Homiletics and Hebrew. Acadia has re-introduced the teaching of theology into its course.

The property and furnishings of the Halifax Ladies College cost up to date, \$11,300. The gross receipts for the year 1889-90 was \$32,993.23, giving a surplus of \$1,241.93 above expenditure.

All departments of the College and Conservatory are in active and efficient operation. The attendance at the College last year was 270; and at the Conservatory of Music, 249. The whole number in attendance during the year was 509, of whom 99 were resident pupils. Some changes have taken place in the College staff. Miss Newcombe and Miss Caldwell have retired, and Miss Seabury, B. A., of Smith, and Miss McNeil, B. A., of Dalhousie, have been appointed in their stead. Mr. King-Pooley has been appointed to give instructions in sight reading in music to all the pupils in the College and Conservatory.

The College aims at the highest educational standard and excellence. Miss Leach, the principal, and her large staff are doing good work. The department of Fine Art, under the management of Miss C. F. Howard, is doing excellent work, and gives satisfaction to all concerned. The Conservatory of Music continues in a most efficient state, under the direction of Mr. Porter. The attendance at the College and Conservatory was larger last year than on any previous year.

The new member of the faculty of Acadia College, is Professor Young.

The Presbyterian Synod withdrew its grant for the support of the chair of logic and psychology, which was filled by the late Dr. Lyall in the University of Dalhousie, and appropriates it for the Pine Hill Theological College, at Halifax.

St. Francis Xavier College, at Antigonish, N. S., with better facilities, is rapidly developing an increased attendance of students.

The New Glasgow High School, N. S., is taking rank above the majority of County Academies. After the 1st of November, Principal E. MacKay, an honor graduate of Dalhousie in Physical Science, has associated with him, in a collegiate capacity, Principal

Coops, of the Inverness County Academy, an honor graduate of Dalhousie in classics; and Principal Grant, of North Sydney High School, C. B., also a graduate of the same university. All three had been "Munro Exhibitioners" in their college days.

C. Stanley Bruce, Vice-Principal of the Albro Street School, Halifax, has been appointed to the principalship of the Shelburne County Academy.

E. B. Smith, B. A. (Dal.) succeeds Homer Putnam, B. A. (Dal.) in the Truro Academy as one of the colleagues of Principal Campbell.

PERSONAL.

The many friends of Inspector D. P. Wetmore, Clifton, N. B., will learn with pleasure that he has almost recovered from his long and severe illness.

Principal Campbell, of the Truro Academy, spent his holidays in a tour through England and Scotland, part of the time of which was spent in visiting the educational institutions of the country.

N. C. James, Professor of Modern Languages in the Halifax Academy, spent the vacation in cis-Atlantic France—St. Pierre—keeping up his acquaintance with the French.

From English reports, Dr. Allison, Superintendent of Education for Nova Scotia, appears to have had a pleasant and profitable educational tour on the continent and in England and Scotland during the last two months. Professor Eaton, of the Normal School, on his way to Germany, was, for a portion of the time, with him. We shall expect some benefit also for our readers, as a result.

Principal J. B. Calkin has returned from an educational trip to the United States.

Miss Antoinette Forbes, B. A., (Dal.), has been appointed to the academic staff, Yarmouth. Miss McNeil, B. A., (Dal.), has been appointed to the staff of the Ladies' College, Halifax. Kings County Academy at Kentville has affiliated to the University of Dalhousie.

We are glad to learn that Inspector Smith, of Petitcodiac, N. B., is recovering from a somewhat serious illness.

Question Department.

E. F. Will you please work out the following in the next REVIEW?

"A person buys 6 per cent. Toronto bonds, the interest on which is paid yearly, and which are to be paid off at par, three years after time of purchase: if money be worth 5 per cent, what price should he give for the bonds?"

One year after purchase he would receive \$6 interest of which present worth = $\frac{6}{1.05} = \$5.7142\dots$

Two years after, he would receive \$6 interest of which true present worth = $\frac{6}{1.1025} = \$5.4421\dots$

Three years after, he would receive \$6 interest and \$100 principal of which true present worth = $\frac{6}{1.157625} = \$91.5668 + \dots$. Therefore, total present worths = $\$5.7142\dots + \$5.4421\dots + \$91.5668\dots = \$102.723\dots$
Ans.

[NOTE. (1) \$1 amounts in one year to \$1.05; \therefore \$1 is p. w. of \$1.05. (2) \$1 amounts in two years compound interest and 5 per cent per annum to \$1.1025; \therefore \$1 is p. w. of \$1.1025 two years hence. (3) \$1 in three years amounts to \$1.157625; \therefore \$1 is p. w. of \$1.157625. Hence the present worth (1) of \$6 = $\frac{6}{1.05}$ and (2) of \$6 = $\frac{6}{1.1025}$ and (3) of \$106 = $\frac{106}{1.157625}$

G. W. Will you kindly inform me where I can get small hand maps, such as Mr. March mentioned at the Institute at Moncton?

Perforated maps are published by the Educational Publishing Company, Boston.

Relfe Brothers & Company, 6 Charterhouse Buildings, Aldersgate Street, London, publish maps for mounting on card board, at a halfpenny each. Atlas containing sixteen maps for 6d.

Collins & Sons, Glasgow, publish a sixpenny atlas, containing sixteen maps full colored.

J. Bartholomew, Edinburgh, publishes individual maps, plain, or mounted and varnished, from 6d to 1s per dozen.

Nova Scotia School of Agriculture.

The closing exercises of the provincial School of Agriculture at Truro, took place October 21st, with the usual eclat. Hon. W. S. Fielding, Hon. A. C. Bell, Colonel William Blair of the Dominion Experimental Farm, the Mayor of Truro and Principal Calkin were on the platform. Several papers were read by graduates of the school, viz: "Potato Culture," by D. Herbert Smith of Truro; "The Relation of Botany to Agriculture," by Edward L. Moore of Halifax; "Experiment Stations," by Fred L. Fuller of Kings County; "Agricultural Education," by Joseph D. McKinnon of Cape Breton.

Professor Smith, who has charge of the school and the Experimental Farm, then gave his report which is summed up in the *Truro Guardian*, as follows:—

Professor Smith gave a short account of the work of the farm and school during the past year. During the year twenty-five students have been enrolled in the school; twenty-three have attended during a portion of the year, while fifteen have been here the most of the time. Of these, four received diplomas and one a certificate. Our students come from nearly all parts of the province, twelve counties

being represented, while Ontario and New Brunswick sent students. The Island of Cape Breton has had three students here and every county of Nova Scotia except Antigonish, as far west as Annapolis, has sent one or more students. Teachers' diplomas were awarded to Mr. J. D. McKinnon and Farmers' diplomas to D. Herbert Smith, Fred L. Fuller and E. L. Moore. Mr. W. H. Maxwell had not attended the whole term but had done excellent work, particularly in the natural sciences, and was awarded a certificate.

Hon. A. C. Bell then gave an address on "The Relation of the Farmer to the commercial Prosperity of Nova Scotia," and was followed by Hon. Mr. Fielding and Colonel Blair.

Professor Smith announced the intention of establishing a butter factory on the provincial farm.

The province has good reason to be congratulated on the successful beginning of this institution.

BOOK REVIEWS.

THE CALENDAR OF THE UNIVERSITY OF KING'S COLLEGE, WINDSOR, NOVA SCOTIA, 1890-91. This is a well got up volume of 182 pages, specially interesting on account of examination papers. The University has five schools, viz.: The school of Arts, of Divinity, of Engineering, of Science, and Civil Law. It is prepared to grant the following degrees: Bachelor of Arts, Master of Arts, Bachelor of Engineering, Master of Engineering, Bachelor of Science, Master of Science, Doctor of Science, Bachelor of Laws, Doctor of Laws, Bachelor of Divinity, Doctor of Divinity, as well as the title of Associate in Arts. Its various faculties consist of six professors, one tutor and six lecturers. The number of students in attendance during the past year is not given. The University seems to begin its second century with renewed vigor.

THE UNIVERSITY OF KING'S COLLEGE, WINDSOR, NOVA SCOTIA, 1710-1890. By Henry Youle Hind. New York: The Church Review Company, 1 and 3 Union Square, 1890. Received the above containing the following fly leaf: "FOR REVIEW. To the editor of the EDUCATIONAL REVIEW, St. John. TITLE: *The History and Story of King's College*. PRICE one dollar and fifty cents. With the compliments of T. C. Allen & Company, Booksellers, Stationers, and Newsdealers, etc., 124 Granville st., Halifax, N. S."

ANNUAL CIRCULAR (TWENTY-SECOND YEAR) OF THE ONTARIO BUSINESS COLLEGE, (Registered), Belleville, Ont., Canada, cor. of Front and Bridge streets. Robinson & Johnson, principals and proprietors, and publishers of the Canadian Accountant, 1890-91. A well printed volume of 109 pages.

PROGRESSIVE FRENCH READER.—First part containing selected pieces, with questions, notes, and vocabulary, edited by H. H. Curtis, and L. R. Gregor, B. A., French Masters, High School of Montreal. Publishers, W. Drysdale & Co., Montreal. We have perused this introductory French Reader with very great pleasure and satisfaction. Our examination of its contents—their arrangement, char-

acter, and utility—has necessarily been brief, but during the process we have had ample opportunity to observe and admire many of those features which make it one of the best elementary French Readers which have yet come under our notice. The passages are carefully selected and judiciously graded. At first easy, never difficult, and always attractive, they provide a desideratum in the teaching of the French language. The questions are excellent, and, being so constructed that they can readily be answered from the text, they give the pupil confidence and facility in expressing himself intelligently in French. The subjects are manifestly chosen with a view to immediate practical results in using the language, for in idiom and vocabulary the learner is, at the outset of his study of the French tongue, made familiar with every day things and forms of expression. The notes are admirable, and must, in conjunction with the exercises, prove helpful in clearing away those stumbling-blocks to English pupils, the "verbs Récchés" and the "Passé Indéfini." And with the excellent vocabulary students can have no difficulty in preparing the lessons without assistance, and must thereby acquire self-reliance and accuracy in expression which are in themselves an education. By exercises in re-translation the accomplished teacher may still further familiarize his pupils with French idioms, and lay a good and lasting foundation for higher acquirements. We confidently and heartily recommend it to teachers, and trust that it may be received with the favor which it so deservedly merits.

SADLER'S PRACTICAL ARITHMETIC, for use in high schools, academies, and the higher classes in grammar schools, by W. H. Sadler, president, founder and proprietor of Sadler's Bryant and Stratton Business College, Baltimore, and W. R. Will, principal of the mathematical department. First edition, cloth, 310 pp., 8 in. by 6 in. Baltimore, Md., U. S. A.: Sadler Publishing Co., 10 and 12 N. Charles street, 1891. A capital commercial arithmetic, with some novel methods, and thoroughly up to date.

COMPREHENSIVE VOYABUK GRAMMAR, by Alfred A. Post. Paper, 62 pp., 5 in. by 7 in., \$0.50. Mattapan, Mass., U. S. A. Published by Alfred A. Post, 1891. This small volume contains the grammar of the simplest and most regular language in the world, some reading exercises and a small vocabulary. The grammar can be mastered in a week quite perfectly. It is an attempt to restore the world to the mythical golden age of the pre-Babelites. The language has already quite an extensive literature, the publications being numbered by the hundreds in all the leading languages of the world. It is an extremely interesting experiment. Phonetic English would, however, in our opinion, have a better chance of winning ultimately the goal of universal language.

GEOGRAPHY OF EUROPE, by Jas. Sims, M. A.; INDIA, BURMA, and CEYLON, by Henry F. Blanford, F. R. S.; MAPS and MAP DRAWING, by Wm. A. Elderton, Publishers, MacMillan & Co., London and New York. The above are three volumes in MacMillan's geographical series. The first and second aim to present the physical features of the

countries named, in connection with the leading facts relating to government, population, and national character, industries, products, and trade. Especially are the historic features of the countries worked in very admirably. The third, a primer, is devoted to the history of maps and surveys, and instructions to students how to construct them. The three are brief and excellent compendiums of geography.

BURKE'S REFLECTIONS ON THE FRENCH REVOLUTION, edited by F. G. Selby, M. A. Publishers, MacMillan & Co.: London and New York. Burke's essay has been here carefully edited, with introduction and notes.

HAND BOOK OF LATIN WRITING, by Henry Preble, A. B., (Harv.), and Chas. P. Parker, A. B., (Oxon.) Price 50c. Ginn & Co., Publishers: Boston. This is a good book for advanced students in Latin composition.

Historiettes Modernes, edited by C. Fontaine, B. L., L. D., Professor of French, Washington, D. C., and *DeMusset's Pierre and Camille*, edited by O. B. Super, Ph. D., Professor of Modern Languages, Dickinson College, Carlisle, Pa. Publishers, D. C. Heath & Co., Boston. The first of these books is a continuation of volume No. I. of *Historiettes*, published in November, 1888, and of which four editions have already been issued, sufficiently attesting its popularity.

Deutsche Literaturgeschichte, by Carla Wenckebach, Professor of German Language and Literature in Wellesley College. Publishers, D. C. Heath & Co., Boston. The "History of German Literature" promises to be of the greatest service to students. The first book here presented, embraces the period from the beginning of German literature until 1100. The second book, to be published later, will cover the time from 1100 to 1624, and the third book that from 1624 to the present time.

SHAKESPEARE'S RICHARD II, with introduction and notes, by K. Deighton. MacMillan & Co., Publishers: London and New York. This is another volume by this Shakespearian author, and with the clear type and full and suggestive notes, is an excellent one for the student.

SYNOPSIS OF ENGLISH AND AMERICAN LITERATURE. Price, \$1.20. Ginn & Co., Publishers: Boston. This is an excellent compendium of English literature, which may be used with advantage, not only by teachers and students, but by the general reader. It condenses much information in narrow limits.

TARBELL'S LESSONS IN LANGUAGE. Boston: Ginn & Co., Publishers. This book combines theory and practice in an admirable manner. It is the first of a series of two books, the design of which is to present as much grammar, punctuation, and composition, as the pupil can profitably study before entering a high school.

A COMPENDIOUS FRENCH GRAMMAR, by A. H. Edgren, Ph. D. D. C. Heath & Co., Publishers: Boston. Price \$1.20. This book is in two parts. The first contains an elementary outline of French pronunciation and grammar, designed to enable the learner to begin reading with profit at the earliest practicable moment. The second part is in-

tended for a more critical study of the language after reading has begun. The examples are copious, the explanations clear, and the arrangement throughout orderly and methodical.

CLASS-BOOK OF GEOLOGY, by Archibald Geikie, F. R. S., Director-General of the Geological Survey of the United Kingdom, etc., etc. Publishers, MacMillan & Co.: London and New York. Pp. 404. Those who have studied that admirable work, Geikie's Class-book of Physical Geography, will gladly welcome the present volume. The simplicity of its arrangement, and the admirable manner in which it meets the needs of teachers and students, must win for it a great popularity, whilst its cheapness, compact form, and the entertaining style in which it is written will tend to make more general the study of geology.

BOOKS RECEIVED.

Report of the Association for the Improvement of Geometrical Teaching. Bedford, England.

FIRST COURSE GERMAN COMPOSITION, by G. Eugene Fasnacht.

THE VETO POWER, (Harvard Historical Monographs), from Ginn & Company.

OUR GOVERNMENT, How it grew and what it does, and how it does it; from Ginn & Company.

MACMILLAN'S COURSE OF GERMAN COMPOSITION, by G. Eugene Fasnacht. London: MacMillan & Co., and New York.

Exchanges.

The November *Popular Science Monthly* is above even the high average of that standard publication. Herbert Spencer opens the number with an essay on The Origin of Music. Two interesting educational articles are, My Class in Geometry, and School Life in Relation to Growth and Health. . . . *St. Nicholas* has completed seventeen successful years, and begins its eighteenth with the November number. . . . *The Century*, for November, celebrates its 20th anniversary by an excellent number, in which there is a greater wealth than ever of illustrations. . . . *Wide Awake*, for November, is a good number. Miss McLeod's Acadian story, Boy Blue, of Grand Pre, is one of the most interesting of the Canadian series. . . . *The Cosmopolitan*, for October, is an admirable number. Its price is \$2.40 a year. Published in New York. . . . *The Kindergarten*, Alice B. Stockham & Co., Publishers, Chicago, is a monthly magazine for parents and teachers. Price, \$1.50 a year. It is very helpful for the instructors of children. . . . *Garden and Forest*, New York, has always something appropriate and seasonable for cultivators. . . . *The Herald of Health*, published by the Herald of Health Company, New York, is a valuable monthly periodical, full of excellent hints for correct living. . . . *The Scientific American* had, recently, a cut and description of the proposed monument to Columbus, at the Chicago World's Exposition.

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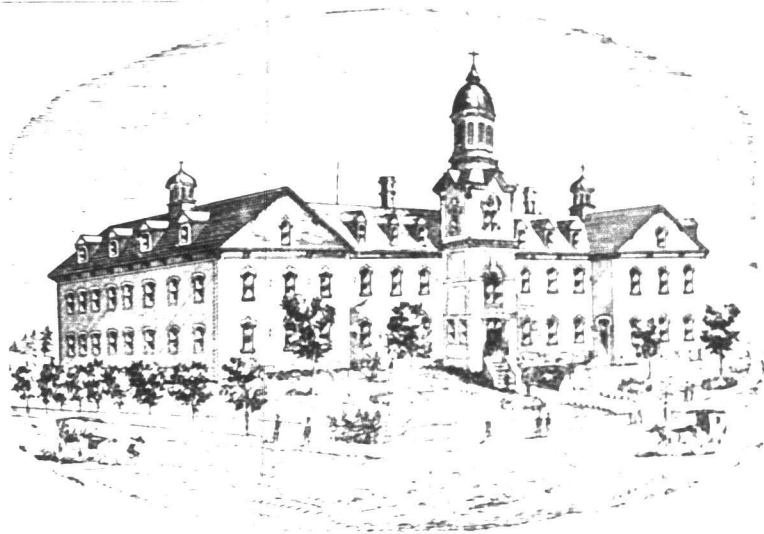
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FACULTY OF LAW—Oct. 1st.

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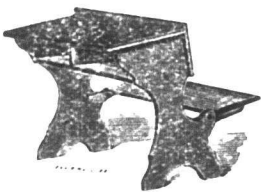
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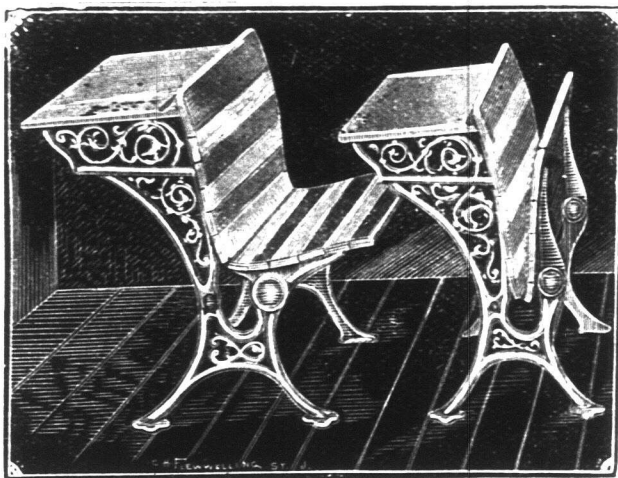
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