

**PAGES**

**MISSING**

# The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

PUBLISHED MONTHLY.

ST. JOHN, N. B., DECEMBER, 1891.

\$1.00 PER YEAR

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Editor for New Brunswick.

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Editor for Nova Scotia.

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Twelve Numbers, . . . . . \$1.00  
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The Review is issued from the office of Barnes & Co., St. John, to whom subscriptions may be paid if convenient.

G. U. HAY, St. John, . . . . . Managing Editor  
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SUBSCRIBERS to the REVIEW who are interested in forestry, gardening, horticulture and kindred subjects would do well to consult the advertisement of *Garden and Forest* on another page. The cost of this excellent weekly is \$4.00 a year. THE EDUCATIONAL REVIEW and *Garden and Forest* will be sent to one address for one year for \$4.00 in advance. Address EDUCATIONAL REVIEW, St. John, N. B.

OUR readers will be glad to see that Mr. Brittain has resumed the lessons on chemistry, the first of which appeared in the REVIEW some months since, and which, we have reason to believe, stimulated the study of this science in many schools. Mr. Brittain would be glad to aid teachers, without any charge, in selecting and purchasing chemical apparatus at the rates given in the REVIEW for October, 1890.

NO BETTER EVIDENCE could be given that the University extension movement has achieved a great success already in St. John than the fact that over 200 are now enrolled in the classes, and the number is steadily on the increase.

**LECTURES ON PSYCHOLOGY FOR TEACHERS.**

The teachers of Halifax City, in accordance with their excellent custom of former years, are arranging for a series of lectures on subjects relating to their professional work. They have taken the lead in what may be called University Extension. They have had for several years past courses of lectures on Chemistry from Prof. Kennedy, Botany from Principal Creighton and Dr. Lawson, Zoology from Superintendent A. H. MacKay, Tonic Sol-fa from Rev. Mr. Anderson and Miss Ryan, Physics from Dr. MacGregor of Dalhousie University, Geology from the late Dr. Honeyman, Drawing and Modelling from Miss O. Smith, of Truro, and Principal Harvey of the Victoria School of Art and Design, Modern Languages from Professors Bober and Balval, and Elocution from Miss McGarry of the Halifax Ladies' College.

They have now arranged for a series of twelve lectures on Psychology from Prof. Seth of Dalhousie University. These lectures will begin on Friday the 8th of January at 4 p. m. For the convenience of teachers they will be delivered in the Halifax County Academy. They will deal with the scope and method of Psychology; the formal nature of Consciousness; the nature and growth of Attention; the Apperceptive Process; Perception; Thought; Imagination; the Feelings; the Will. After each lecture an opportunity will be given for questioning and discussion. A small fee of \$2.50 will be charged, to be devoted to the purchase of works on philosophy. Sully's Teachers' Handbook of Psychology is recommended in connection with the course. A written examination will be held at the close, and certificates granted according to the proficiency shown.

As the Professor is the ablest Psychologist we have in the country, and as his lectures will have special reference to the teaching profession, we will endeavor to furnish our readers with a good outline of them in the REVIEW.

In connection with the psychology, and based upon it, Mrs. Harriman, Director of the Halifax Kindergarten, will give a series of lectures on Fröbel's system and its relation to the common schools, particularly to primary work. These lectures are particularly meant for primary teachers. They will illustrate the occupations, songs, games, busy work, etc., of the "children's garden," as well as note many modern improvements of the system.

A GREAT DEAL of interesting matter intended for the December REVIEW is crowded out. Will our valued contributors be as brief as possible.

**A CONSCIENTIOUS TEACHER'S NOTICE.**

In the Grand Falls' correspondence of the *Sun* of November 25th there appears a letter from Mr. Richard Wheeler, teacher of the Superior School there, giving notice to the trustees of his intention to terminate their agreement. His reasons, which are tersely given and which will enlist the sympathy of all interested in progressive education, are, in substance, as follows:

- 1st. There is no co-operation on the part of the trustees.
- 2nd. There is no interest displayed on the part of the parents. During a term's service there was not a visit to the school made by a trustee or citizen, save a short business visit by the secretary.
- 3rd. That the indifference of parents and school officers has a natural effect upon the attendance and punctuality of pupils. Sometimes the attendance of the morning is double that of the afternoon, and many of the latter pupils bring excuses to leave at recess. Eight hundred and ninety-four of these excuses was the legacy of his predecessor.
- 4th. That the school is utterly destitute of apparatus, with the exception of a small map of the Dominion of Canada.
- 5th. That the outlook for an ambitious teacher is very dismal, taking into consideration, in addition to the reasons given, the fact that in seventeen years but one pupil has been fitted by the school for the Normal School, and her education was not wholly acquired in the district.

This is rather a strong arraignment against a community like Grand Falls, and shows that the benefits of our school law have not yet become apparent to its people. Mr. Wheeler suggests that a little judicious pressure be exercised by the inspector, and we think the suggestion a good one, as without such lever many districts quite as pretentious as Grand Falls would be in a similar state. For these, courses of instruction and apparatus are prescribed in vain unless backed up by mild compulsion, such, for instance, as withholding the county fund.

Any neglect or lack of interest on the part of trustees begets an indifference on the part of parents, which soon infects the pupils. No teacher can have any heart for his work when brought face to face with such neglect and indifference as, judging from Mr. Wheeler's letter, seems to exist at Grand Falls.

Keep all your black board surface in use. Many good teachers have not enough. Black board is the right arm of the school, yet how common it is to see it used day after day, week after week, month after month, and, in some cases one could almost say, year after year, to preserve some elegant piece of work. No work should encumber the board longer than a week at a time, except it is being added to and used each day. Such as a map growing into completeness.

## GRADED AND UNGRADED SCHOOLS.

It would seem at first sight that the pupils of thoroughly graded schools must have a great advantage over those of a miscellaneous school. In the former case the teacher may claim the attention of each pupil during the whole session. All are supposed to be benefited by the instruction given to each one. But where there are say six grades each pupil must be left to work by himself at least four hours out of the five; for there can be but little work which so many grades can have in common. It might be expected that so great difference of opportunities would show corresponding differences of results. But such is not the case. The country boy in the miscellaneous makes nearly as good progress as his cousin in the well-graded school of the city. The fact is the city boy labors under several disadvantages. First, having to pass through the hands of eight teachers in as many years, much time is lost before his various teachers become acquainted with his peculiarities. The country boy is likely to be with the same teacher for two or three years at least. Secondly, the city boy is helped at every step of his work, unless he happens to have a teacher of more than ordinary ability. But the country boy is thrown upon his own resources four-fifths of his time. He is obliged to become his own instructor. He is taught by the teacher how to utilize his books for that purpose. He forms the habit of going to books for information. He becomes self-reliant and walks alone. He forms a habit which can be indulged after he leaves school; for he can always get books. But the city boy relies on the continual help of the teacher, and ceases to study when he ceases to have that help; that is, when he leaves school. City teachers should therefore be careful to give only such assistance as will barely enable their pupils to overcome the difficulties they meet. A pupil who has not acquired the habit in school of using books has missed one of the most important parts of his education.

IN *Science* (New York), of November 13th there is a recognition of the work of Dr. McGregor, Dalhousie University, on "Kinematics and Dynamics," noticed in Vol. I., p. 179, of the REVIEW. Professor Hoskins, of Michigan University, referring to the lack of definiteness in the elementary treatment of the subjects of work and energy in standard text-books, refers to the improved treatment of these subjects in Dr. McGregor's work, which he characterizes as "a book possessing many other admirable features."

## A POPULAR APPOINTMENT.

Whatever may be the merits or demerits of Nova Scotia politicians, they are certainly entitled to be accredited with a magnanimity and liberality that place such vital interests as those of education above party politics and sectionalism. Tupper and Archibald, leaders of opposing parties, united in framing the Free School Act and founding the Normal School. Hon. P. C. Hill, the head of a Liberal government at a time when party feeling was intense, selected for superintendent of education Dr. Allison, whose sympathies and connections were strongly Conservative. The present government has even bettered these excellent precedents in the appointment of A. H. MacKay, who, though broad-minded in politics, was formerly held as being more or less in the ranks of the opposition.

Among the avowed supporters of the government there were men eminently qualified to manage successfully the educational affairs of the country; but none, perhaps, who would be so generally acceptable to thoughtful educationists. By the appointment of A. H. MacKay every teacher in the province feels that his status has been improved. One of the public school teachers has been raised to the highest position in his profession—the only consideration being that he was found to have been diligent in business, strong in action and in the affections of his co-laborers. So far as we have heard, the recent appointment has received the warmest approbation of all parties.

The new Superintendent, therefore, enters upon his duties under the most favorable circumstances. There are many improvements of our educational system awaiting his careful and immediate consideration:

A revision of our course of study has been in the hands of a special committee for nearly two years.

The excellent work of our County Academies makes it possible and desirable to have the Normal School re-organized and specialized.

There has been much discussion regarding a change in our school terms.

Some of our text-books are not the best obtainable on the subjects of which they treat.

The graduates from our academies should receive diplomas which might entitle them to certain legal privileges.

Manual training and kindergarten are asking for admission into our curriculum, and are offering to become our most powerful allies in the physical,

moral and even intellectual development of our pupils.

Cannot statistical tables be simplified, so that school inspectors may be able to spend more of their time in the school-rooms discharging the vitally important part of their functions?

These and other questions, demanding an early solution, will enable the new Superintendent to utilize the large stores of practical knowledge gained during an active service in the school-room of twenty-three years, and supplemented by most extensive professional reading, much scientific work and some travel.

#### SCHOOL SAVINGS BANKS.

To Dartmouth belongs the honor of having established the first School Savings Bank in the Atlantic Provinces. Through the energy of the late principal, Mr. H. S. Congdon, this bank was started early in 1888. The deposits for the first year amounted to \$1,407. In 1889 there were 1,132 pupils enrolled with \$2,135 to their credit in the bank. At the end of 1890 the amount had increased to \$2,821. The depositors numbered 450, having each on an average \$6.25.

The bank is managed, under the direction of the school board, by Mr. Alfred Elliot, who receives for this service \$60 a year. Deposits are received by the teachers every Monday in any amounts down to one cent. A transfer to the Dominion Savings Bank takes place whenever any sum exceeds one dollar. Bank books are supplied free of charge. The interest on untransferred balances is almost sufficient to defray necessary expenses.

It is claimed by the Dartmouth school board that life-long habits of thrift are acquired by the pupils at an early age—that they gain some knowledge of the methods of banking—that school attendance is greatly improved, no pupil being allowed to deposit unless he has been in school four days or more the previous week, and that there is in many instances a good influence upon older members of the family to which the pupil belongs.

Savings banks can be shown to be a most effective agency in the moral education and social advancement of any community. The greatly improved condition of the common people of the State of Maine arising from the adoption of prohibitory liquor laws was shown by a most wonderful development of their savings banks. The economical and thrifty habits of the French peasants enabled them in a very short time to pay an enormous indemnity to Germany at the close of the disastrous war of 1870.

The formation of habits so essential to the greatness of the country and to the happiness and independence of the individual should be formed in the school, which, if it limits its teachings to the scholastic subjects of the curriculum, is a very poor affair indeed. These habits cannot be formed as the result of mere lecturing by the teacher on "moral and patriotic duties," especially if at the same time the children are allowed freely to spend their pocket money or earnings and to gratify every present want according to their ability. They must be taught self-denial, the reserving of their energies for great and worthy objects, the necessity of providing for future energies and the pleasures of pecuniary independence.

For the great mass of children this can be done nowhere as well as in the school and will not be done unless there.

We would recommend cities like St. John and Halifax to lose no time in making a thorough study of this subject, and we are satisfied that they will follow the example so worthily set by Dartmouth. The EDUCATIONAL REVIEW will be happy to give detailed information about the working of the system.

#### UNIVERSITY EXTENSION.

We wish to call the attention of our readers to what Prof. J. B. Hall, of the Truro Normal School, has to say on the above subject in a letter to the *Colchester Sun*. After a clear exposition of the nature of the movement he makes some recommendations which we cordially endorse. There are gentlemen in Truro whose teaching of some of the subjects named would be endorsed by any of our colleges or universities. For other subjects lecturers might easily be secured from Halifax or elsewhere. There is, perhaps, no abler psychologist in the Dominion than Professor Seth of Dalhousie College. Professor Russell of the Halifax Manual Training School is the only man in the Atlantic Provinces who could satisfactorily deal with his subject. For the department of physics, particularly electricity, Dr. J. G. MacGregor would be a necessity. There are, however, a few of the subjects to which the professor refers for which no teachers could be found in the Atlantic Provinces. Let a beginning be made. It will certainly be a success. Other places will follow the example and much good will be done:

The movement appropriately called University Extension had its origin in England nearly a quarter of a century ago. Such renowned educational centres as Oxford, Cambridge and London Universities attempted to carry the learning of the colleges to the people. Leading men from

those institutions were sent to the cities and towns to conduct classes in university subjects.

In this way, university extension has spread and popularized itself in England until it has become a recognized institution, doing a work little less important than is done at the great centres of learning themselves.

The feature of the university extension movement, which especially merits public approval, is that it is adapted to be the greatest benefit to the whole people at the least possible cost. The college or university has a definite locus, and from the nature of things only a limited number able to spend four or five years within its walls.

The university extension movement has much to recommend it both to the teacher and the taught. It brings the teacher face to face with the people and practical life. The teacher is forced to revise his methods and matter in order to adapt them to the wants of active men and women engaged in the affairs of every day life. Many of these courses of lectures could be given in the afternoon or evening in order to accommodate all who wish to attend. The fees would be small as the chief expenses are for rooms, light, stationery and books.

Truro affords superior facilities for the introduction of the university extension. On the one hand it is the seat of the Provincial Normal and Agricultural Schools, and one of the best county academies in the Province. A large number of young men and women would gladly avail themselves of an opportunity to improve the long winter evenings, if an opportunity was presented, which would prove at once pleasant and profitable.

In view of these considerations would it not be well to invite gentlemen to prepare a course of say six to ten lectures to begin early in January. Let me suggest a few subjects, some of which might be included in a course of study by teachers and professional men of Truro:

- History of English Literature.
- Study of English Authors.
- Ancient and Modern Languages.
- Natural Sciences with Laboratory.
- Applied Mathematics.
- History of Education.
- Psychology.
- Comparative Religions.
- Civics — International Law, Commercial Law, Temperance, Agriculture, Horticulture, Meteorology, Electricity.
- Art in Relation to House Decoration.
- Theory of Music.
- Sanitation.
- Manual Training.
- Kindergarten in its Relation to the School and Family.
- Comparison of the Constitutions of Canada and United States.

These subjects are intended to be suggestive rather than exhaustive. Even three or four courses that could be easily popularized would be a benefit to the instructors and class.

Without entering into details, I think I have, in a general way, made the outline of this scheme understood, and sincerely hope that the subjects may receive such consideration as will bear fruit *in immediate action*.

For the REVIEW.]

#### Local Natural Histories — A Need.

Everyone, excepting only the students of the flowering plants, who has ever made any attempt to study the natural history of our Atlantic Provinces, has had to face at the outset one difficulty so great as to be very discouraging if not quite insuperable. That difficulty is the almost total lack of accessible works which can be taken as guides in the study of our animal and plant life. We do not refer to guides to anatomical or physiological study, for of such there are plenty, and good ones too; but the rather we mean, works which will bear, to the remainder of our plants and to all of our animals, perhaps even to our minerals and rocks, somewhat the same relation that Gray's Manual bears to our flowering plants.

But the latter comparison after all only poorly expresses our meaning. For Gray's Manual tells too little and at the same time too much, for a useful local natural history; too little because it is a guide to anatomy and classification only and tells us nothing of what men have learned of the habits, uses, relations to surroundings and each other of plants—in a word of their lives; too much, because we have to pay for, to carry about and to select our own from among descriptions of many plants in which for the time we have no interest. No defense of this seemingly narrow view is needed; it has the support of some of the best living observers and thinkers and can be shown to have its firm foundation in the nature of the study as well as in the powerful logic of expediency.

That there is need for these local natural histories, all who know the conditions, must admit. The people of the Maritime Provinces are practically shut out from the possibility of knowing thoroughly their own animals and most of their plants; and a scheme of education which does not take account of this fact, is immensely distant from logical completeness. On the other hand the splendid influences of a good scientific manual is shown by the large number of expert botanists in the provinces; these have had Gray's Manual for a guide; but of zoologists there are very few, and hardly any of the many branches of zoology have even one student, for to the zoologists no such guides are available.

It is not difficult to sketch the requisites of a good local natural history. For convenience, both of preparation and use, each natural division of the animal or vegetable kingdom should be treated in a separate volume. Each should be prepared by a specialist, though all should be upon the same plan and carefully edited by a competent naturalist to secure this desirable uniformity. Each should treat only our

own species, such as actually have been or almost certainly will be found in these provinces, and the work should be for all three combined, for from a natural history standpoint the three are one. Each volume should be prefaced by such a sketch of the anatomy, habits, etc., of the group as a whole, as will suffice for the clear understanding of the contents of the work, and no more; further information of this sort can be found elsewhere. Each volume should contain a key to the species, so that one can be identified as easily and quickly as possible, for very many would use the work for this purpose only, and the scientific ones will get the scientific detail without being forced to it by a key, and each should have a bibliography containing the titles of these standard works which treat more fully of each division of the subject. Then should come an account of each species, under which there should be treated the following topics:

(I.) *Names.* These, some people who should know better, pretend to despise the study of. But not only is the name a necessary preliminary to a further acquaintance with a plant or animal, or to communicate with others about it, or to finding out what men have discovered and written about it; but it is also to many a pleasure in itself. It is surely as legitimate a pleasure to have a wide speaking acquaintance among plants or animals as among men, and if the acquaintance ripens into some friendship, so much the better; but it is not a bad end in itself.

Our natural history should give (a) that full scientific name which is sanctioned by the latest conservative authority; (b) a synonymy just full enough to allow other local works to be understood; (c) the common names by which it is known, widely and locally; (d) vernacular, Acadian French and Indian names; all these expressed concisely and yet without confusion, by tricks of typography.

(II.) *Distribution.* In general terms should be expressed concisely (a) its habitat and range over the world in general, (b) its habitat and exact range in our three provinces, including its relative abundance and exact localities where very scarce.

(III.) *Description.* This should always be two-fold; (a) one scientifically complete and technical, as are those in Gray's Manual, family, generic and specific, each in its proper place in the system; and (b) a concise popular description which all can recognize, at least for the more common forms.

(IV.) *Habits.* Very few indeed are the books anywhere which properly treat this division of the subject. Plants, as well as animals, should be treated as living beings, with needs like ourselves of adapting themselves to their surroundings, and with peculiarities of structure to enable them to do it. This is the key-note of our whole system of scientific natural history teaching, that structure and habit are inseparably linked, change but together, and mutually determine each other. The importance of this principle has only of late years been fully recognized.

(V.) *Illustration.* Of the principal forms, good figures should be given. Fortunately good processes of reproducing pictures are becoming cheap. The less important forms do not need them, as they can be described by comparison with the more important.

(VI.) *Economics.* By this is meant the relation of a species to man's good or injury. Forms important for food, in medicine, in the arts, etc., should be fully treated with references to technical works on the subject; and so also should these that are poisonous or otherwise injurious.

(VII.) *Interesting historical or other local associations, etc.*

At first sight it would appear that a work upon this plan, even if treating of a very small group, would be bulky and otherwise tiresome. In reality it would not be so; thus the great majority of wild animals and plants have but a single scientific and no common names, no uses to man, no historical or other important associations, and we know nothing of their habits. Hence this great majority would receive necessarily but brief treatment. At the same time this very brevity would prove a stimulus by showing how much remains to be done.

Natural histories upon this plan are not an experiment altogether, for England and other European countries have them, and not only are they of the very highest value to all scientific men, but they make possible among the people the study of nature in its most favorable aspect. In the Maritime Provinces, the series proposed above must have equally beneficent results.

If it appears that such works would tell too much and thus remove an incentive to original study, it is only necessary to answer that from the earliest times, good natural histories have stimulated the highest kind of scientific study, and the better and more complete they are, the more marked and excellent has been their influence in this direction.

We do not overlook the objections to our plan; they are altogether of a practical nature. It is true, the cost would be great; but there are three provinces to bear it. It would be difficult to get them well-written; but there are men in the provinces to-day fully capable of preparing some of them, and in time there will come others. In fact, it is chiefly a question of money; if this were supplied, the rest would follow.

W. F. GANONG.

#### A Christmas Prayer.

O Lord! who wast a little child like me,  
Make me a holy child, like Thee,  
All my life long a simple child to be,  
For such the Father's face can see.

—Wide-Awake.

For the REVIEW.]

**Practical Chemistry.**

J. BRITAIN, NORMAL SCHOOL, FREDERICTON.

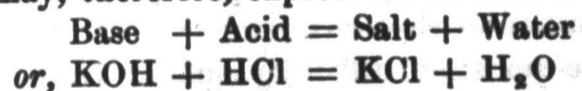
**LESSON VI.**

(Continued from February, 1891.)

The formula HCl denotes, strictly, one molecule of hydrochloric acid gas. But, for the sake of brevity, it is customary to use the formula as an abbreviation of the name of the substance whose molecule it represents.

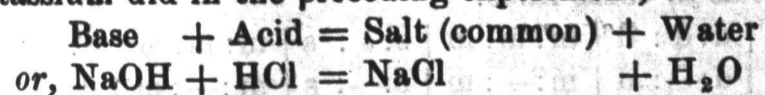
We may say, then, that at our last lesson we mingled in water some HCl and KOH, and that the water was found thereafter to contain a substance differing from either. If we evaporate the water this substance will remain as a white solid resembling common salt. It has been found by chemists to be a compound of sodium and chlorine. Its name is potassium chloride and its formula KCl. From its resemblance to common salt it is called a *salt*. Since the water contained neither K nor Cl, the salt must have been formed by the metal K of the KOH combining with the Cl of the HCl, thus taking the place of the H in the acid. By careful weighing it would be found that the quantity of water had slightly increased. This is easily accounted for by supposing that the displaced H of the acid took the place of the K in combining with OH of KOH forming HOH or H<sub>2</sub>O, which is water. It will be noticed that not an atom was lost; only a re-arrangement of the atoms took place.

We may, therefore, express the re-action thus:



Dissolve a small piece of caustic soda (sodium hydrate, NaOH) in water. Taste the solution and test it with litmus paper. It will turn reddened litmus back to blue. This, with its pungent taste, will convince you that NaOH, like KOH, is a *base*. The chemical change by which the red litmus was turned blue is called a *basic* or *alkaline* re-action. Dip the same litmus into a solution of the acid HCl. It becomes red again. An *acid* re-action took place. Now carefully mix the two solutions till the mixture gives neither a basic nor an acid re-action. Taste the mixture. You perceive an unmistakable taste of common salt.

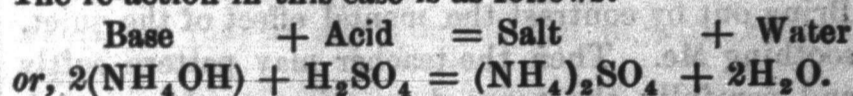
The metal sodium of the base has exchanged places with the hydrogen of the acid, just as the metal potassium did in the preceding experiment, thus:



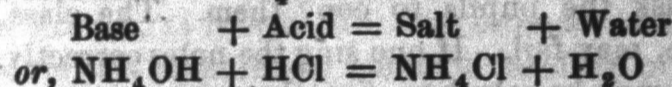
You will now begin to suspect that the metal of a base has a tendency to replace the hydrogen of acids.

Taste and test with litmus some aqua ammonia (Ammonium hydrate, NH<sub>4</sub>OH). Its pungent taste and basic re-action will show you that it is a base. Mix the solution, as in the preceding experiments, with a solution of sulphuric acid (hydric sulphate, H<sub>2</sub>SO<sub>4</sub>). This is a very corrosive acid. If the experimenter should get any of it on his face, or in his eyes, the consequences would probably be serious. In making solutions of sulphuric acid, the acid should always be slowly poured or dropped into the water. If the water be poured upon the acid an explosion is liable to occur. There is no risk, however, if the danger be kept in mind and reasonable care be taken. The solution of sulphuric acid will be found to have a very sour taste and a strongly acid re-action. In tasting solutions merely touch your tongue with a drop of the mixture.

Mingle the acid solution with the base as before until you obtain a mixture which is *neutral* to litmus. The re-action in this case is as follows:



Mix solutions of NH<sub>4</sub>OH and HCl. The re-action is:



You will notice that we have always obtained, by mixing an acid and a base, a *salt* and *water*.

Notice, too, that the group of atoms NH<sub>4</sub> acted, in the last two experiments, like the metals did in the preceding ones. It took the place of the hydrogen in the acids, thus forming salts. The group NH<sub>4</sub> did not break up, but behaved like a single element. Such a group of atoms is called a compound *radical*. And since NH<sub>4</sub> acts like a metal it is called a *positive radical* and is named like a metal, ammonium. The group OH also remains intact while the metal deserts it and hydrogen takes its place, forming with OH the compound substance, water. OH is another compound radical. It is named *hydroxyl* from the elements of which it is composed. Since it does not act like a metal it is to be regarded as a *negative radical*.

Compare the formulas for the different bases we have used, KOH, NaOH, NH<sub>4</sub>OH. Each consists of a metal (NH<sub>4</sub> is equivalent to a metal) and OH. A base, then, is a compound substance, consisting of a metal (or positive radical) in combination with hydroxyl and having usually a pungent taste and a basic or alkaline re-action.

Compare the formulas for the acids, HCl, H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>. They all contain hydrogen. There is no metal in any of them. Cl is a negative element. The groups SO<sub>4</sub> and NO<sub>3</sub> acted like negative elements in not breaking up, but combining with the metals



which replaced the hydrogen to form a salt. They may be considered as negative radicals.

An acid, then, is a compound substance, consisting of hydrogen and a negative element or radical. It commonly has a sour taste and an acid re-action. Compare the formulas of the salts, KCl, NaCl,  $(\text{NH}_4)_2\text{SO}_4$ ,  $\text{NH}_4\text{Cl}$ . Each contains a metal or a radical equivalent to one. A salt is a compound substance, consisting of a metal and a negative element or radical other than hydroxyl. It may be produced by mixing an acid and a base.

For the REVIEW.]

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

#### FIFTEENTH PAPER.

When the class can sing correctly  $ds$ ,  $dds$ ,  $dsd$ ,  $d'sd$ ,  $ds'd$  to different keys, it is probably time to teach Me. Revise the mental effects of  $d$  and  $s$ ; then let the class point out Me when the teacher sings to lah. Bring out by contrast the mental effect of the quiet, soothing Me. Then the teacher may pattern softly and carefully the tones  $dsm$ , singing them to lah and ask the pupils to copy them. The class, as a whole, may fail. If one sing the notes correctly, that pupil may be asked to sing them as a pattern to the class. If the Me is not taken correctly after two or three attempts, then the class needs more drill on the notes  $d$  and  $s$ .

$dsd$ ,  $dssd$ ,  $dsd'sd$ ,  $d'ds$ ,  $dds'sdd$ ,  $ds'd$ .

Take these from the manual signs, pointing to the notes the teacher has put on the board in red and yellow, and also writing the notes of such phrases in a line, and the Me may be again tried next lesson. Me is easiest sung when  $d$  and  $s$  are heard, or if not heard are ringing in the pupil's mind and ear. If the teacher can divide the class into three sections and get one outside section to sing  $d$ , the other  $s$ , then the section between these two will probably sing Me correctly when they hear  $d$  and  $s$  sounding around them. The teacher can afford to spend some time in getting this tone correctly. As soon as the pupils sing it correctly to lah, write the name of the tone in blue chalk between Doh and Soh and a little nearer Soh. Then let the pupils sing after pattern to the tone names. Such phrases as these may now be sung from the manual sings, pointing on the modulator and from the exercise written on the board. It is well to get each phrase sung to lah as well as to the tone names.

$dsm$ ,  $dssmd$ ,  $dsmsmd$ ,  $d'smd$ ,  $smsd$ .

Only when these are sung with confidence ask the pupils to sing from pattern  $m$ , ascending from  $d$  to  $s$ . Introduce it in this phrase:  $dsmm dmsmd$ .

Then such phrases as these may be pointed:

$d'smd$ ,  $dmsd'$ ,  $dmsmd$ ,  
 $dmdsm$ ,  $ddmssmmd$ .

Some teachers think that it is easier to sing  $dms$  than  $dsm$ ; but after trying with several different classes the teacher will find that the former is more difficult.

As soon as the class has learned the Me the children should be taught a few simple songs and rounds containing only notes of the D chord.

Teach, then, the more difficult intervals of the first step by pattern. Let the teacher sing these intervals, making the hand signs, and then pointing them on the first step modulator containing only the notes of this step. These intervals are:

$d'm$ ,  $md'$ ,  $s'm$ ,  $ms'$ ,  $sm'$ ,  $ms'$ .

If the teacher find that the class sing incorrectly a tone which has been given correctly in an earlier part of an exercise when all the notes are written in one color, he may help them over the difficulty by reminding the pupils of the mental effect of the note, say  $m$ , and dealing further with it thus in such a phrase as

$dsm d m m d s m d$ .

Suppose the first and second  $m$  has been sung correctly, but not the third. Put out all the four and write them again, but with blue chalk, reminding the class that in each case it is the same tone.

In writing music on the blackboard it will help the pupils if one color be used for the accent marks and other time marks, and a different color for the letter notes. This will be found very helpful in teaching the different time rhythms.

In these no tune difficulty should be presented until the form is mastered. But variety may be obtained by using in turn  $d$ ,  $m$  and  $s$ , and further, these may be combined in one exercise without presenting any difficulty of tune, when taken in a certain fixed order. This will have the further advantage of impressing these important tones on the ear and on the mind.

1. | d :— | d : d | d :— | d : d | d :— ||
2. | d :— | m : m | s :— | m : m | d :— ||
3. | s :— | m : s | d :— | s : m | d :— ||
4. | d :— | m : s | s :— | m : s | d :— ||

Teach first the form in 1, take it next with the familiar order of tones in 2 and finish with lines similar to 3 and 4.

Variety in three pulse measure may be wrought out as in these lines:

- 1 | d : d : d | m : m : m | s : s : s | m : m : m | d : d : d ||
- 2 | d :— : d | m :— : m | s :— : s | m :— : m | d :— : d ||
- 3 | d :— : d | m :— : m | s :— :— | m :— : m | d :— :— ||
- 4 | d :— :— | m : m : m | s :— : s | m : m : m | d :— :— ||

With a little ingenuity much variety may be introduced into these five measures. The teacher can greatly interest the class by alternately singing the line and then asking a pupil to alter the exercise to what he has sung, and then altering the line and asking the class to sing it as now written.

Four pulse measure can be treated similarly, and one pulse, two pulse, three and four pulse notes can be used.

Teachers often ask how far a class of a certain grade may be taken. I think the answer is as far as they can go with interest and intelligently. Of a boy of seven years and seven months, his father writes: "His ear in music is altogether acquired; he has no gift or talent with respect to memory or ear and he has no ruling passion for music born in him. He cannot bear praise; his chief satisfaction is to carry out my ideas." This boy has passed the examinations for the Junior, Elementary and Intermediate certificates. At the age of five and a half years he wished to study harmony, but as his father did not wish him to get any formal brain work before the age of seven, he was only allowed to begin at that age.

This should be considered satisfactory for Grade I.

1. Sing to the examiner's pointing such exercises as these:

1. d m d s m s d' s m s d    2. d s, d m s m d s d s, d  
3. d s m d m s d s s, s, d    4. d s m d d s s m d' s d.

2. Imitate, without naming the notes, such phrases as the following when sung to lah:

- d m d s,    d s m d,    s m d d,    s m s d,  
d d m s,    s m d d,    s m m d,    d s s m.

3. Sing to words one of three prepared simple, appropriate school songs.

4. Sing a time test with only one and two pulse notes in two or three pulse measure.

Mr. D. W. Evans, Music Instructor to the Huddersfield School-board, asked by circular the leading professors of music in his town:

"Have you, as conductors, choir-masters, teachers of pianoforte, violin, etc., noticed any increase of readiness and intelligence on the part of pupils who have been through a Tonic Sol-fa course in the board schools?"

The professors, to the number of thirty-one, replied promptly; none had a word against Tonic Sol-fa; all spoke highly of its results. These are some of the answers:

"I notice the greater ease with which pupils read music at sight." "Tonic Sol-fa singers are the best readers." "It is decidedly easier to get a violin pupil on if he has had musical training in the day school." "Tonic Sol-faists make the best staff notationists."

"From the marvellous manner in which the boys sing from the old notation, I am thoroughly convinced that the choir-masters of Huddersfield owe you a deep debt of gratitude."

These writers are not Sol-faists and most of the thirty-one writers refer to work in the old notation.

JAMES ANDERSON.

CORRECTIONS.—Page 121, 2nd column, line 36, read "the time."  
Page 122, 1st column, line 54, read "sound al, dms."

For the Review.]

#### The Study of French.

Having been asked by Dr. Harrison, as member of the Board of Education, to lay my views upon the teaching of French before him on paper, I beg to offer the following remarks:

First, That any teaching which lays continually more stress upon points of grammar than upon familiarity with words and sentences is not recommendable, is not even natural, and is especially unsuited to the requirements of students in Canada where we may at any moment fall in with French speakers.

Secondly, That a knowledge of words and phrases and of French, as it is used in the ordinary relations of life, is best acquired by plentiful reading of easy books, especially of story-books.

Thirdly, That for this purpose some easy story-book, novel, or book of extracts (as interesting in its subject-matter as possible) should be chosen, with a glossary of words at the end to save the trouble of using a dictionary.

Fourthly, That a very little study of the grammar is sufficient to launch a pupil into an easy French text. Practically all he requires to know is the declension of nouns, of adjectives, and the conjugation of the regular verb. The conjugation of the irregular verbs can best be learned by hunting them up in a grammar according as they are met with.

Fifthly, That to learn the bare, dry rules of grammar apart from their connection with the text of some interesting book is drudgery for nothing. One of my students told me that she spent her third year at French in school "learning verbs." Needless to say she had forgotten the verbs and knew nothing else.

I should recommend, then, plenty of French reading and easy and interesting books—not "instructive" ones, but interesting. I would recommend the adoption of such books as the "Progressive French Reader," school series, published by Drysdale, and Darey's "Lectures Françaises," and I would insist upon the truth that French idioms and French modes of thought, and to a considerable extent French grammar, can only be learned through the reading of numerous—not necessarily difficult—French texts.

The University, Fredericton, N. B.

DOUGLAS HYDE.

For the REVIEW.]

## Can We Do Without D Teachers?

It is more for the purpose of presenting a few facts concerning D teachers, gathered in one inspectorial district, than of answering the above question that this is written. Looking at the large proportion of them in the district under consideration, two-fifths of its teaching force being D's, one would say that their presence is very necessary; looking at the low scholastic requirements of those doing such a large portion of our educational work, it must be a serious evil. There is nothing to be said against the novice who is using a D license as one rung of the ladder of her attainments, but a great deal against the one who is employing this slender thread as her whole support. Twenty who were teaching five years ago on a D license are still employed, with no higher grade, nor an effort to get one, while fifteen have got C. The remainder have left the profession. Of the D's employed last last term:

10	were teaching their first term.
12	" " " " " year.
6	had been teaching 1½ years.
17	" " " " " "
8	" " " " " 2½ "
8	" " " " " 3 "
5	" " " " " 3½ "
1	" " " " " 4 "
6	" " " " " 4½ "
7	" " " " " 5 "
3	" " " " " 5½ "
1	" " " " " 6 "
2	" " " " " 7 "
2	" " " " " 8 "
4	" " " " " 9 "
1	" " " " " 13 "
1	" " " " " 15 "

The rest undetermined.

Then in that five years a number of sections have employed none but D's, while in many cases D's have succeeded C's. Now think of the condition of the young people of a section that have been taught for five years by a D teacher, that had neither energy nor ambition to try for a higher license. Think, also, of such a school, after a long struggle, turning out a D from its pupils, who goes to a neighboring section to succeed a C, because she is cheaper.

I know D teachers who are doing good work, as there are some C's who are doing the reverse; but some are only killing time and the mental force of their pupils. If a teacher is doing good work with a D license she will be more of a success and a greater power in the section with a C. It does not take a great effort to step from D to C. Let every D who reads this at once begin to take that step. You say it is hard work to teach and study, too. So it is, but it is much harder work to teach and not study. Begin and you will find the difficulties disappear and your school-room work grow easier as you grow

in knowledge. Come! Won't you try? When you put this down, get out your geometry, or your history, or your arithmetic and do a good, solid hour's work this evening and you will want to increase the dose to-morrow. To the educational authorities, I would say, let us give our young people a chance to win a D license and teach on it for a time, if necessary, but don't let it be held *in perpetuum*.

It is safe to say that the scholastic attainments of those who have been so long in the profession, without trying for a higher license, are at a lower standard than when they passed their examination. Then, even if a D teacher of two years standing will not apply for C, let him or her be re-examined on D work. Let our C teachers, also, who have been four or more years in the profession, see to it that they are up to the requirements of and not afraid to try next year's examinations.

NOVA SCOTIA.

December 1st, 1891.

For the REVIEW.]

## Primary Department.

## ANIMAL LIFE.

To lead Grade I. children to intelligent observation of the structure of the human frame and the lower animal forms I employed several devices. A few of the most successful are presented in this paper.

The fact that every healthy boy is a born acrobat naturally suggested physical exercises for teaching the principal parts of the body. The names were quickly learned, the parts distinguished, their uses dwelt upon and their importance clearly impressed.

Recognizing the value of pictures as silent educators, I gave the six domestic animals on the lesson cards, a half inch border of bright paint, and suspended them on the wall, leaving my pupils to learn from observation the numerous scientific facts presented by the pictures.

Finding that their interest repaid the trouble, I added to the collection pictures of the most familiar wild animals. The forms were clearly outlined, the coloring good and each animal was represented in a characteristic attitude.

To cut out the pictures, mount them on card-board, allowing a two-inch border, and to fasten them on the walls with loops of bright tape, was one evening's work; the cost was twenty-four cents.

Conversations on the pictures brought books into the school-room. One child brought a "Chatterbox" to compare the lion on the wall with the one pictured in his book. Another found in the pages of "Little Folks" a white bear sleeping on the ice, and, of course, all were expected to show interest in such a peculiar animal. As "reading the pictures" was all the little

ones could do for themselves, the teacher was expected to supply the story. All stories treating of animals should be memorized for such occasions.

From the children's books I gathered many useful ideas, among others a set of mechanical toys. With card-board, paint and string the set was reproduced and novelty seekers were delighted with a dancing bear, an elephant tossing its head and tail, a bird flapping its wings and a jumping Jack showing the movements of the principal joints of the body; a Highlander in national dress drawing a fish from the lake, a Chinaman drinking tea, and a sailor playing the violin, gave pleasing instruction on other familiar motions.

In a girl's school a supply of jointed dolls would furnish a series of delightful lessons to the little ones.

Sliced animals are interesting to both boys and girls, but the price of sets sold in boxes places them beyond the reach of primary teachers.

Fortunately, home-made sets will do as well. Ask your pupils to collect business and other cards with pictures of animals and then turn their naturally destructive tendency to good account by letting them slice the pictures into sections; enclose the sections in envelopes and give to the baby-class for busy-work.

For the grading class have a set of natural history cards, pictures cut from every available source and pasted on cards and a lot of printed slips, each slip containing a descriptive sentence. Let the children print the sentences and ask each child to read what he has printed—quite a story is the result.

I saw a good idea in a grammar school the other day; a little thought will adapt it to primary use. A large pasteboard circle was hung on the wall and divided into zones, the Torrid Zone was red, the two Temperate green and the Frigid Zones pale grey, the colors being evidently chosen to indicate certain peculiarities of climate.

Pictures of animals, natives of each division, had been carefully cut out and pasted in the zone where they belonged.

The Torrid Zone teemed with animal life, birds, beasts and reptiles jostling each other with uncomfortable familiarity. The Temperate Zones were also well stocked, but there were vacancies to be filled as the specimens were brought in by the pupils; certain startling combinations showed the chart to be entirely children's work.

The North Frigid Zone had only three tenants, while its southern relative had none.

All conversations on animals must be illustrated by black-board sketches. Drawing deepens interest. Take, for instance, a lesson on animal life combined with one on reading, the object being

to learn the habits of the animal under discussion. Suppose the subject to be that primary classic—Tom's dog. To be told that he can swim wakens no special interest; but sketch in a bit of Courtenay Bay, build up a break-water with boys looking seaward at a dog breasting chalk waves, and through the crude lines childish imagination calls up a vivid picture; interest is aroused in the action, swimming and the word "swim" is impressed. Or let the talk be about the different kinds of dogs and their uses, let the children tell of the dogs they have seen and then tell them of other species not generally found in the neighborhood of their homes. Sketch in some sharp points for the Alps, build a rude structure on the mountain-side and draw a St. Bernard floundering in the drifts. Ask the children to make a story from the picture, lead them to talk freely about the dog's noble efforts to save life; impress the word "kind" and dwell upon kindness to animals.

Make a free use of clay in producing rare studies of animals,—dogs, cats, birds and elephants, all will take shape as grotesque expressions of images clearly outlined by trained observation, but losing form in the process of reproduction by unskilled fingers.

The page of skeleton drawings in Prang's manual suggests a good experiment. I asked my boys to reproduce the drawings with tooth-picks and soaked pease and the first effort was a failure. We had tried too much in one lesson, so I decided to begin with an arm. Placing a child on the platform with his arm in a certain position I asked the other children to place tooth-picks on their desks just the way that Charlie's arm turned. They did so and joined the parts with a pea; then the model was changed, another position assumed and copied and a drawing made. That lesson was successful. The other parts were treated in a similar manner and combined into skeleton representations of the body in nine different positions.

Some of the smaller animals stuffed form an interesting collection, unfortunately beyond the teacher's means, but a fair imitation is within the reach of anyone willing to give time and patience to the work. With scraps of fur and cloth, yarn ravellings, clippings of leather, beads and bits of bone, a box of paints and a set of patterns, wonders may be produced, and a whole menagerie of animals, ranging from a mouse to an elephant, may gain a footing in the school-room. They satisfy the children's desire to grasp and see for themselves, and, as the little critics readily detect the difference between the stuffed specimens and the real animals, even the defects in structure may be made to serve a purpose.

Taxidermists' windows can also be utilized in this work; children should be encouraged to visit them and study their contents.

While serving the original purpose these devices also help to maintain discipline. I have known restless, irritable pupils on the verge of an outburst of temper settle down quietly to work after a short trip to the square to count the turtles in the fountain or report the seal's movements.

Kindness to animals should be inculcated with every lesson. Teach the little ones to be kind to each other, to their parents and teachers. Help them to express the gratitude so many feel without knowing how to show it, to perform the trifling little acts of courtesy and good-will that cost so little and mean so much. Train them to be thoughtful for others, to be helpful at home as well as in the school and ever ready to make life pleasanter for all.

Children, so trained, are incapable of cruelty to animals. The habit of kindness develops with their moral growth into a fixed principle based on the reverent recognition of everything created as an instance of the Creator's power.

M. B. O'SULLIVAN.

For the REVIEW.]

#### Composition — Grade III.

##### ONE TEACHER'S METHOD AND THE RESULT.

The work in composition prescribed for Grade III. is to answer, in writing, the questions on each reading lesson, to correct orally any wrong forms of speech used by the pupils, and to require the pupils to repeat the substance of a reading or oral lesson before leaving it.

In dealing with the first part, viz., answering the questions, I generally prescribe about five questions to be studied with the lessons; then, next morning these questions are answered on the slates either before or after the reading of the lesson. In correction of wrong forms of speech my plan is to note and correct each error in grammar made either in writing or in conversation. But I have found most difficulty in getting the pupils either to repeat the substance of the reading lesson orally or to reproduce it on slate or paper. The reason of the difficulty is that by the time the children have read the lesson several times they become so well acquainted with it that they adhere too closely to the words of the book instead of using their own language. In order to overcome this difficulty I have tried different plans, and have found them more successful in leading the pupils to express their thoughts in their own words than the reproducing of the reading lesson. On Friday mornings I have frequently distributed pictures, one to each pupil, and asked them to write a short

story about what they see in the picture, one pupil frequently putting her story on the black board so that the class may criticise, and then a number of others read their compositions, holding the picture so that all may see it. There are a number of other plans, but one which I have found to interest the children lately is to ask them to write a short account of any visit they have made during vacation or at any time, or of anything which they have seen or of which they have read. Then, as before, a certain number read their story to the class, and I frequently encourage the children by asking those who write a fairly good composition to write it on paper and give it to me. This plan, I find, leads the children to think and to express their thoughts in words, which is one of the difficulties to be overcome in the work of Grade III. The following is one of a number of the last named compositions given me by my class a few days ago:

A.

##### CAMPING IN MAINE.

I am going to tell you a story. I was away camping last summer for three weeks. We were on an Island in Moosehead Lake, Maine. It was two miles long and one wide. We had for neighbors lots of squirrels and deer. The latter used to bark at night, just like dogs. We slept in tents, and our beds were spruce boughs, three feet deep. We kept our doors wide open, and went to sleep looking at the stars. Our guide's name was Icabod Smith. My brother and the guide went out in the canoe every morning to the hotel to get provisions. The squirrels used to wake us up at day-break with their scolding and chattering in the trees. We had three tents—a dining-room tent, and a bed-room tent, and a tent for the guide to sleep in. It was great fun to watch the guide cook pan-cakes. After he had finished making ours, he would make a big one for himself, and throw it up in the air to make it turn over. When he wanted to bake beans, he would make a hole in the ground, and fill it with burning coals, and put the pot in and cover it with earth, and leave it all night. There was a large hotel, four miles below us, at Kineo, where Americans went every summer.

FREDA C.

Essay on "Breath," by a schoolboy who had attended a course of lectures in Physiology: "Breath is made of air. We breathe with our lungs, our lights, our livers and our kidneys. If it wasn't for our breath we should die when we sleep. Our breath keeps the life agoing through the nose when we are asleep. Boys that stay in a room all day should not breathe. They should wait till they get outdoors. Boys in a room make carbonic acid. Carbonic acid is more poisonous than mad dogs. A heap of soldiers was in a black hole in India and carbonic acid got in that black hole and killed nearly every one afore morning. Girls kill the breath with corsets that squeeze the diaphragm. Girls can't run or holler like boys, because their diaphragm is squeezed too much. If I was a girl, I'd rather be a boy so I can run and holler and have a good big diaphragm.

### The Teacher in Relation to Society.

The teacher who shuts himself up in his lodgings after school hours and during holidays rarely excels in his profession. While it is necessary that a reasonable portion of his time should be given to the preparation of his work and to the acquisition of additional stores of knowledge, it is of equal importance that he should cultivate that sympathy with society and with popular modes of thought which cannot be obtained by the recluse. His pupils come from the homes of business and professional men where the surroundings are such as to habituate them to mental vivacity, ease of manner, and a cheerfulness which their daily associations naturally develop. The transfer of pupils from such associations to a school-room where the teacher's manner is cold and stiff, where his address is stilted and mechanical, where his want of sympathy precludes all friendly intercourse with him, have a tendency to stunt the growth of those generous impulses which are so natural to children during school age. The most successful teacher, other things being equal, is the man of a buoyant temperament, with an exuberance of spirits and with a certain rush of boyhood in his manner; who knows how far a child's disposition to enjoy himself should be subordinated to the duties of the school-room, and who is capable of looking upon the miniature world over which he exercises control as a world of pleasure as well as activity.

So much for the personal attitude of a teacher towards his pupils. Towards his own profession his attitude should be one of progressive sympathy. How often teachers are heard to speak disparagingly of their own calling, forgetting that the greatest philosophers of the day, and the professors of our best universities, are their own coadjutors. In pedagogy there is no aristocracy. The teacher of the kindergarten is the peer of the university professor. Without the inspiration which the child so often receives while studying his primer, there would frequently be no distinction for the university at which he may finally graduate. The honors are divided all along the line, and the log school-house may have played a more significant part in the child's education than the tessellated halls of Oxford or Cambridge.

To maintain that professional sympathy which is so essential to the dignity and supremacy of his profession, the teacher should keep himself in touch with the educational tendencies of the times. Education is an evolution. Its moods and tenses are ever varying; its phases in one state or continent differ from those of another, and the teacher who knows no more of the educational forces at work than those which

operate within the four walls of his school-room becomes a pessimist before he is aware of it and a drag upon the aspirations of his fellows. If his life is to be one of professional growth and enjoyment he must be a man of the world, at least so far as to avail himself of the momentum of the best tendencies of the age; his daily bread must be the best literature and his highest ambition must be to develop the individuality and character of his pupils. — *Hon. G. W. Ross, Toronto.*

### Natural Science in Common Schools.

By reason of its importance the study of natural science should begin quite early in school. But on account of its methods, which require maturity in the student, as well as because of the fact that the study of nature is only a small portion of human learning, it must not occupy a large place in the programme. It is quite sufficient for common district schools to devote one hour each week to the purpose, beginning in the lowest grade of the primary school. This hour should not be divided into fifteen minute object-lessons and scattered through the week, but should be one undivided lesson. In it he should take up in systematic order the important results of science. There should be description, illustration by pictures, models, and natural objects, a conversation with the pupils, drawing out what they have already learned on the subject, and a critical comparison made with a view to verify or correct their previous knowledge, and thereby teach critical alertness in observation. Pupils should be set to work, illustrating and verifying the results presented, in their leisure hours doing the work, and lastly their knowledge should be tested and made exact by short essays written on the contents of the lessons.

Three courses arranged spirally in the eight years of the district schools will be found advantageous. For each child ought to see nature in all its departments, and not sink himself into a specialist in some department when he has not yet seen all the departments. For the lowest three years I have found it best to have for the first year a study of plants, their structure and habits and interesting phases; animals for the second year; for the third year such glimpses of physics as are involved in explaining the structure of playthings and familiar tools and machines, also the phenomena of the elements of nature. This is the first course, taking up organic nature and inorganic.

The second course of three years studies botany more scientifically, learning something of classification and much more of structure; also learning the

useful plants for food, clothing, shelter, and medicine. The second year of this course should take up animals more scientifically, and devote one-half the lessons to animal and human physiology. The third year takes up physics or natural philosophy, some experiments in chemistry, and an outline of astronomy. A third course of two years follows in oral lessons, the arrangement of topic usual in the text-books on "physical geography," (containing an outline of the sciences of organic nature) for the first year; and for the second year, a similar outline of the sciences of inorganic nature, such as is found in the usual text-book on natural philosophy.

By such a course of study in the district schools, with one lesson each week for the eight years, each child has learned something of the different departments of science, their systems and classification, their methods of investigation, their applications to the explanation of phenomena. — *William T. Harris, LL. D.*

#### Dress of Teachers.

"Which of these young ladies would I select for the ideal teacher?" asked an observer of herself as she watched the bright-faced students of a normal school strolling arm in arm through one of the corridors of the building. "Not this one," looking at a pretty girl whose disordered, even untidy dress betrayed a very unpromising carelessness. "Nor this," as her eyes fell on an intelligent looking young woman, severely neat in dress, but, alas! laced into a long, tapering bodice that made one wonder on what anatomical principle she could possibly have been constructed. "If I were selecting an assistant for a school of my own would I really reject an intelligent, energetic and capable seeming candidate because her ideas of dress did not agree with my own?" Not quite that, but other things being equal, I should certainly prefer a teacher whose dress was neat, well chosen and hygienic, to one who was untidy or dressed in violation of well-known laws of health. For one thing, no woman in a tight dress, collar, or shoes can possibly have thorough command of her mind or her temper; the whole intellectual and emotional tone is lowered, just as the physical powers are limited. The energy used merely in resisting the disadvantages of a hampering dress might accomplish much if set free and properly employed. Then, too, I should be somewhat unwilling to trust the practical judgment of a teacher who was so unpractical as to wear a dress that must be more or less injurious to her. However high her intellectual aims and ideas, I should fear there was something lacking in her conception of well-rounded development for her pupils. — *N. Y. School Journal.*

#### Triplet Maxims.

Three things to do—think, live and act.  
 Three things to govern—your temper, tongue and conduct.  
 Three things to cherish—virtue, wisdom and goodness.  
 Three things to love—courage, gentleness and affection.  
 Three things to contend for—honor, country and friends.  
 Three things to hate—cruelty, arrogance and ingratitude.  
 Three things to teach—truth, industry and contentment.  
 Three things to admire—intellect, dignity and gracefulness.

#### Acadian Relics.

Prof. A. E. Caldwell writes the following letter to the *Scientific American* in reference to an interesting discovery made at Wolfville, N. S., some time ago: "At the head of Minas Basin, a few feet above tide water, some very interesting remains have recently been found on the premises of Mr. W. C. Archibald, of the town. The place in question has been a small hill of sand as far back as any of our residents can remember, but within the last twelve years Mr. Archibald has removed about six feet of soil, and in doing so came to traces of building. Recently he has had the place thoroughly dug over, and the following remains have come to light:

1st. A floor of hewn boards, probably hemlock, charred on upper side.

2nd. Rough bricks of irregular pieces of clay reddened and hardened by fire.

3rd. Charcoal, or charred wood, and sticks which may have been wattles.

4th. Iron implements, as wrought nails, file, knife portions of vessels.

5th. Copper coin and gun guard.

6th. Small pieces of crockery, a bowl of clay pipe two inches high and several stems.

There was evidently a small house here at some remote period, which was burned down and the site of which has since been covered by six feet of sand. The land surrounding this is alluvial, but it is not easy to account for this evidence, or to say whether the remains belong to the Acadian or Norse period."

All who propose to teach need to recollect that the very basis of fitness for teaching, so far as it can be gained from study, is a broad and accurate scholarship. To be a teacher, one must first of all be a scholar. . . . To be openminded, magnanimous and manly; to have a love for the scholarly vocation, and a wide and easy range of intellectual vision, are of infinitely greater worth to the teacher than any authorized set of technical rules and principles.—*Page's Theory and Practice.*

## QUESTION DEPARTMENT.

What steps would it be necessary to take to become proficient in the Tonic Sol-fa System of Music? I would like to teach it in my school.

Get an Elementary Course, say Vocal Harmony, 10 cents, or Elementary Sacred Course, 15 cents, and Home Modulator, 2 cents, and study it in connection with the notes in REVIEW. When the first step is mastered get Calico Modulator, 21 cents, and begin to teach. If further help is needed get Teachers' Companion (Curwen), 30 cents. Address Rev. James Anderson, St. John; or get Tonic Sol-fa Reader, Biglow & Main Co., New York.

SUBSCRIBER.—Will you kindly give in the next issue of the REVIEW a solution of each of the below mentioned exercises? Nos. 6 and 7 in Grade C Geometry, No. 7 in B Geometry and No. 6 in B Algebra, examination for 1891. By so doing you will much oblige.

P. S.—I anxiously await the coming of the REVIEW each month and seldom lay it down until I read it through.

A. S.

(I.) Grade C Geometry, No. 6. Solution: Let ABC be a triangle. Let D be the middle point of AB and E the middle point of AC. Let DC and BE intersect in O. Join AO and produce AO to BC, cutting it in F. The triangles ADC and AEB are each equal to one-half of triangle ABC. Therefore triangle AOB is equal to triangle AOC, and being on the same base AO it has the same altitude—the same as being between the same parallels. Therefore triangle BOF = FOC. Therefore BF is equal to FC (I. 38 cor.) and BC is bisected in F. Therefore the line bisecting the sides meet in O.

(II.) Grade C Geometry, No. 7. Solution: Let D be the given point in AB. Draw AE parallel to DC, meeting BC in E. Then triangle EUD is equal to triangle ACD. Therefore triangle ABC is equal to triangle DEB.

(III.) Grade B Geometry, No. 7. Solution: Let ADE and AFG be two such triangles and let P be the middle point of DE. Then draw EH parallel to FD, cutting FG in H. Then triangle FDP is equal to triangle EPH and less than triangle EPG. Therefore triangle ADE is less than triangle AFG.

(IV.) Grade B Algebra, No. 6. Solution (1): Change the signs of the roots, add to x and multiply thus:  $(x-0)(x+3)=x^2+3x=0$ .

$$(2) (x+1-\sqrt{-5})(x+1+\sqrt{-5})=x^2+2x+6=0.$$

$$(3) ax^2+2x+3a=0.$$

$$x^2+\frac{2}{a}x+3=0.$$

$$\text{Then } -\frac{2}{a}=3 \therefore a=-\frac{2}{3}$$

## SCHOOL AND COLLEGE.

The Halifax Academy is now the largest academic institution in the Atlantic Provinces. Upon the retirement of Superintendent A. H. MacKay and Professor James the staff was re-organized. Howard Murray, B. A., (Lond.) has been appointed Principal at a salary of \$1,800. German is taught by Professor H. Lothar Bober, and French by Professor J. Victor Plotton. As these gentlemen are teaching their native tongues, and by the natural method, they have already succeeded in awakening very great interest in modern languages. There are sixty pupils conversing in German and eighty-five in French. The Art department is conducted by Miss K. F. Hill of the Victoria School of Art and Design. Mr. R. J. McDonald, B. A., (Dal.), Grade A, has been appointed to the department of Mathematics and Natural Science, temporarily. Mr. W. T. Kennedy, Grade A, becomes Vice-Principal, with increase of salary \$1,250. The staff as re-arranged stands thus: Howard Murray, B. A., (Lond.), Grade A, Principal, Senior Latin and Greek; Miss Kate Macintosh, Grade A, Senior English, Geography and History; R. J. McDonald, B. A., (Dal.), Grade A, Senior Mathematics and Science; Professor H. Lothar Bober, German; Professor J. Victor Plotton, French; W. T. Kennedy, Grade A, Vice-Principal, Junior Latin, Geometry, History and Geography; Miss F. A. Peters, Grade B, Junior Arithmetic, Grammar, Science, Composition and Algebra; Miss K. F. Hill, Freehand and Object Drawing and Painting.

Miss Alice Black, of Milltown, who has been seriously ill, is again able to resume her duties. Mr. W. T. Kerr will continue in charge of the High School there.

St. Stephen is to lose two of its best teachers, Miss Jennie Lyle and Miss Mary Dibblee. Miss Lyle's reputation is provincial, and as primary teacher she has few equals and no superiors in New Brunswick. Both ladies are reported westward bound.

Miss Stella Payson and Miss Edith Williams, teachers in Millidgeville, St. John, purpose giving another school concert in aid of their library on the 16th inst.

Mr. John C. Robertson, the efficient Principal of Moore's Mills Superior School has resigned, greatly to the regret of all interested in the school. Mr. Robertson intends taking a college course.

Mr. Blackney, Principal of the St. Mary's school, has been appointed to the charge of the superior school at Keswick, and will assume his duties there the first of next term.

Miss Annie Hudson, one of Charlotte County's most valued teachers, recently obtained leave of absence from the Trustees of Milltown to visit California and the West. She was so favorably impressed that she has concluded to remain permanently as Mrs. Carmichael. The REVIEW extends congratulations.



Mr. F. H. Hayes, City Superintendent of Schools in St. John, has been suffering from a severe attack of la grippe.

Miss Beattie, who taught last term in Milltown, has been engaged by the St. Stephen Board.

Prof. Anderson, of Nova Scotia, has been engaged by the St. John Board to instruct the teachers in music. Nearly all the teachers attend the classes. The method employed is the Tonic Sol-fa. Prof. Anderson is also giving instruction to the pupils in the schools.

On the invitation of the teachers of Milltown a united meeting with the teachers of St. Stephen was held in Milltown. Not only were professional matters discussed, but the meeting partook of the nature of a literary and musical gathering.

The Teachers' Association for District 5, Nova Scotia, will be held at Hantsport on Thursday and Friday, December 17th and 18th. Superintendent A. H. MacKay will address the Association.

Miss Maggie M. Brady has been engaged by the Trustees of St. Stephen.

Principal McRay of the St. Martins Superior School, St. John County, is reported to have resigned.

Miss Minnie V. Hea, one of St. John's most popular and efficient primary teachers, retires at the end of the present term. Miss Hea's retirement is purely voluntary, and if all reports are true, will be accounted for in due time.

The St. John County Teachers' Institute meets in the Centennial School building, in St. John, on the 17th inst. Dr. Inch, and Inspector Metcalfe, of Boston, are to be present. A public meeting is to be held on the evening of the 17th.

The York County Teachers' Institute meets in Fredericton on the 17th inst.

The St. John School Trustees have lately had under consideration the expediency of providing instruction in military drill to the pupils in all their schools. It is understood that it has been decided to introduce it at once into the schools.

The schools in St. John and Fredericton will close on the 16th inst, on account of the Teachers' Institutes. The other schools of the Province will close on the 18th for the Christmas vacation.

Miss I. J. Caie, who has been teaching at Moulie's River, Kent County, has been engaged to teach a department of the Richibucto school.

Amherst is to have a new academy building costing \$25,000. It will contain eleven departments, a laboratory, a library room, museums, and that indispensable adjunct of every large school—an assembly hall. The general plan of the building will be furnished by Inspector Lay, who has visited Halifax and examined the improvements in the Alexandra and other new schools of that city.

Mr. A. C. M. Lawson, teacher at Lord's Cove, Deer Island, and Mr. H. W. Robertson, teacher at Welchpool, Campobello, have resigned.

The following students of the Tonic Sol-fa system under Rev. James Anderson have been awarded junior certificates: Alberta Forbes, Malcolm McLeod, Hannah McDonald, Laura Roberts, Murray Harbor, P. E. I.; Emma McInnis, G. W. Dill, Harriet D. Gregg, St. John, N. B.

### BOOK REVIEWS.

FRUIT GROWING FOR PROFIT is the title of a useful little pamphlet of fifty-two pages written by Mr. W. O. Creighton, a recent graduate of the Provincial Agricultural school at Truro. In this pamphlet "Apple Culture" receives special attention. The writer tells what soils are suitable for the best varieties, how the soil is to be prepared and kept in good condition, how trees are to be selected, set out, grafted and pruned, how the apples are to be picked, packed and preserved, how this is all to be done so as to give a greater return for this kind of labor than can be obtained from any other form of manual occupation. An interesting chapter is devoted to the enemies and diseases of the apple. The last chapter deals with the cultivation of the various small fruits, including the strawberry. It is very generally believed that there are only a few favored localities in the province in which fruit, especially apples, can be successfully raised. This erroneous belief has been most injurious by hindering a most profitable industry. Mr. Creighton has done a most valuable service by showing clearly that nearly every part of the province is well adapted to fruit culture. The fruit raised in the eastern counties has the important advantage of having superior keeping qualities so that it may be shipped to distant markets without fear of loss. It is hoped this little work will do much to open the eyes of farmers, teachers and others to the profit and great pleasure arising from some attention to the fruit garden. The writer owns three quarters of an acre of land, nearly one-half of which is under cultivation. As the result of two or three hours work each day in May, June and July he, and to some extent his friends, enjoyed a bountiful supply of strawberries, cherries, currants, raspberries, etc., all in their season—laid up a winter's store of preserved fruits and sold enough to buy a year's supply of flour—not to speak of the advantage arising from out-door exercise, an abundance of ripe fruit and a closer acquaintance with nature.

INDUSTRIAL PRIMARY ARITHMETIC, by James Baldwin, Ph. D., pp. 264. Price 55 cents. Ginn & Co., Boston. This book professes to show how arithmetic should be taught during the first three or four years of school life by a natural and practical method in which the pupil is constantly led to make discoveries for himself. We have not seen any book on primary arithmetic in which the subject is so well treated and which, on account of its excellent methods and suggestions, we could so heartily recommend to teachers. It is not, however, suitable as a text-book for children, as it implies more knowledge of reading than they usually possess between the ages of five and seven.

ENGLISH WORDS; an Elementary Study of Derivation, by Charles F. Johnson, Professor of English literature, Trinity College, Hartford. Cloth, pp. 255. Harper Bros., publishers, New York. The student of English literature will welcome this excellent and well arranged volume, whose object is to call attention to the sources of our language and the literary values of words. It is admirably designed for all who would make a serious study of the English language. Of sixteen chapters or lectures, the first four are upon: 1. The Importance of Language; 2. The Relationship of the English Language; 3. Nature and Proof of Linguistic Relationship; 4. Sources of Modern English Words.

AYLMER'S FIELD (Alfred Tennyson) with introduction and notes by W. T. Webb, M. A. Price 2s. London, MacMillan & Co., and New York. This contains a very concise sketch of Tennyson's life and writings, with introduction and notes, very conveniently arranged for study, of the poem above named.

HERNANI (Victor Hugo), with introduction and notes, by John E. Matzke, Ph. D., Johns Hopkins University. Cloth; price 70 cents. D. C. Heath & Co., Boston, Mass. Students of the French drama will be glad to have this celebrated play presented to them in such a clearly printed volume and in such a carefully edited text as this seems to be.

#### BOOKS RECEIVED.

(Will be reviewed in the January number.)

STARLAND, by Sir Robert Ball, Royal Astronomer of Ireland. Ginn & Co., Boston, publishers.

SELECTIONS FROM OVID, edited by J. H. and W. F. Allen and J. B. Greenough. Publishers, Ginn & Co., Boston.

#### PAMPHLETS RECEIVED.

Contributions from the Cryptogamic Laboratory of Harvard University, by William Albert Setchell.

Announcement concerning Garden Pupils of the Missouri Botanical Garden, from Dr. Trelease, Director.

The Eleventh Census—an address before the American Statistical Association, by Hon. Robert P. Porter.

The Report of the Y. M. C. A. Convention at Truro for the Maritime Provinces, from the Secretary.

#### Current Periodicals.

*The Living Age* has had a remarkably successful career of nearly fifty years. It grows in value as its years increase, and as periodicals of all sorts multiply. It is unrivalled in its field, and easily enables its readers to keep abreast with the best thought and literature of the day. Its prospectus for 1892 is well worth attention in selecting one's reading-matter for the new year. Reduced clubbing-rates with other periodicals are given, and to new subscribers remitting now for the year 1892 the intervening numbers are sent *gratis*. Littell & Co., Boston, are the publishers.... The *Christmas Century* is pervaded with the spirit of Christmas, and both directly and indirectly touches upon the Christian celebration. This characteristic is first evident in the cover, a new and special design, drawn by George Wharton Edwards, and printed in gold and brown on white. The frontispiece is a reproduction of the painting of "The

Holy Family." The number also contains engravings of modern pictures relating to Christmas as follows: "The Arrival of the Shepherds," "The Appearance of the Angel to the Shepherds," "The Annunciation to the Shepherds," "Holy Night," and a Madonna, accompanied by a poem, by Mrs. Mary Mapes Dodge, entitled, "An Offertory."... The *Christmas St. Nicholas* is ahead of any previous holiday number, and that is saying a great deal.... The *Christmas Wide Awake* is as gay as old Santa Claus himself, and it is a big pack of holiday delights. Its exquisite frontispiece, in color, is from the terra cotta bas-relief "Day and Night" by Caroline Hunt Rimmer. Rarely has anything more beautiful been given in a magazine. Perhaps the story that will attract the most attention is the first one of the "Fair Harvard" series, "Such Stuff as Dreams are made of," by John Mead Howells, the son of W. D. Howells, a good proof that there is something in heredity. The opening story is as delicious and fresh: "How Christmas came in the Little Black Tent," by Mrs. Charlotte M. Vaile, with two illustrations by Irving R. Wiles. "The War of the Schools," by Capt. C. A. Curtis, U. S. A., is a splendid snow-balling story. "Captain Joe" is a particularly bright and fresh war story by a new southern writer, Helen Keene. "In Arctic Pack-Ice" is a thrilling story by Lieut-Col. Thorndike, the first in the series of "One Man's Adventures," and other short stories with several interesting serials begun in this number. *Wide Awake* is \$2.40 a year. D. Lothrop Company, Boston.

#### WIDE AWAKE.

A few of the good things for 1892. 100 pages each month; only \$2.40 a year. Perfect entertainment for the passing hour. "Fair Harvard." Several members of the class of '91 have promised to contribute. "Such Stuff as Dreams are Made of," by John Mead Howells, son of W. D. Howells, will appear in the Christmas (Dec.) number. "In a Thunderstorm," by Robert Beverley Hale, son of Edward Everett Hale, the clever second of the set, will be published later.

Serials: "The Lance of Kanana," by Abd-el Ardavan. A brilliant story of Oriental adventure and youthful patriotism; historically true. "Jack Breton's Three Months' Service," by Mrs. Maria McIntosh Cox. A true story of the Civil War, a northern village and a young hero. "That Mary Ann," by Kate Upson Clark. "Mary Ann" is a girl of our own day. Sure to be the gayest serial of the year. "The Writings-down of Dorothy Holcomb," two common-sense, real-girl sor of girls; their experiences and various happenings, projects, opinions.

"One Man's Adventures," by Lieut-Col. Thorndike. A dozen thrilling adventures, strictly true: "In Arctic Pack-Ice," "A Tiger's Breath," "Out of Paris by Balloon," "Getting Away from Gibraltar," "On Board a Pirate Junk," "A Night with a Chinese Prefect."

A new kind of Indian story, by Mrs. Harriet Maxwell Converse. "I. How I became a Seneca Indian," "II. The Strawberry Feast at the Long House," "III. With Seventy Sachems," "IV. The Fire-fly Song of Indian Children."

Short stories: "How Christmas Came in the Little Black Tent," Charlotte M. Vaile; "Christy Ann's Rezavoy Picnic," Mary Hartwell Catherwood; "The Moriarity Duckling Fair," Florence Howe Hall; "The War of the Schools," (Two-Part Story), Capt. C. A. Curtis, U. S. A.; and many others, by Jessie Benton Fremont, Margaret Sidney, author of "Five Little Peepers Grown Up," John Preston True, L. T. Meade, etc.

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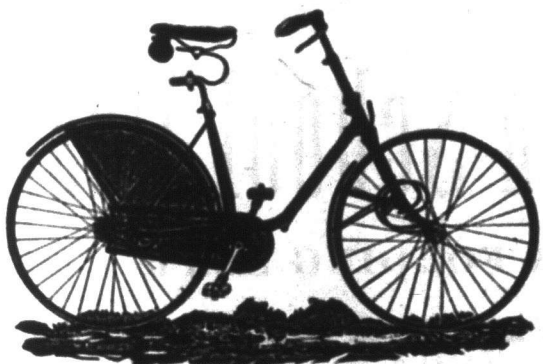
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DONALDA SPECIAL COURSE FOR WOMEN—(September 14th.)

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FACULTY OF MEDICINE—(October 1st).

FACULTY OF LAW—(September 7th).

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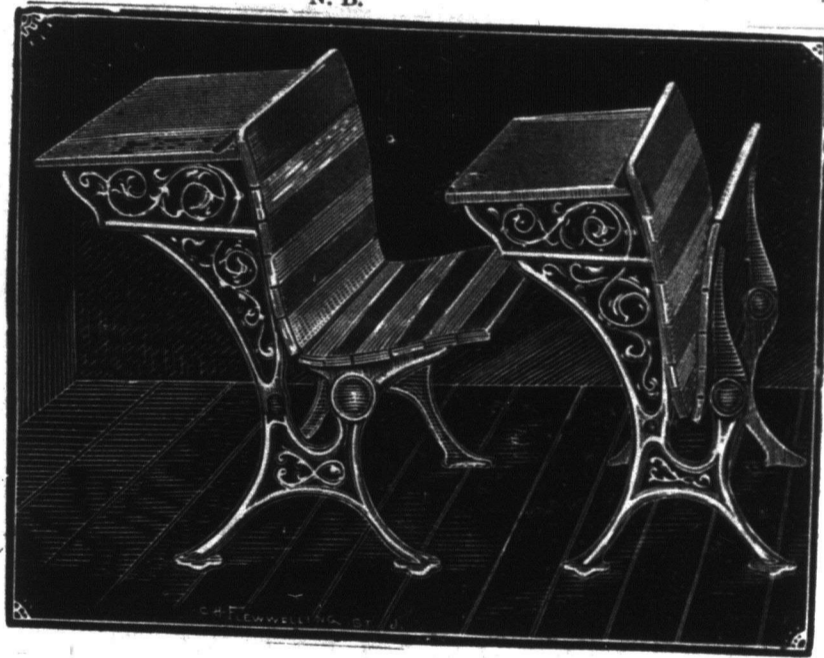
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