

PAGES

MISSING

The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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Editor for New Brunswick.

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Editor for Nova Scotia.

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THE EDUCATIONAL REVIEW.

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CONTENTS:

EDITORIAL—	41-44
TALKS WITH TEACHERS—	44, 45
HINTS, ORIGINAL AND SELECTED—	45, 46
NATURE LESSONS—	47, 48
CONTRIBUTED ARTICLES—	48-52
N. B. Schools of the Olden Time—The Royal William, 1833—	
Expulsion of the Acadians—The Provincial Normal School of	
N. B. (with cut).	
SELECTED ARTICLES—	52, 53
On Questioning—Concerning Discipline—Cultivating the	
Habit of Observation.	
Question Department—School and College—	54-56
Book Reviews—Educational Articles in Magazines—	57, 58
NEW ADVERTISEMENTS—	
A. & W. MacKinlay (p. ii)—Webster's International Diction-	
ary (p. 58)—N. S. School of Agriculture (p. 58)—A. J. Fouch,	
Chromo Reward Cards (p. iv).	

Subscribers should promptly notify the REVIEW of change of address, giving old as well as new address. Communications from New Brunswick should be addressed EDUCATIONAL REVIEW, St. John; from Nova Scotia and Newfoundland to W. T. Kennedy, Academy, Halifax; from Prince Edward Island to J. D. Seaman, Charlottetown.

BEGINNING with this number, Mr. J. D. Seaman, Principal of the Prince street school, Charlottetown, becomes one of the editorial staff of the REVIEW, and business manager for P. E. Island. Mr. Seaman is one of the best known and most progressive teachers of that province. His ability and energy will materially strengthen the REVIEW, and make it even more popular with its wide and constantly growing circle of readers.

TO THIS number of the REVIEW is appended a supplement for New Brunswick readers, containing papers read at the Educational Institute, June, 1893.

WE CALL the attention of our readers—our teachers especially—to the two historical memoranda given in this number of the REVIEW, in the articles containing the "Petition of the Government and Legislature of the Colony of Massachusetts Bay," in 1750, and the sketch of the first Atlantic Ocean Steamship. We make at present no further comments.

DR. G. W. ROSS, Minister of Education for Ontario, "spoke right out in meeting" at the World's Educational Congress, Chicago. He said Toronto did not aim to compete with Chicago in the matter of population, but they did aim to surpass Chicago in education. The educational system of Ontario he described as a unit from the kindergarten to the university.

MAKE it a point to attend the County Institute. This advice is particularly applicable to those who have been teaching some time and have fallen into a rut as it were. Read a good educational paper and attend teachers' meetings.

THE EXECUTIVE COMMITTEE of the Prince Edward Island Educational Association has decided to hold a three days' convention this year instead of two as formerly, holding morning and evening sessions and none in the afternoon. This will give teachers attending, an opportunity to visit the Provincial Exhibition and not neglect the convention meetings. This considerate action of the committee will, we feel sure, be appreciated by the teachers, and a larger number than usual will, we trust, be in attendance. The Convention

will be on the 27th, 28th and 29th of September, meeting in Prince Street School, Charlottetown.

A TRAINING SCHOOL FOR NURSES has been organized at Mount Hope Asylum, Dartmouth, by the genial and talented superintendent, Dr. Sinclair. Students will act as assistants in the wards, and receive, besides board and lodgings, the ordinary wages. Theoretical work will be carried on in a well fitted lecture room, and practical work in the wards. The treatment of nervous diseases will receive special attention. Graduates of such schools are found to be more than ordinarily self-reliant and collected in emergencies and are therefore more in demand and receive better wages. Candidates must present certificates of age, good health and character. The course of two years results in a diploma and a profession which to many would be more remunerative and congenial than teaching. Every woman should understand the general principles of taking care of the sick.

THE CALENDAR issued by Dr. Hind, for the "Church School for Girls," Windsor, is the handsomest that we have seen for some time. This school has made great progress during the two years of its existence. There are fourteen teachers and eighty-one students. The buildings are commodious and beautifully situated on a terraced slope covering about eight acres. The ordinary literary and fine arts subjects are supplemented by courses in dress-making, science, etc. The school owes its success very largely to the enthusiastic managing director, Dr. Hind.

A NEWFOUNDLAND subscriber writes:

"I wish to give testimony of my appreciation of your journal, and to state that it is now nearly three years since I became a subscriber thereto; and that it affords me unqualified pleasure to find it after a critical personal examination of the contents, in all that is practical and instructive, deserving of the highest commendation. I have seldom met with a journal that fulfils its purpose so thoroughly and satisfactorily."

Too warm praise cannot be given to Webster's new International Dictionary as an aid to teacher and school. A teacher may *be* without it, but it is hard to *do* without it. It is recognized as the standard authority. While compact, it is sufficiently comprehensive, and while strikingly attractive typographically, and rich and substantial in binding, it is still within the reach of about all who wish to possess a work of this kind.

It is rumored that valuable geological discoveries have lately been made at the Joggins Mines, N. S. These have been communicated to Sir Wm. Dawson, Montreal, and the scientific world may shortly expect the results.

THE CENSUS AND EDUCATION.

Statistics may be quoted at par; but in most cases where an opportunity is afforded for critical examination, they can be demonstrated as notoriously inaccurate. This seems to be especially the case in regard to the last Dominion census as far as relates to education, but it is satisfactory to know that in regard to inaccuracy, the statistics furnished by it have not been questioned in respect to education alone. To those familiar with census taking, all kinds of absurdities are known. Some of the more ignorant look upon the inquiries made as an interference with their private concerns and as a design to impose additional taxes upon them.

Fortunately by our school reports, the statistics of attendance in which are sworn to by our teachers, we are able to show the erroneousness of the conclusions reached by Mr. Johnson, and this has been done most conclusively by the press of the Province.

In the matter of school attendance, Canada is about on a par with the United States, and both countries are only surpassed by those in which a compulsory clause is enforced. This should serve as a useful lesson to us, and emphasize the importance of enforced attendance at our public schools.

The late Chief Superintendent, from figures furnished by the census of 1881, which no doubt was quite as misleading as that of 1891, presented a very strong case for compulsory attendance. His conclusions were questioned in some quarters at that time.

There is a class of our population, that regardless of school facilities, will not avail itself of school privileges. This is shown by the fact that in the cities and centres of population where the schools are the best, there is the largest proportion of non-attendants.

How can these people be reached? Certainly not by increasing the excellence of our schools. That has been found to fail in every case. The only remedy is that adopted in Denmark, Germany, Scotland, and those countries that head the list in the matter of attendance, viz., add a compulsory clause to the school law.

MANUAL TRAINING.

The government grant for a Provincial Manual Training school, has been transferred from the city of Halifax to the Provincial Normal School at Truro, where the province can derive greater benefit from it. Lee Russell, B. Sc., of the Polytechnic, Worcester, Mass., son of the Principal Russell of the Massachusetts State Normal School, has charge of this department. His work has been so successful in Halifax, that henceforward the city will continue the depart-

ment at its own expense in connection with the Halifax Academy specially, and under the charge of one of Professor Russell's students, Mr. Gardiner.

During last winter a special course in wood-work was given by Mr. Russell for the teachers of the Halifax schools, who on his promotion to the Provincial Normal College, presented him with a very complimentary testimonial. Professor Russell is not only a well read university graduate, but a specialist in practical chemistry, metal and wood-working. He excels in making his students thorough and exact masters of whatever problems or manipulations they undertake, theoretically and practically. The Province of Nova Scotia is to be congratulated on obtaining for its service in this department one who has proved himself, though still young, to be so thoroughly competent, and who is practically acquainted with the latest developments of his subject in the leading Normal Schools of the eastern states of America.

GREEK AND LATIN PRONUNCIATION.

The Antigonish *Casket*, after quoting our note in a previous issue on this subject, says:—

The true Roman pronunciation of Latin and the pronunciation of Greek by accent has long been in use in St. F. X. College. Of our graduates who take up Greek, it cannot truly be said that they "cannot write a simple sentence in Greek composition exercises with the proper accentuation." The rules for accentuation are taught with the declensions and in the writing of exercises attention is as strictly paid to proper accents as is given in writing English to the dotting of i's or crossing of t's.

It would be interesting if our education reports would contain a statement of the character of the pronunciation at our leading high schools and colleges. Hybrid pronunciations have already nearly disappeared from the leading institutions of Ontario and from at least McGill in Quebec.

THE SURVIVAL OF THE UNFITTEST.

Many years ago a worthless member of the groundsel family became a weed somewhere near Picton. It spread gradually until now it flourishes abundantly in the eastern counties.

The family to which it belongs furnishes excellent food for birds, and many species are locally used for medicine—having diuretic and tonic properties. But this particular species which is variously known as benwood, cankerwood, St. James' wort, kadle-dock, *Jacobaea*, fairies'-horse, ragweed, and in Picton county as stinkin' Willie, is supposed by some of the farmers to be the cause of the terrible and mysterious cattle disease prevalent in Picton and Antigonish.

The soundness of this theory could easily be tested if teachers would take the trouble to investigate and

report on this subject. In doing so they would be giving the best evidence that they are teaching botany in a practical way. We invite reports on the existence of this plant from every school section where it may be found and on its connection with the cattle disease. A description of it will be found under the botanical name *Senecio Jacobaea*. The genus to which it belongs has 960 distinct species and is therefore the largest genus among flowering plants. For the benefit of teachers whose text-books do not refer to it, we give a description which will enable them to know it: Stem erect, tough, branching, and about two or three feet high, with a flat-topped cluster of yellow flowers in a radiate compact terminal corymb. The leaves are lyrate, bi-pinnatifid toothed, the lower ones with broad, ragged segments, the upper ones still more broken up. The separate heads are surrounded by a glabrous, short and cylindrical involucre with showy yellow ray flowers, the rays not being revolute.

This hardy plant, so persistent in pushing its way where it is not wanted, painfully illustrates the truth that in the fierce struggle for existence it is not always the noblest nations, the best men, the most desirable animals, or the most useful plants that survive.

WORLD'S FAIR NOVA SCOTIA EDUCATIONAL EXHIBIT.

The space set apart for the educational exhibit of Nova Scotia is situated near the middle of the great gallery overlooking from the west the great central hall of the Manufactures and Liberal Arts Building. This is the largest building at the World's Fair—the largest building in the world—having a floor area, including the galleries, of forty-four acres.

The Nova Scotia space has Quebec to the north and Russia to the south. On the west, across an aisle of nine feet, lies the Northwest Territories, New South Wales, etc. It measures twenty-eight feet by twenty-one, and is enclosed by walls thirteen feet high. At the east and west ends there are arched doorways, between which stands a wall eighteen feet long and thirteen feet high. On each end of this septum immediately in front of and within the arched doorways, are twelve hinged picture frames, showing photographs and all kinds of school work on two faces. The exterior walls are covered on the outside with large photographs of some of the finest scenery of Nova Scotia. Here are also shown several fine nature studies from the brushes and pencils of Miss Edith Smith of Halifax and her brother Lewis—very promising artists of the Victoria School of Art and Design. There is also shown a very pretty map drawn by Arthur Drew of the Liverpool Academy;

also some other school work. On the inner walls, entering from the west and turning to the right, are shown in succession: 1. All kinds of school work, from the Provincial Normal School and the Truro Academy (covering about 300 square feet); much of this work is decidedly good. 2. School work from the Institution of the Deaf and Dumb. 3. Some specimens of work and apparatus from the School of the Blind. 4. Plants from Morris Street School, Halifax. 5. School and kindergarten work from various schools and academies throughout the province; (here Inspectoral Districts 4 and 5, also Milton school, show up well). 6. A large map of Nova Scotia, showing the exact location of every school house in the province. 7. Drawings, maps and Sloyd work from the Halifax Academy.

On the north side of the septum is shown art work from the Church School for Girls, Windsor, and from Acadia Seminary. The south side is taken up with mechanical and architectural drawings and paintings from the Victoria School of Art and Design, besides some from the Halifax Ladies' College.

On tables there are several cases showing clay modelling, sewing, chemical preparations, microscopic slides, and a collection of minerals from Halifax Academy and from Mr. A. J. Pineo; also bound volumes of exercises from various schools and academies, together with various blue-books and text-books used in the public schools. A selection of the best educational work from every part of the province was put in the hinged frames on account of the prominent position which they occupy and the protection the work would have under glass.

The Nova Scotia educational exhibit is, upon the whole, creditable. Set up like too many others with more gilt and tinsel, it would attract more general attention, but the expert will recognize its intrinsic merit as being equal to the exhibits of many much wealthier states.

THE DOMINION HISTORY COMPETITION.

The Dominion History committee has issued instructions to intending competitors for a history of Canada, adapted for all the schools in the Dominion. Any one may apply for permission to write up to 1st January, 1894, but the application of only those considered qualified shall be considered. The book must be written from a Dominion, not from a provincial, standpoint. The book ought not to exceed 400 pages, long primer type, and the retail price must not exceed fifty cents. The successful competitor shall be allowed the usual royalty of 10 per cent. on the retail price of all books sold. This will be a moderate

fortune—a splendid prize. The next four competitors shall receive \$200 each, provided their manuscript possess real merit. Any further information may be obtained on application to the members of the committee for the maritime provinces—J. B. Calkin, M. A. Truro; G. U. Hay, Ph. B., St. John; Alex. Anderson, LL. D., Charlottetown—or to Wm. Patterson, Secretary, Montreal.

TALKS WITH TEACHERS.

The last REVIEW contains the names of the successful candidates at the N. B. Normal school entrance examinations. When it is considered in addition to the mere entrance examination, the candidates had to undergo examination for the scholarship in several branches necessary for the class of license applied for, the results are most satisfactory.

While the examination was reasonably severe, and was the first of its kind, it is creditable to our schools and teachers that more than enough passed to tax severely the capacity of the normal school, and I fear to somewhat overcrowd the teaching profession in the future.

To those who failed, I would say, do not be discouraged! Many of you will be the better to have older heads and a year's schooling. The expense and inconvenience of the examination have been trifling, while the experience gained must have been considerable. Many of those who failed may be able to better appreciate the few remarks and suggestions I am going to make regarding the causes of failure. Do not impute blame where it does not belong. Do not find fault with the examiners. They have no interest in the matter except to be just and impartial. It is of no use to appeal to the Inspector, who is only the supervising examiner and has nothing to do with marking the papers. He can only sympathize with you.

Perhaps the chief cause of failure was the want of familiarity with written examinations, and the teachers may learn a lesson from this.

The schools from which the most successful candidates came have regular monthly or even weekly written examinations. A knowledge of how to go to work is especially valuable to a nervous student and the form of the paper counts for a great deal with the examiner. Some of the papers sent in were models of neatness and arrangement; others were crude and slovenly in make up, and must have been prejudicial to any one seeking to become a teacher.

I have advised the teachers before not to neglect regular written examinations for the training it gives if for no other purpose, and I now repeat the advice.

Many candidates assign this failure to nervousness. There can be no doubt that such a feeling seriously interferes with some; but a knowledge of the subject and ability to express it will go a long way to dissipate this feeling. Nervousness is often the excuse for want of knowledge.

One candidate says, "My teacher did not teach me drawing, especially of maps." Another says, "current events were not dealt with in my school." Another, "I was not trained in practical arithmetic," etc. Teachers must have a care, for pupils are very discriminating after an examination, and an adverse opinion is often a bad advertisement.

I was much pleased on going into a new teacher's room a few days ago to notice the attention that was being given to oral composition. On inquiring where she—a new teacher—had received the idea of giving prominence to so an important subject, she informed me that the subject was emphasized at the normal school. I hope all of our new teachers and many of the older ones will carry into practice the teaching of this subject, and that the normal school will continue to impress its importance.

HINTS, ORIGINAL AND SELECTED.

A city in the United States which supplies its primary pupils with only one reading book, to be read over several times during the term, is regarded as being poverty-stricken and educationally behind the age. How many primary pupils in the Maritime Provinces read more than one primary book? After your pupils have read the prescribed primer once, do not put them through it again, but get different books about the same grade of difficulty for them, even if you have to buy them yourselves; or write new lessons on the blackboard and let them read these, but do not teach from a book which the children know in a certain way by heart.

Thought, inquiry, reasoning, must be exercised in investigating a subject. By so doing you develop intellect and gain new truth. Those who are satisfied with mere mechanical replies, when they question, will never produce scholars; they do not educate, draw out, lead forth, but simply hear recitations. The question is frequently asked: "Why is it colder in winter than in summer?" The answer will almost invariably be, "Because the sun's rays do not fall so perpendicularly on the earth in winter as in summer." This is only part of the reason, while to the uninquiring mind, who has not asked how perpendicular rays furnish more heat than oblique ones, it is accepted as the entire answer. Too many are satisfied

in their investigations with the statements of the book. To know that a thing is so, and to know why it is so, are two entirely different things. Why are drops of liquids round? We have two eyes, why do we not see double? Why does a prism held in the sun's rays dissolve them into the seven colors? Questions might be multiplied to almost any extent. Cultivate the habit of inquiring into causes and do not be satisfied until your pupils can give a "reason why" for their answers. When the reason is given by means of tangible illustrations, many difficult problems are simplified.—S.

"Order, it has been said, is God's first law; let it be yours. Do not let your work accumulate on your hands. It is not work that kills, but arrears of work; work put off is work put on with heavy interest. 'Sufficient unto the day is the evil thereof.' If I recommend you three rules for saving time and economizing strength, they shall be these: Answer letters, keep appointments, make up your minds. In the affairs of this life a decision is frequently more important than a right decision. One man makes up his mind and acts, it may be wrongly, but if so, he finds out his mistake, corrects and retrieves it before another has acted at all."

Most teachers do not read enough. They do not realize how much help they could get from reading a few good books and periodicals. They worry along through an entire term with a few vexatious questions of teaching or school management, when a few hours reading might clear up all difficulties. Teachers frequently lose positions, or are unable to get any except the most unsatisfactory ones, when, by careful study of educational works, they could so improve themselves as to be able to secure good positions. Economy in preparation is extravagance in results, both in financial and educational points of view.—S.

"Fling away from you the poisoned shafts of sarcasm, they are forbidden to the humanities of school life."

One frequently hears the complaint among intelligent people that the pupils of our schools are not taught the principles of municipal or provincial or federal government. That while the pupils of our schools are educated to become clerks, professionals, etc., they are not educated to become good citizens. This should not be so. A great deal of attention is being devoted by our American cousins to the teaching of civics. They hope thus to have a generation grow up that will realize their responsibility as citizens and act up to the conviction they thus obtain.—S.

In many of the schools of France each pupil is provided with a blank-book, on the cover of which is printed some sound advice, showing how the good use of one's school life is likely to ensure a happy and prosperous future,—also appealing to the child's patriotism, to be and to do something noble for the sake of his country. On a certain day in each month all the exercises are written in this book, so that the pupil's progress from month and from year to year is seen at a glance.

I can scarcely conceive of a better or more wholesome stimulus than one in which the pupil strives to excel himself. After many years such a record would be looked upon as one of the most precious mementos of the past. I mean to try the plan, and would recommend it to all other teachers.—B.

It is becoming more impressed upon the public that the teacher must teach a good many things. Formerly a knowledge of the three R's was considered sufficient. Now it is demanded that the pupil shall have, in addition to these, some physical culture, walk well, sit well, and bear himself with some cultivation towards those he meets; that he shall read books; that he shall study nature; that he shall use tools; that he shall think intelligently of duty; that he shall know what is going on in the world; that he shall be able to write letters, orders, receipts, etc., readily; that he shall have some knowledge of his body and how to preserve his health. Knowing something of all this, if he has also acquired a preference for the good before the bad, the true before the false, he may be said to have a good education. The sending from the schools pupils so educated is the work of the teacher of to-day. And by such work should he or she be tested.—S.

"The noblest triumph of a schoolmaster or schoolmistress is found not in educating the virtuous and painstaking pupils, where education might be pretty safely left to itself, but in correcting, inspiring and elevating those of his pupils who are wilful, I daresay irresponsible, and seem to common eyes as if there were no power or promise in them."—*Contem. Review.*

"Dr. Arnold won his way to the hearts of Rugby boys by the simple respect which he showed in accepting their word as true. A master's success has sometimes been imperilled by so slight a matter as the mistake of not returning a boy's salute on the street. * * * The way in which things are done is sometimes more important than the things themselves. One special point of personal courtesy you will let me mention—it is punctuality. To keep a class waiting is to be rude, and to seem to be unjust."

The demon of unrest appears to have possessed himself of the entire world. Dissatisfaction appears on every hand. People hasten to be rich. The teacher leaves for more lucrative situations, grudging the time he is obliged to spend in the schoolroom. Pupils (and their parents) insist that such things shall be taught as will advance their interests, i. e., enable them to make money. In all this unrest the true teacher will seek to impress upon herself and her pupils the blessedness of calm, rest, reflection, normal growth. Keeping her own spirit she will become the custodian of many other spirits.—S.

"It is well to take up some subject outside your ordinary school work. It will serve to brush the cobwebs from your mind. A school-teacher's mind, if it is to be entirely healthy, needs some interest or occupation beside the regular school work. Try to forget sometimes that you are a schoolmaster or schoolmistress."

"How is it that masters and mistresses have failed so often to anticipate the distinction of their scholars? Want of care has not been the cause, nor want of good will, or interest, or ability. It has been chiefly, I think, the narrowness of the view which has prevented their seeing merit, or promise, unless it appeared in the limited field of the scholar's life."

Tired and worried teacher, how do you spend your recesses? Do you add to your discomfort by keeping some dull or backward pupil in, and fret and fume over him when you should yourself have been out in the pure air with your pupils thus refreshing yourself?

Do you take the recess to read some interesting book or paper, and become so much interested in reading what has no bearing upon your school work that you forget when recess bell should ring, and allow time to be wasted?

Teachers as well as pupils require the fresh air and should conscientiously observe the practice of going out in fine weather at recess. Not only would they be benefited by so doing, but their presence on the play-ground would prevent many a quarrel, and save boys from a punishment given for offences, the origin of which was on the play-ground, and which would not have occurred had the teacher been present. Prevent, rather than punish, is a good rule for a teacher.

Do you wish to study the disposition of your pupils? No better place to do so than the play-ground. Children at play show their natural dispositions; under the restraint of the school-room they are more or less artificial. If you have been in the habit of spending recess in-doors, try the out-door plan for a month. You will feel better and teach with more life. Raise the windows, open the doors, and leave the school-room at recess.—S.

For the REVIEW.]

NATURE LESSONS.**No. II. The Tyro's Attempt.**

"Well, how did you get along with the birds?"

"Birds! It's very curious. After I gave your advice to my school — and it was taken with about as much enthusiasm as the announcement of a holiday — I thought when going home I should use my own eyes and gather up some facts about birds myself.

"I first commenced to take an inventory of my ornithology. 'How many birds do you really know by name,' said I to myself. 'Our domestic farmyard birds, they are good enough for three or four lessons and by that time I can find out something about our wild natives. But what do I know about them anyway? Suppose I should ask the boys how a goose differs from a duck, or a hen, or a pigeon, or a turkey, or a peacock, would I know to what extent the answers would be right or wrong?' Just then I passed near a flock of geese whose habits I watched for quite a while with a new interest. I noted their manœuvres with their goslings in entering a pool in which some of them swam. I saw them feed and enjoy their accustomed intercourse with all the curiosity of the beggar boy peering into a ball room. I then interfered with their domestic arrangements to see how they would adapt themselves to the exigency of the instant, and retired satisfied amidst a storm of hisses and bills presented in every possible posture for examination, and within microscopic, if not dangerous, proximity to the eye of the now rapidly retreating observer.

"A neighboring farmyard in like manner supplied a group of ducks, a turkeycock, and other less impressive fowls. My head was full of the peculiarities of forms and habits belonging to each of these, when I heard a peculiar whistle in the air, and saw a flock of chickens with the mother hen rush to shelter. It was a hawk. Spent half an hour in trying to get a good sight of him. Passing by a small piece of wood I saw some small birds, and noted their appearance and call. And lastly I was scared by the sudden explosive scream of an owl, on which I was able to make some observations. In the morning returning to school I observed a partridge and two or three other birds. In twenty-four hours I really appeared to have noticed more about our birds than in the whole twenty years of my life."

"And how did your scholars do?"

"Why! Every one of them made some observations; and some of them, at least two or three, appeared to be acquainted with everything about our wild birds and their habits. I could take down but

a small number even of the names of birds which they knew. I find out that there are two or three at least in the school who are born naturalists. I have already materials enough for lessons for a month, I believe.

"Yes, I expected you to find at least one person in your school who naturally from the first caught the fever of noting what he saw. Your present course will stimulate him to excel specially in natural history, while he will on the other hand be of very great use in helping you and your school to advance all the more rapidly on account of his experience."

"True! That is how it looks. I can now understand how he enjoys his quest. For half an hour I forgot everything last evening in following up a bird which was strange to me and passed my path while going through the patch of woods. There is nothing like it for mental relaxation, for carrying the mind away forcibly and completely from its usual train of monotony or worry. But I see a person must make a beginning before he can realize it."

Such, substantially, was the conversation. Next we hope to have some specimen lessons.

Plant Study.**No. III. ASTERS AND GOLDEN-RODS.**

In September the fields and hedges are bright with asters and golden-rods. There are about fifteen or sixteen species of each in the Atlantic Provinces, and the determination of some of these species is often a matter of perplexity even to the skilled botanist. Dr. Gray once remarked to the writer that no genus of plants gave him more difficulty than asters. But teachers and scholars at first need not concern themselves with difficulties of species. The structure is of first importance. So let us begin.

Choose an aster, and take with it into the classroom a sunflower, belonging to the same family — *compositæ*. This is the largest family of plants, embracing about one-seventh of all the plants found in the temperate zone, and more than half the plants found in our fields in September. It is distinguished by having flowers collected in heads, surrounded by one or two circles of bracts (*involucre*), anthers united in a circle round the style, and an inferior one-seeded ovary (*akene*). The family is divided into two series, the first having tubular flowers (*Tubulifloræ*), the second with ligulate or ray-flowers only (*Ligulifloræ*). The sunflower and aster belong to the first series, nearly all the flowers of which are both tubular and ray, the former (perfect) occupying the centre, and the latter (pistillate or neutral) occupying a row on the margin.

Specimens are easily obtained and may be in the hands of all. One sunflower in the hands of the teacher may be seen from all parts of the room. Each scholar should have an aster. The teacher, after a general lesson on the structure of the sunflower as a whole, should make a section down through the centre, and direct the pupils to do the same with the aster. The teacher should then distribute two or more centre flowers and a ray-flower of the sunflower to each of the class and ask the pupils to place these side by side with centre and ray-flowers of the aster. Compare the centre flowers first. The difference mainly will be in size. Both will have the ovary below, the outer covering of which may be called the calyx tube. At the top of the ovary will be found the limb of the calyx, which in the sunflower consists of two small awns, each arising from an angle of the ovary, and in the aster of a circle of bristles (pappus). Within and above the awns and pappus the tubular five-lobed corolla is seen rising straight up, peering out of which at the top is the two-lobed style, the inner surface of each lobe being roughened (stigmatic). Slitting the gamopetalous corolla and spreading it out the stamens will be found occupying a circle inside and united by their anthers (syngenesious).

Compare the ray-flowers. What is the difference? The ray-flower of the aster has a small ovary at the base, from which rises a two-lobed style. The flower is pistillate. The ray-flower of the sunflower has no ovary and therefore no style. It is neutral.

[For the REVIEW.]

New Brunswick Schools of the Olden Time.

By W. O. RAYMOND, M. A.

(Continued.)

EARLY LEGISLATION IN NEW BRUNSWICK FOR THE ADVANCEMENT OF EDUCATION.

As has already been pointed out, the first provisions made by law for the education of youth in the Province, were contained in the Royal Instructions to Governor Thomas Carleton, issued at the Court of St. James, August 18th, 1784. This valuable historic document should certainly be printed at an early day for the information of all who take an interest in our Provincial history. Section 78 of the Royal Instructions, contains the following paragraph: "It is our further will and pleasure, that you recommend to the Assembly, to enter upon proper methods for the erecting and maintenance of schools, in order to the training up of the youth to reading and to a necessary knowledge of the principles of religion."

The legislators of the newly created province lost little time in turning their attention to the subject of education. Even before the first meeting of the

General Assembly at St. John, February 3, 1786, attention had been directed to the matter. Dr. William Paine * and others on December 13, 1785, presented a memorial to the Governor in Council, praying that a charter of incorporation be granted for the institution of a Provincial Academy of Arts and sciences. The memorial pleads "the situation in which the Loyalist adventurers here find themselves, many of whom on removing here had sons whose time of life and former hopes call for an immediate attention to their education."

Many of the founders of the province had enjoyed the advantages of university training in their youth. An interesting article in a late number of the *Atlantic Monthly* by an American writer strikingly illustrates this point. Speaking of the effects of the Loyalist emigration upon the State of Massachusetts, he says:

Among the exiles were nearly one hundred graduates of Harvard College, and they must have been no small loss to the infant state. They and their sons filled for more than half a century the chief offices in the Nova Scotia and New Brunswick judiciary, and they must have contributed in a degree not easily estimated to the elevation and progress of those provinces. Cambridge lost by the American revolution nearly all her men of mark and high standing, except those immediately connected with the college.

Accompanying the memorial submitted to the Governor and Council by Dr. Paine and his associates was another memorial signed by the principal officers of the disbanded loyal regiments and other leading inhabitants of the County of York praying that part of the reserved lands around Fredericton might be appropriated to the use of the proposed academy.

After due consideration it was ordered that the Attorney General and Solicitor General be directed with all convenient speed to prepare the draft charter for the establishment of the said institution.

Such was the initial step in the direction of higher education in New Brunswick. The proposed institution was described as "The Academy or Free School maintained, and always hereafter to be maintained, in our town of Fredericton, for the education of youth." The words in this elaborate title whereby the academy was to be permanently located at Fredericton, did not prove acceptable to some of the early legislators, and subsequently formed the ground of controversy. Had it not been for difference of opinion as regards the site, there is every reason to suppose the College of New Brunswick would have been endowed and have received its charter about the year 1792. Local jealousies deprived the province of the means of providing a collegiate education within its own borders for more than a quarter of a century.

* Dr. William Paine was a member for the County of Charlotte and first Clerk of the House of Assembly.

The next important bit of legislation connected with the academy, was its incorporation by provincial charter in the year 1800, as the College of New Brunswick. The trustees appointed included some of the most influential men in the province, namely:—

Lient-Governor Thomas Carleton, Chief Justice Geo. Duncan Ludlow, Provincial Secretary Jonathan Odell, Attorney General Jonathan Bliss, Solicitor General Ward Chipman, Judge Isaac Allen, Judge John Saunders, Col. Gabriel G. Ludlow, Col. Edward Winalow, Col. Beverley Robinson, Geo. Leonard, Esq., Rev. Geo. Pidgeon and Rev. James Bissett.

Meanwhile government had been making some provision for the maintenance of the institution. On February 3rd, 1786, the Executive Council ordered that the rents of the reserved lands (2,000 acres) in the vicinity of Fredericton should be devoted to the use of the academy. The work of tuition probably began about this time, although there appears to be no record which preserves the name of the first teacher. The first trustees of the school were Rev. Samuel Cooke, rector of Fredericton; Hon. Jonathan Odell, Provincial Secretary; and Col. Beverley Robinson. The rents of the reserved lands in 1788 amounted to £55, and were made payable to the trustees: ten years later the rents had doubled and were nearly sufficient to pay the salary of the preceptor. In 1800, the Rev. James Bissett* was principal preceptor, and he continued in charge till the summer of 1803, when he succeeded Rev. John Beardsley as rector of Maugerville. The school was at this time conducted in a building on King street. The qualifications demanded of the early preceptors were not excessive—nor for that matter was the salary they received. All that the board of trustees required, was "a correct grammatical knowledge of the English language, reading English with grace and propriety, writing and arithmetic, with the elements of geometry, and a competent knowledge of the rudiments of classical learning."

On August 26th, 1805, James C. F. Bremner was appointed preceptor with a salary of £150 per annum of which £100 was granted by the province. At this time the terms of tuition were £2, £3 and £5, according to the subjects taken by the pupil. The hours in summer were from eight to twelve, and from one to four; in winter, the school opened an hour later. The government voted £200 towards the erection of a suitable school house. The building, like all ancient school houses, was not by any means "a thing of beauty." It was a long, low structure, and stood near the site of the present collegiate school at Fredericton. The head master's apartments were in the building.

* Rev. Jas. Bissett was the only son of Rev. George Bissett, first Rector of Trinity Church, St. John.

For the Review.]

The Royal William, 1833.

The first steamship to cross the Atlantic was the Royal William, built in Quebec, 1830-31, by a joint stock company, of whom over eighty were Nova Scotians, principally from Halifax and Pictou.

The trans-atlantic trip was made from Pictou, where the steamship was coaled and its machinery overhauled. The port of Pictou was left on the 18th of August, 1833, and the passage to London, England, was made in twenty-five days. The Royal William is without the slightest doubt the pioneer of the Atlantic steamship lines—of the Cunard line—of the thirty-four other lines which to-day run regularly from Europe to America—of all ocean steamship lines which now may be counted by thousands with a gross tonnage of 12,000,000 tons.

United States authorities mention the Savannah, 1819, as the pioneer ocean steamship. Steamers were plying before this date both on the St. Lawrence and the Hudson with success. But the trip of the Savannah, in 1819, was not a success for steam, nor was the vessel a steamship at all. It was simply a sailing packet, which had on board an apparatus which could be let down to the sides of the ship and operated by a steam engine when the water was calm. Whenever the water became rough the machine was hoisted on board the ship again.

The voyage across the Atlantic by this sailing packet was made in *seventy* days, on eight days only of which the paddling machine was ventured to be put out for a few hours at a time, averaging ten hours on each occasion. The Savannah, in a word, was a sailing vessel which on one occasion took on board a paddling apparatus for use in calm weather. This paddling apparatus, which could occasionally be driven by steam, proved so useless in the few odd spells of this seventy days' voyage in which it could be used, that as a sailing vessel, its deck was no longer allowed to be cumbered with it once land was made.

Fourteen years after, Canadians showed how, with Pictou coal, to propel a steamship across the Atlantic in a manner to pay and in a manner to call up a host of American and European imitators and improvers.

Dr. Sanford Fleming, C. B., F. R. S. C., has specially to be thanked for bringing these facts to the knowledge of the public, first at a meeting of the Toronto Institute, and lately at a meeting of the Nova Scotia Historical Society, which unanimously adopted the following resolution:

Resolved, That this society respectfully seconds the recommendation of the Canadian Institute that the government of

Canada should adopt some means of communicating the fact that the first vessel propelled by steam through the entire voyage across the Atlantic was the Royal William, built at Quebec and owned in Canada, and which made the pioneer voyage from Pictou to London in 1833 :

And further resolved, That this society suggests the expediency of having the evidence proving the pioneer ocean steamship to have been a Canadian vessel properly collated, and published in pamphlet form under the auspices of the government :

And further resolved, That the members of parliament and senators from Halifax and Pictou be requested to present these recommendations to the Dominion authorities.

Expulsion of the Acadians.

ORGANIZATION OF THE SCHEME, MASSACHUSETTS, 1750.

TO THE KING'S MOST EXCELLENT MAJESTY—

The humble address of the lieutenant-governor, council and representatives of the province of the Massachusetts Bay in New England.

MOST GRACIOUS SOVEREIGN—

We, your majesty's most loyal and dutiful subjects, the lieutenant governor, council and house of representatives of your majesty's province of the Massachusetts Bay, with all humility, beg leave to approach your throne, and to render our most hearty and sincere thanks for your royal and paternal care of your majesty's dominion on this continent, in opposing and preventing the encroachments which the French are attempting upon them.

Your majesty's subjects in this province were greatly surprised when they were informed that the French had presumed to lay claim, not only to the greater part of your province of Nova Scotia, but also to a part of the territories granted by the royal charter of King William and Queen Mary to the inhabitants of this your majesty's province.

We saw with concern the projections of the French to extend their settlements on the back of your majesty's colonies from the mouth of the Mississippi as far north as the river St. Lawrence, but we had no apprehension that they would endeavor in any other way than by force of arms to separate your majesty's possessions on the sea coast. It is highly probable that they are very much encouraged to the groundless and unreasonable claim and attempt by the absurd neutrality challenged by the French inhabitants of your majesty's province of Nova Scotia; who are always ready to receive and supply the troops sent thither in the pay and service of the French crown, and who encourage the native Indians in their bigotry to the French religion and interest, and we have great reason to suppose that those inhabitants want not the inclination, but wait for a favorable opportunity to declare themselves the subjects of the French king; which would give them possession of a country to which we humbly conceive he has not a shadow of right; and this might in time prove of the most fatal consequence to your majesty's intent in America; and we doubt not that they would have revolted from your majesty in the late war, if it had not been for the signal favor of divine providence in the early reduction of Cape Breton, by your New England troops, and the remarkable and repeated preservation of the garrison of Annapolis Royal by the forces sent from the Province.

But such extraordinary events may not always be presumed on; and we humbly hope that we may be indulged in earnestly intreating your majesty that no dangerous a neighbor and such uncertain and precarious subjects may be compelled to leave your majesty's dominions or reduced to a more perfect obedience to your majesty's crown, and that no breach may be made in any of your majesty's territories on the continent.

It is the high sense we have of the happiness we enjoy as we are the subjects of the crown of Great Britain, and the dread which proceeds even from the most distant prospect of being ever subjected to the yoke and tyranny of the French, that induces us to this our humble address to your majesty.

And it is our constant and devout prayer to Almighty God, that your majesty may long continue to reign over us, and that our posterity may remain the faithful subjects of your royal house to the end of time.

January 31st, 1750.

In the name and order of the council.

SPENCER PHIPPS, Lieutenant Governor.

JOSIAH WILLARD, Secretary

In the name and by order of the house of representatives.

THOS. HUBBARD, Speaker.

This document, the original of which is in the archives at London, has been copied and published for the first, only this year, by Dr. Henry Youle Hind of Windsor, Nova Scotia. This event occurred just five years before Shirley and Lawrence saw the scheme carried into execution.

Cultivating the Habit of Observation.

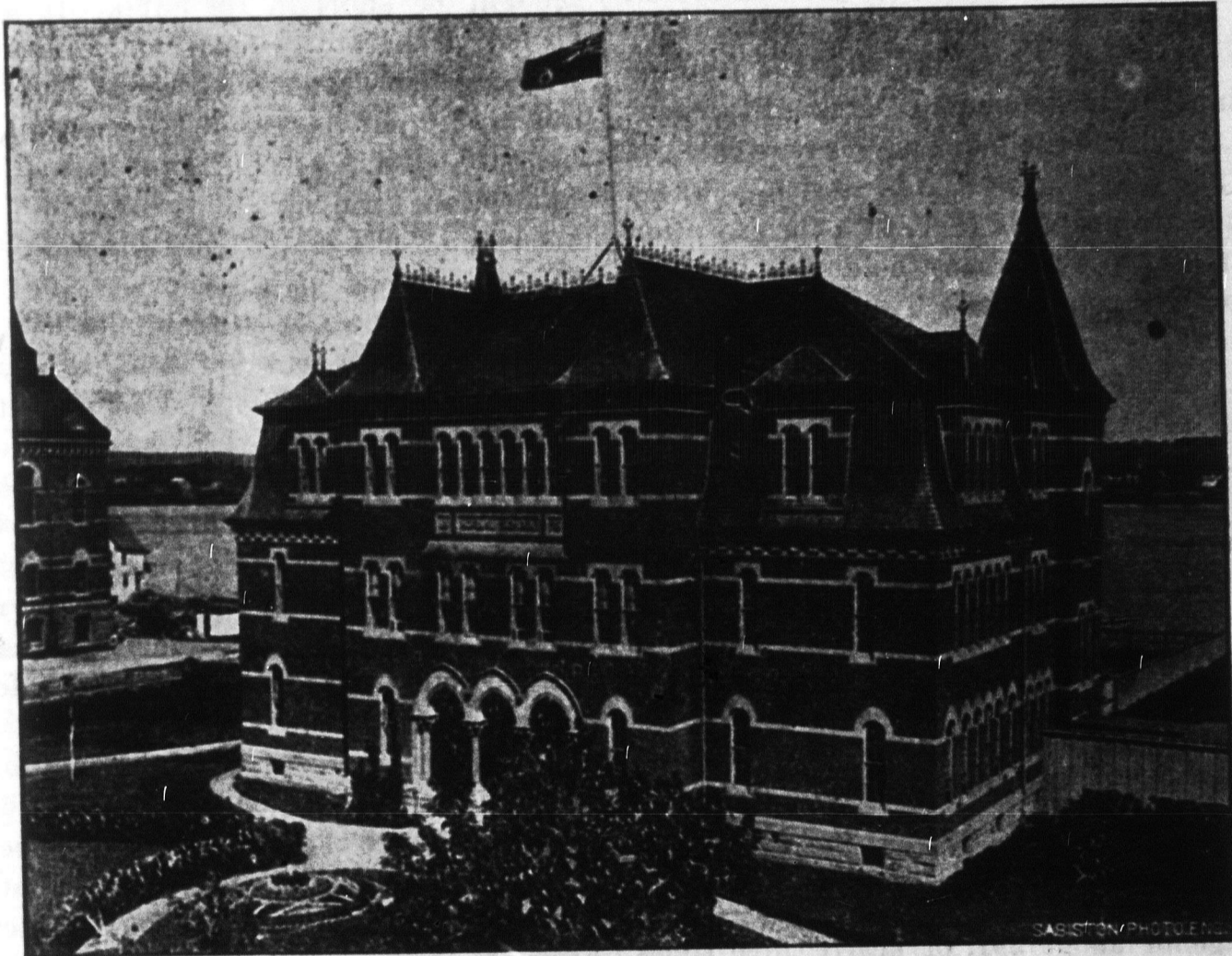
The growing feeling that children should be instructed in the beginnings of science and taught to use their eyes in the world about them needs no defence. Among the sciences there is none that appeals to them more directly than botany. An instance showing the increase in interest in this direction is the issuing of a circular by the Wayne Horticultural society, offering prizes for the best collections of wild flowers from the vicinity, competitors for the different prizes to be under twenty, sixteen, or twelve years of age. Collections of insects have been made by a busy professor of mathematics as a relaxation; in collecting, he spent time in the open air, and had an object for walks into the country or for trips. It has been done by children who made collections of everything that could be preserved, and eagerly listened to all that they could hear about their specimens. Pages might be written on the value of this work for children, from almost every point of view; for the pleasure at the time, for the cultivation of a happy disposition, for the advantage of a habit of observation, and of the knowledge thus acquired as an aid in making them intelligent men and women. Childhood is the natural time for observing, and to deprive one of the opportunity is like laming him for life."

For the REVIEW.]

The Provincial Normal School of N. B.

The handsome and commodious building depicted above was erected under authority of the legislature at an expense of \$50,000.00, and was formally opened on the 14th of August, 1877. It accommodates, on the ground floor, the four departments of the model school, and on the two flats above, the normal school classes,—the latter occupying four spacious rooms, each furnished with desks for about eighty students, together with the large assembly hall (108 feet long), seated for about 250. There is also a room for the Acadian French department.

academy in that town, and the principal was Mr. William Crocket, M. A. In 1870 these two schools were closed, and the provincial training school was opened in Fredericton, in the building known as the old stone barracks. Mr. Crocket was the principal, with Miss Allen as assistant, and Mr. McInnis in charge of the model school. Miss Mary Gregory succeeded Miss Allen in 1871; Mr. H. C. Creed was added to the staff in January, 1874, and Mr. Cadwallader, as teacher of music, in 1875. Since that time the additions and changes in the faculty of instructors have been as follows: Mr. James Fowler, M. A., natural history and chemistry, 1878-80; Miss M. A.



PROVINCIAL NORMAL SCHOOL OF N. B.

It was in 1847 that the legislature of New Brunswick first made provision for the training of teachers. A training school was established at Fredericton in that year, with J. M. D'Avray as master, and another at St. John in 1848, with E. H. Duval as principal. The former continued in existence only till November, 1850, when the stone building which it occupied was destroyed by fire. The training and model schools were maintained in St. John until 1870—a period of twenty-two years—Mr. Duval being succeeded in the principalship by Mr. Wm. Mills in 1858. During the last three years of this period a branch training school for the northern counties was kept at Chatham, in connection with the Presbyterian

Clark, reading and vocal training, 1878 to the present time; Mr. Jas. Vroom and G. E. Croscup, B. A., natural history, etc., 1881-4; Mr. Eldon Mullin, M. A., principal from 1884 to the present time; Mr. Edward O'Brien, 1886-8; Mr. John Brittain, natural history, chemistry, etc., 1889 to the present time.

A special department for Acadian French students was established in 1878 and placed under the charge of Mr. V. A. Landry, who was succeeded in 1880 by Mr. Alphée Belliveau, the present teacher. Previous to 1884 this was styled the French *preparatory* department, but since that date it has been an integral part of the normal school, while not aiming to carry the students beyond the requirements for a third

class license. The numbers in attendance have varied from five to forty-four. Many other French Acadians have attended the regular classes with the English-speaking students.

The teachers in the four model departments since 1872 have been, in the order of their appointment, as follows: Miss Catherine Tweedie, Miss Eusebia Minard, Miss Jennie Lyle, Miss Agnes Lawson, Miss Alice Clark, Mr. R. S. Nicholson, Mr. James Vroom, Miss Julia R. Bateman, Miss Kate R. Bartlett, Mr. G. E. Croscup, Miss M. Maude Narraway, Miss Helen J. McLeod, Mr. John F. Rogers, Miss Clara I. Shea, Miss Annie M. Harvey, Miss Miriam J. McLeod, Miss Frances I. Ross, Miss Helen Galt, Miss Harriet H. Richardson.

Originally there were four sessions of the training school, making four enrolments of student-teachers, in each year. In 1872 the four sessions were changed to two—a summer and a winter session,—which arrangement continued until 1887, with the exception of four years (1880-84) when there was but one annual session of nine months. This latter plan was resumed practically in 1887-8, and is still observed. The session opens on the first teaching day of September and closes early in June, a few days previous to the closing examination for license.

In the ten sessions beginning with the summer of 1872 (five years) the total number of student-teachers enrolled was 706, giving an average of about seventy per session. In the next ten sessions, beginning with the summer of 1877 when the school was moved into the new building, (six years) the total number enrolled was 1,401, giving an average of 140 per session—just double of that in the preceding period. Again, in the ten sessions from the autumn of 1883 to the summer of 1890 (seven years) the total enrolment was 2,008, including the French department—making an average of about 201, or nearly three times that in the first period. There are usually four or five times as many young women as young men. The numbers for the last three years are as follows:

	Male.	Female.	Both.
1890-91,	37	206	243
1891-92,	38	231	269
1892-93,	47	217	264

At the beginning of the present session the enrolment was 274; many will go out in December and another class will enter in January, 1894.

The following figures relating to the recent entrance examinations and the numbers enrolled, may be of interest.

Tried preliminary or entrance examination in July,	399
Passed the same,	253
Failed,	146

Tried supplementary examination in September, . . .	76
Passed the same,	29*
Failed,	38
Admitted on matriculation certificates (U. N. B. and McGill),	17
Admitted on license,	1
Total enrolled, September 6th,	256
French department,	18
	274

* Besides three who made up at this examination certain defects in their U. N. B. matriculation examination.

On Questioning.

Many a teacher, who wants to do good teaching, fails because he questions without rousing any thought or effort in the pupil. In a school lately visited, the history class came up; they had been studying American history, about the time of Arnold's treason. "Arnold was in command at West Point, was he?" "Yes sir." "And he had been in communication with Sir Henry Clinton." "Yes, sir." And so on. Evidently the habit was firmly fastened. This teacher was a conscientious, painstaking man; he studied his lesson with infinite care; he was the one depended on at a gathering of teachers if any point was to be elucidated. I am not certain but that I was told he had injured his health by over-study.

In a certain school where there were seven teachers employed I noticed one was called, "What do you Understand." I found this was a nickname applied to him because he used the phrase so much in his classes. I visited his class-room; he read a definition of a participle and then said, "What do you understand by that Mary?"

And here the great fault of the questioner is revealed—he is *aimless*. Such a man should visit a law court and notice the care with which the trained lawyer asks questions. To question aright is difficult. It is one of the nice points. But the teacher too often begins to question without seeing the point himself. Time is an important element; let not the pupil's time be wasted while the teacher meanders all around the subject before the class; let the teacher aim straight at the bull's eye.

I visited a school where there was an alert class gazing eagerly into the eyes of the teacher. I sat quickly down so as not to interrupt. The teacher said, "The boys are daring me to ask them questions" and went on. A boy was told to stand, and the rest pitched upon him—the subject was percentage. First, one asked five questions; then another asked five, and so on.

When this boy was beaten, another rose eager to be tried. The questions came short, sharp, and quick; and he went down, but rose again, for the the teacher interposed, "That's a good answer," and stood it

through. I noted that he felt like one who had run a race.

The recitation time is almost holy time; then the pupil and teacher are face to face; then is the time he can do his pupils good if he is going to do it at all. The pupil should feel there is to be an encounter of wits; he should (in a right sense) dread what is coming—dread it as the boy with the bat dreads the coming of the swift base-ball, but determines to summon up his energies and meet it. He should feel there is to be something to be said and done of a worthy character, of a stimulating character, of an exhilarating character.

In one school there was a Scotch teacher, who had nearly fifty pupils; this man was not a model teacher, but he might have been if he had left off his everlasting smoking and some other things. As a questioner, as one who could pry into the pupil's possessions, who could discover weak points, who could uncover irrational conclusions, he had no superior—his recitation period used to resemble the hunting of a rat that had escaped. Teacher and class would start after some truth (generally the grand scrimmage would occur in grammar) and soon they would all be on the run. "Its an adverb, you say; will you stick to that now? What is an adverb? And how many classes? And which do you make this? Time, eh? Oh, boys, he says this is a time adverb. You won't give up on that? What would you say if Jenny should tell you it was an adjective?" All this in an excited way that wrought the class up to the highest pitch. And when the fight was over and some pupil would say, "Mr. Mc—, which is it, an adverb or an adjective?" he would reply, "I must be a poor teacher if my pupils cannot tell turnips from pumpkins," and this was all the answer they would get.

How can one become a good questioner? for a good questioner and a good teacher are almost synonymous. It is not accomplished by waiting until the class comes before the teacher. Does any one suppose a good lawyer, waits until the case is called to put his questions? He has formed them all in his mind, or the important ones, before the trial. So it must be with the teacher. Joseph Payne used to say before the College of Preceptors, (London) "Write out the questions you will ask your pupils and look at them." It is the true prescription.

The teacher will find, if he watches himself, that he is at this time probably in a rut; his pupils know just what questions he will ask them; they have discerned and read him. Let him determine to surprise them. — *Ex-Superintendent, in the N. Y. School Journal.*

Concerning Discipline.

Prevention of the wrong-doing is better than punishing the wrong done.

Exercise great care in taking a stand that you may have no occasion to retreat.

Fault finding is not calculated to cure a fault.

Distrust in the teacher breeds deceit in the pupil.

A child properly employed is easily controlled.

Obedience won is far better than obedience compelled.

Absolute self-control on the part of the teacher is a necessary pre-requisite to proper control of the pupils.

A class that will work well by itself is well managed.

An orderly changing of places between lessons signifies much regarding a teacher's control of the class.

If children push or crowd in the file there is weakness somewhere.

If the teacher has to talk much about order, there can be no good order.

Public sentiment in school can alone secure perfect discipline, and it requires a great teacher to discipline through public sentiment.

Make no threats.

Be firm.

Be kind.

Be patient.

Be pleasant.

Be self-contained.

Be as perfect as you ask your pupils to be. — *Exchange.*

WE do not know to what extent the practice of making annual appointments, or in other words, "hiring" teachers by the term, or the year, prevails in Canadian public schools, but we fancy it is still the rule, especially in the country districts. No good reason can be given why the public schoolmaster's term of office should be less permanent than that of a college professor, or a clergyman. As a matter of fact, though, we believe there are still places where the churches "hire" their ministers by the year. In either case, the practice is derogatory to the dignity of the profession, and harmful to the interests of all concerned. A prominent American educator has said: "Permanent tenure in Germany has made teaching a profession, with us it is a trade." — *Toronto Educational Journal.*

GOLDEN-ROD.

Like miser's gold when death draws on apace,

Like lover's kiss when parting is at hand,

Like yearning looks that seek a loved one's face,

As ebbs the last of life's retreating sand—

So is the golden-rod; the summer wanes

We think not of the roses of the past,

But love this flower, less fair than they, because

We cannot keep it, and it is the last.

— *Detroit Free Press.*

QUESTION DEPARTMENT.

QUESTIONS SOLVED.

[For a Newfoundland subscriber.]

1. Prove clearly that
- $x^0=1$
- .

$$\frac{x^2}{x^2} = x^2 \div x^2 = x^{2-2} = x^0.$$

$$\frac{x^2}{x^2} = 1, \therefore x^0 = 1.$$

2. Prove the rule for finding the area of a triangle from its sides.

Let BC be the base of the triangle ABC, and AD the perpendicular on BC.

Let AB=c, AC=b, BC=a, AD=d. DC=e, and half the sum of the sides of the triangle be

$$\frac{AB+BC+CA}{2} = \frac{a+b+c}{2} = s.$$

$$\text{Then } \frac{a+b-c}{2} = \frac{a+b+c-2c}{2} = \frac{a+b+c}{2} - c = s-c.$$

$$\text{Similarly } \frac{c+a-b}{2} = s-b \text{ and } \frac{b+c-a}{2} = s-a.$$

Proof. $c^2 = a^2 + b^2 - 2ac$. (Euc. II. 13).

$$\therefore e = \frac{a^2 + b^2 - c^2}{2a}$$

$$\therefore d = \sqrt{b^2 - \frac{(a^2 + b^2 - c^2)^2}{4a^2}} \quad (\text{Euc. I. 47}).$$

$$\therefore \text{Area ABC} = \frac{a}{2} d = \frac{a}{2} \sqrt{4a^2 b^2 - (a^2 + b^2 - c^2)^2}.$$

$$\text{Area} = \sqrt{\frac{a^2}{4} \times \frac{4a^2 b^2 - (a^2 + b^2 - c^2)^2}{4a^2}}$$

$$= \sqrt{\frac{4a^2 b^2 - (a^2 + b^2 - c^2)^2}{16}}$$

$$= \sqrt{\frac{(2ab)^2 - (a^2 + b^2 - c^2)^2}{16}}$$

Here the numerator being the difference of the squares of two quantities, it is equal to the product of their sum and difference.

$$\therefore \text{Area} = \sqrt{\frac{(2ab + a^2 + b^2 - c^2)(2ab - a^2 - b^2 + c^2)}{16}}$$

$$= \sqrt{\frac{(a^2 + 2ab + b^2 - c^2)(c^2 - a^2 + 2ab - b^2)}{16}}$$

$$= \sqrt{\frac{\{(a+b)^2 - c^2\} \{c^2 - (a-b)^2\}}{16}}$$

$$= \sqrt{\frac{(a+b+c)}{2} \times \frac{(a+b-c)}{2} \times \frac{(c+a-b)}{2} \times \frac{(c-a+b)}{2}}$$

$$= \sqrt{s(s-c)(s-b)(s-a)}$$

That is, the area = the square root of the continued product of half the sum of the sides, and the differences between half the sum of the sides and each side separately.

3. Prove the rule for finding the area of a circle.

$$d^2 \times .7854 = \text{area.}$$

Let the circle be considered to be made up of an infinite number of triangles, with their bases in the

circumference and their apexes at the centre, then the sum of their areas would be equal to the sum of their bases, that is, the circumference multiplied by the radius and divided by two.

$$\text{That is, the area of the circle} = \frac{\text{circum.} \times \text{rad.}}{2}$$

$$\text{But the circum.} = 3.1416 \times \text{diam.}$$

$$\therefore \text{area} = \frac{3.1416 \times d \times r}{2}$$

$$= \frac{3.1416 \times d \times d}{4}$$

$$= .7854 \times d^2$$

4. Divide
- a^4
- by
- b^4
- .

$$a^4 \div b^4 = \frac{a^4}{b^4}$$

5. Reduce to its lowest terms
- $\frac{x^{m-1} y^{n-1}}{x^{m-2} y^{n-1}}$

$$\text{Precisely similar to this } \frac{x^2 y^3}{x^2 y^3} = \frac{y^3}{x^3}$$

As the quantities are monomials, it can be seen at once that they can be divided by subtracting their powers.

6. From what source is "Useful Knowledge" papers compiled?

From all or any books, papers, or magazines containing useful information—particularly from the book of "Nature,"—which every one should study directly as well as from other books. Paul Bert's "First Year of Scientific Knowledge" is one of the most popular compendiums.

7. Solve Exercises I and II, Question Department EDUCATIONAL REVIEW for October, 1891.

The solution given of the "James Harper" exercises is correct as far as the last paragraph on page 108. Here a slight error has crept in. Instead of as in the text, read thus: The jeweller loses property worth 300×2925 and the premiums he paid on two-thirdsof that amount at $3\frac{1}{4}$ per cent for three years, together with annual interest on the premiums at 6 per cent, that is he loses

$$\frac{300 \times 2925}{4.905} + \frac{21.255 \times 300 \times 2925}{300 \times 4.905}$$

less the insurance paid to him.

The second exercise is an inane puzzle which we have failed to solve, and over which we would not advise our readers to waste any time.

8. Explain which is correct: "Six and two are eight," or "Six and two is eight."

All good usage requires the verb to be plural.

9. Being on the bank of a river, I wish to know how I would measure its width, having only a book with me.

Assuming that the corners of the leaves of your book are right angles, fold a leaf so that the upper edge will coincide with the other edge forming the right angle. This gives you an angle of 45° . Sight an object across the river and another along your bank of the river, such that the lines from these objects to the place where you are standing will form

a right angle. Then walk in the direction of the object on your side until the place you left, and the object across the river make an angle of 45° , as seen from your new position. The distance walked is equal to the width of the river.

10. Solve $\sqrt{(x-a)} + \sqrt{(x-b)} = \sqrt{(a-b)}$.
Squaring both sides—

$$x-a+2\sqrt{(x-a)(x-b)}+x-b=a-b$$

Collecting and transposing—

$$2\sqrt{(x-a)(x-b)}=2(a-x)$$

Squaring—

$$\sqrt{(x-a)(x-b)}=a-x$$

$$(x-a)(x-b)=a^2-2ax+x^2$$

$$x^2-ax-bx+ab=a^2-2ax+x^2$$

$$ax-bx=a^2-ab$$

$$(a-b)x=(a-b)a$$

$$x=a.$$

NOTE.—The problems from McMurchy & Smith's arithmetic will receive attention if a copy of them is sent to us.

INQUIRER.—Which is proper to say, "The hen *sits*, or the hen *sits*, on her eggs?"

The hen *sits* or *is sitting* is proper. Although the latter of the two expressions quoted above is colloquially common, there is no good authority for its use.

N. B. TEACHER.—Please answer the following: 1. How many pounds of gold are actually as heavy as 12 pounds of iron? 2. Distinguish between bilateral and radial symmetry. 4. What metal does slate contain? (The other questions asked by our correspondent can be readily answered by consulting a history of England and Canada).

[These and some other questions will be answered in October.—EDITOR.]

SCHOOL AND COLLEGE.

A. J. Pineo, Esq., of Pictou, N. S., well known to readers of the REVIEW, has been appointed science master of the High School, Victoria, B. C.

There are more teachers than schools in New Brunswick.

Prof. Duff has resigned his position in the New Brunswick University, and has accepted a position in Perdue University, Indiana.

Dr. Bridges, of the University, has been spending a portion of his vacation in St. Stephen and St. John.

Inspector Carter will be engaged in Charlotte County during the month of September.

Mr. James Ward, Secretary of Trustees for Lambert's Cove, Deer Island, was presented with a silk hat on the completion of his twenty-first year as secretary, in token of the general satisfaction that he had given in the discharge of his duties. Few can show a record equal to that of Mr. Ward for continuous and accepted service.

New school houses are being erected at Seal Cove, Grand Manan; Lord's Cove, and Lambert Town, Deer Island.

The question of site having been settled, Fairville is now going to build a house of four departments after the plan of that in St. George.

The *Island Reporter* (C. B.) gives an interesting account of the excellent results obtained by teaching the Tonic Sol-fa in the elementary departments of Sidney Academy, and quotes in this connection from the Report of Inspector Macneil as follows:—"It would be very desirable that some means could be found of training more of our teachers in the Tonic Sol-fa system of music with a view to its introduction into more of our schools. Where this admirable system is in use, notably in the departments of the North Sydney schools conducted by the Sisters of Charity, where it has been in vogue for some years, and in the auxiliary departments of Sydney Academy where it has been introduced as a result of Rev. Mr. Anderson's visit and instructions last year, the results obtained are marvellous. Children of the tenderest years grasp it with so much ease."

Miss Alice Fitch, M. A. (Acadia), has been appointed to the principalship of Moulton Ladies' College, Toronto. Miss Fitch is the second lady graduate of Acadia College, having attained her B. A. in 1877.

W. J. S. Myles, B. A. (U. N. B.), of the St. John Grammar School, took a course in physics and chemistry at the recent session of the Harvard Summer School.

Charlottetown, P. E. I., public schools re-opened after the midsummer holidays, on Monday, August 28th, with an attendance of 1143 pupils.

The Berwick school is fortunate in still retaining the services of Mr. L. D. Robinson. His successes have been occasionally recorded in our columns.

Mr. A. J. Denton, A. B., Gr. "A", formerly of the Halifax Academy, has returned from Colorado where he has been residing for a few years. We regret to learn that his health is not satisfactory.

Probably the proudest group of teachers in Nova Scotia, at the present time is the staff of the Halifax Academy. As the result of the Provincial Examinations, four of their students have been awarded Grade "A"; 28 Grade "B"; 36 Grade "C"; and 62 Grade "D,"—a record never before equalled in the Province.

Mr. Henry B. Hogg, Gr. A., takes the principalship of the Bridgewater School, in the place of Mr. G. M. Huggins, who goes to Weymouth.

Mr. J. M. Longley, A. B., Gr. A., formerly head master at Guysboro, takes charge of Digby Academy.

There are to be two Grade "A's" teaching in St. Noonans' school, Antigonish, viz: Mr. E. E. Mack and Mr. E. H. Owen.

In the schoolrooms of both Milton and Port Medway, Queen's Co., the ladies are to have it to themselves for this year.

River John Pictou, is to have the benefit for the next year of the professional services of Mr. C. Clarke Gormley.

E. H. Colpitts, B. A. (Mt. Allison), has been appointed to the principalship of Carbonear Academy, Newfoundland.

Few teachers of Nova Scotia have such good reason to be proud of their professional records as Mr. Nicholas Smith, just retiring from the profession, and the principalship of Liverpool Academy. Thirty of his "boys" united recently in presenting him with a group containing their photographs, arranged around a central figure—the "beloved old master." It was remarkable that every one of the thirty occupied the higher positions in their respective occupations as lawyers, judges, clergymen, doctors, educationists, politicians and merchants. Long may Mr. Smith enjoy as the reward of faithful service, a serene old age.

Miss H. D. Gregg, of the Victoria School, St. John, having passed her examinations in elementary and intermediate theory, has been enrolled as Associate of the Tonic Sol-fa College, London.

Miss Cecilia Alexander, a successful teacher of Northumberland Co., N. B., has removed to Vancouver, B. C.

The English literature selected for the examination of candidates for Class I. N. B. Normal School, 1894, is Macaulay's Essay on Hallam's Constitutional History, and Shakespeare's Julius Cæsar, either Clarendon Press or Rolfe's edition.

For the position of Mathematical Master in Pictou Academy, Mr. C. B. Robinson, B. A., was selected from seven candidates.

"Mr. Robinson won a Munro bursary (\$300) in 1887, a Munro exhibition (\$400) in 1889, and was graduated from Dalhousie College with first class general distinction in 1891, being the only one of his class who made first class in all the five subjects of the fourth year curriculum. He obtained his Grade A. in 1890, with an average of over 80, leading all the candidates in the Province. He has had a year's experience in teaching, having just completed successfully a year's engagement in Kentville Academy, where he was offered a re-engagement at a higher salary, but preferred to cast in his lot with his home institution. Mr. Robinson is, in ability and character, a gentleman whom the Academy may be proud to welcome to its staff of instructors, and from his well known energy and zeal, we predict for him the success which these qualities merit and ensure.

The commissioners showed also their appreciation of the faithful and efficient services of Messrs. Oliver and Moore by increasing the salary of each of these gentlemen \$100, being double the amount of the regular increase guaranteed by the terms of their engagement. It is understood that both gentlemen were offered positions elsewhere at higher salaries than those they receive even at the increased rate, but prefer the class of students and the character of the work in Pictou Academy. The Academy never had a stronger or more popular staff than at present, and the coming year promises to be a more than usually successful one."—*Standard*.

The formal opening of the Normal School at Fredericton, took place on Thursday afternoon, 7th September. Upwards of 270 students were in their places—more by 35 than ever before on a similar occasion. After an address by Principal Mullin relative to the present condition, attendance, prospects and needs of the school, and addresses of welcome and counsel to the students by Chief Superintendent Inch and Chancellor Harrison, the several clergymen who occupied seats on the platform, responded to the Principal's request for short speeches. These were Revs. J. C. McDevitt, F. D. Crawley, R. W. Weddall, C. W. McCully, and W. W. Lodge. Their presence, as representatives of the different Christian churches, was a new and pleasing feature of this year's commencement.

The student-teachers now enrolled are classified denominationally as follows, including the French department:—Roman Catholics, 56; Baptists, 53; Methodists, 51; Presbyterians, 44; Episcopalians, 39; F. C. Baptists, 24; Reformed Baptists, 3; Congregationalist, 1. They represent the different Counties as follows:—York, 44; Charlotte, 31; Carleton, 30; King's, 29; Westmorland, 27; Northumberland, 24; Queen's 17; St. John, 14; Gloucester, 14; Albert, 13; Restigouche, 10; Kent, 8; Sunbury, 8; Victoria, 3, Madawaska, 1.

Principal McLeod of the Summerside, P. E. I., schools has resigned, resignation to take effect Dec. 31st. Summerside loses an excellent teacher in the retiring principal.

Prof. G. G. Robertson, B. A., of Prince of Wales College has resigned and gone to seek a home and improve his prospects in British Columbia. A. Shaw, B. A., takes his place.

Prince of Wales College, P. E. I., will have a changed staff this year; not only Prof. Robertson but Prof. West has also resigned. Prof. West's successor is not yet named.

Principal Balderston, of the Montague, High School, P. E. I., slips out of the list of to be inspected ones to that of inspectors, having been appointed Inspector for the Queen's County District.

J. K. Ross, Kent St. School, Charlottetown, has laid aside the birch for the present to engage in life insurance work. T. A. McLean, jr., a former pupil of the school, succeeds him.

The Summerside Board of School Trustees, determined to be abreast of the times, have added to their staff this year a teacher of stenography and typewriting. They are also making preparations to have kindergarten work in connection with their schools.

Prince of Wales College opened on the 1st inst. with a larger enrolment than ever. A new building is an absolute necessity. What government will earn for themselves the credit of giving P. E. Island a suitable college building?

In the September REVIEW among the list of candidates in the New Brunswick Normal School entrance examination, Miss Eva Maxwell, Moore's Mills, Charlotte County, was successful for *first* class, not *second* as reported.

BOOK REVIEWS.

A TEXT BOOK OF NEEDLE WORK, KNITTING AND CUTTING OUT, with methods of teaching, by Elizabeth Rosevear. MacMillan & Co., London and New York; pp. 460; price 6s. This book appears most opportunely. Sewing is not taught in the schools of Canada as commonly as it should be, but even where it is professedly taught it often degenerates into mere fancy work, ungraded, learned by imitation and wanting in the practical and educational results that such a useful study ought to secure. In this book we have a gradually developed series of exercises suitable for every grade until the pupils are able on scientific principles to cut out and complete the simpler garments. Such useful accomplishments as darning and knitting receive the attention they deserve. The book abounds in illustrations showing how the blackboard can be used as in other educational subjects. This study is raised above the mechanical plane which it occupied in the past, and as here presented becomes a mind, a thought stimulator. We would recommend it to our sisters in the profession as the best book we have yet seen on the subject.

THE CECILIAN SERIES OF STUDY AND SONG, *Common School Course*, by J. W. Tufts, price 85 cents, publishers Silver, Burdett & Co., Boston. The present volume of this series affords working material to teachers who desire to cultivate musical taste in their pupils. The books are written in staff notation and are prepared expressly for use in the class room. The number which we have seen, called the "Common School Course" is arranged for mixed schools and classes and is divided into three parts. The first part contains music set for one voice only; the second takes up two part harmony, while the third has songs and exercises for three voices with added notes for bass. The plan of the book presupposes, on the part of the teacher, a fair knowledge of musical theory, but the six or eight pages of "hints and directions to teachers" give very useful ideas as to the best method of imparting such knowledge to the pupils. The "Cecilian" treatment of time is very suggestive of our tonic sol-fa plans. The use of the French time names is recommended as well as the study of time forms apart from tune. There are special exercises for time, and one excellent feature throughout this book is the careful selection of preparatory exercises for any difficulties either of time or tune that present themselves in the songs. Each song group is preceded by a corresponding group of exercises to prepare the singer for the new steps introduced.

CATULLUS, with introduction, notes, and vocabulary, edited by Elmer Truesdell Merrill, Wesleyan University, Middletown, Conn. Cloth, pages 273. Price \$1.50. Ginn & Co., publishers, Boston, Mass. This work is evidently a labor of love by the editor, from the enthusiasm with which he has thrown himself into the life of the Roman poet. His introduction is no dry recital of facts, but a warm, sympathetic prelude to what is to come, a bit of *rus in urbe* to readers of "introductions." The notes, which are arranged at

the bottom of each page, are critical and have an originality and independence which at once enlists the attention of the student. The work is a valuable addition to Ginn's "College Series of Latin Authors."

THE CLASSIC MYTHS IN ENGLISH LITERATURE, edited by Chas. Mills Gayley, University of California. Cloth, pp. 589, price \$1.65. Publishers Ginn & Co., Boston, Mass. This work, based chiefly on Bullfinch's "Age of Fable," is attractive in style and contents, the illustrations and maps profuse and clear, and a perusal of its pages designed to give a clearer insight into English as well as classical literature. It should be in every school library for reference.

VIRGIL'S ÆNEID, Book II, edited by J. C. Robertson, B. A., principal high school, Toronto Junction. Cloth, price 50 cents. W. J. Gage & Co., publishers, Toronto. This convenient and well printed book has several excellent features, such as some finely executed illustrations; a vocabulary that covers the whole six books of Æneid and which therefore gives a pupil a wider grasp of a word than the usual one-book vocabularies; notes and references that seem to be particularly clear and definite to students beginning Virgil; and an introduction giving the story of the Æneid, with a chapter on the metre. Both editor and publisher have done their work well. But we must take exception to one view of the editor in his introduction. "He (the editor) has endeavored merely to help the pupil to a clear understanding of the poet's meaning, leaving appreciation or enjoyment of the beauties of the poem to come, as alone they will, with increasing acquaintance with Latin." Why not at the beginning try to make him appreciate the beauties of the poem? Not one student in twenty will pursue Latin further than the high school, and if he does he will pursue it with a zest from having been taught from the first to appreciate the beauties of such a poet as Virgil. That girls and boys are not sooner led to do this is one reason why such a poem as the Æneid is thrown aside in disgust after a "grind," giving sufficient to pass the examination, is worked up.

Mr. Carman's book, "LOW TIDE ON GRAND PRÉ," the title being taken from the well known poem of that name which forms the initial number of the volume, is now out, from the press of C. L. Webster & Co., publishers, New York. Prof. Roberts' latest book, "Songs of the Common Day," which is published by an English house, has been shipped and is now on the way out.

GEOGRAPHY BY MAP DRAWING, by Amos M. Kellogg, fifty cents, E. L. Kellogg, New York. As an illustration of a sound method of teaching geography this little pamphlet of 74 pages would be admirable if it contained about twenty pages. One gets tired of the repetition—a fault too common with American books of method. As this book deals entirely with the United States it is not of course suited for our schools, and would be valuable to our teachers only as it exemplifies correctness of method.

THE EDUCATIONAL REVIEW.

FIFTY LESSONS IN WOOD WORKING, by Arthur A. Upham. E. L. Kellogg & Co., New York 99 pages. Price 50 cents. We commend this little volume with much confidence to all teachers, especially to those who have not the time and means to purchase the more expensive works on this subject. In country schools this book would serve a useful purpose in the hands of the pupils.

DIE EHREBUNG EUROPAS GEGEN NAPOLEON I. DREI VORLESUNGEN VON HEINRICH VON SYBEL, edited by A. B. Nichols of Harvard University. Published by Ginn & Co., Boston pp. 126. Price 66 cents. Here we have an admirable reader for the third and fourth year German students of our academies and for the junior students of our colleges. The absorbing interest of the history and the strong light it throws upon the actors of that time, will cause it to be read not as a study but as a story book, more especially by those who are at the same time studying the modern history of Europe. The notes do not in our opinion afford the necessary grammatical assistance to the ordinary student, but such as are under good teachers they are sufficient and all that could be desired.

BOOKS RECEIVED.

Health Readers, Nos. 1 and 2: Publishers, T. C. Allen & Co., Halifax.

Virgil's Aeneid, Book VII., by Wm. C. Collar, A. M. Publishers, Ginn & Co., Boston.

Practical Lessons in the use of English, by Mary F. Hyde. Publishers, D. C. Heath & Co., Boston.

The Interstate Third Reader, by May I. Lovejoy. Publishers, D. Lothrop & Co., Boston.

Des Wirtshaus im Spessart, Von Wilhelm Hauff, with Notes and vocabulary, by Eugene Fasnacht. Publishers, MacMillan & Co., London.

The Adelphoe of Terence, with Introduction, Notes and critical appendix, by S. H. Ashmore, L. H. D. Publishers, MacMillan & Co., London and New York

An Introduction to the French Language, by Alphonse N VanDaell. Publishers, Ginn & Co., Boston.

Educational Articles in the Magazines.

In the September *Popular Science Monthly*, there is an article on Scientific Cooking, a Plea for Education in Household affairs.

The *Atlantic Monthly* for September contains a reply to Professor Shaler's "Relations of Academic and Technical Instruction" which appeared in the August number. It is by General Francis A. Walker, President of the Massachusetts Institute of Technology, and is a most able defence of the system of the independent technical school. In this paper the author expresses his belief "that scientific and technical education always encounters a grave risk when put out to nurse with representatives of classical culture." These two papers, covering both sides of an important educational question, should be read by all teachers.

The *Century* has just come in possession of one of the most unique and important historical documents of the age. It is a record of the daily life of Napoleon Bonaparte on

board the English ship which bore him into captivity at St. Helena, as contained in the hitherto unpublished journal of the secretary of the admiral in charge. The diary will be published in early numbers of *The Century*.

The *Cosmopolitan* (New York, price 12½ cents a number), devotes September to the World's Fair, giving over 100 pages of illustration and reading matter. To those who have been to the Fair, and to those who have not, it is of absorbing interest. There is not a dull page in the hundred, which is to be expected when one glances at the names of the contributors, among whom are Walter Besant, Julian Hawthorne, Murat Halstead, and Ex-president Harrison. The illustrations are models of beauty and finish.

Littell's Living Age, August 26th, has a well written and timely article on The Study of English Language and Literature as a part of a liberal education.

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" " Dairying for those who wish to run creameries.	Agriculture.

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