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FOR THE ATLANTIC PROVINCES OF CANADA.

Vol. III.

SAINT JOHN, N. B., MARCH, 1890.

No. 10

FOR USE IN THE PUBLIC SCHOOLS.

THE ENGLISH LANGUAGE,

ITS GRAMMAR, HISTORY AND LITERATURE

With Chapters on Composition, Versification, Paraphrasing,
and Punctuation.

—BY—

J. M. D. MEIKLEJOHN, M. A.

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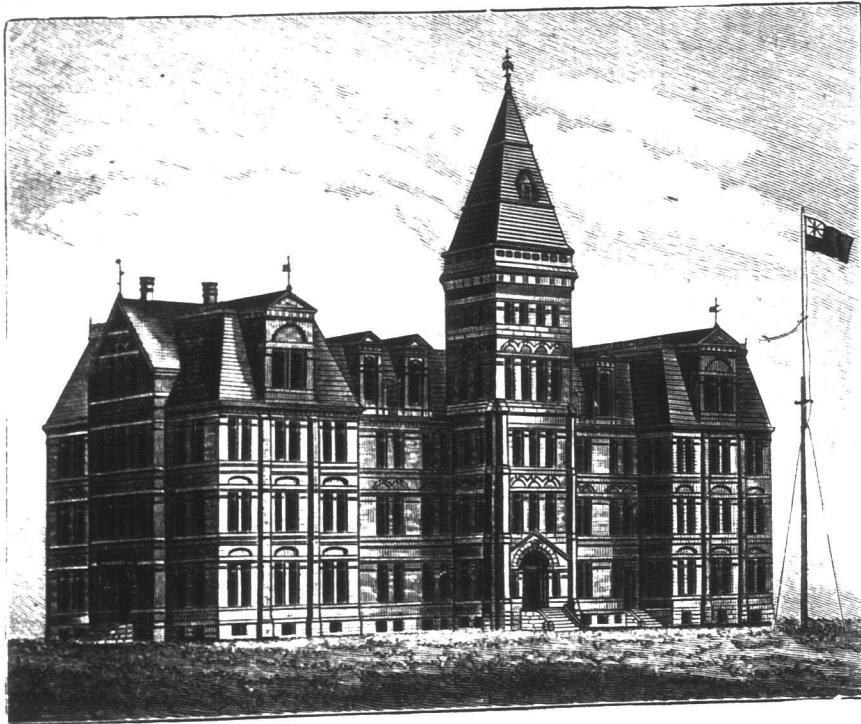
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A. H. MacKAY, B. A., B. Sc.,
Editor for Nova Scotia.

ALEX. ANDERSON, LL.D.,
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G. U. HAY, Ph. B.,
Editor for New Brunswick.

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EDITORIAL NOTES.

WE have received many warm commendations from our subscribers on the valuable articles contained in the February REVIEW. Turning to that number we find the list of contributors is larger than usual, and the topics treated are of interest and value to all classes of educators. From month to month the REVIEW is becoming more and more appreciated by those who have their work at heart and who find its pages stimulating them to further and higher efforts. To continue this work, a work in which every community

in these Atlantic provinces is interested, we ask for further additions to our contributors' column. We ask those to contribute who have something that will stimulate and encourage others—short helpful articles on methods that teachers have found to be successful in their classes; suggestive sketches on our history, geography, natural science; criticisms on systems and methods that are excellent or faulty; with items of personal interest.

A subscriber writes: "I find your astronomical articles so interesting that I can scarcely wait for the night to verify the statements in them."

PHILIP COX, A. B., Principal of the Newcastle, N. B., High School is contributing to the *Advocate* a series of valuable papers on the Winter Birds of the Miramichi. The articles so far as they have appeared give much useful information about the birds that winter with us, their habits, food, etc. Mr Cox is a pleasing writer as well as an industrious and enthusiastic naturalist, and when he puts on his snow-shoes for a tramp in the woods it is to some purpose.

We have to thank the editor of the *Dalhousie Gazette* for the excellent cut of the late Professor Lyall, LL. D., F. R. S. C., which appears in this issue.

THE National Education Association of the United States will meet this year in St. Paul, Minn., from July 8th to 11th.

IN this issue Messrs. McMillan advertise an excellent work for schools or private study—Meiklejohn's English Language; the Sessions of the Toronto Woman's Medical College are announced; D. C. Heath & Co. advertise school books; Jas. Vick, Seedsman, gives some information for gardeners; and the announcement of the Ingres-Coutellier School of Languages is made. This latter takes the place of the Berlitz School, but the teachers are the same. Spanish has been added to the list of languages. With accomplished and energetic teachers this school is rapidly extending its branches throughout New Brunswick and Nova Scotia.

DUAL LANGUAGE DEBATE.

This great debate will be historical. It gave an opportunity for speech-making. It disclosed an important view of public sentiment. But after all, in the historical future it must show even the radical reforming English representative to be rather an absurd sort of a reformer after all. Evolution is slow. If the delicious morsel of sucking pig was accidentally roasted by the burning down of the primitive hut, it was only quite natural that more huts should be built and burnt down purposely over the gastronomic piggies. It probably requires some time to discover a more economical method of making a roasting fire.

Science moves, but slowly, slowly: creeping on from point to point.

A conspicuous Imperial Federationist, *mirabile dictu*, appeared to take as an axiom, "No community of language no unity of Dominion." It transpired that in the great Imperial British empire but a small minority spoke the English tongue, perhaps about one-fifth. The brilliancy of this ultra-English champion will scarcely eclipse the splendid pose of British muscle seen reclining in the editorial chair of a London thunderer who damned most contemptuously the notion that a few extra letters would handicap the growth of the great English language. Several nations have already reformed their orthography, restored spelling to its original function, consigned the ignorance and conceits of more vain than learned and sensible ancients to the limbo of historical dictionaries, brushed the barnacles from the bottom of the ship, and now make several knots more per hour in the race. A tar on the "Great Eastern" might smile at the impotence of a barnacle, but what would the officers think of a huge bottom-load of them? But the slow brain is yet on the quarter-deck. The momentum of the huge mass is relied on to press its way through the waves. But millions of foot-tons of the Antean energy of the boilers are utilized in tearing the water into myriad ribbons of foam to the immense delight of the little fishes beyond, although to the deep chagrin of the intelligent engineer within. Germany, with but comparatively little to reform and little to gain, a few years ago by Imperial decree reformed the spelling in the equivalent of our common schools, and it was directed that five years later the change would be compulsory in the high schools. Already the great mass of German literature is appearing in the new orthography. France is just now commencing to be agitated with the same problem,

although its spelling is incomparably more simple and regular than the English. And although the discussion is but a few months old, we observe it has already moved some of our Canadian French exchanges to discussion.

If our English reformer would endeavor to advance the interest of the English language, it should be by moving for a simplification of a mischievous spelling condemned now by every leading philologist in England and America—a spelling which makes it extremely difficult for the French or any foreigner to acquire the language. At the present time, more than ever before, we have good reason to believe, the French of Quebec and of all our provinces are making strong attempts to learn English. But we have made a law to prohibit their acquiring it, which is a hundred times more effective than any parliamentary statute against the use of French could be—we have made such a law in our system of spelling. And we ourselves pay a tax to support this law, more vastly horrible than the tax of the fabled minotaur of Crete on ancient Greece—the sacrifice of two years of the school life of every son and daughter in the vast English empire.

N. S. BARRISTER'S SOCIETY EXAMINATIONS.

Under a rule of the council of the barrister's society, the preliminary law examinations are held twice a year instead of once as formerly. The first winter examination under the new rule was held a few days ago, the result of the same being as follows:

H. E. Congdon, Berwick; H. B. Stairs, Halifax; D. A. Cameron, Sidney, C. B.

The names of the above candidates are given in the order of merit.

Five papers are required to be "passed" in the preliminary examinations above referred to, namely: 1. Latin; 2. Greek or French or German; 3. Mathematics; 4. English; 5. History and Geography. In each of these subjects, we understand, the syllabus will be approximately that prescribed from year to year by the Council of Public Instruction for the High School or Academic curriculum. Such an arrangement would give the best possible chance to all future law candidates, whether attending the public schools or studying privately, and would be a great saving of energy in schools where students are preparing for various examinations. It has always been noticed as a strange anomaly that the *law society* should have so long ignored the *lawful* public educational curriculum. But, after all, evolutionary slowness is surer and safer than revolutionary rashness.

Course of Plant Study.

SQUEERS.—“Where’s the second boy?”

SMALL BOY.—“Please, sir, he’s weeding the garden.”

SQUEERS.—“To be sure, so he is. B-o-t, bot, t-i-n, tin, bottin-ney, ney, bottinney, noun substantive, a knowledge of plants. When he has learned that bottinney means a knowledge of plants, he goes and knows ‘em. That’s our system, Nickleby, what do you think of it?”

NICKLEBY.—“It’s a very useful one, at any rate.”—“*Mr. Squeers’s Educational System*” in *Nicholas Nickleby*.

It must be confessed at the outset that no direct application can be made of the above. Mr. Squeers is too radically phonetic as a speller to hold him up as an example. And although he cites a maxim that all practical educators will hail with delight—“he goes and knows ‘em”—there is a strong suspicion left by Nickleby’s answer that Mr. Squeers, who owns the garden, has a selfish end in view.

But Mr. Squeers certainly had a definite plan, and that is something. Nothing—or next to nothing—can be accomplished by giving a few object lessons on plants without any more definite end in view than merely to satisfy the requirements of the school curriculum.

It is time now to arrange your plan of work for classes in plant study. If your plan of work is carefully arranged and faithfully carried out, the interest will be great and increasing, and the value of plant study as a mental discipline for your classes will be unquestionable.

HOW TO PROCEED.

Turn up your files of the REVIEW for the spring of ‘88 and ‘89 and read what is there given about planting seeds in boxes so that plants may be ready for study in classes a few weeks hence. Make a list of plants in the neighborhood that flower early, such as the willow, alder, red maple and others, and though these are too difficult for younger pupils, a glance at their simpler characters, with notes on their time of flowering, drawing their parts, will pave the way for closer and fuller study next year.

BUDS.

This subject can well be taken up in March. (See “Leaves and Flowers in their Winter Homes,” March REVIEW, 1889.) A talk on buds, showing that the miniature leaves and flowers they contain were formed last year and are securely folded up and protected during the winter, cannot fail to arouse an interest in nature and her plans.

For this and one or two succeeding lessons a few twigs will furnish abundant illustrations for the arrangements of buds.

Buds that grow at the end of stems and branches are called *Terminal*. The buds that grow on the sides are called

Lateral. Lateral buds usually grow in the axils of leaves; they are then called *Axillary*. These buds are formed during the summer, and may usually be seen long before the leaves fall. Each leaf, as it falls, leaves a little scar where it grew. These scars may be seen just below the buds.

Buds are differently arranged on different species of plants. Look at the Lilac or the Maple, and you will see on each joint of the stem two buds, standing just opposite each other. This is called the *Opposite* arrangement. Each pair seems to be turned just half way round the stem from the pair below it. In the Cherry, Currant, Apple, etc., only one bud is found on each joint of the stem; and each bud is turned partly around the stem from the one next below it, so that no but is borne on the same side of the stem as the one next above or next below it. This we call the *Alternate* arrangement. It is also called the *Spiral* arrangement; for if a string be wound spirally around the stem, it will touch each bud. These buds are arranged according to fixed laws, which are very mysterious and interesting. The arrangement is always the same in the same species of plants. If there seems to be any variation, it is only because some of the buds have failed to grow. Sometimes we find each bud just half-way round the stem from the one below it, so that the third bud stands over the first. In other cases we find each bud just one-third of the way around the stem from the one below it, so that the fourth bud stands exactly over the first. Again, we find each bud two-fifths around the stem from the one below it. In this case we have to take two turns around the stem to find a bud that is exactly over the one from which we started. The first is called the half, or *Two-Ranked*, arrangement; the second, the one-third, or *Three-Ranked*; the third the two-fifth, or *Five-Ranked*, and so on. These different modes of arrangement may be expressed by the following fractions: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{5}$, $\frac{2}{8}$, $\frac{5}{13}$, $\frac{8}{21}$, $\frac{13}{34}$, etc., each fraction being formed by taking for its numerator the sum of the two preceding numerators, and for its denominator the sum of the two preceding denominators. The numerator of each fraction shows the number of turns we have to make around the stem to find a bud exactly over the one from which we started, and the denominator shows how many buds are found in the cycle. No other arrangements than those indicated by fractions formed in this way are ever found.

Sometimes three or more buds are found in the axil of a leaf. In most cases the middle one is a *leaf-bud*, while the others are *flower-buds*. These additional buds are called *Supernumerary*, or *Accessory*. In the butternut and in some other trees, two or three buds are often found one above another. The upper one is usually the strongest, and the only one that grows; but if it be destroyed, one of the others takes its place. Some buds remain alive year after year without growing. These are called *Latent* buds. When the top of the tree has been broken off, or in any way destroyed, these latent buds grow, to supply the deficiency. Some kinds of trees, such as the Beech, Willow and Poplar, form buds and send forth shoots wherever they are bruised or cut. Such buds are called *Adventitious*. Adventitious buds sometimes grow even on roots, which do not usually produce buds. In cold climates, buds that are to survive the winter are covered with scales to protect them from sudden changes of temperature. These are called *Scaly* buds. The buds of herbs, and of trees in warm climates, have no scales, and are called *Naked*. In some species, the terminal buds are much stronger than the lateral; and then the tree forms a tall, spire-shaped top, as in the Hickory, Spruce and Poplar. In others the lateral buds are stronger; and the tree forms a broad, spreading top, with delicate sprays, as in the Elm and the Willow.

Astronomical Notes.

THE STAR OF BETHLEHEM.

Since writing the note on this subject for the February REVIEW, I have seen the prediction of the star's appearance in so many papers and have been asked so many questions about it that it seems worth while to give it a little more attention.

The following is the paragraph which has been going the rounds of the newspapers:

"The Star of Bethlehem is again to be visible in this year, being its seventh appearance since the birth of Christ. It comes once in 315 years and is of wondrous brilliancy for the space of three weeks, then it wanes and disappears after seventeen months. It will be a sixth star added to the five fixed stars in the constellation Cassiopeia while it remains in sight."

To the general reader this looks like one of those genuine astronomical predictions which are accepted now-a-days as matters of course. The reader who keeps himself posted on astronomical matters knows that this prediction is not genuine, that astronomy is not responsible for it, that it is just as true and just as credible as if it had been made about the ghost of Julius Caesar instead of the Star of Bethlehem.

There are no grounds, so far as I know, for predicting the appearance of Caesar's ghost this year. If we knew that the ghost appeared in the year before 1 A.D., and if we knew it had appeared once every 315 years since, then we might reasonably expect its appearance this year; but even then there would be more of presumption than of prudence in asserting positively that it would appear.

And *if* we knew that the Star of Bethlehem had appeared in the year before 1 A.D., and *if* we knew that it had appeared again in the years 315, 630, 945, 1260, 1575,—then *et cetera* as before.

The truth of each of these things is asserted or implied in the paragraph quoted, but not one of them is known to be true. There is not a shred of evidence of any sort that this star was seen in any of the last mentioned years. (I'll take this back, and do it with pleasure, when the shred is produced.) And it is very far from certain that its first and only recorded appearance happened in the first mentioned year. (This is not theological heterodoxy, it is chronological orthodoxy.)

There is therefore not a whit more reason for expecting the appearance of the Star of Bethlehem this year than there is for expecting the appearance of Cæsar's ghost.

"It will be a sixth star added to the five fixed stars in Cassiopeia," says the prediction.

If Matthew's account of our star is true (and it is the only account we have), it was not a fixed star and it was not in Cassiopeia. No star in Cassiopeia could have been seen by the Magi while travelling from Jerusalem to Bethlêhem, unless they travelled back foremost; and no fixed star could have behaved as it is said to have done during that journey.

That there are only five fixed stars in Cassiopeia will be strange news to all who know that constellation. Long before telescopes were known more than fifty had been counted in it. If the paragraphist had said five hundred thousand instead of five he would have been nearer the truth. If he had got nearer the truth on this point he might have done so also on other points, and then he might perhaps have left his paragraph unwritten.

What is written above contains the answers to a miscellaneous lot of questions received. What is written below is in answer to the question, "What is known or supposed about the Star of Bethlehem?" and "How do you account for the predictions of its appearance that we have been having lately?"

What is known about the star may be found in the second chapter of Matthew. For what has been *supposed* about it, the reader may consult whatever commentaries or Bible dictionaries or other literature of that sort that he can lay his hands on. And when he has done so, if his experience is like mine, he will find himself thinking of what Seth Bede's mother said about people making "a peck of their own words out of a pint of the Bible's." He will probably find, as I did, that Origen and Chrysostom and sundry others thought the star was an angel; that another authority thought it was the Holy Ghost; that some thought it was a comet; and some that it was a "temporary" star (of which more anon). He may also chance upon a commentator who, after citing other people's notions upon the subject, proceeds in this way: "But I reply that it was a new and unknown star, entirely different from other stars, and superior to them in nine prerogatives." Then follows a list of the nine "prerogatives," one of which is that "the angels framed it of condensed air and infused brightness into it. And then we are told what the star meant (1) allegorically, (2) tropologically, (3) anagogically, and (4) lastly. I forgot to say that after telling us about what some others have to say, this commentator adds, "But such things, says St. Anselm, are fables and trifles."

It is not so easy to find out what astronomers think of the star. You might spend weeks in turning over astronomical books and find never a word about it. Perhaps this is because astronomers are not so much given to writing about matters that they

know nothing of. I think it is very likely that if you were to ask any eminent living astronomer for information about the Star of Bethlehem, he would refer you to the second chapter of Matthew, and tell you it contained all he knew about the matter.

But there have been some astronomers—and eminent ones too—who have done some supposing and some figuring about it, among them Kepler, at the beginning of the seventeenth century, and Ideler and Encke in the first half of the present one. Their supposition was that the phenomenon which drew the Magi to Judæa might have been a conjunction of two of the larger planets, a conjunction so close perhaps that the two may have looked like one star. They figured their way backward through the centuries and found (I give Encke's results, the latest and most accurate) that Jupiter and Saturn were in conjunction in the year 7 B.C., that at the time of conjunction they were about a degree apart, and that three such conjunctions happened in that year,—on May 29, on September 30, and on December 5.

Is a distance of a degree small enough to make two bright stars look like one? Proctor thought it was—if the observers were “miraculously short-sighted.” You can settle this matter for yourselves. The stars in Orion's Belt are about a degree and a half apart. On March 28, and again on May 30, this year, Saturn and Regulus will be about a degree and a third apart. You can easily imagine the former distance reduced by a third and the latter by a fourth. Do so, and then try to imagine a pair of eyes—not “miraculously short-sighted”—that could make the two objects look like one. [On the 13th of November next at 7 p.m., sixty degree time, Jupiter and Mars will be exactly a degree apart.]

This is one difficulty connected with the Jupiter-Saturn theory of the Star of Bethlehem. Another is as to the chronology. These conjunctions happened in 7 B.C. Was that the date of the events in Matt. ii. 1-10? And a third difficulty is to explain how these planets could be got to behave as the star behaved according to verse 9, and the natural inference from verse 10.

Now let us look back to the “temporary” star theory. In itself it is quite as reasonable at least as any of the other theories, but it is to it we owe all the nonsense that was talked and written about the Star of Bethlehem three years ago, which mess of nonsense we seem to be again threatened with this year.

A temporary star is an extraordinary star which appears for a time only. Eleven such are recorded in history—six between 150 B.C. and 1700 A.D., the other five within the last forty-two years. The most famous of the lot was the one of 1572, observed by Tycho Brahe. Any astronomy book will tell you about it—how bright it was when first seen, how for

a time it grew still brighter and was visible in daylight, how within a week or two it began to fade but continued visible to the naked eye for sixteen or seventeen months, after which time it was seen no more. It appeared in Cassiopeia and was a fixed star while it lasted. This was an extraordinary star; the Star of Bethlehem was an extraordinary star; therefore, so said the fool in his heart, the two stars were —, but we have not yet got all the facts. In 1264 and 945 brilliant stars appeared in the region between Cassiopeia and Cephus. We don't know that these appeared in the same spot as Tycho's star, but neither do we know that they did not. “We may suspect,” says Herschel, all three “to be one and the same star with a period of 312 or perhaps 156 years.”

There are known facts as to brilliant temporary stars in or near Cassiopeia, and that is what Sir John Herschel deduces from the facts—a “may suspect” and a “perhaps.” But the Star of Bethlehem crank gets much more than that out of them. ‘May's’ and ‘perhaps's’ he cannot away with. Herschel may suspect that the stars of 945, 1264 and 1572 were one and the same star; this chap is sure of it and knows also that these three were one and the same star with the Star of Bethlehem. He may have heard that Beza, who was living in 1572 and saw Tycho's star, thought it was the Star of Bethlehem, just as some earlier theologians thought the Star of Bethlehem was an angel.

Now, given a fellow fool enough to believe that the identity of all four stars was established by the evidence adduced above, it is easy to see how he might have proceeded to evolve his prediction of its re-appearance in 1887 or 1890. Put the nativity three years before the Christian era, (when or about when it is now generally held to have happened), and the interval between the appearance of the star to the Magi and its appearance to Tycho is 1575 years. But it appeared in the 13th and in the 10th centuries as well as in the 16th and the 0th, therefore, it must also have appeared in the 7th and the 4th centuries. This makes six appearances in 1575 years, giving an interval of 315 years between each two. (The actual intervals between the recorded appearance of the real stars of 945, 1264 and 1572 are not 315 years; but when you put your hand to the plough of folly you must not look back for trifles like this). 1572 plus 315 gives 1887; therefore, the seventh appearance should have happened in that year. But it didn't; it was Venus that all those good people stood staring at with open mouths in those December mornings. Well, let us do some more tinkering at the facts. We'll keep the 315 years because it will save us the trouble of doing another division sum, and simply shift the date of the nativity three years forward to the beginning of the Christian era, where Denis the Little fixed it and where, of course, it ought to be. This, of course, shifts the date of each appearance of the star three years forward, and changes the 1572 with which we began operations into 1575. But that is only another trifle, and just see what we have gained by it. It makes the seventh appearance fall in 1890.

A. CAMERON.

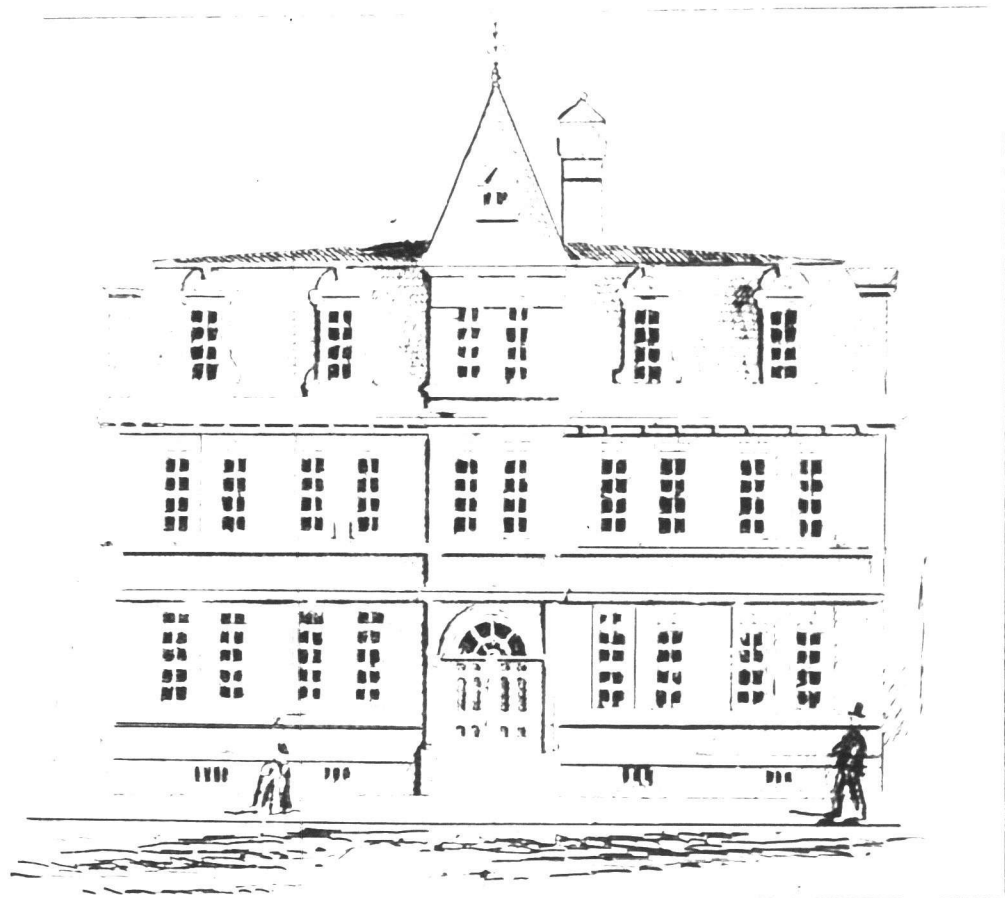
Yarmouth, N. S.

The New Truro Academy.

The new Academy is situated on the corner of Forrester and Victoria Streets, Truro. It is 67x50 feet with three storeys and basement, and is fitted up with all modern improvements. The building contains four large class rooms, each capable of seating sixty pupils, four cloak rooms for pupils, a laboratory, library room for teachers, museum, principal's office, and a large and comfortable Assembly Hall. The classrooms are large, well lighted and well ventilated, features too often found wanting in school rooms. Through the middle of the building run two large

The principal's class room is connected with the other rooms by a system of electric bells which will be used as a signal, summoning, dismissing and changing classes. In the basement are two hot air furnaces by which the building is heated.

The system of ventilation is the best we have ever seen. Under each floor are foul air shafts leading to the flues and connected with the room by registers in the floor. Fresh air is supplied by another shaft under the floor as well as transoms above the windows, thus giving the building a perfect system of ventilation. The ceilings are all done in panneling, and oiled and varnished. The sheathing, windows,



halls, on each side of which are the class rooms. Adjoining the class room on the right is the laboratory which opens before the class with double rising doors. A table on rollers brings before the class any experiments previously prepared. Provisions are also made by which pupils who wish can carry on special lines of work in chemistry. Immediately across the hall is the principal's office. On the same floor are two hat and coat rooms for boys. On the second floor are two class rooms similar to those on the first, museum room, a library room for teachers, and two cloak rooms for ladies. These cloak rooms will be supplied with water, for the use of the pupils. On the third floor is the assembly hall which will seat at least 400 persons. This will be the regular convocation hall on all occasions in which the whole school is assembled.

doors, etc., are all finished in natural wood and oiled and varnished in the same way.

The building throughout presents a most handsome and pleasing appearance, and has an air of cheerfulness about it so often wanting in the ordinary school room. Competent judges pronounce the class rooms superior to anything else in the province.—*Col. Sun.*

[We might notice in connection with the above institution that the teaching staff is one of the strongest in the province. W. R. Campbell, B. A., is principal and master of classics and science. H. Putman, B. A., is master of English and history. Jas. Little is master of mathematics. May W. Griffin is teacher of music and elocution, Prof. Ornano of the Berlitz school of languages, has charge of the classes in French.]



Rev. Professor Wm. Lyall, LL.D., F.R.S.C.

Dr. Lyall, professor of logic and psychology in Dalhousie University, Halifax, died on the seventeenth of January, in his seventy-ninth year. He attended to his lectures as usual, until stricken with paralysis three days before his death. His life was that of the student. As metaphysician, he was inclined to the Scottish school, and was a special favourite of his distinguished teacher, Thomas Brown. He was not a technical theologian, rather an amateur, more learned than popular, and reflecting somewhat the light of Coleridge's religious philosophy. His style has been described by a writer in the *Presbyterian Witness* as follows: "His sentences and periods were faultless and beautifully balanced. His voice was soft, clear and low, and full of pathos. His action was graceful in a high degree. His face glowed with emotion and with a light that was not wholly of this world."

He was born in Paisley, Scotland, 11th June, 1811, and educated at Paisley Academy, Glasgow College, and Edinburgh University, and became minister of Uphall, Linlithgow, where he published a volume of sermons. In 1848 he was appointed to Knox College, Toronto, and 1850 to the professorship of classics and mental philosophy in the Free Church College, Halifax. In 1860 he was appointed to the same position in the United College at Truro. In 1863 he became Professor of logic and psychology in Dalhousie. He contributed a number of papers on theological and philosophical subjects to Canadian and foreign reviews. His chief work was the volume entitled, "Intellect, the Emotions, and the Moral Nature," published in 1855. This received high praise from the reviews, and was prescribed as a text book in several colleges.

His fame as a philosophical writer secured for him in 1864, the distinction of the degree of LL.D. from McGill University, Montreal. And later when the Royal Society of Canada was founded, he was selected as one of the original Fellows, in section of English literature.

For the REVIEW.]

School Rooms.

We often think the children do not care whether their school-room is bright and pleasant or not. A year ago Amherst erected two new school-rooms, one of which was occupied by Grade II. The rooms were well painted, well lighted, had good walls, which were decorated by the teachers, and are very cheerful and bright. When grading time came one of the boys told his father he did not wish to grade and go over into the dull room occupied by Grade III. The remark is suggestive. Very few teachers understand how their pupils are being influenced. It has been a matter of experience, that if you fix up the school-rooms and corridors for the children they are careful not to deface them; but take no pains with the rooms and there seems to be no limit to their ability to disfigure.

AMHERST.

For the REVIEW.]

Our English.*

This is a small and interesting book on how to make teaching in English of greater use. The present state of things is bad; of that the author is convinced, as well as are other people. Children spell badly, and express themselves badly; when they cease to be children they do the same. Yet as Professor Hill says of his own college: Though "Harvard sends out men—some of them high scholars—whose manuscripts would disgrace a boy of twelve, the college can hardly be blamed, for she cannot be expected to conduct an infant school for adults." Then even when young persons at one age or other do get taught, pedantry comes across the path, and the last state of the man she meets is worse than his first.

As to the study of literature in this mother tongue, there is, our author says, a school where "the study of authors is made so interesting, that pupils who are preparing for colleges which have no examination in English are in the habit of joining the class in this subject for their own pleasure." Alas! he adds—"an anomaly, I believe, in the annals of American institutions of learning." Is there a summer school there for teachers and professors?

The admirably anomalous institution is perhaps where the happy spirit of the late Mr. Hudson lingers; in teaching Shakespeare, that well known Shakespeare

* OUR ENGLISH; by Prof. A. S. Hill. New York. Harper, 1889.

editor had some such delightful experience as he tells in his *Essays on Education, English Studies, and Shakespeare*. For simplicity and common sense, and ways of saying things as an ordinary common-place person would say them, that little book was a worthy predecessor of *Our English*. The publisher was Ginn of Boston, in 1884.

Neither Mr. Hudson nor Mr. Hill has rules for producing perfection in teachers or in taught; and neither thinks, on the other hand, that nothing can be done.

The author of *Our English* does nothing more than ask us to confess how bad things are, while he offers suggestions as to how each one must, in his writing, bind license down to liberty, and pedantry down to order.

To begin with,—it is obvious that, as Emerson says, your child may be caught some births too late to make a scholar of him: we may have equal rights, but we are not equal. But “even she whose talk is the life of the school at recess, writes as if she were on her good behavior at a funeral. Even he who takes the lead among his fellows, in everything that requires quickness of wit, becomes insufferably dreary the instant he puts pen to paper.” Taking the ordinary intelligence which might write fairly, the fact that teaching should lead it to dull mediocrity is the worst thing of all. Better have crowds of mistakes. But can these, too, be avoided, by teaching from the first the chief rules as to sentences and punctuation, not wearying with niceties; and by teaching spelling of all common words? Above all, our author says, do not waste time on grammar. Might not one reflect in this connection, that English speaking people in Europe do not speak and write worse than such in America, though they may be said to learn no grammar? As to punctuation, we should add, pierce unmercifully with full stops all ordinary young writers.

Together with this elementary teaching in correctness—no child's play—the child, and then the boy or girl, must be given something interesting to write about, something that interests him or her. Let the writers sometimes or often choose their own subjects, we say.

If the writer abuses the freedom, the teacher no doubt can help by showing that liberty meant to the writer license. But can he do very much? Even if the writer is not caught too late, one has to ask: Is he bumptious and never in the state of one looking to be taught? Is he humorous in the bad sense, funny, in fact, and therefore vulgar? How has he spoken? How do his associates speak? Not everything rests with the teacher, even when the teacher is perfect.

But if license and “humor” are dangers in the path, so are pedantry, and what Professor Hill says he “must be pardoned for calling ‘schoolmasters’ English” the dialect of men and women whose business keeps them in close relations with young minds, and who, being to a great extent cut off from intercourse with the world outside of the school room, are apt to attribute undue importance to petty matters, to insist upon rules, in cases where the best usage leaves freedom of choice, to prefer bookish and pompous ways of putting things to easy and natural ones.”

He goes on to quote a poet, who, inspired by our author's words, wrote as follows:—

IMMODESTY.

I am a modest little maid,
Who thinks it more polite
To bid a man “good evening,”
Than bid a man “good night,”
And I whom the human members
Are spoken of by him,
I always call what doctors call
“A leg” or “a lower limb.”

I am a modest little maid,
Who never goes to bed;
But to my chamber I “retire”
Most properly instead,
And when the chaste Aurora
Unseals my sleepy eyes,
The act which some call “getting up”
I designate “to rise.”

I never speak of feeling “shk,”
But always say I’m “ill,”
And being in my dressing gown,
I style my “deshabille,”
In fact I always hesitate
To call a spade a spade,
Because, you see, I try to be
A modest little maid.

Coleridge had a master: “*Lute, harp and lyre, muse,* etc., were all an abomination to him.... ‘Harp? harp? lyre? Pen and ink, boy, you mean! Muse, boy, muse? Your nurse's daughter, you mean! Pierian spring? Oh ay! the cloister pump, I suppose.’ But the truly great have all one mind, as the same Coleridge says; and so all sensible people, humorous in the good sense, agree about this. Another of them says: “Think as wise men do; speak as common people do.” And even: “Be profound with simple terms, not with obscure terms.”

What the author says about the younger pupils, he says about the older. That his own pupils may sometimes write in a heat, having no time for fine language, he gives essays to be written in twenty minutes, which plan Professor Hill finds to work well.

And then when it comes to study of literature, perhaps if we have aimed teaching chiefly at reality and simplicity, this study may become of more use than often it seems to be now. The two lessons to be learnt, are they not frank confessions of what one likes or does not like, *plus* suspension of judgment, and submission to opinions, even if you make no pretence to adopt them. Liberty and order, in fact, again: this everlasting problem. But liberty first, if possible. Do not suppress or even touch with the lightest finger of reproof particular signs of individuality—a sign, for instance, so good as the confession in the middle of an essay that the preceding part had been conventional repetition of opinions in which the writer did not believe. That should soften the severest confessor.

Mr. Hill divides his book into five parts—of which the first three seem the best—English in Schools; English in Colleges; English in Newspapers and novels; English in the Pulpit; Colloquial English.

Cannot even writers of books on English force the printers of the new world to say *wo-men*, not *wom-en*, and *know-ledge*, not *knowl-idge*? In these meaningless forms, the printers may *know* themselves to be right, but the writers must know them to be wrong, as do *know* the suffering readers, men and wo-men.

W. F. STOCKLEY.

Fresdencton, N. B.

For the REVIEW

English Literature in the School.

An interesting experiment in teaching English literature, which might be suggestive to some readers of the REVIEW, was recently made in the English department of the New Glasgow High School, under the care of Miss Nettie Forbes, B.A. On Longfellow's birthday, which REVIEW readers will remember falls on the 27th of February, lessons were thrown aside in the classes of each year and a "Longfellow celebration" was held. A few numbers selected from the programme carried out in the junior class will best explain what that meant. Thus, among the papers read were a "Sketch of Longfellow's Life" and a "Sketch of Evangeline." Then interspersed with these were quotations given by the pupils, the initial letters of which would spell "Henry Wadsworth Longfellow;" readings and recitations, the poet's "First Poem," "Last Poem," "The Abbot's Soliloquy," "The Clock on the Stairs," and about the middle of the hour a song and chorus—"Excelsior." Somewhat similar programmes were carried out in each of the other years. On the blackboards surrounding the room one pupil had drawn a sketch of Longfellow's residence in Cambridge, and others had

printed appropriate mottoes in colored chalk. The "celebration" was a great success. The students took up the idea with enthusiasm, and it is safe to add that they carried away a deeper appreciation of Longfellow from this little break in the routine of class-work than they would have acquired by hours spent in monotonous recitation.

NEW GLASGOW.

Selected by Ladies' Auxiliary Committee S. P. C. A.]

Guardian Birds.

The RED-BEAKED OX-BITER (Rhinceros Bird)

If we go into the African jungle we come upon an ungainly and savage brute guarded with much care and jealousy by an attractive little bird. These are the rhinceros and his faithful attendant the red beaked ox-biter, more popularly known as the rhinceros bird. These birds which belong to the great raven family are, to use Gordon Cumming's words, "the best friends the rhinceros has." They cling to him through good and evil report, watch over him by day and perch upon him by night; never leaving him—in fact as long as he has a tick to his hide. *Ticks*, which infest the forests of most parts of the earth and are particularly painful and enterprising in Africa, cause the most exquisite agony to the rhinceros, hippopotamus and elephant, notwithstanding the seeming protection of their very thick skin. The beak of the ox-biter is so constructed as to render the extraction of a deeply embedded tick only a pleasantly difficult task. The ungainly recipient of the bird's attentions is duly grateful, and never, even when suffering great pain, from the probing beak, offers any remonstrance, but rather shows by the liberties it permits the implicit confidence it reposes in its attendants. He is not content to extract the parasites from the easy and conspicuous spots, but hops with great care all over his huge charge, now thrusting his inquisitive beak into this ear, now hopping over the head and inspecting the other, now examining the corners of the mouth, and next wisely seeing that the region of the eyes is safe. Nor do they limit their duties to parasite inspection. They watch over his slumbers and warn him by vociferous crying of the approach of an enemy, and when noise fails to arouse him they fly at his face and flap it with their wings.

This bird is found only in Central Africa, but there is in South Africa, a near relative known as the African ox-biter, which performs very much the same office in its own territory."—*John R. Coryell in Harper's Magazine, 1884.*

Selected by Ladies' Auxiliary Committee, S. P. C. K.

The Robin in an English Church.

It was the night before Christmas, in England, and snow was falling. They did not mind it in happy homes, where lamps were lighted and fires burned cheerily, and tables were spread for tea. But a little robin, cold and hungry, hopped about wearily, seeking shelter and food. Our robins fly away south before snow comes, but this was across the sea, where the robin stays all the year.

The little bird lighted on window sills and tapped with its beak, but was seldom heard. Once two little girls looked out of the window and saw him, but it was so very cold that they quickly ran to the warm fire and birdie flew away.

After a while an old man came along in the path that led up the village church. Robin hopped behind him, and when he opened the door birdie was close by and went in without being noticed. Oh, how warm and comfortable the church was! The Sunday-school children had been there with their teachers trimming the church with holly, and mistletoe, and singing Christmas carols. The fire was to be kept all night that the church might be warm for the Christmas service. The old man put on fresh coal and went home. Birdie hopped about in the fire-light, picking up some crumbs he found on the floor. Some cakes had been given to the children. How welcome this supper was to the hungry robin you can guess. Then he perched on the railings of the stairs and tucked his head under his wing—a very sleepy and happy bird. In the morning his bright eyes espied, first thing, the scarlet holly berries. There was indeed a royal feast in robin's eyes, enough to last for many weeks of wintry weather.

The hours flew on and the happy children came and sang their Christmas carols.

Just as the first verse was finished, a clear, rich, joyous song burst from birdie's little throat, high above among the green branches. No one had seen him and what a sweet surprise! The minister raised his hand to keep silence while birdie sang, and then, opening the Bible, read in reverent tones:

"Yea, the sparrow hath found a house, and the swallow a nest for herself, where she may lay her young: Thine altars, O Lord of hosts!"

"This time," said the minister, "our favorite bird, our little Robin Redbreast, has found a lodging and breakfast in the church where we come to pray for our daily bread. Snow is all around, covering the ground and bushes: he was cold and hungry and might have perished in the storm, but the good All-Father, in His pitying love and tender care, guided the tiny wings hither."

"The little bird praises Him in its joyous song. Shall not we, with far greater reason, praise Him gladly?"—*New Orleans Picayune.*

Important Sanitary Information.

Science sums up the Report of the Paris Commission on consumption as follows:—

Tuberculosis is, of all diseases, that which has the most victims, especially in the cities. More than one-fourth of the mortality of Paris, during the year 1884, was from tuberculosis in some of its forms. Tuberculosis is a parasitic, virulent, contagious, transmissible disease, caused by Koch's bacillus. The microbe penetrates the organism by food, by air of respiration, and through the skin and mucous membranes by abrasions, excoriations, and divers ulcerations. Certain diseases, as measles, chronic bronchitis, pneumonia; certain constitutional states, due to diabetes, alcoholism, syphilis, predispose to tuberculosis.

The cause of tuberculosis being known, there is but little difficulty in preventing its dissemination and propagation if proper prophylactic means are taken. The parasite of tuberculosis may infect the milk, muscles, and blood of animals which serve for the food of man. Raw meat, underdone meat, blood, may contain the living germ of tuberculosis, and should be interdicted. For the same reasons milk should be boiled before being ingested. By reason of the dangers which attend the use of raw milk, the protection of young children, who are so susceptible to tuberculosis should earnestly engage the attention of mothers and nurses.

By reason of the dangers which attend the use of butcher's meat, which may come from animals which were tuberculous, though having every appearance of health, the public should insist that the inspection of all meats, as required by the law, should be rigorously enforced. The only sure way of avoiding the dangers arising from meat derived from tuberculous animals, is to subject such meat to a thorough cooking, which shall include the entire substance in depth as well as the surface. Meats completely roasted, boiled, or broiled are alone safe.

As the germ of tuberculosis may be transmitted from the tuberculous to the healthy man by sputa, pus, dried mucosities, clothing, or other objects impregnated with fine tuberculous particles, it is necessary for the public, in order to be protected against the contagion:—

(1) To know that the sputa of phthisical patients being the most formidable agents of the transmission of tuberculosis, there is danger in allowing these expectorated matters to be deposited on the ground, on carpets, on drapery, screens, towels, handkerchiefs, clothing and bed linen.

(2) To be persuaded that the use of spittoons is obligatory on all phthisical patients everywhere. Spittoons should always be emptied into the fire and cleaned with boiling water. They should never be emptied on dung heaps, on garden soil where they may tubercularize fowl nor into privies.

(3) To refrain from sleeping in the bed of a tuberculous patient; to remain as little as possible in a room occupied by such a person. This caution is especially applicable to young children.

(4) To sequester from all places occupied by phthisical patients, individuals considered as predisposed to tuberculosis, children born of tuberculous parents, or that have lately had measles, small-pox, pneumonia, etc., and all diabetic patients.

(5) To avoid using objects which a phthisical patient may have contaminated—garments, bed-clothing, toilet implements, play-things, etc., till after previous disinfection, in the hot-air stove, by boiling water, sulphur fumigations, etc.

(6) To insist that the rooms of hotels, furnished houses, cottages occupied by phthisical patients at watering places or winter stations, shall be equipped and tapestried in such a way that disinfection may be easily and completely effected after the departure of each patient. It would be better that these apartments should have no hangings or tapestry, and that they should be whitewashed. The floors should be bare, either oiled or painted. Hotels and furnished cottages in which such hygienic precautions and measures of disinfection are taken should alone be patronized by the public.

German Pension System.

The German government acts on the principle that the teacher is an officer who has served his country, and when he is no longer fitted for service it is incumbent upon the state to care for him. The chief points of the pension system are as follows:

After ten years' service each teacher is entitled to a pension equal to one-quarter of his salary at that time, should he be obliged to discontinue. To this $\frac{1}{4}$ ($\frac{2}{10}$) $\frac{1}{10}$ is added for each year's service thereafter. Thus, if after ten years he continue yet thirty years, he adds $\frac{3}{10}$ to his $\frac{1}{4}$, making $\frac{7}{10}$, or $\frac{7}{10}$ of his salary at the end. Should his salary be \$800, he can retire on an annual income of \$560. Thus, when a young man has become a teacher he is encouraged to continue, because his salary increases from year to year; thus recognizing the value of experience; 2. His pension increases year by year; 3. He has a permanent place as long as he lives; 4. He is held in high respect by all; 5. He has a field of real usefulness where he can devote himself with definite purpose to reach certain ends and then see the fruits of his labors.—*The Practical Teacher.*

A Serious Loss.

It seems strange that facts which are so plainly evident to one person should sometimes be wholly incomprehensible to another. Nothing is clearer, for instance, to one who has given the matter any attention, than the loss farmers suffer annually from the poor teachers who are too generally found in the country schools. Progressive and thoroughly prepared teachers can do an incalculable amount of good in waking up the children with whom they come in contact, to the importance of putting mind into whatever they undertake in after life. The country boy and girl are in great danger of being overmastered by tradition, and nothing will be more valuable than the habit of mind which is not willing to follow the

old-fashioned way of doing without asking the reason of it. It is constantly repeated that farm lands are deteriorating, or at least, not keeping pace in value with the increase in town property. This unfortunate condition of affairs can not be justly charged upon the country school. But the country school ought to be a centre from which intelligence should be diffused. It ought to furnish the children with a fair amount of knowledge, and, above all things, it ought to impress them with the important fact that in material things intelligence always wins. It cannot be expected to teach agriculture, but it may very properly be expected to insist upon the fact that if farming is to be carried on successfully it must be carried on intelligently. It cannot be expected to teach entomology, but it should lay stress upon the importance of an intelligent study of insects, and indeed of all animal existence. A vast amount of valuable material bearing upon farm life is sent out every year by the General and the different State Governments, but it is of benefit to a very small number of persons because the vast majority of farmers care nothing for it and do not know how to use it when put in their hands. The district school is the most difficult educational problem at present demanding a solution, and the most discouraging phase of the situation is the fact that those who should be most interested are the most indifferent.—*Journal of Pedagogy.*

A Device in Discipline.

The writer recently spent a little time with H. G. Woody, principal of the Kokomo (Ind.) high school. His school room was crowded, there being five more pupils in attendance than there were seats in the room. Yet the order was perfect. Not a whisper—not a note passed—no side glances—simply an earnest attention to business. There were frequent consultations of dictionaries, encyclopedias, and other reference books, but no communication. Each pupil seemed interested in his own work and attended strictly to his own business. It was simply a model school.

In this school each pupil keeps his own record of both conduct and study, in a little blank book prepared for the purpose, and makes daily entries. This is not the "self reporting system," because the pupil's standing is not made up from this record. The pupil does not report to anybody; he simply keeps the record for himself. The principal frequently looks at these little books to see how they are kept, but never criticises the marking. The pupil is not required to show his books to his parents, and yet he is encouraged to keep a report that he will not be ashamed to show. The pupil is given to understand that the

record is for his own benefit exclusively, and that it is for his own inspection exclusively, unless he chooses to let others see it.

It seems to the writer that the above named device is an excellent one, for two very manifest reasons:

1. It compels the student to constantly compare his own performances, in both conduct and work, with his own ideal standard of excellence, and this is worth a great deal to any one, whether in school or out of school.

2. It places no inducement before the pupil to make a false report, and this gives it its immense advantage over the "self-reporting system."

Let no teacher flatter himself that this device or any other, however good, will run itself.—*Indiana School Journal*.

The Spelling Class.

"How do you teach spelling?" asked Miss A. of Miss B., the senior teacher in the village schools.

"Well," she replied, "I think some learn to spell by sight and some by sound and some by a combination of the two. That is, we recognize the correct or incorrect spelling of a word just as we do a correct or an incorrect picture of a man. If a letter is gone in one case or an arm in the other, the picture is imperfect."

"But how does a child first come to know a correct picture of a word?" asked Miss A.

"By frequently seeing it and writing it. In reality he learns words as he learns faces."

"But are not some children very dull about perceiving and remembering exact forms?" again queried Miss A.

"There is no doubt about that," was the reply, "and also in the recognition of sounds and their proper order. Some never know one tune from another, and they easily forget the order of sounds in the spelling of a word."

"Miss B., please tell us how you have your class study and recite?"

"My grade, you know, is third year. My methods might not be adapted to higher grades, but this is what I do. I write the words on the board and have the pupils begin their study by spelling and pronouncing each word three times in concert and aloud. This is the *aur* work. Then they spend fifteen minutes in writing the words on their slates, copying from the board. This is the *eye* work. Then they recite by erasing the words from their slates and writing while I pronounce. While doing this the words upon the board are covered by a small curtain that slides upon a wire. After the spelling I

pass around and mark the misspelled words, then draw back the curtain, have the slates cleaned, and the missed words reviewed by writing them several times upon the slates, after which the pupils come to me singly and spell the words orally. Then about once a week I give for a lesson only these words that have been misspelled."—*Intelligence*.

Latin.

There are moments or hours in every Latin class when a little diversion is as necessary as enjoyable. At such a time a Latin joke does good service. If the pupils can translate it they have gained considerable amusement and an equal amount of Latin. A class beginning Caesar will quickly appreciate the following:

It was the custom in a certain school to give a topic each day for a Latin essay. The topic had been assigned, "Brutus, Cesare interfecto an bene fecit, aut male fecit?" One boy came in late, the dinner hour was drawing nigh, he aimed to be as brief as possible, and wrote:

"Nec bene fecit, nec male fecit, sed interfecit."

Again the story is told of Burke that once while snuffing a candle, he put it out; he aptly quoted from *Ars Poetica*:

"Brevi esse laboro, obscurus fio."

Some one, on being told that a young lady studying thorough bass, had mastered it in three weeks, said:

"Nemo repente turpissimus fuit."

Poetry is a pleasant diversion, and the nursery rhymes, though they do not profess to be classic, are a delight to beginners. After a few weeks' work in Latin "O Miss Mary" can be easily translated:

"O Mea Maria,
Tota contraria
Quid tibi crescit in horto?
Testae et crotali
Sunt mihi flosculi
Cum hyacinthino seroto."

The prayer of Mary, Queen of Scots, written on the morning of her execution, is more serious, but simple to read:

"O domine Deus
Speravi in te,
Ocare mi Jesu,
Nunc libera me!
In dura catena
In misera poena
Desidero te,
Languendo, gemendo,
Et genu flectendo,
Adoro, imploro
Ut liberares me."

Allen's Latin Primer contains a number of such little selections. Common phrases and maxims from the Latin may be constantly put before the class to their pleasure and profit. The pupils themselves may contribute these. Webster's dictionary contains an abundant supply. A page of the Testament is an exercise in sight reading. As the pupil advances in the work, quotations from the classical writers may be used. Horace abounds in gems. His ode on the "Return of Spring," or the one "To a Ship," or "To Pyrrha," may be given to a class at a time when for some reason the regular lesson has not been prepared. With some aid from the teacher, the poems may be read at sight.

Another device is to place before the class a page of simple French, not telling them what it is, then to let them translate it from their knowledge of the Latin. The results are astonishing, and the method is another "practical" application of the dead language.

All this, of course, is to be done so as not to interfere with the prescribed work. The expedients have all been tried and found good. They often serve to keep spirit in a class, and hence secure better work. for

"A merry heart goes all the day,
Your sad tires in a mile-a."

—*Public-School Journal*.

An Oxygen Explosion.

An accident which occurred in Lexington, Ill., gives sad emphasis to the necessity for care in conducting chemical experiments. Professor J. Jess, of the high school, started to make oxygen for his chemical class. He used as a retort a piece of gas pipe eight inches long and two inches in diameter. On applying heat for a short time an explosion occurred, and the retort blew up like a bomb shell. The room was wrecked, Professor Jess and several others were terribly injured, while about twenty were included in the list of wounded.

The probabilities are that the chemicals were impure. About twenty years ago a similar accident happened at the School of Mines, Columbia College. The experimenter had by mistake mixed sulphide of antimony, instead of binoxide of manganese, with chlorate of potash. On applying heat the mixture in the retort exploded and the experimenter's sight was permanently destroyed. Oxygen can with perfect safety be generated in a glass retort, flask, or test tube, but the mixture of chemicals should always be tested by heating a small quantity in the bottom of a test

tube. If it evolves oxygen quietly, the oxygen mixture may be considered correctly made. Sulphide of antimony and binoxide of manganese are so similar in appearance that the mistake described above is one always liable to happen, and the result is practically gunpowder or worse. Organic matter or sulphur may bring about a similar result.—*Scientific American*.

Reading Music At Sight.

The people are beginning to ask why it is that their children are not taught to read music. They know they have good voices because they learn songs, and sing them well. But they also know that they are wholly dependent upon some one else to teach them the songs by rote. It is certainly a misfortune, with all we have done, and all we are doing in education in general, that pupils are allowed—compelled is a better word—to stay from four to twelve years in school, and not learn to read music, and with the same facility that they learn to read their mother tongue. Give the pupils proper teaching, and *one-fourth* of the time that is spent in any other branch, and the results in music will be most satisfactory. There is no excuse for this poverty stricken business, for every teacher that can teach reading, can teach singing.—*Public-School Journal*.

The Beginning of a Bottle.

The process begins with the gatherer. His blowpipe is a tube of wrought iron five or six feet long, and of lighter weight than the pipe used in blowing window glass. He dips the end of his pipe into the molten contents of the boot, and brings out a mass of red-hot plastic glass. If the bottles to be blown are small, one gathering suffices, but, for larger wares, two or even three gatherings may be necessary to get the requisite supply of material on the end of the blowpipe. When the gathering is done properly, this lump of red-hot glass is a perfectly homogeneous mass. Its subsequent fortunes rest with the blower. He takes the blowpipe from the gatherer, and, resting the plastic glass against a marvering table of stone or cast iron, he gives the pipe a few adroit rotations, thus fashioning the glass into an even cylindrical shape. By further rolling it along the edge of the table he forms the smaller prolongation of glass which is afterward to become the neck of the bottle. Lifting the still red-hot glass from the table, he blows through the pipe, forming a small bubble of air in the interior of the mass of glass. This is afterward extended until it becomes the inwardness of the bottle.

The partly fashioned bit of glassware is now introduced into the mold which one of the "shop" boys has already opened to receive it. For convenience in working, the mold is placed on a somewhat lower level than that on which the blower stands. It is made of cast iron, and is commonly formed in two pieces. One of these is stationary, while the other opens outward, its motion being controlled by a foot lever. When the blower places his incomplete bottle, still attached to the blowpipe, into the mold, he closes the mold with his foot, and blows through the pipe until the plastic glass is everywhere forced against the sides of the mold and has impressed upon it the form of its prison.—From "The Evolution of a Glass Bottle," by Prof. C. H. Henderson, in the *Popular Science Monthly* for December.

EDUCATIONAL OPINION.

School boards and school officers would deserve and receive the benedictions of coming generations if they supplied to pupils, during the eight years of their common school course, proper hygienic conditions—rooms capable of ventilation without hurtful changes of temperature—seats and desks so constructed as to facilitate order and to prevent deformity—light, suitable in direction, quantity and color—systematic and frequent exercises in gymnastics, calisthenics, and military movements—school sessions giving abundance of time for a regular, deliberate midday meal. Managers of schools incur a fearful responsibility when, thoughtlessly neglecting to provide for those under their care, they entail upon them those sufferings which such neglect certainly produces.—*Supervisor McKay*.

He who can express his thoughts readily, correctly and felicitously, and who has thoughts worthy of expression, occupies a much-to-be-desired vantage ground in the warfare of life. I fear that some of our teachers are not sufficiently impressed with the importance of this group of subjects. They are too often content with fragmentary answers, barely indicating that the pupil possesses the requisite knowledge. They do not insist upon full and grammatically complete answers which would develop bowers of expression. Familiar conversations in which the pupils take part, descriptions by them in their own words of what they observe, frequent written abstracts of their lessons, in history and in science of common things, would give them an easy mastery of their own language.—*Supervisor McKay*.

§10,000 TO DALHOUSIE.—The late John P. Mott of Halifax, among many other public bequests, left ten thousand dollars to the university of Dalhousie, College.

AMONG THE SCHOOLS.

The teachers of New Glasgow—twelve in number—have organized themselves into a local association which meets on the last Friday of each month. At the first meeting, January, Principal E. Mackay read a short paper outlining the work that the Association might accomplish, and emphasizing in particular the opportunities it afforded for scientific work. During last month the teachers have been reading Inspector Hughes' little work on "Mistakes in Teaching" and at the last monthly meeting Miss Nettie Forbes, of the High School Staff, read a very suggestive paper on the same subject. Miss Forbes supplemented the list of teacher's weaknesses noticed in Mr. Hughes' book by indicating several other "mistakes" to which the profession is liable. An interesting discussion followed, after which Mr. McKay gave a lesson on Limestone and Miss Forbes outlined work in Botany suitable for March. The programme for the March meeting will include papers on professional subjects, science lessons and a lesson in school calisthenics.

The teachers of Amherst have organized for study. Their present course of study is Fitch's Lectures on Teaching, for professional work; and the critical study of Macbeth in the department of literature. After they finish Macbeth, they intend to follow a course of science study to prepare for the Summer School of Science.

Springhill has one of the finest school buildings in the province; Truro has just completed a handsome High School building, according to the most approved ideas, and now Amherst is thinking about a new building. A fine site of about four acres has been secured and a large brick or stone building is being talked of to be completed about November, 1891.

PERSONAL.

Stanley Mackenzie, B.A., (Dal.) has been awarded a scholarship of \$200 at the Johns Hopkins university.

The Halifax Academy is making a shade of sensation in the lecturing line. W. T. Kennedy, Junior Classical Master, drew the largest house of the season in the Y. M. C. A. course on the 25th February, subject: "Some Laws of Nature Suspended; the Consequence." The climax was attained, however, on March 4th, when Howard Murray, Senior Classical Master, filled the house so that many were unable to get standing room; subject: "A Wife or a Library, Which?"

QUESTION DEPARTMENT.

Questions and Answers.

N. S. M., ENGLISH CENTRE, PENNSYLVANIA.—1. A man standing on a globe, six feet in diameter, has his eye six feet above the surface of the globe; how much of the plane surface on which the globe rests is hidden by it from his eye?

(Geometrical solution.) Draw a circle with any radius touching a horizontal line at A. From A draw the vertical diameter AB. Produce AB upwards to C, making CB=BA. From C draw a tangent to the circle at D. Produce CD to meet the horizontal line in E. The horizontal represents the plane, the circle the globe, C the position of the eye, and the circle described with the radius AE the portion of the plane hidden from the eye at C.

(Algebraical solution.) Let AE= x , then (Euc. III. 36 Cor.) ED= x . But by Euc. III. 36, CA \times CB=CD 2 =12 \times 6 ft.=72 ft. \therefore CD= $\sqrt{72}$ = $6\sqrt{2}$. \therefore CE= $x+6\sqrt{2}$. But by Euc. I. 47, CE 2 -CA 2 =AE 2 , that is, $(x+6\sqrt{2})^2-12^2=x^2$ (1)
 (1) Expanded, $x^2+12x\sqrt{2}+72-144=x^2$ (2)
 (2) Transposed, $12x\sqrt{2} = 72$ (3)
 (3) $\div 12\sqrt{2}$, $\therefore x = \frac{6}{\sqrt{2}} = 3\sqrt{2}$ (4)

But x = radius of the circle of obscuration. \therefore Area of circle of obscuration = (Pi) x^2 = 31.4159 \times 3 $\sqrt{2}$ 2 =3.14159 \times 3 \times 1.4142=13.3285+ square feet.

2. In a room 40 feet long, 20 feet wide and 10 feet high, there is a rope 50 feet long, one end of which is fastened to the corner of the ceiling, and the other end fixed in the opposite (diagonal) corner on the floor. How many feet from the corner on the floor, under the ceiling corner, where the rope is fastened, will the rope touch the floor along the wall, *i. e.*, by pulling the rope down to the floor along the wall by the length of the building?

Let x feet = the required distance. Then square of height of room + x^2 = square of length of rope in air (Euc. I. 47). That is, $\sqrt{x^2+100}$ = length of rope in air. $\therefore 50 - \sqrt{x^2+100}$ = length touching floor along the 40 foot wall. Remaining length of 40 foot wall = $40 - (50 - \sqrt{x^2+100}) = (\sqrt{x^2+100} - 10)$. The square of this + the square of the breadth of the room (Euc. I. 47) also = x^2 . That is

$$(\sqrt{x^2+100}-10)^2+20^2=x^2, \quad (1)$$

- (1) Expanded—
 $x^2+100-20\sqrt{x^2+100}+100+400=x^2, \quad (2)$
 (2) Coll. and Trans., $-20\sqrt{x^2+100} = -600, \quad (3)$
 (3) $\div -20,$ $\sqrt{x^2+100} = 30, \quad (4)$
 (4) Squared, $x^2+100 = 900, \quad (5)$
 (5) Trans. and Coll., $x^2 = 800, \quad (6)$
 (6) Sq. rt. ext., $x = 20\sqrt{2}, \quad (7)$
 $\therefore x = 28.284 + \text{feet.} \quad (8)$

3. Buell and MacKenzie agreed to dig a ditch 100 rods long for \$100. The part of ditch MacKenzie had to dig was more difficult of execution than Buell's. Buell said, "I'll throw of twenty-five cents per rod on mine and give it to you; and you dig the worth of \$50 or \$1.25 and I'll dig the rest." They should receive respectively \$1.25 and \$0.75 per rod. How many rods should each dig?

Let x = number of rods dug by MacKenzie @ \$1.25.
 Then $\$1.25 \times x = \$50.$

$$\therefore x = \frac{50}{1.25} = 40 \text{ rods.}$$

And $(100-x)$ number of rods dug by Buell = $(100-40)$
 = 60 rods.

L. A. M., HANTS. 1. Who were the Arundel poets, and why were they so called?

1. Poets whose works were published in an edition called the "Arundel Poets." Name probably suggested by the famous patronage of the fine arts by the Earl of Arundel.

2. Who was the author of the "Keepsakes" and "Amulets" mentioned in the notes on Robert Browning in January REVIEW?

The "Keepsakes" and "Amulets" were artistic publications of selections from the best poets very popular in England about sixty years ago.

3. Do the "pointers" always point to the North Pole star, or does the "handle of the Dipper" ever point to it?

This problem should be solved by observation. The "handle of the Dipper" swings around the North Pole star once in 23 hours and 56 minutes approximately. But as the positions of all the stars are fixed, with respect to each other, the Dipper cannot curl up its handle to take the place of its nose—the "pointers," which, of course, must always point towards the Pole star.

S. S. S. Is there not some confusion in the February REVIEW with respect to the Secretary of the Summer Science School, *et cetera*?

There is. The proof-reader of his own motion changed the signature *A. McKay* to that of *A. H. MacKay* in the "Circular to Halifax Teachers" and the advertisement of the Summer School, probably under the impression that there was but one MacKay—the *Principal*. But there is a greater than he—the *Supervisor* of the public schools of Halifax, *A. McKay*, also Secretary of the Summer School of Science.

A. P.—A. owes B. \$729.18 due to-day. A proposed that he should pay \$183.14 and have the payment on balance extended for four months, interest to be paid at the rate of 10 per cent in advance, said interest to be taken out of the \$183.14, the balance to be paid on note. Point at issue: What are the respective amounts for interest and credit on note?

10% per annum = 31¢ for 4 months. \$729.18
 \$183.14 = \$546.04, which is 93% (100 - 3%) of the
 amount on which interest is to be charged.

Therefore, \$546.04 ÷ 93% = \$587.87, the amount
 on which interest is to be charged.

\$729.18 - 564.87 = \$164.31, the amount paid on
 principal. \$183.14 - \$164.31 = \$18.83, the interest
 paid in advance.

Proof. - 4 months' interest on \$587.87 = \$18.83.

S. K.

LITERARY NOTES.

Ginn & Co., Publishers, Boston, will issue shortly a work on Structural and Systematic Botany, for high schools and elementary college courses. It is designed to serve as both a laboratory guide and an outline of the classification of the vegetable kingdom.

To this end a number of typical plants have been carefully selected and these studied in detail, with full directions for gathering or growing the specimens as well as for the study of their structure. This work is supplemented by a brief diagnosis of the group to which each plant belongs, with such descriptions or figures of related forms as will enable the student to recognize the common forms likely to be met with, as well as the relationships of the different groups of plants.

Ginn & Co. will publish in April "THE BEST ELIZABETHAN PLAYS," edited with an introduction by WILLIAM R. THAYER. This volume appeals to the general reader who wishes to get, in small compass, the best products of the Elizabethan Drama (exclusive of Shakespeare), and also to the students in academies or colleges, who are studying this most important period of English literature. It is a work equally well adapted to the library and to the class room.

BOOK REVIEWS.

A TEXT-BOOK OF ANIMAL PHYSIOLOGY, with introductory chapters on General Biology and a full treatment of Reproduction, for Students of Human and Comparative Veterinary Medicine and of General Biology, by Wesley Mills, M. A., M. D., L. R. C. P. (Eng.), professor of physiology in McGill University and the Veterinary College, Montreal; with over 500 illustrations. pp. XXII + 700. 8vo. New York, D. Appleton & Co., London; Caxton House, Paternoster Square, 1889. (Also, E. M. Ronouf, 2238 Saint Catherine st., Montreal). Although this volume bears the imprimatur of the great publishing house of New York upon it, in its superior typographical finish it is a Canadian work — one which will reflect no little additional lustre on the growing reputation of the great Canadian University of McGill, and one which will give much satisfaction to those who like to see our own people take a leading position in the progress of the world. Professor Mills' work is admirable on account of his clear style, the concise and forcible presentation of his points, their logical succession, the skill with which his illustrations are utilized and

the demarcation between the latest proven facts and hypotheses. But we specially admire the wide sweep of his treatment of the observed laws of life. All flesh is laid under tribute to discover the mysteries of those ills to which the human flesh is heir. The bone, the blood, the muscle, the nerve of man, grow, and live, and die, much as in other animals. Reproduction, assimilation, action and decay are common to each in very similar forms. Why this similarity? Our experience teaches us the more fully we explore the more profoundly we feel it — that nothing in nature is meaningless. The study of the laws of life in the lower animals is giving a knowledge of human life where it would be impossible to obtain it by direct observation and experiment. This work lays a broad foundation for a sound medical knowledge of human physiology. It is equally valuable to the zoologist and to any who desire to have a knowledge of the latest presentation of the principles of general biology. The author distinctly adopts the evolutionary hypothesis as the most profitable for the correlation of the observed facts. This treatment if persisted in, with severe and accurate observation and experimentation, cannot fail before long to show the sufficiency or insufficiency of this hypothesis. Truth is mighty and will finally prevail. This work will, we have no doubt, do much towards revolutionizing the method of studying animal physiology. The comparative biological and evolutionary points of view from which it is written, will call attention to it everywhere. We see by one of our exchanges that permission has been asked for its translation into German.

A GERMAN READER FOR BEGINNERS IN SCHOOL OR COLLEGE with notes and vocabulary by Edward S. Joyner, M. A., professor in South Carolina University, pp. vi + 277, 12mo. (Boston, D. C. Heath & Company, 1890). The publishers have in this volume produced a beautiful specimen of the typographical art, and a handsome and strong binding. The reader commences with interlinear translations, then passes on to a well graded selection of simple readings in prose and poetry. The selections are principally in the German letter, new orthography; but there are also selections in Roman letter, and a few in the old orthography. Its useful and copious notes, beautifully printed vocabulary, and skilfully graded selections can hardly admit of a superior under 300 pages.

ÆSCHINES AGAINST CTESIPHON. Edited by Prof. Richardson, of Dartmouth college. Publishers, Ginn & Co., Boston and London. This celebrated oration, the companion piece of Demosthenes' On the Crown, will always be of interest to the readers of ancient classics. The attractive form in which it is now published by Messrs Ginn & Co., the excellent typographical appearance, with copious notes and vocabulary, will enhance its value in the eyes of the student. The basis of this edition by Prof. Richardson, is the German edition of Weidner, and his commentary has been freely modified to meet the needs of advanced college students in America.

THE NEW ARITHMETIC Edited by Seymour Eaton. Boston: D. C. Heath & Co., publishers. If there is

wisdom in a multitude of counsellors this book should bear the palm over all other texts on arithmetic. It is the product of three hundred authors. It has very little theory but is practical to the fullest extent. The preface to the work by Prof. Stafford of William's College has many excellent points, worthy the thoughtful consideration of those who would teach arithmetic successfully.

RECEIVED.

LABORATORY MANUAL OF EXPERIMENTAL PHYSICS C. W. Bardeen, publisher, Syracuse, New York.

ELEMENTARY CLASSICS: Livy, Book XXI, MacMillan & Co., publishers, London and New York

LABORATORY MANUAL OF EXPERIMENTAL PHYSICS Arey (C. W. Bardeen, Syracuse, 1890)

TEACHER'S MANUAL OF FRACTIONS. Ginn & Co., publishers, Boston.

FREITAG'S AUS DEN STAAT. D. C. Heath & Co., Boston, Mass.

PUBLICATIONS RECEIVED.

In *Wide Awake* for March is an Acadian Story, "The Kuluskak Giant," the scene of which is laid near Lake Rossignol, N. S.; time, 1795. In *Bookman* for February are two excellent articles. One on Browning and the other a criticism on Tennyson's latest volume. The *Century* for March has for its leading article the continuation of the "Autobiography of Joseph Jefferson," the illustrations of which are even more excellent than usual. The *Popular Science Monthly* for March has a fine table of contents. In an editorial, "How to make Knowledge Real," there is a strong protest against mere book teaching in science. *St. Nicholas* for March opens with an exciting sketch, "On a Mountain Trail." The table of contents and the illustrations are as usual excellent. The *Scientific American* for March 1st has an interesting article with illustrations on the Artesian Wells of Riverside, Cal. Among the valuable articles in *Garden and Forest* for Feb. 26th, are "Botany for Young People," "An Alley in the Tuilleries Garden, Paris," "Mocking at Knowledge," etc. A trial subscription for three months for fifty cents, will secure thirteen numbers of this excellent journal. Address *Garden and Forest*, New York.

NOVA SCOTIA SUMMER SCHOOL OF SCIENCE.

The Fourth Annual Session of the Nova Scotia Summer School of Science will be held at Parrsboro, N. S., from July 21st to Aug 1st 2nd, 1890. Opening address in the Skating Rink, July 21st, 7.30 p. m. The course of study includes: ZOOLOGY, 8 lectures—By Principal A. H. MacKay, Halifax Academy; assisted by John Brittain, Esq., N. B. Normal School, Fredericton. BOTANY, 8 lectures—By Inspector Lay, Amherst; assisted by Prin. Creighton, Compton Avenue School, Halifax. MINERALOGY, 8 lectures—By A. J. Pineo, A. M., Truro; assisted by Miss Mary Dwyer, St Mary's School, Halifax. PHYSICS, 8 lectures—By Principal E. McKay, New Glasgow. CHEMISTRY, 8 lectures—By Prof. A. E. Coldwell, Acadia College, Wolfville; assisted by W. E. Kennedy, Esq., Halifax Academy. PHYSIOLOGY, 8 lectures—By Prof. Burwash, Mt. Allison College, Sackville. GEOLOGY, 4 lectures—By Prof. Kennedy, Kings College, Windsor. ASTRONOMY, 4 lectures—By Principal Cameron, Yarmouth Academy. TONIC SOL-FA—Miss A. F. Ryan, St. Mary's School, Halifax. ELOCUTION—By Miss H. E. Wallace, Acadia Seminary, Wolfville. MODERN LANGUAGES—By Herr Lothar Bober, Halifax.

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FACULTY OF MEDICINE—Oct. 1st.
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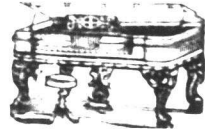
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[116 pages, 32 cuts. See REVIEW for Nov., p. 92.]

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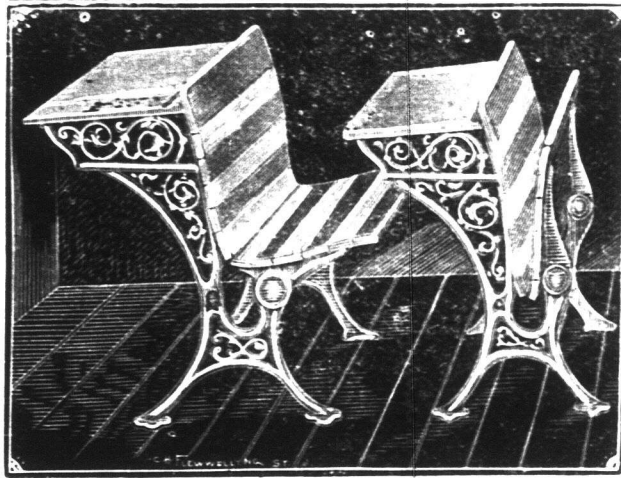
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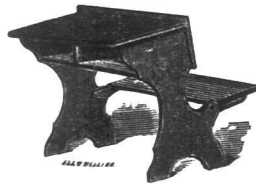
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