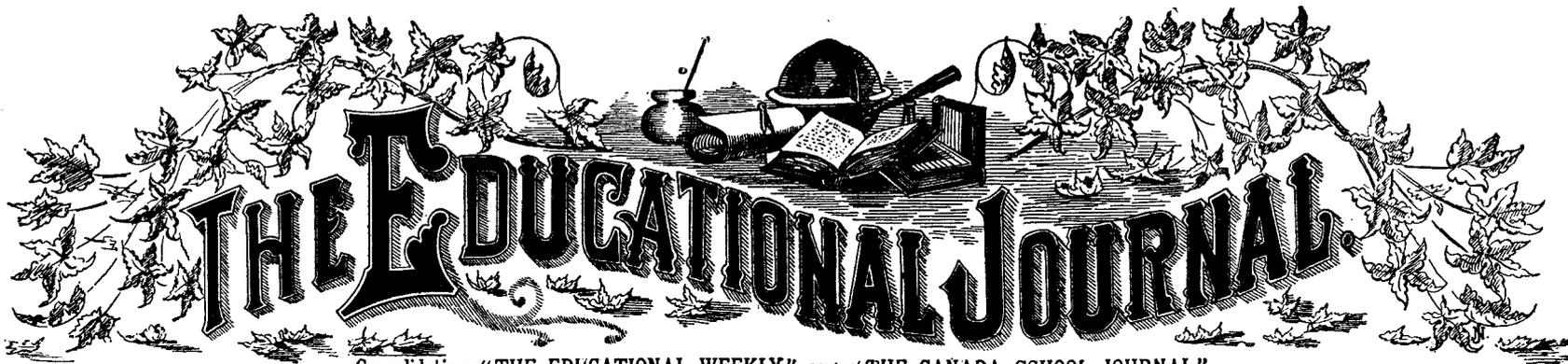


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OFFICIAL CALENDAR

—OF THE—

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November :

Last day for receiving applications for examination from candidates not in attendance at the Ontario School of Pedagogy will be Dec. 1st.

I. HIGH SCHOOL ENTRANCE EXAMINATION—
(1) The examination in History will be in Canadian History alone. No questions will be set in British History. The Inspector shall see, however, that the subject is taught orally, and shall report any case of negligence to the Board of Trustees.

(2) Physiology and Temperance are compulsory, and shall take rank with the other subjects for the Entrance Examination. The new text-book in this subject may not be ready before the first of October, and this fact will be taken into account in the construction of the examination papers for 1894.

(3) The work in Drawing is limited to Drawing Book No. 5, and in Writing, to Writing Book No. 6.

(4) The Public School Leaving Examination or some modification thereof, will be substituted for the present High School Entrance Examination as soon as the results of the present changes in the Public School Leaving Examination justify the Education Department in adopting this course.

II. PUBLIC SCHOOL LEAVING EXAMINATION—
The changes with respect to the Leaving Examination are as follows :

(1) The subjects of the Fifth Form may be taught in any school, irrespective of the number of teachers on the staff or the grade of certificate which they may hold. Pupils may write at the Leaving Examination without having passed the Entrance Examination.

(2) The examinations will be conducted by the Board of Examiners having charge of the Entrance Examination, and will be paid for at the same rate per candidate.

(3) Physiology and Temperance are compulsory, and the examination in this subject will include the ground covered by the new text-book.

(4) The subjects of Euclid and Algebra will be included in a small text-book which will be the basis of the examination and will be ready about 1st October.

(5) Agriculture, Botany, and Physics are optional subjects; the course in each to be determined by the teacher, subject to the approval of the Inspector.

(6) The High School Reader will be used for Reading and Literature. The Public School Arithmetic will be enlarged to admit of greater practice in Commercial work, but no change will be made in its price. The additional exercises will be required for the Fifth Form. The text books in the other subjects will be those authorized for Public Schools.

(7) Candidates who obtain Public School Leaving certificates shall be entitled to admission into the classes in Form II. of a High School in all the subjects of that examination, and the Commercial course for the Primary should, if possible, be completed before they enter the High School. Candidates who fail at the Leaving Examination but who obtain 25 per cent. of the marks for each subject, will be admitted to a High School.

III. HIGH SCHOOL PRIMARY EXAMINATION—
(1) The course prescribed for the Primary Examination with the Science option may be taught in any Public School, subject to the approval of the Trustees and the Inspector.

(2) The amount of school work prescribed for the Commercial course has been reduced and the details of the course modified, especially in Drawing. The examination of all candidates will be conducted by the Principal of the High School and the High School teachers in charge of such subjects, but a written examination will be required, in addition, on papers prepared by the Department. For 1894, any four of the books of the High School Drawing course will be accepted, in the case of candidates for the Primary Examination, in lieu of the prescribed books of the new course, and any two books in the case of other pupils. The work done in Book-keeping in the blank books hitherto used, will also be accepted for 1894.

(3) The whole of Euclid Book I. is now prescribed and will form the subject for examination in 1894.

Minor details of the proposed changes will be found in the Regulations, to which your attention is respectfully directed.



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TORONTO, NOVEMBER 1, 1893.

Vol. VII.
No. 12.

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Editorial Notes.

WE are requested by the Educational Department to remind those interested that a special written examination of the School of Pedagogy will be held in December for those who are exempt from attendance thereat. Intending candidates are reminded that application for this examination should be made to the Deputy Minister on or before 1st December.

WE do not understand how such things as our correspondent "Smike" describes can be. Surely either teacher or rate-payer has an easy remedy against either teachers whose certificates have lapsed, or girls under (or over) the age of eighteen who have no certificates. We do not see how schools having such unauthorized teachers can draw the Provincial grants. Surely all that is required is that the attention of the Education Department be called to the fact. Meanwhile, the remarks of our correspondent point to the desirability of forming either local unions, or a Provincial union, for the protection of teachers' interests.

A CORRESPONDENT calls our attention to the fact that there is to be a special examination in connection with the School of Pedagogy in December, for those who are not required to attend the school. As most of those who would write at this examination are engaged in teaching, and as the examination is for those only who are not attending the school, he thinks it would be a great convenience to those proposing to write if the examination were held during the Christmas vacation. This would save them from the difficulty and expense of

employing substitutes and their pupils from the disadvantage of having a strange teacher for a week. The suggestion seems reasonable. Unless there is some objection or difficulty which does not occur to our correspondent, or to us, we feel sure that the attention of the Department needs only to be called to the matter in order to obtain the desired arrangement in respect to date.

WE have received a good many orders for sample copies of the *Cosmopolitan* from persons who specified the September, or World's Fair number. Such orders were all duly forwarded to the office of that magazine. We are now in receipt of a communication in which the publishers of the *Cosmopolitan* say:

"We greatly regret that it is absolutely out of our power to furnish the September *Cosmopolitan*. The December issue will also be a World's Fair number, and more artistic and expensive in character than the September number. May we send December number instead?"

Will those who have ordered the September number whether as samples, or as the first number of a yearly subscription, kindly drop us cards explaining their wishes in the matter? Will you wait for the December number, or accept some other number? If we hear nothing from you we will infer that you have concluded to wait.

WE find that there is a good deal of difference of opinion among teachers in regard to the teaching of a fifth-class, or leaving work, in the public schools. Some hail it as giving opportunity for a step forward and upward in the public schools. Others regard it as an additional burden placed upon the already overburdened shoulders of the long-suffering teacher. Of the latter class are the teachers of East Grey, as is evident by the resolutions passed by them, published in our last number. By the way, may we be permitted to observe that the resolution referring to this subject is a little indefinite. The opinion is expressed that "the present course for the Entrance Examination is sufficiently extensive for pupils of the average age and intelligence." This means, we presume, the average age and intelligence of those who take the Entrance Examination. But we do not understand that it is expected that the additional year's work is to be done in the public school without an additional year's time being given for it. Other things being made right, would it not be an important step in advance if a large number of boys and

girls could be induced to spend another year in the public school, whether they afterwards entered the high school or not?

ON one point all will, we think, be agreed. It would be unreasonable and unfair to expect the teachers in the public schools to undertake all the labor involved in adding a full year's work to the course, without giving them both more help and more remuneration. One teacher writes us—and no doubt his words voice the perplexity of many—"I confess that in making out my table I do not see how I am going to bring in all the classes." The same teacher further points out that, by having this year's additional work done in the public school, parents are saved the expense of that year at the high school and can therefore afford to increase salaries in the former. For our own part, we are sure that if we were now engaged in teaching a public school, we should welcome the opportunity to do the work for the leaving examination as a real improvement of the public school teacher's status, but we should certainly think ourselves justly entitled to some advance in salary, while some additional help in the school would seem indispensable.

A TORONTO newspaper said the other day, in the course of an article with the significant heading, "Over-much Governed and Educated:" "If we had less education, less of the forcing-house system, we would (should) have more farmers' sons willing to till the soil (and that is the great requirement in Canada), and more boys raised in the city prepared to make their way by manual labor."

This is the old refrain, "Too much education!" Nine-tenths of the children should be kept without education in order that they may become hewers of wood and drawers of water for the remaining one-tenth. That will make things go smoothly. That is what the argument comes to. The fact, if such it is, that there is not a sufficiently large proportion of the young people willing to engage in farming and other manual occupations may be a very good reason for improving the kind of the education given in the schools. It can be no reason whatever for refusing to give to every child the best education possible under the circumstances. That is every Canadian child's birthright. Perhaps it may be a very good reason, too, for readjusting the rates of payment, degrees of social estimation, etc., attached to these employments. But why should farmers' sons be expected to do all the farming of the future, and city boys all the manual labor? We do not say that every shoemaker's sons must become shoemakers,

English.

All articles and communications intended for this department should be addressed to the ENGLISH EDITOR, EDUCATIONAL JOURNAL, Room 20, 11½ Richmond Street, Toronto.

THE GOLDEN TOUCH, AN ETHICAL AND CRITICAL STUDY,

[FOR SENIOR THIRD CLASS.]

MISS M. A. WATT.

1. SPECIAL object: To obtain author's meaning and moral teaching.

2. General objects: To cultivate observation, imagination, language and taste.

To understand an author it is well to know something about his life. The following are a few general facts in the life of Hawthorne:

Nathaniel Hawthorne, one of the finest American novel writers, was born at the beginning of the present century, probably in 1806. He lived in Salem, Massachusetts, and his mind became deeply tinged with the weird quaintness of the New England traditions and superstitions, his humor modifying his beliefs, and causing him to relate them as though he were an on-looker at a distance. His writings deal largely with his surroundings, and with the ancient tales of the olden days of New England, which he relates in elegant and easy language, giving at the same time a wholesome and moral inflection to his story. He was at one time Surveyor-General of Customs at Salem (vide "Scarlet Letter") and American Consul at Liverpool. He died in 1864. "Twice-told Tales," "Mosses From an Old Manse," "Scarlet Letter," and the "House of the Seven Gables," are his best books. He is psychological and weird and somewhat mystical, and he himself feared that on this account he would be forgotten, unless some boy remembered him as the author of the "Town Pump!" Our Ontario boys will remember him better as the author of "The Golden Touch" and "The Truant" (in the Fourth Reader.)

"The Golden Touch" is a story intended to teach a useful lesson. It is a fable or allegory. It is especially to obtain the meaning Mr. Hawthorne wishes to convey that we study this lesson, and it will be necessary to explain the meaning of an allegory. It will perhaps disappoint the children to be told it is not literally true, and some may refuse to give up their belief, as one boy did in regard to the "Fairies on Caldon Low." He said he had relations who had seen them in England, and his vexation was great when he was told there were no fairies. We have to leave such children in the enjoyment of their harmless fancies, knowing that time will harden their hearts and remove most of the beautiful delusions of youth and innocence soon enough to suit even the worst Gradgrind in the School district.

The class may read silently the introduction of the personages and their description, as far as the middle of page 217. Return to first and question. (Who? When? Who else? Describe Midas.) Appropriate name for child may be noticed, and here a question will be asked by the children: "How is it 'Marygold' was never heard of by anyone else than Mr. Hawthorne?" Explain, if you can, and as you may, but there will still remain a puzzle to most. The terrible truth that Hawthorne *invented* Marygold as an influence to check Midas in his downward career, could not be received by any but a hardened youth!

Questions: What was chief point in the character of Midas? Why did he value his royal crown? Why should he have valued it? What is the value of the royal crown to our good Queen? How much did Midas love Marygold? What effect had his love upon his character and actions? How did he think he could best show his love to her? Have you ever heard of parents feeling so? Is it right? (Get reasons for answer, and show correctness of the feeling in modified degree.) What could a parent do better for a child than to save up a great heap

of wealth to leave him? (Educate him to help himself, give him good chances of culture, give him good society, give him power to help to do good, let him have comforts and enjoyments as he went along, that he may be able to enjoy rationally what there might be to leave at the parents' death. Child less likely to wish parent dead.) Attention should be called to the beauties of nature which are described here in a way that shows Hawthorne to be a lover of natural loveliness. Ask pupils to describe, *as well as they can*, some beautiful things they have seen. What did Midas think of the sunsets and the yellow flowers? What loss would there be if flowers were turned to metal? (Get answers, then indicate a few of the scientific points, as: Flowers feeding bees and insects, which in turn benefit the flowers by carrying pollen to fertilize the seeds, which are of economic value in feeding man, animals, and birds, being eaten in the form of grain and fruits. The plants also exercising a beneficial effect on the atmosphere by absorbing carbonic acid gas and giving out oxygen.) Which was wiser, Marygold or her father? Why? (Answer on paper.) What lesson does Hawthorne draw from the fact of Midas becoming more miserly? (Like the little girl in "Alice and the Looking-glass," who ran as hard as she could, yet never got past the same spot, and, when she expressed surprise, was told that she would find that it took people all their time to *keep up* without getting ahead at all, Hawthorne says, "people always grow more and more foolish unless they take care to grow wiser and wiser.") What kind of friends would Midas like to have? Pick out four words, all beginning with the same dull letter, that form a pen-picture of Midas' treasure room. (Teacher explain words requiring explanation as she finds pupils needing help.)

To present next paragraph in its true light get the class to imagine that Midas is sitting playing with what he thinks is gold, but which is really sand and shining brass. Where would the enjoyment be then? Many persons in lunatic asylums are enjoying such happiness as Midas enjoyed in his treasure room. "But the gold was gold, and was worth something. Midas could have spent it and got a great deal of good things for it." This may come spontaneously. Suggest it if it do not. Get class to think it out. Speak of bank notes and their value as pieces of paper, and after the bank breaks; tell of Indians using shells, etc., to bring out idea of purchasing power of money deciding its value.

Midas is now in a proper state to receive the spirit or genius who is introduced. Language in this part is elegant. Mysticism may be lightly touched upon, but not dwelt upon, as children are naturally superstitious and may form distorted ideas of what is said, to their hurt. What had the stranger come to do, evil or good? Read the conversation, and try to imagine the feelings of Midas as he thought of what he should ask for. How did the stranger look when Midas asked for the Golden Touch? This is a beautiful paragraph; the image of the dell, the golden sunlight, the yellow leaves likened to the treasure-room and its contents, give a vivid idea of the scene. Notice the distribution of consonants. The paragraph fairly sparkles and gleams because of their masterly selection and distribution. In the conversation the stranger asks a question, Midas answers with a question and again answers with another, and the stranger seems satisfied to accede to the request, and disappears in a blaze of brightness, leaving Midas dazed and blinded. It may be well to ask a few review questions, but it is not necessary to spend much time until the general review, as it will interrupt the perspective of the story to break it up.

The Second Reading of the Golden Touch deals with Midas in possession of the longed-for boon, enjoying it madly and unthinkingly, until Marygold's sobs cause him a slight sensation of uneasiness, which becomes alarm when his food turns to gold. The second part ends, however, leaving Midas still anxious to keep his

power, though he is seriously startled. The influence of Marygold begins to be felt, and Hawthorne introduces a touching and homely bit of feeling when he makes Midas sorry to have the little handkerchief changed.

Word and phrase definition as required. Midas changes one thing after another into gold, most of the changes signifying a loss; the handkerchief, the spectacles, the book, the flowers, the food, the pictures on the bowl, friends (as exemplified by Marygold) these all will give subjects for thoughtful debate. Ask for list of things that are better than gold. (Read "Better than Gold" in old Third Reader during this period of study.) A composition entitled "Better than Gold," on the following lines would fit in here:

1. Things better than gold when a person is sick.
2. _____ if cast on a desert island.
3. _____ if in trouble of mind.
4. _____ if weary.
5. _____ when lonely.

And when children are tired of play and want something to interest them, what they would like to have—books.

Do parents now-a-days ever exchange their children for gold? (By neglecting them or working them too hard.) How much money is a boy or girl worth? What changed Midas?

The third part brings in the genius for the second time. Midas has changed very much, yet he is still dissatisfied and longing for a boon. But it is a different boon he now craves, it is *love*, and he is willing to give his all, more now than before, for a person who loves him unfeignedly. The first visit found Midas a "miser," he is now "miserable." Read both conversations to find contrasts. Name commonest things more useful than gold. If gold were common it would be cheap, too. There is hope for anyone who values a child's love. Midas had not had his heart all changed to gold, as the result showed. He made no reserve of a particle of his magic power, nor asked to have it a moment longer, but gladly plunged into the river. How did he prove his honesty? What did Marygold say when she came back to life? Tell the rest of the story. Is this a true or false story? Give reason for answer. Review questions:

Read the prettiest paragraph, the best description, a beautiful thought, the saddest part, a lively paragraph, a paragraph that warns us, a climax. Which contains the grandest words? Which word expresses a great deal? How long did it take Midas' to change as he did? What word tells the reason of his alteration? Give subjects of each part. What is the moral of it all?

COMPOSITION AND THOUGHT.

[We reproduce this article by Miss Lascomb from the *School Journal*, because it contains an eminently practical and suggestive method of interesting pupils in the verbal expression of their own observations. There is every reason in advanced classes that pupils who are interested chiefly in physics, chemistry, etc., should learn to express accurately, briefly, and in good English, their observations of phenomena. These, and the topography of the district they live in, with the school or farm or roads or woods they best know, will afford plain, sensible subjects for clear, sensible writing, and, if accompanied by drawings, opportunities for the cultivation of accuracy of hand as well as of mind.—ENGLISH ED.]

I gave the subject of the lesson, The Table, to my fifth-year pupils. Our children are bright enough naturally, but we are just emerging in our school neighborhood from the narrow methods of the past, and they have not had much previous training in observation. The diversity in the results of their first effort upon "A Table," showed distinctly how some had fallen naturally into habits of observation, while others needed school training in this matter. A few of the compositions gave the essentials of

Teachers' Miscellany.

MORALS IN SCHOOL.

THE best character is the best formed by the best teaching. The school does not form character by the teaching of morals explicitly, but by the moral ends attained by the best teaching. The highest intellectual attainment is the highest moral attainment, and the more firmly we believe this and the earlier we accept it the better will it be for the generations to come. That which marks the highest intelligence is a proof that the determinations are swayed by the most distant ends. Sculpin and cunners are worthless fish because their determinations, their "selections," are based purely upon immediate gratification, while the choice, chaste fish, is the one whose selections and determinations look to other conditions. The toad is not respected because its choice of companions does not look beyond the moment, while the birds that are respected and even beloved are those who consider a variety of conditions and proprieties before their desires. Among men, the tramp is least respected because his outlook is but for the day; a "Bohemian" is little more respected because he considers only his present comfort and pleasure; the bachelor is but a grade higher in public estimation because he provides but for himself. The home-maker and home-lover are universally respected because they think and do for another generation. The patriot is above the parent, the philosopher above the patriot, and the Christian above the philosopher in intelligence, other things being equal, because his determinations are swayed by reference to more distant ends.

The school has its mission in all this. To work for the approval of the day is one thing; to work for the year's promotion is a higher end; to work for a knowledge of a lesson is one thing, but to work to know that which will help to know something more is quite another. To work to know how to answer questions or to make a recitation is one thing, but to know how to learn much more and to learn it much better is quite another. To seek the approval of "the boys" is one thing; to seek the approval of parents and teachers is quite another. Along this line are many things that can be done by the teacher to establish higher intellectual power and greater strength of character. Whatever is done in school that sets the standard of ends aimed at higher and more remote, tends to chastity, to integrity, to honesty, to truthfulness, as well as to broader, keener, deeper thought. The highest moral teaching is that which leads to higher, surer moral action, which only comes when determinations are swayed by the highest and most distant ends.—*Journal of Education.*

DEAFNESS AND MENTAL DULLNESS.

A CONTRIBUTOR to *The Medical News* brings evidence to show that a large proportion of the school children classed as "mentally dull" are affected with a degree of deafness. That deafness should have a marked effect upon the mental and even upon the physical, development of a child is easily believed, since so large a part of every one's education is transmitted to the brain through the ear.

Dr. Sexton, an American aurist, found a distinct defect in the hearing powers of thirteen per cent. of a large number of school children whom he examined.

Dr. Weill, of Stuttgart, in an examination of over 5,000 school children, found that thirty per cent., or nearly one-third of the number examined, had defective hearing powers. He made use of the whisper test and the test for hearing the watch tick. The hearing was considered defective only when it fell considerably below the average.

Dr. Gelle, of Paris, who has made extensive experiments in regard to the percentage of deafness among school children, found that a degree of deafness was very common among "dull" pupils, though often unrecognized. He found in one case seven children placed in seats in the rear of the schoolroom on account of dullness and inattention. Of these, four could hear the watch tick at a distance of from two to eighteen inches, while two were entirely deaf in one ear.

Of twelve boys whom the teacher considered poor pupils, ten were affected with loss of hearing power in one or both ears.

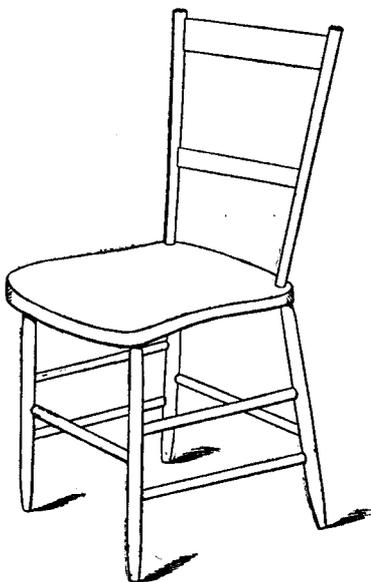
a table with the materials of which tables are made, the processes of manufacture, and their uses. Others gave one or more of these points, with such inanities, as, "I should not like to be a table," etc. Most were utterly vague and incoherent.

I then brought a child's toy table to school and placed it conspicuously as the subject of a drawing exercise. No instructions were given, except to "draw the table within a horizontal oblong 3x2 inches." This done, the oblongs were carefully cut out, with penknives and scissors, and attached with a drop of mucilage to the top of the sheet upon which the composition was to be written. I requested the class to assume that I knew all about tables in general, but had never seen this particular one, and to write a composition that would tell me how it differed from other tables in form, structure, material, and use. I put the four words that were to control the plan of the composition on the board, and had a little talk about them, to make sure they were understood. This time, the compositions were much more uniform in excellence and definite in structure. I am keeping the two sets to illustrate the difference between the results of good and bad method—between requiring expression before thought is ready and after thought is ready.

Following up my success in this experiment, I told them I wanted now a set of compositions that would be different from one another, as it was somewhat tiresome to read so much about one table. This time the common subject should be The Chair, but they were to draw and write at home, so as to have different chairs to tell about, and they could call their compositions "Our New Dining Chairs," "Grandma's Armchair," "Baby's High-Chair," "My Little Sewing Chair," or any other they chose to adopt, provided it was a chair they wrote about. The children caught at this variation in their composition work with great interest. The work enlisted activities already developed, instead of calling for thought beyond their years, and appeared to them both easy and attractive. They entered into it with zeal, and I had no lack of variety in that set of compositions. I send you one of the best. Nearly all were good.

OUR KITCHEN CHAIR.

I have not chosen the prettiest chair in our home, but the one that is easiest to draw and write about. This is not to be lazy, but to have something that I can do well.



The chair has, of course, a seat and a back and four legs, as all chairs must. But the seat of this chair is of wood, so that Mary can stand on it without harm, when she wants to reach a high shelf. And the back is very plain, having only two straight cross-pieces. And the legs are held together by rungs, or rounds, to make them strong. There is one round at the front and one round at the back and two at each side. I don't know why they made the sides stronger than the front and back, but I noticed while I was draw-

ing the chair that the rounds, did not come together at the corners. I thought that was a good thing, to make the chair stronger, and it was like breaking joints in a brick wall.

This chair was painted, but Mary has stepped on it and scrubbed it till the paint is all gone from the seat. I think it would be as well not to paint such chairs, as it is no use. Sometimes this one is left out all night in the rain. Mary takes it out to set her clothes-basket on and forgets it.

Mamma says this is a silly subject to write about and the kitchen is not the right place to do my studying. I don't think so, but I don't know what to say to mamma about it. I wish you would tell me. Next time I will write about mamma's willow rocker that we gave her at Christmas. But it will be very hard to draw. It is so fancy.

HELEN GOODRICH.

[I have had a talk with Helen's mamma and she agrees with me, now, that it is better to give children something that they can think about when we want them to write.]

CORRESPONDENCE.

R.B.—The parsing of the italicized words in

Who can say *while to-day*
To-morrow will be *yesterday*,

is made clearer by the prose order "to-day will to-morrow be yesterday," in which "to-day" is the noun subject and "yesterday" the predicate nominative noun, while "to-morrow" is the adverbial modifier of "will be." The relation of "while" in the quotation as you give it is not clear. Have you quoted accurately?

SUBSCRIBER.—The metre of "The Return of the Swallow" is in general

x x' x x' (x) x'

in an eight-line stanza, running *a b a b' c c d d*. The line is usually divided 1 x x, making four dactylic feet in each line, with the exception that there is usually but one unaccented syllable in the third foot, and the last foot lacks the thesis or unaccented parts. The omission of an unaccented syllable is found likewise in other feet at the poet's will. To my mind the true scansion is to treat the line as anapestic, lacking the upbeat or unaccented syllables at the beginning of the line

(x x)' | x x' | x x' | (x) x' |

The unaccented syllable is omitted in any foot at the poet's pleasure.

Algiers is "white," from the color of the stone and painted wood—made white to reflect the burning rays of the sun.

Newfoundland is pronounced in the island itself New'-fund-land', which is the best authority.

W. H. E.—The difference between the assertions, "the book is yellow" and "the book is read" may or may not exist. If the reading of the book is finished, we say, "the book is now read." The participle "read" is used in precisely the same adjectival relations to "book" as "yellow" is in the sentence above. If we say, "the book is read by all," the sense is different. We mean, "is being read by all." An action here is asserted as going on, while in "the book is read," a quality is attributed to the book. Take a number of similar sentences and have your class consider them. If they cannot see the difference wait till their minds grow.

"I perceived there were innumerable trapdoors that lay concealed in the bridge, which the passengers no sooner trod upon *than they fell through into the great tide.*" The italicized clause is a subordinate clause of comparison (as to time), to "which the passengers no sooner trod upon." This subordinate relation will be clearer in such a sentence as, "He is no wiser *than his father* (is)." The clause "than — is," is subordinate, limiting or defining the preceding statement.

J. S.—(1) The JOURNAL may have later on lessons in rhetoric suitable for a fifth class; meanwhile look up the primary examination papers in rhetoric.

(2) The P. S. Grammar is sufficient for P. S. Leaving examinations. For rhetoric read Gung's *Outlines of Rhetoric*, published by Ginn & Co.

(3) We shall try to have a few lessons in subsequent issues, of fifth class literature.

(4) No selections are presented for memorization for P. S. Leaving examination.

The Educational Journal

PUBLISHED SEMI-MONTHLY.

A JOURNAL DEVOTED TO LITERATURE, SCIENCE, ART,
AND THE ADVANCEMENT OF THE TEACHING
PROFESSION IN CANADA.

J. E. WELLS, M.A., EDITOR AND PROPRIETOR.

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The Educational Journal,

Room 20, No. 11½ Richmond St. West,

TORONTO.

Editorials.

TORONTO, NOVEMBER 1, 1893.

THE PUBLIC SCHOOL.

THE Public or National School is an institution too deeply rooted in our modern civilization to leave any room for fear or hope of its being superseded within the lifetime of any one now engaged in the work. We can easily fancy some of our readers starting at the use of that alternative word, "hope," and wondering how any one could possibly hope for the displacement of Public Schools, or how any civilized or Christianized country could get along without them. We have become so used to State schools, at least for elementary education, that it becomes natural to think of them as grounded in the very nature of things. A few years ago we shocked, almost offended, a good many friends and admirers of our Public School system, by venturing to say that State education is, after all, but a makeshift to supply the lack of parental service. And yet we do not see how any one can reflect seriously upon the state of society which makes a public school system indispensable to the well-being if not to the very existence of a free state, without perceiving that this necessity has its origin in the indisposition, and in very many cases, in the utter inability of parents and guardians to fulfil their obligations to the children for whose training for life and citizenship they are responsible.

It is, we hold, a universal principle, an unchangeable moral law, that the parents are primarily and properly responsible for

the education of their children. If all parents realized the weight of the obligation and were capable of fulfilling it, either personally or by the employment of suitable helpers, there would manifestly be no need of the State school. In fact, we should not hesitate to go further and say that there would be no room for it. The work of education would be better performed without it. Under the direction of conscientious and intelligent parents who realized that one of the first and highest duties of life was to train their children, intellectually, morally, and spiritually, the work of education would be much more effectively done than it can ever be done under any system of State schools. The individuality of the child could be regarded as it cannot be regarded in the great public school, which must, in the very nature of the case, partake more or less of the character of a machine. So, too, the moral and religious nature of each child could be cultivated and developed, and no troublesome questions of orthodoxy or sectarianism be raised. In short, to our thinking, the ideal system of national education would be one in which every parent—this makes the large assumption that all parents were what they ought to be, in personal character and intelligence—should, personally and by the employment of efficient helpers, see to it that his own children received the very best possible training under the healthiest possible influences.

But under existing conditions all this is practically out of the question. To leave the matter in the hands of parents would be to have a very large proportion of the future citizens grow up utterly untrained in mind and morals, to become in many cases the pests of society. The State is obliged, in sheer self-defence, to make elementary education compulsory and to provide for it at the expense of the whole body of citizens. What, then, is the use of discussing the question? There is much use in it. Apart from the general principle that it is helpful to think straight about such matters and to form correct theories, it is very desirable to have it constantly borne in mind that in carrying on the work of elementary education, the State is doing work that primarily belongs to parents, in order that we may counteract, as far as possible, the deplorable tendency of parents in these days to wash their hands of the responsibility and throw the whole upon the State, i.e., the Government of the day. Nor does it detract in the least from the dignity and responsibility of the teaching profession for the teacher to realize that he is employed to supplement to a certain extent the high duties of

parents, and not by any means to supersede them.

In a recent article in *Education*, Herbert Spencer draws a graphic picture of the deplorable and most culpable indifference of many parents, even those of education and intelligence, in respect to the culture and development of their children. We give an extract:

"Equally at the squire's table after the withdrawal of the ladies, at the farmers' market-ordinary, and at the village ale-house, the topic which, after the political question of the day, excites perhaps the most general interest, is the management of animals. Riding home from hunting, the conversation is pretty sure to gravitate towards horse-breeding, and pedigrees, and this or that 'good point;' while a day on the moors is very unlikely to pass without something being said of the treatment of dogs. When crossing the fields together from church, the tenants of adjacent farms are apt to pass from criticisms on the sermon to criticisms on the weather, the crops and the stock; and thence to slide into discussions on the various kinds of fodder and their feeding qualities. Hodge and Giles, after comparing notes over their respective pig-styes, show by their remarks that they have been more or less observant of their masters' beasts and sheep; and of the effect produced on them by this or that kind of treatment. Nor is it only among the rural population that the regulations of the kennel, the stable, the cow-shed and the sheep-pen are favorite subjects. In towns, too, the numerous artisans who keep dogs, the young men who are rich enough to now and then indulge their sporting tendencies and more staid seniors who talk over agricultural progress or read Mr. Mechi's annual reports and Mr. Caird's letters to the *Times*, form, when added together, a large portion of the inhabitants. Take the adult males throughout the kingdom and a great majority will be found to show some interest in the breeding, rearing or training of animals of one kind or other.

But during after-dinner conversations or at other times of like intercourse, who hears anything said about the rearing of children? When the country gentleman has paid his daily visit to the stable and personally inspected the condition and treatment of his horses; when he has glanced at his minor live-stock and given directions about them, how often does he go up to the nursery and examine into its dietary, its hours, its ventilation?"

The picture is drawn with an English atmosphere, but needs only certain changes in local coloring to make it equally true for the latitude of Canada. Our only regret is that, instead of placing it before our readers who already understand the state of the case, we cannot hold it up as a mirror before the faces of indifferent parents all over Canada, to shame them out of their unnatural and lamentable carelessness in regard to one of the first and highest duties of life.

THE FACULTY OF SPELLING.

IN a recent article under the above heading, the London *Spectator* propounds a view which we have long held, in part at least. We are persuaded that it contains so much of truth that it is worth the careful study of teachers. They may, unless we are much mistaken, gain some valuable hints from it, which may be put to practical use in the school-room. The *Spectator* sets out with a reference to a question asked in Parliament by Mr. Balfour, the Conservative leader, which virtually raised "that fine old question, 'Ought putting two 'c's' and one 'm' in 'recommend' to disqualify an eager and high-spirited youth from serving in the army?'" In the course of its article, which is intended to show that "Spelling and ability, either literary or practical, have no connection whatever," it goes on to say:—

"But it may be said, 'What do you mean by spelling being a special faculty? You surely don't mean to suggest that spelling comes by nature or that it is a natural gift, like drawing?' No, we do not go quite so far as that. What we do mean to say is that the inability to spell, or, rather, to learn to spell, rests upon a physical defect. Bad spelling, it is often said, comes from not paying attention; and, properly understood, this saying is true. But this not paying attention is due to the fact that the bad speller's vision is defective, or at any rate not of a kind that will enable him to pay close attention to the letters which make up the words before him. A man who is constantly reading ought, of course, to be able to spell the words which he is repeatedly seeing on the page before him. Yet, as we know, it often happens that great readers are exceedingly bad spellers. Why is this? We believe it is because the bad speller sees and reads each word as a whole, as a grammalogue or thought-symbol, that is, and not as so many letters. All people, of course, do this to some extent; but we believe that the educated bad speller does it very much more than the good speller. The ordinary man, puzzled about a word, writes it to see how it looks; and this look tells him at once whether he has spelt it right or wrong. The true bad speller is, however, not helped the very least bit in the world by this process. He is only the more puzzled by the writing on the blotting pad. He may write the word a dozen ways, and not get one version which looks to him better than the others. The truth is, his eyes have some defect, probably of focussing-power, which prevents him seeing clearly the letters of the words. When he learns to read, he learns to read *verbatim* and not *literatim*, and hence he sees, and has always seen, the symbol for "receive," not "*receive*," with the "e" always following the "c" and in front of the "i." This is why bad spellers will almost invariably be found to have been slow in learning to read. They were taught to read literally, but found

great difficulty in the process owing to defective eyesight, and so had slowly and laboriously to learn the words as symbols of ideas, not as compounded letters. In a word, bad spelling is a defect of the eyesight, not of the mind; and in all probability, many a case of inability to learn to spell might be cured in children by the right pair of spectacles. It is not short-sight that makes the bad speller, so much as over-sight and difficulty in focussing the eye. Short-sighted people are, indeed, apt to spell well. They hold the book close to the eye, and see every letter standing out clearly; for, as is well known, the effect of the short-sighted eye is to magnify. The long-sighted eye, on the other hand, sees small print as a confused and indistinct mass. The general look of the word is detected, but not the letters which make it up."

MUSIC IN THE SCHOOLS.

MANY of our readers will, we dare say, be interested in the report on music in training colleges, and on the general progress of music in the elementary schools in England and Wales, which we reproduce in another column. The *School Music Review* says that this is probably the most important report ever written by a Government Inspector of Music. "The report derives force," it says, "not only because of the unquestioned eminence of its writer as a musician, but because it represents the deliberately expressed views of an examiner who, for ten years, has had experience of the matters discussed far away beyond that of any other musician. During the decade reviewed the Inspector has *individually* examined about fifteen thousand students in training colleges, and has had under observation the work of forty or fifty of the best class singing teachers of the day. At the same time he has been closely watching the progress of music in the schools, and taking special note of the quality of the music practised."

The question of the best methods of promoting music-teaching in Canadian Public Schools demands, we are persuaded, more study than it has yet received. A chapter or two from the experience of some of our principals and teachers in regard to it might be useful. Is it really expedient and desirable to have every pupil take music lessons, irrespective of the presence or absence of musical ability? We know some boys, not below the average in other respects, to whom the music lesson, though taught by a master of high standing, is the *bete noir* of the school. They have "no tune in them," as one of them said plaintively the other day, in reporting his regular failure in this subject. For such boys, unless there is some better system than that now used—it is not the tonic sol-fa—we are strongly inclined to believe that the music lesson is a good deal worse than a waste of time. It leads to discouragement, loss of temper, undeserved reproof, a sense

of injustice, and a dislike for school. We should much like to know the view of some of our experienced readers on the point.

RESTORING THE BALANCE.

THE following extract from a paper by Mrs. H. E. Scudder, in the November *Atlantic Monthly*, is so closely in line with the thought of our article on "The Public School," that we cannot forbear to give it a place. The writer is showing how, in the case of many children, the Public Schools help to compensate for things lacking in the children's homes:

For example, the kindergarten is not merely the demonstration of a philosophical theory regarding the foundations of education; it is a practical measure to restore to large numbers of little children what has been lost out of their lives through the pressure of toil weighing more and more heavily upon the mothers of these children. Given such a reform of social conditions as shall make the humblest mother both a homekeeper and one trained in the lore of childhood, and it is within the bounds of possibility that the kindergarten should shrink into smaller compass. Again, the introduction of manual training schools would have been an anachronism when every boy spent a large part of his time out of school in the handling of tools, and when the apprentice system was in vogue. So also the teaching of sewing, even of cooking, in city schools is an attempt to compensate for the loss of training at home.

In all such cases there is, indeed, a perfectly natural relation of these studies to the rounded education of the child, yet the point we make is that the assumption of the training by the Public Schools is in consequence of the failure, for one reason or another, of the family or the industrial society to provide for such training, as these forces once did, and may do again under changed conditions. The same may be said of what is regarded as more intimately and fundamentally a part of systematic school education. What is the meaning of that most interesting movement, now gaining great headway, by which enduring and noble literature is ousting the commonplace and ephemeral reading books from our schools? Undoubtedly a very strong impulse has been given by the reasonableness of the change as soon as the attention of teachers and others interested in education has been called to it. But aside from doctrinal arguments, the argument drawn from practical experience has been very powerful. It has been seen that there is a decay in the habit of strong reading out of school; that the child who does not find the best books in his school work does not find them in his home, and between the two misses great literature altogether. So the school comes in to redress this wrong; it even gives the child fairy tales and nursery legends, because he hears them no longer at home; it goes on step by step and initiates him into the mysteries of literature, because in a vast number of cases the school-teacher is the only priest of literature.

Special Papers.

COMMON ERRORS IN PHYSICS.

BY C. A. CHANT.

WHILE engaged in reading the candidates papers returned at the various examinations held by the Education Department during this last summer, many errors were so frequently met with that the Associate Examiners in Physics requested the writer, who had the honor of acting as their chairman, to prepare for publication an article indicating some of those points where students go wrong. It was thought that those who were asked to read the papers had, perhaps, some advantage over those left at home, or at their holiday resorts, and that such a statement might be of some use to all the teachers in our secondary schools to whom falls the subject of Physics.

It may not be amiss to remark that the Committee, nearly all of whom had acted for the two previous years, were of the opinion that the Primary papers were better than those of 1891 or 1892, and that the Junior Leaving papers were decidedly ahead of those in the other two years. Indeed these candidates seemed very intelligently prepared, and were a credit to the schools they attended. It was no uncommon thing to find a dozen candidates in succession take on an average over 70 per cent. The work of the Senior Leaving candidates was more ragged and fragmentary. This may have been due to the facts that this was the first time such a paper had been set, and that many had hastily prepared for it. The complaint was also made that the prescription of work was not very definite. But these reasons would not cover all the cases, as, on inquiry in other sections where such arguments would not hold, it was found that there was, pretty uniformly, a high rate of mortality.

It will be remembered that some of the questions called for the description of some experiment, and it is truly surprising what wonderful experiments were given in many instances. To prove that sound requires a medium to travel through, it was no uncommon answer to be told to pump all the air out of a room, and some were very anxious that the examiners should go into a room from which all the air had been exhausted, being assured that when there no noise would reach their ears. To prove that air would expand without heat, one would take a balloon to the top of a high mountain; he knew he would see the phenomenon exhibited. To hear a watch ticking at a distance many fanciful arrangements were suggested. Students should be carefully warned against such answers. When such a question is given, only simple experiments, such as can be easily performed in the class-room or the laboratory, should be given. They might also be told that in every possible case clear, simple diagrams should be given. It requires little skill to draw a satisfactory diagram, and it seems natural to suspect that if the candidate knows the question thoroughly he will find it easiest to illustrate with a diagram.

Another serious error was the confusion of *pitch* with *intensity*. This was perhaps the most common blunder of all. As a typical blunder look at the following: "Take a piano-string and strike it slowly and then strike it harder. We notice that when we strike it with a little force the vibrations are not so many in one second, and the pitch is lower. Therefore pitch depends upon the number of vibrations in one second. The greater the number the higher the pitch." It was the same with a tuning fork, a bell, or any other instrument; strike it harder and you get a higher pitch. I cannot think that all have emphasized this distinction, or surely so many slips would not have been made.

It was also noticed that some did not know the difference between an arc and an incandescent lamp, even though they were told that the latter had a slender thread which became bright. I suppose they had never seen either, and yet this foolish error should not have been made. In some cases the telephone was described under the name of the telegraph, and many other batteries in place of Grove's. One candidate, indeed, drew a diagram of a compound microscope and called it a common telegraph circuit, though for what reason the examiners could not say. The famous *carbon button* was also frequently seen. Ever since a question was put upon this little thing, it has

been found looming up in all parts of the subject—in telegraph, telephone, electric bell, and everywhere else.

The above errors relate chiefly to the Primary papers, but many similar ones occurred in the Junior Leaving examination. The matter of simple experiments was again brought to our attention. To shew that a body, when projected horizontally, will reach the ground as soon as if simply dropped, the experiment of shooting a cannon-ball from a cliff and dropping another at the same time could hardly be accepted. Yet such answers were often seen. Something quite practicable should always be given.

In stating the Law of Charles (or Law of *Chas.*, as some put it) the common mistake was to omit "at 0°C ." Some candidates seemed able to get the answer to the illustrative problem, and yet were unable to state clearly what the law was.

It is unfortunate that the text-book does not illustrate the common electric bell; yet almost every book on electricity describes it fully, and it was surprising to see how many bungled over it.

I shall not refer at length to the Senior Leaving. Many failed to give a quantitative definition of *density*. The statement that it is the "closeness with which the particles are packed" is hardly full enough for first-class certificate work. Boyle's Law and Charles' Law were often confused, and the phrase " 0°C " was also left out of the latter. It was easily discovered that very many failed to see the necessity of the double time-phrase used in describing an acceleration; the first part stating the velocity acquired (or lost), the second, how long it took to secure that change; the whole expression, thus indicating the *rate of change*. Magnus' "Mechanics" is partially responsible for this looseness, but such should not be tolerated. In solving questions in calorimetry a most objectionable method was seen several times. It will obtain the correct result in many cases, but a little consideration will shew its fallacious reasoning. It was stated that 900 grammes of water at 30°C contains 900×80 , or 27,000 units (little calories) of heat; and that 630 grammes of brass, whose specific heat is .095, contain $630 \times .095 \times 80$, or 1795.5 units of heat. It will be seen at once that this assumes that at 0°C these substances contain no heat, which is very absurd. As before remarked the correct result will generally be reached by the faulty method.

Of course when such a large number wrote—almost 7,000—it was quite natural to find some who either knew very little about Physics or who intended to start a new science of their own. We were informed that "when a nail is driven into the wood it does not destroy its properties any, but only causes them to be driven more closely together," and that "the holes in the chalk (when dropped into water) come to the top." Another candidate was going to "take a thin tissue bag which wholes two points," and another bright one explained an experiment that "produces a harmonious dischord." Still another one asked the examiner to "fill a jar with hydrolic gas." Again, "it requires 536 calories to raise a unit of heat one degree," and "1 minute = 3,600 seconds." Perhaps it may be a surprise to some to learn that "an electric lamp is used for determining the space between the poles of an electric light;" or that "an incandescent electric lamp consists of a circular globe of glass having a small globe of electricity inside," and "the slender [thread] becomes so bright because there is no penumbra." We learned that the name *voltmeter* "is from Voltai, a German scientist." A paper much worse than the usual bad ones contained the following method for finding the specific gravity of iron: "The specific gravity of iron is 45 pounds to the square inch. Melt the iron so as to have it limpid, and put into it the acid hydrometer whose 0 mark is at level of water and is at the top of the glass tube, the hydrometer would then rise partly out of the limpid iron and remain with one of its graduations on a level with the surface of the iron. This then would be the specific weight of iron." The hydrometer consists of "two pieces of wood fastened together so as to form a bellows;" and "the barometer measures pressures, the water barometer measures the pressure of water, and the air barometer measures the pressure of air." Another, apparently of the opposite sex, but probably a twin with the 'limpid iron' one just above, defined Charles' Law thus: "When a body of gas has twice as much pressure exerted upon it the mass, or rather the volume is decreased according to

the square of twice the sum of heat or pressure exerted." But if we do not care to accept this statement the following may be better: "The law of Charles is that a solid displaces an equal weight of water in a fluid." Still another, who should have had a fair knowledge of the subject, after writing a very poor paper, made a graceful exit with the remark, "No more time, the examiner is onto me."

REPORT ON MUSIC IN TRAINING COLLEGES IN ENGLAND, WALES AND SCOTLAND.

SIR JOHN STAINER, Inspector of Music, makes the following report on music in Training Colleges in England and Wales in 1892:—

My Lords,—I have the honor to present to you my report and that of Mr. McNaught on music in training colleges. This being the tenth year of our work of inspection, a few remarks on the general progress of music in elementary schools, as well as in training colleges may not be out of place. Ten years ago reading music at sight was made by the Code a requirement for the higher grant of one shilling. The requirements were not, and, indeed, could not have been suddenly demanded; it had been long known that such a step would be taken, and the standard of work was gradually raised for several years. In 1884 about 1½ million of children earned the grant, in 1892 the number closely touched 3 millions. All these children have learnt enough about music and theory and practice of music to constitute a sound basis for future work in after-life. Some take exception to this statement on the ground that the majority of children learn the letter notation (Tonic Sol-fa), and not the Staff. But there need be no misgiving on this score, for the Tonic Sol-fa method now admits those instructed in it to the best literature of vocal music; an immense number of standard vocal works, ancient and modern, can now be obtained in this notation. But this is not all; it will be found that the majority of those having real musical taste use the Tonic Sol-fa system as a stepping-stone to the ordinary Staff; and no more scientific method can possibly be found for unravelling the acknowledged difficulties of the Staff as a vocal notation. The ordinary notation will be infinitely better mastered and understood by those who have passed into it through the gates of the more scientific Tonic Sol-fa and it is important to note that all that is learnt by the Tonic Sol-faist is of value when studying the Staff; *nothing has to be unlearned*.

The ultimate result of the present system of permitting two notations to run side by side on equal terms will probably be that in the more favored and prosperous schools the lower divisions will be presented in the letter notation, the higher divisions in the Staff. This is the goal towards which our faces have been set from the very first; and our recommendation that this should be done has now been carried out in many important schools. It would be premature to make the combination of both notations compulsory; it can only be successfully adopted in schools which exist under very favorable conditions.

At last there seems to be a general movement towards providing school children with a better type of music. It appears to be a fixed notion among some persons that the interest of children can only be concentrated on something that is positively silly. In music, at all events, this is a fatal creed; a school song thoroughly taught and learnt becomes a companion for life; it is, therefore, of the highest importance that these compulsory companions should exercise a good influence, not a bad one. Music, good and easy, can be found, and is now being issued for use in schools; and it is to be hoped that in future children leaving school will carry away with them, not a bundle of worthless rubbish which they would gladly throw away, but the cherished memory of many beautiful melodies which they will always recall with pleasure.

The excellent singing of children in our large town schools is, naturally enough, a fact unknown to the general public, hence the erroneous statements and criticisms made on school music. If some of these critics, whose habit seems to be to make statements first and afterwards look at facts, were to hear the remarkable sight-reading, the pure sweet tone and the tasteful part-singing, that is to be found in our

leading towns. I am sure they would be astonished and delighted.

The introduction of this music code into elementary schools made it absolutely necessary to re-model the course of study of students in training colleges. Any attempt to make a sudden and unprecedented demand, would here, as in elementary schools, have defeated its own object. What has been done has been to gradually mould the character and raise the standard of the musical training to such a condition and point that every student passing creditably the Inspectors' practical examination may be accepted as capable of preparing children for the higher grant. Those interested in education will know without further explanation the length of time required to bring about such a result, bearing in mind that music is only one of the many subjects that students have to master during their two years' residence in college. It has also been our object to improve the taste as well as the instruction in technique. Slowly, but surely, an usefully mass of poor popular songs and ballads has been ejected from colleges to make way for beautiful classical songs, the very study of which is education in itself.

None of the good results we hope to have obtained could have been reached without the most hearty co-operation of the music teachers in training colleges; in previous reports the debt owed to them had been freely acknowledged, and again our expression of gratitude is due to them.

The large number of students entering training colleges absolutely devoid of any musical knowledge has hitherto been a serious difficulty to teachers; but, owing to the steps taken by your Lordships in instituting an examination in vocal music for pupil teachers, this obstacle to progress has been, we hope, surmounted. It is of course too early to report on the results of this new departure, the system has only just got into working order; but it was much needed, and though involving more work on all sides, it has been welcomed everywhere.—*The School Music Review*.

School-Room Methods.

ON SCHOOL METHODS.

In his outlines of a course of lectures on the "Science and Art of Teaching," Professor W. H. Payne, professor of education in the Michigan University, gives the following:

"One grand purpose of primary instruction should be to teach the art of interpreting language and exposing thought."

The type of school work is the acquisition of accumulated knowledge rather than that of original knowledge; the use of books rather than attempts at discovery.

As the typical work of schools is the imparting of accumulated knowledge, the teacher's typical method should be THE METHOD OF INSTRUCTION as distinguished from THE METHOD OF DISCOVERY: 1. The method of instruction applies when knowledge has already been acquired and expressed in the form of general laws, rules, principles, or truths. 2. The method of discovery is employed in the acquisition of knowledge, and really consists in those processes of inference and deduction by which general truths are ascertained from the collection and examination of particular facts. [Jevons.] 3. The method of instruction employs language as its chief agent, and has for its chief purpose to put the pupil in possession of desirable portions of knowledge already acquired and systematized. 4. The method of discovery repeats in brief, the process by which knowledge was originally acquired; it is inductive in its procedure, and its purpose is to attain truth by rediscovery. 5. The method of instruction regards accumulated knowledge as so much assured capital that is to be transmitted to a new generation of learners without the cost of rediscovery. The learner is to accept the greater part of this on trust; only a limited part can be verified by personal experience. 6. The method of discovery assumes that the only real knowledge is that which is gained *de novo*, by

personal experience; and would have each child repeat in brief the history of the race.

The method of discovery has necessary limitations that unfit it for the general purpose of education: 1. If it be applied systematically and thoroughly, it would limit the child's acquisitions to a very few of the most elementary notions. It would require several years' exclusive study by the method of discovery to attain a knowledge of chemistry that could be secured by the ordinary method of instruction within a few weeks. 2. The method of discovery is wholly inapplicable to history, applicable only to a very limited extent of geography, and, in actual practice, only partially applicable to mathematics and natural sciences.

While the typical method is the method of instruction, the method of discovery should be employed for purposes of illustration: 1. The method of discovery, by appealing directly to the senses, excites interest and enlists attention. It is therefore useful in introducing pupils to a new science; and, to all stages, in sustaining interest and attention. 2. The less the skill in interpreting language, and the weaker the power of reflection, the more necessary becomes the method of discovery.

The method of instruction sets out with a definition, a classification, a general law, an abstract truth, or a proposition, and then proceeds by way of explanation—division: 1. "In 'Plato's Republic' (one of the noblest examples of method), successive definitions of justice are brought to the test and rejected; and the division preponderates, in the enumeration of the powers of the human soul, and of the classes in a state that answers to them.—*Thompson*. 2. The method of instruction is the classical method, the one employed by the great teachers of all ages for conveying ascertained truth. It is the only royal road to knowledge."

FORMATION OF PLURALS.

THE formation of the plurals of letters, marks and figures, should be illustrated, and then made the subject of a short dictation exercise, as in Lesson IV.

Nouns that are used only in the plural, and those which are alike in both numbers, should also become familiar by means of dictation exercises.

The compound nouns which pupils are liable to meet with in reading and writing, may be made into a list, their plurals written, and then used in dictated sentences.

LESSON VI.

Write the following list on the board:

<i>Singular.</i>	<i>Plural.</i>
1. calf.	
2. loaf.	
3. half.	
4. leaf.	
5. self.	
6. shelf.	
7. thief.	
8. wolf.	
9. beef.	
10. sheaf.	
<hr/>	
11. knife.	
12. wife.	
13. life.	
<hr/>	
14. muff.	
15. puff.	
16. cuff.	
17. snuff.	
18. ruff.	
19. flag-staff.	

The plurals are then written, as far as possible at the suggestion of the pupils, care being taken to avoid guess-work.

"Let us look at the first ten words in the singular. What is the last letter in each?"

"f."

"Look at their plurals. What do you find in place of this f?"

"ves."

"Look at the next three words. What are the last two letters in each?"

"fe."

"Look at their plurals. What do you find in place of the fe?"

"ves."

"Who will make a rule about the plural of nouns ending in f or fe?"

"Nouns ending in f or fe change these endings to ves in their plurals."

Teacher gives the singular of each word in the column, and class spells its plural.

"Look at the last six words. How do they end?"

"In double f."

"How are their plurals formed?"

"Regularly—i.e. by adding s."

After some further drill in spelling the plurals, the columns are erased and sentences containing these words are dictated, and corrected by pupils. This correcting is a very valuable part of the lesson.—*Popular Educator*.

HELPING PUPILS.

TEACHERS often insist on the pupils "studying out" everything unaided. The teacher refuses to help the pupils because he thinks it will make him more independent. But the pupils may not know how to study the subject at hand. When this is true, it is a waste of time and energy to have him try to work it out unaided. To illustrate, consider the following problem in the hand of a Third Reader pupil.

Mr. Brown began on the 1st of January to put money in bank. He put in \$20 each week, and drew out \$25 each month. How much had he left in the bank at the end of the year?

The pupil has failed to get this problem, not because he has made mistakes in his work, but because he had not thought correctly. He had failed to think the conditions in their proper relations. Don't send him home to work the problem at night. Give him some help that will help him to help himself.

Teacher.—What is the question in this problem? *Pupil*.—We wish to find how much Mr. Brown had in the bank at the end of the year. *T*.—Very well. What must we know before we can answer this question? *P*.—We must know how much he put in. *T*.—Read the problem and see whether that is all we must know. *P*.—He took out some money, so I think we must know how much he took out, too. *T*.—Can you find, by reading, how much he put in and how much he took out during the year? *P*.—No, sir; but we know how much he put in every week, and I know how many weeks there are in a year, so I can find out how much he put in during the year; and I can find out how much he took out, because the problem tells how much he drew out each month, and I know how many months there are in a year.

The pupil has received enough help. Let him try the problem. See that he has another one as difficult but not like it. He will certainly have a tendency to ascertain what is required, and what he must know to get what is required. He will have a clear purpose in mind and this purpose will lead him to think the process. Give him a problem of this sort: A boy earns \$5 a week and spends \$8 a month. How many months will it take him to pay for a "Safety" that cost \$48?—*Indiana School Journal*.

OH, there are moments in man's mortal years,
When for an instant that which long has lain
Beyond our reach is on a sudden found
In things of smallest compass, and we hold
The unbounded shut in one small minute's space,
And worlds within the hollow of our hand—
A world of music in one word of love,
A world of love in one quick wordless look,
A world of thought in one translucent phrase,
A world of memory in one mournful chord,
A world of sorrow in one little song.
Such moments are man's holiest—the divine
And first sown seed of Love's eternity.

Mathematics

All communications intended for this department should be written on one side of the sheet only and should be addressed to the Editor, C. Clarkson, B.A., Scaforth, Ont.

PUBLIC SCHOOL LEAVING.

ARITHMETIC AND MENSURATION.

1. (a) What is meant by a common multiple of two or more fractions?

(b) Find the L. C. M. of $2\frac{1}{2}$, $3\frac{3}{4}$, $3\frac{9}{16}$, $14\frac{3}{4}$.

2. Express in decimals accurately to seven places:

$$\frac{1}{5} + \frac{1}{3 \times 5^3} + \frac{1}{5 \times 5^5} + \frac{1}{7 \times 5^7}$$

3. A boy can run six times around a circular plot of ground in 52 seconds, another boy can run nine times around the same plot in 80 seconds. If they start from the same place at the same time, and run in the same direction, how many rounds will each make before the faster boy overtakes the slower?

4. A clerk pays \$7.50 taxes on his salary. What is his total salary if \$400 of it is exempt from taxation and a $2\frac{1}{2}\%$ rate is levied on the remainder?

5. A miller bought 20,000 bushels of wheat and had it insured for $\frac{1}{5}$ of its cost, at $1\frac{1}{8}\%$, paying a premium of \$136. At what price per bushel must he sell it to gain 20%?

6. For what sum must a note be drawn on June 1st, 1893, payable in 90 days, so that when discounted on June 14th at 8% the proceeds will be \$717.20?

7. I own \$6,000 of Bank Stock, paying an annual dividend of 5%. How much will my annual revenue from the Bank Stock be reduced by selling enough of it at 72 to pay a note of \$3735 nine months before it is due, reckoning true discount at 5% per annum?

8. Charging interest at 6%, what sum is due to-day (June 29th), on the following ledger account:

Dr.

1893		\$	c.
Jan. 12	To Mdse., 30 days.....	130	00
Feb. 6	" " 60 days.....	180	00
Mar. 8	" " 90 days.....	460	00
April 4	" " 30 days.....	362	00
May 12	To Cash.....	160	00

Cr.

1893		\$	c.
Feb. 18	By Cash.....	100	00
April 20	" ".....	150	00
June 24	" ".....	312	00

9. A square plot of ground that contains $\frac{9}{16}$ of an acre is covered with cordwood (4 ft. long) to an average height of 12 ft. What is the wood worth at \$4.12 a cord?

10. A town lot containing $\frac{1}{5}$ of an acre is 4 rods wide. Find the total cost of the material for a picket fence around it of inch pickets 2" wide and 3' long, placed 2" apart, two stringers 2"x4", and an inch base 14" wide, the lumber being worth \$16 per M, board measure; posts 8 ft. 3 in. from centre to centre at 13 cents each; nails \$1.15.

SOLUTIONS.

By E. MOSGROVE, Kirkfield, Ont.—

1. (a) Book-work.

(b) $\frac{9}{16}$, $\frac{27}{32}$, $\frac{105}{32}$, $\frac{205}{14}$, reduce to common denominator and we get $\frac{504, 756, 735, 3280}{224}$

Find L. C. M. of numerator and we obtain (in factors), $\frac{7 \times 9 \times 5 \times 21 \times 164}{224}$ which when cancelled gives $19372\frac{1}{2}$ ans.

2. Reduce each to a decimal thus:—

$$\begin{aligned} \frac{1}{5} &= .2000000 \\ \frac{1}{3 \times 5^2} &= .0026666 \\ \frac{1}{5 \times 5^5} &= .0000640 \\ \frac{1}{7 \times 5^7} &= .0000018 \\ \text{Sum} &= .2027324 \text{ ans.} \end{aligned}$$

3. 6 times in 52 seconds or once in $8\frac{2}{3}$ sec.; 9 times in 80 seconds or once in $8\frac{8}{9}$ sec.; Ratio of their rates is $\frac{27}{54} : \frac{80}{72}$ or 78 : 80, or 39 : 40; ∴ Faster boy will have run 40 times around to the slower boy's 39 times around.

4. $2\frac{1}{2}\%$ on taxable salary amounts to \$7.50 ∴ 100% or taxable salary is $\frac{7.50 \times 100}{2\frac{1}{2}} = \$300.$

$$\$300 + \$400 = \$700 \text{ ans.}$$

5. $1\frac{1}{8}\%$ on amt. insured pays \$136 premium ∴ 100% or amount insured is

$$\frac{136 \times 100}{17} = \$12,800$$

∴ $\frac{4}{5}$ of value of wheat is \$12,800.00

∴ value of wheat is $\frac{5 \times \$12,800.00}{4}$

∴ S. P. of 20,000 Bush. is

$$\frac{6}{5} \times \frac{5 \times 12,800.00}{4}$$

∴ S. P. of 1 Bush. is

$$\frac{6}{5} \times \frac{5 \times \$12,800}{4} \times \frac{1}{20,000} = 96 \text{ cents.}$$

6. Note drawn June 1st at 90 days falls due on Sept. 1st.

Discounted on June 14th at 80 days.

Int. on \$100 for 80 days at 8% amounts to \$17 $\frac{2}{3}$, which banker deducts from face of \$100 note.

∴ Every \$98 $\frac{1}{3}$ is proceeds from \$100 note.

∴ \$717.20 is proceeds from

$$\frac{100 \times 717.20}{98\frac{1}{3}} = \$730 \text{ Face of Note.}$$

7. Income derived from \$6000 Bk. St. paying 5% is \$300.00.

Int. on \$100 for 9 mos. at 5% is \$3 $\frac{3}{4}$;

Every \$103 $\frac{3}{4}$ has a P. W. of \$100

∴ Every \$3735 has a P. W. of

$$\frac{100 \times 3735}{103\frac{3}{4}} = \$3600$$

Rec'd \$72 Cash for \$100 Stock

∴ Rec'd \$3600 Cash for

$$\frac{100 \times 3600}{72} = \$5000 \text{ Stock}$$

∴ \$5000 Stock paying 5% gives an income of \$250 by which his income will be reduced.

8. Dr.

\$130 × 0 =	0 for 1 day after Feb. 11th.
180 × 55 =	9900 " "
460 × 116 =	53360 " "
362 × 83 =	30046 " "
160 × 91 =	14560 " "

\$1292 and \$107866 = \$1292 due in 83 days after Feb'y 11th or May 4th.

Cr.

\$100 × 0 =	0 for 1 day after Feb'y 18th.
150 × 62 =	9300 " "
312 × 127 =	39624 " "

\$562 and \$48,924 = \$562 due in 87 days after Feb. 18th or May 15th.

$$\text{Difference } \$730 \text{ due in } \frac{1292 \times 11}{730} = 19 \text{ days}$$

before 15th day of May = 26th of April.

∴ Int. should be charged on this balance from April 26th until June 29th = 64 days.

∴ \$730 + $\frac{6}{100}$ of $130 \times \frac{64}{365} = \$7.30 + \$7.68$

Int. = 737.68 Amount due on June 29th.

9. $\frac{9}{16}$ of $1\frac{6}{10} \times 1\frac{21}{4} \times \frac{9}{1} = 9801$ sq. ft. in plot.

$\frac{9801 \times 12}{128} = \$4.12 = 3785.63\frac{1}{2}$ ans. Value of the wood.

10. $\frac{160}{5} \div 4 = 8$ rods long or dimensions are

66 ft. by 132 ft.

$(66 \times 2) + (132 \times 2) = 396$ ft. around plot.

4 in. allowed for a picket

$\frac{396 \text{ ft.}}{4 \text{ in.}} = 1188$ pickets of 3' by 2"

or $\frac{1188 \times 3}{6} = 594$ ft. lumber in pickets.

$396 \times 2 \times \frac{1}{4} = 528$ ft. lumber in stringers

$396 \times \frac{1}{2} = 462$ " in baseboard

1584 ft. lumber at \$16 per M

ft. = \$25.34

48 posts at 13c. = 6.24

Nails 1.15

Total \$32.73 ans.

CORRESPONDENCE, SOLUTIONS, ETC.

N. J. KEARNEY, Bosanquet, solved Nos. 68, 69, 70, 71, 74.

ADELA BOYD, Carthage, solved Nos. 82, 83.

A. M. H., Durham, solved 89, 90.

MORLEY SHURTLEFF, Battersea, solved 79, 80, 82, 83, 88, 89, 90.

ALBERT BRANTON, Granton, solved 88, 89, 90.

E. MOSGROVE, Kirkfield, solved 88, 90.

A. C. BATTEN, Barrie, solved 68, 69.

W. J. SIMPSON, Richmond, solved 67, 68, 69, 71, 72, 73, 74, 79, 82, 83.

A. S., Guelph, solved 88, 89, 90.

P. GARDINER, Cromarty, 88, 89, 90.

If anyone dreams that the study of mathematics is dying out in Ontario, let him observe how royally the EDITOR of this department is supported by the public school teachers. Perhaps the *Modern Language Association* will make a note of the fact that mathematics is very much like the famous banyan tree of Calcutta, covering thirteen acres and sending out new shoots every year!

No. 77.—No solution received.

No. 78.—By the EDITOR.—The difference between the terms *area* and *surface* is entirely subjective. In the former term we are looking particularly at the number of square units contained in the surface, in the latter we are thinking of the surface or bounding envelope of a solid as discriminated from its volume or solid content. See Dictionary.

No. 79.—By W. J. SIMPSON.

$$\frac{2^{n+4} - 2 \cdot 2^n}{4 \cdot 2^{n+2}} = \frac{2^n \cdot 2^4 - 2^n \cdot 2}{2^n \cdot 2^2 \cdot 4} = \frac{2^n(2^4 - 2)}{2^n \cdot 2^2 \cdot 4} = \frac{2^4 - 2}{2^2 \cdot 4} = \frac{7}{8}$$

No. 80.—By M. SHURTLEFF.

$$\frac{2^n \times (2^{n-1})^n}{2^{n+1} \times 2^{n-1}} = \frac{2^n \cdot 2^{n^2-n}}{2^{2n}} = \frac{2^{n^2}}{2^{2n}} = 2^{n^2-2n} \text{ Ans.}$$

No. 81.—By the EDITOR (no solution received).

Let $\frac{a}{b} = \frac{c}{d} = m$ ∴ $a = bm, c = dm.$

Hence $\frac{ax + b}{cx + d}$ becomes, $\frac{bmx + b}{dmx + d} = \frac{b}{d}$, which

is wholly independent of $x.$

No. 82.—By W. J. SIMPSON.

Solve $\sqrt{(x + 3)} + \sqrt{(x + 8)} = 5\sqrt{x},$

Square both sides and collect,

$$\therefore 2\sqrt{(x+3)(x+8)} = 23x - 11$$

Square both sides again and collect

$$4x^2 + 44x + 96 = 529x^2 - 506x + 121$$

$$\therefore 525x^2 - 550x + 25 = 0$$

Divide by 25.

$$\therefore 21x^2 - 22x + 1 = 0$$

$$\therefore (21x - 1)(x - 1) = 0$$

$$\therefore x = 1 \text{ or } \frac{1}{21}$$

No. 83.—By ADELA BOYD.

$$\frac{1}{2 + \sqrt{3}} = \frac{2 - \sqrt{3}}{(2 + \sqrt{3})(2 - \sqrt{3})} = 2 - \sqrt{3} = .2679492$$

No. 84.—See *Clarkson's Problems*, p. 72, for general solution.

No. 88.—By M. SHURTLEFF.

$$\text{Let } \sqrt{a^2 + b^2} + \sqrt{-(3a^4 - 2a^2b^2 - b^4)} = \sqrt{x} + \sqrt{y}$$

Square and we have,

$$a^2 + b^2 + \sqrt{-(3a^4 - 2a^2b^2 - b^4)} = x + y + 2\sqrt{xy}$$

Now the rational part must equal the rational part and the irrational part the irrational part.

$$\therefore a^2 + b^2 = x + y \dots I.$$

$$\text{And } \sqrt{-(3a^4 - 2a^2b^2 - b^4)} = 2\sqrt{xy} \dots II.$$

Square and substitute from I., which gives

$$x = \frac{a^2 + b^2 \pm 2a^2}{2}$$

$$x = \frac{3a^2 + b^2}{2} \quad y = \frac{b^2 - a^2}{2}$$

$$\therefore \sqrt{x} + \sqrt{y} = \frac{\sqrt{3a^2 + b^2}}{\sqrt{2}} + \frac{\sqrt{b^2 - a^2}}{2}$$

which is the square root of the given expression.

No. 89.—By A. S., Guelph.

$$a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca).$$

$$a(a + 2b) + b(b + 2c) + c(c + 2a) = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca = (a + b + c)^2$$

$$\therefore H. C. F. = a + b + c$$

No. 90.—By E. MOSGROVE.

Factor each part and we get,

$$(1) (x - 1)(x - 1)(x - 1).$$

$$(2) (x + 1)(x - 1)(x - 1).$$

$$(3) (x + 1)(x - 1)(x - 1).$$

$$(4) (x^2 + 1)(x - 1)(x - 1).$$

\therefore L. Common Multiple is

$$(x - 1)^3(x^2 + 1)(x + 1) = x^6 - 2x^5 + x^4 - x^2 + 2x - 1.$$

A. S. would like to see solutions for the Senior Leaving papers in Algebra, Trigonometry and Chemistry for 1893. We make a note of the request.

JOHN IRELAND, DRACON, Ont., claims to have made a great discovery. He writes: "I have just worked this famous problem, (the trisection of a plane angle).

"If the Dominion Government or the Ontario Government award me one thousand dollars I will publish my method, else, I shall offer to Washington or London."

We sincerely hope that the solution is sound and that both governments will take the offer.

It would be a disgrace to let Washington or London get ahead of Ottawa and Toronto. We trust our friend will have the money before Thanksgiving Day.

No. 94.—By J. C. IVES, Maidstone Cross.

A merchant holds two notes, one for \$187.25 due February 15th, 1887, and the other for \$382.75, due April 1st, 1887. What will be due him in cash on both notes, January 7th, interest at 7%.

No. 95.—By the same.

I desire to invest in county bonds which bear 6% interest, a sum sufficient to bring me an in-

come of \$1,000. If the bonds can be bought at 91, how much money must I invest, brokerage $\frac{1}{2}\%$?

No. 96.—By B. E. C., Rawdon.

A and B dig a ditch 120 rods long. The soil at one end is clay, at the other sand. If the whole of the ditch were sand A could dig it in 30 days, and B in 24 days. If all clay A could dig it in 40 days and B in 60 days. A begins at the clay and B at the sandy soil, and they together dig it in 17 days. What length of ditch is sand and what clay?

N.B.—This has appeared in this column before. See Type Solutions, page 71, in *Clarkson's Problems in Arithmetic* for full solution.

W. D. H., Park Head.—Your problem is unintelligible in the form you have given it. Try again.

P. GARDINER writes the following note:

"In looking over solution of No. 68 I fail to see why $112 \div 5 =$ No. of yds. at 18c. Although not the person who sent in this question, I was interested in it as I had always worked the question according to the solution given, but I fail to explain it satisfactorily to myself and I come to the conclusion I have worked it by rule, not reason. Below I give my own solution, but I would like to see the above thoroughly explained."

SOLUTION.—

The average S. P. of 50 yds. of Calico = $\frac{50c}{3} = 15\frac{1}{3}c$.

On the 13c. Calico he gains $2\frac{1}{3}c$. or 1c. on $\frac{50}{11\frac{2}{3}}$ yds.

On the 18c. Calico he loses $2\frac{2}{3}c$. or 1c. on $\frac{50}{13\frac{2}{3}}$ yds.

\therefore he must have sold $\frac{50}{11\frac{2}{3}}$ yds. at 13c.

when he sold $\frac{50}{13\frac{2}{3}}$ " 18c.

or 112 yds. at 13c.

and 138 " 18c.

Using this proportion we get

$$\frac{112}{250} \text{ of } 50 = 22\frac{2}{5} \text{ yds. at } 13c.$$

$$\text{and } \frac{138}{250} \text{ of } 50 = 27\frac{3}{5} \text{ yds. at } 18c.$$

NOTE.—The published solution is sound, we believe, and can be defended, but there is a flaw in the reasoning of this one, if the EDITOR is not notably mistaken. Test it and see whether the prices and quantities agree together.

J. MCVICAR, Strathroy, kindly points out that in C. H. C's solution of No. 3 Entrance, on page 148, \$2.40 should be \$4.80, which makes the total cost \$50 instead of \$47.60. Thanks for the correction and also for the kind words in favor of this department of the JOURNAL.

PROBLEMS FOR SOLUTION.

92.—By ROSE BYRNE, Lanark.—Place three circles two inches in diameter so as to enclose a space and find the area of the enclosed space.

93.—By MORLEY.—Find, without factoring, the H. C. F. of

$$x^6 - 7x^5 - 3x^4 - 5x^3 + 42x^2 - 34x - 21, \text{ and } x^5 - 11x^4 + 25x^3 + 19x^2 - 49x - 21. \text{—McLellan's Alg. p. 142, No. 15.}$$

OBEEDIENCE is not a natural impulse which every child possesses as a matter of course, as many seem to believe, but it is a trait of character wholly dependent upon training; and in order that perfect obedience shall become a habit this training must be systematic and continuous.—Mrs. E. Kellogg.

EDUCATION has progressed, not as blind fate has ordered, but as earnest aggressive men were able to make it advance.—William E. Wilson.

EVERY educational reform and every improvement has been the direct result of closer personal acquaintance and deeper insight into the life and needs of the young.—G. Stanley Hall.

DOUBT is honesty; unbelief is obstinacy.—Henry Drummond.

For Friday Afternoon.

A LITTLE BOY.

If I were a little bird,
I'd sing my sweetest song;
I'd take a journey to the sky,
And frolic all day long.

If I were a pussy cat,
I'd chase the rats and mice,
And have sweet cream for supper,
And everything that's nice.

If I were a tiny mouse,
I'd gnaw the soft new cheese;
When Tabby wasn't in the way,
I'd do just as I please.

But I am a little boy,
Just learning what to do,
And every day, it seems to me,
I find out something new.

I get up every morning
And play with Tom and Nell,
But when I am as old as they,
I'll go to school as well.

I'm very little to be sure,
But then I'm only four,
And some day I'll be older,
And know a great deal more.
—Our Little Ones.

IS IT WORTH WHILE?

IS IT worth while that we jostle a brother,
Bearing his load on the rough road of life?
Is it worth while that we jeer at each other,
In blackness of heart that we war to the knife?

God pity us all in our pitiful strife.

God pity us all as we jostle each other;
God pardon us all for the triumph we feel
When a fellow goes down 'neath his load on the heather,
Pierced to the heart: Words are keener than steel,
And mightier far for woe than for weal.

Were it not well, in this brief little journey
On over the isthmus, down into the tide,
We give him a fish instead of a serpent,
Ere folding the hands to be and abide
Forever and aye in the dust by his side?

Look at those roses saluting each other,
Look at the herbs all at peace on the plain—
Man, and man only makes war on his brother;
And laughs in his heart at his peril and pain;
Shamed by the beasts that go down on the plain.

Is it worth while that we battle to humble
Some poor fellow-mortal down into the dust?
God pity us all! Time oft soon will tumble
All of us together, like leaves in a gust,
Humbled, indeed, down into the dust.

Joaquin Miller.

Correspondence.

SMALL SALARIES—UNFAIR COMPETITION.

To the Editor of the EDUCATIONAL JOURNAL:

SIR,—Teachers as a whole are under obligations to Mr. Weidenhammer for his excellent paper on Salaries.

He complains of the competition of third-class certificate teachers, but what would he say to the competition of young women of twenty-one years with lapsed certificates and girls under eighteen without certificates at all?

What remedy has a teacher when he finds himself replaced by a young girl under age without any certificate? What remedy has he against competitors with lapsed certificates? What remedy has he or even a ratepayer against trustees who practice this method of reducing salaries?

I would suggest a committee of teachers to take in hand any case where there is reason to suppose that the teacher is occupying his place under a lapsed certificate.

A county committee will not do, as in many cases the county teacher feels the influence of their Inspector. It is a case where the strong (in cities, etc.) should aid the weak (in counties), and in so doing help themselves.

"SMIKE."

Primary Department.

FREEHAND DRAWING.

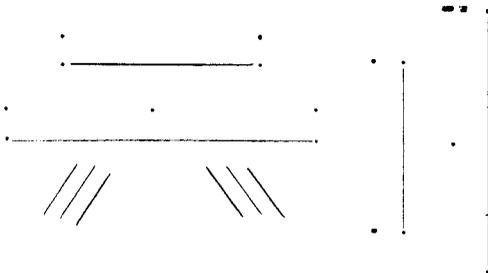
RHODA LEE.

In a great many primary classes the children are required to use kindergarten drawing books, in which small squares are printed to serve as guides in the dictation and designing exercises. These books may have some slight value but they contribute very little to the work of drawing. Tracing is not what we should aim at in our grade. What we should have and that in abundance is genuine freehand drawing. On slates? No, with pencil and paper. Children are not going to use slates for drawing in after years and they might just as well become accustomed to paper at once.

The best book for little ones consists of a single sheet of paper about six inches by four in size. I have cut up scribbling books for this purpose and find the paper quite satisfactory. Pencils should be rather hard, as soft lead will not, as a rule, make neat work. From the first, endeavor to impress upon the children the fact that they must hold the pencil freely, not using any great force.

Rulers should be used only as a means of detecting errors and fixing the units of measurement. In some classes a piece of pasteboard an inch square has been substituted for the twelve inch rule, and with advantage, as there is always a temptation about the ordinary ruler.

Straight lines are the first exercise. In drawing these allow the children to take points and connect. If the line be short, two points; if long take three, erasing the middle one before sketching the line.



After practising the horizontal, take up vertical and oblique lines. As an exercise in these lines draw the letters of the alphabet in which they occur:

E F L H T I K V W M

Incidentally introduce the three angles, right, acute and obtuse and speak of them in these terms; they are just as intelligible after the idea is grasped as the names square, sharp and blunt.

Next in order take up the work of dividing lines into any number of parts, practice bisecting and trisecting and also drawing lines of definite length. Get the inch measurement well fixed if possible. Draw, test, and correct, should be the order of procedure. Let this be done again and again until your class acquire considerable skill in judging length.

The study of the square and oblong should come next. As these are the bases of a great many designs in advanced work, take infinite pains with them. Teach the

meaning and use of diameters and diagonals and practice drawing these frequently so as to get both accuracy and speed in execution.

Simple designs based on the square and oblong may be given next and work of original designing be commenced. In all the work here outlined the teacher should draw at the board and the children work with her, all doing the same work at the same time.

The reason for the drawing in the advanced classes being frequently so poor lies in the fact that the children of the primary classes have been depending far too much upon the printed guide-lines. If we are ever going to get good work in our schools we must do away with these and teach *freehand* drawing from the start.

STORIES FOR REPRODUCTION.

STORY OF AN APPLE.

"I'll not lose my hold upon this tree for anybody," said a rosy-cheeked apple. "Who wants to fall down yonder to be gobbled up by some one of the young folks, I would like to know?"

"But think of the pleasure you would give them," said her sister.

"Pshaw!" and our apple tossed herself about so scornfully as to be in great danger of falling off at once.

The farmer came and gathered all her plump and rosy sisters and piled them up in delicious-looking heaps, ready for the row of barrels placed alongside.

But our apple hid herself under the leaves, only bobbing out into the sun when he was well on his way to another tree.

When Nell and Robbie came with long poles "a gleaning," she was obliged to hide again, and very cunningly, for their eyes are very bright and sharp.

"There, they are gone at last," thought she, and settled herself for a sunbath.

"Yes, it is rather lonely," she answered to the wind's questioning, "but I don't mind that."

But the wind grew colder, and the sun gave her less and less of warmth with every passing day; the leaves grew brown and dropped away, one by one, from her sides.

"I declare I, too, would drop down among the grasses if I could," she said, "for I am tired of this; I wonder where the children are." Then she tried very hard to shake herself free, but, alas; the autumn weather had so toughened and shrivelled her stem, that there was no breaking it.

"I am bound; my own selfishness has chained me here," said the apple, dismally. "I shall stay here till I freeze and thaw, and freeze and thaw, and dry up into just such a light, good-for-nothing, weazened old apple as I saw the wind making sport of the other day; dear me!"

Strange, wasn't it? But just then Nell and Robbie in the window seat caught sight of the red apple bobbing about at a great rate on her high perch.

What a rush and shout and scramble there was for her, and how she did enjoy being "halved" and gobbled up by the very children she had hidden from.—*Popular Educator*.

SEVEN TIMES ONE.

JEAN INGELOW.

THERE'S no dew left on the daisies and clover,
There's no rain left in heaven;
I've said my "seven times" over and over,
Seven times one are seven.

I am old, so old I can write a letter;
My birthday lessons are done,
The lambs play always—they know no better—
They are only one times one.

O Moon! in the night I have seen you sailing,
And shining so round and low;
You were bright! ah bright! but your light is
failing,
You are nothing now but a bow.

You moon, have you done something wrong in
heaven,
That God has hidden your face?
I hope if you have, you will soon be forgiven,
And shine again in your place.

O velvet bee! you're a dusty fellow,
You've powdered your legs with gold!
O brave marshmary buds! rich and yellow,
Give me your money to hold!

O columbine! open your folded wrapper,
Where two twin turtle doves dwell!
O cuckoo-pint! toll me the purple clapper
That hangs in your clear, green bell!

And show me your nest with young ones in it,
I will not steal them away;
I am old! you can trust me, linnet, linnet,
I am seven times one to-day.

LETTER BOX.

I.—ADDITION.

MY CLASS is not making satisfactory progress in addition. They do not seem to grasp the idea as they should. In teaching a new combination such as $\frac{2}{3}$ I have had the children make strokes on their slates but have never used objects. Should I use slats, or something of that kind?—M.C.H.

Objects are of great use in beginning the work of addition. A clear percept must precede the concept. Supply each child with a small calico bag containing about twenty shoe-pegs, and when a new combination is to be studied let them make it with their pegs. Pegs are less expensive and more easily managed than slats, beans, or buttons, all of which are used. I am glad that you are teaching your children by the "combination" process. It is the only way to avoid counting. Of course when you teach $\frac{2}{3}$ you include $1\frac{2}{3}$, $2\frac{2}{3}$, $3\frac{2}{3}$, etc., and drill on them well. I suppose you began with the numbers that make ten, then took up the double such as $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, etc., and are now drilling on the combinations that contain the number 2.

II.—SLATE-RULING.

Do you advise ruling slates for writing? If so what plan is most successful?—L. Mc.

I would certainly use slates for the writing lesson for the first few months, and for this we must have them ruled. I find that the best writing is done when the lines are placed at equal distances, every fourth line being marked with a star as the base-line of the writing. Pencil and paper should take the place of the slate as soon as possible.

III.—A MOTION SONG.

CAN you give me the words of a pretty little motion song entitled "The Brown

Birds." I remember the air but cannot recall all the words.—M.H.K.

I think this must be the song to which you refer. It is very suitable to this time of the year:

The brown birds are flying like leaves through the sky,
The flowers are calling "Dear birdlings, good-bye."

The bird voices falling so soft from on high,
Are answering the flowerets, "Dear playmates, good-bye."

The wee flowers are nodding, so sleepy they grow,
They put on their night-caps, to dreamland they go.

Their playtime is ended for summer is o'er,
They sleep 'neath the snowflakes till spring comes once more.

ANECDOTE.

WHEN the great Nelson was a child he strayed away from home one day with a cowboy. When meal time came and the boy was nowhere to be found his parents were very much alarmed, fearing he had been seized by gypsies. All set out on an anxious search for the little fellow. Some went into the wood, and there sat the future hero of the Nile by a brook which he had found himself unable to cross.

"I wonder, child," said his grandmamma, when at last he was safe again and in his chair by the fireside, "that hunger and fear did not drive you home?"

"Fear," said the boy, "I never saw fear. What is it."—*Popular Educator.*

Literary Notes.

THE leading article in *Current Topics* for November is one which will excite wide interest. It is a remarkably frank discussion of the Annexation question by the Attorney-General of Canada. Jenkin Lloyd Jones writes of the Sweating System; Prof. W. G. Hale of the University in American Life; the General Manager for Holland of the Dutch Pictures at the Fair. There are two bright stories, poems, and reviews of late books.

THE Bancroft Company are progressing well with their *Book of the Fair*, which is pronounced the finest and most important publication connected with the great Exposition. In fact it has no rival; there are art works and works of descriptive history, and catalogues, and directories, but there is no other publication which unites all in a complete and perfect historical and descriptive work of art. Its text is by Hubert Howe Bancroft, and its pictures by the best artists America and Europe can produce.

Next in importance to the Fair itself is a faithful reproduction of the Fair in printers' ink for permanent preservation. Most of the buildings will soon be torn down and their contents removed, but the book will remain to teach and preach the world's completest civilization throughout all time.

Two articles in the November number of the *Atlantic Monthly* will be of particular interest to teachers. These are Horace E. Scudder's School Libraries, and Ernest Hart's Spectacled Schoolboys. Mr. Scudder sketches the growth of the movement resulting in the establishment of such libraries all over the country, relating in particular the very successful system which obtains in Wisconsin. The paper contains many valuable hints for the future success of this great movement, and shows what great benefits to the country will result from it. Mr. Ernest Hart, a distinguished ophthalmologist of London, writes a very optimistic paper showing how the general use of glasses by young people often proves curative of defects which would otherwise become fixed or aggravated in later years.

THE first part of the lecture on "Evolution and Ethics," delivered by Prof. Huxley at the

Sheldonian Theatre, Oxford, appears in *The Popular Science Monthly* for November; also the concluding half of the interesting account of "Electricity at the World's Fair." In a thoughtful essay on "The Scientific Method with Children," Mr. Henry C Clapp maintains that the schemes of scientific teaching constructed by college professors, while well adapted for adult students, are useless for children, as they do not take account of the child's standpoint nor of his natural way of thinking. Among other notable articles in this number is "An Argument for Vertical Handwriting," by Joseph V. Witherbee, with cuts showing the positions demanded for writing in the vertical and the slanting style and engraved specimens of both styles. The new handwriting has already won much favor in England.

THE complete novel in the November number of *Lippincott's* is "An Unsatisfactory Lover," by Mrs. Hungerford ("The Duchess"). It tells of an inauspicious wooing and an interrupted courtship, which at length led to a happy result—for the lover did not always remain unsatisfactory. The ninth in the series of Lippincott's Notable Stories is "The Rustlers," by Alice MacGowan. Other short stories, or sketches, are "How the Light Came," by J. Army Knox, which narrates a pathetic incident of French-Canadian life, and "Expensive Religion," by Phil Stansbury. The Athletic Series is continued in an article on "Golf," by John Gilmer Speed. Lewis M. Haupt tells of "Progress in Local Transportation;" Dr. Charles C. Abbott describes "An Old-Fashioned Garden," which contains shade and water, and by consequence also the music of birds; and Wilton Tournier tells "Why the Body should be Cultivated." "A Three-Volume Tract," reviewed by Frederic M. Bird, is Madam Sarah Grand's remarkable novel, "The Heavenly Twins." M. Crofton continues his series of "Men of the Day," with a brief sketch of Attorney-General Olney. The poetry of the number is supplied by Hjalmar Hjorth Boyesen, Bliss Carman, Richard E. Burton, and Florence E. Pratt.

THE *Pansy* for November enters upon a new year, and announces in that number many new and important features. Instead of the weekly parts forming a monthly whole, we have the approved magazine form, lacking none of the bright, wholesome and charming elements that characterize this young folks' magazine as the household standard. There will be each month a special department devoted to the work of the Christian Endeavor Society, *Our Christian Endeavor Bulletin*. Mrs. G. R. Alden (*Pansy*), who has given so much of her best thought and endeavor to the editing of this magazine, has long been one of the prime movers in Christian Endeavor work. There will be the latest news of the Christian Endeavor movement all over the world, and the most helpful and most progressive papers by Christian Endeavor specialists that can be procured. The other departments of the magazine are to be broadened and enlarged by some material changes.

RARELY, if ever, has *The Living Age* contained richer material, been more filled with thought-engendering matter, than in its recent issues. Late numbers have many articles which few would willingly, and none who would keep abreast of current thought can afford to leave unread. Among the most striking are, "A visit to Prince Bismarck," by George W. Smalley; "Ethics and the Struggle for Existence," by Leslie Stephen; "Some Ruskin Letters," by George Stronach; "The Fall of the Ancient Regime;" "John Ruskin;" "La Fontaine," by J. C. Bailey; "The Tuscan Nationality," by Grant Allen; "American Life Through English Spectacles," by A. S. Northcote; "Under British Protection," by J. Theodore Bent, etc., etc. The names of the authors are a sufficient guarantee of the value of their papers. But those named are only a few of the many brilliant contributions served up by this popular eclectic within a few weeks.

Lovers of choice literature should certainly avail themselves of the opportunity which this magazine presents of having put into their hands the very best productions of the greatest minds of Europe.

A specimen copy of *The Living Age* and its prospectus for 1894, with specially generous propositions to new subscribers may be obtained for 15c. The subscription price is \$8.00 a year. Address *Littell & Co.*, 31 Bedford St., Boston, Mass.

Question Drawer.

S. S.—For list of text-books used in Normal School and amount of fees charged, you had better write direct to the Principal, or to the Education Department.

S. Mc.—Your questions in Grammar were accidentally overlooked, until too late for answers to be given in this number. See English Dept. in next number.

S.W.A.—(1) The duty of a Registrar is to keep a record of deeds, wills, and other documents of that kind, which may be executed in the county or municipality which constitutes his official district.

(2) It is difficult to give definite information with reference to interprovincial trade, as no statistics are available. Generally, it may be said that Ontario sends flour and minerals to Quebec and the Maritime Provinces; Quebec, Ontario, and New Brunswick send lumber to the North-West; New Brunswick sends fish to Quebec and Ontario; Nova Scotia sends coal to New Brunswick and Quebec, pig-iron to Ontario and Quebec, and fish to all Provinces; Prince Edward Island sends potatoes and other vegetables to the contiguous Provinces and sometimes further west; Manitoba sends wheat and flour to all the Provinces, and British Columbia sends fish and certain kinds of lumber to all the Provinces. There is also more or less exchange of manufactured products. Ontario sends agricultural implements and musical instruments to all the Provinces, and there is some interchange of cotton and woollen manufactures, boots and shoes, soaps, and various other articles, between Ontario and the East. These articles are also sent to Manitoba and the North-West.

(3) There are so many books on natural history in its various departments, and also on manufactures, that we hardly know what to recommend in the absence of fuller particulars. Do you want to read closely, or only to acquire some general information? Perhaps your best plan would be to write to some bookseller. Several reliable names will be found in our advertising column. Ask for lists with prices from these you can choose.

J. P. B.—(1.) You are under some misapprehension. There is to be no new Public School Canadian History at present. Probably you have in mind the work that is to be written, under competition, for the committee appointed by the Dominion Convention. As the competitors have until January 1st, 1895, to complete their manuscripts, that work cannot be published till a good part of that year has passed. Of course the Ontario Department is not bound to adopt that as a text-book.

(2) An incorporated village or town is one which has been set off by legislature as a separate body, or municipality, with power to transact business, enter into contracts, pass by-laws for its own local self-government, sue and be sued, etc. In a word, incorporation gives it an existence as a distinct municipal body, for all purposes of business and local administration of its affairs.

(3) The management of its affairs is vested in the mayor, or reeve, and aldermen or councillors, whom its tax payers may duly elect.

(4) The incorporated cities, towns and villages in Hastings County are Belleville, Madoc, Trenton, Deseronto, Stirling.

(5) We have not at hand a copy of the Geography you refer to, but there must be some mistake about the figures you quote. If the reference is to the motion of the earth around the sun, it certainly is at a higher rate of speed than 17,000 miles an hour. The earth's orbit is computed to be 580 mill ons of miles. By dividing this by the number of hours in a year you can obtain the rate of speed for yourself.

(6.) This question has been repeatedly answered in this column. Not far from the town of Bingen, on the Rhine, is a rock in the middle of the river. On this rock stands the famous tower of Bishop Hatto, in which, according to the legend, the bishop was devoured by rats, in the year 969. The tower was not really built until the thirteenth century.

THERE are three persons that divide the honors in shaping and moulding and influencing human lives; the mother, the teacher, the preacher.—*W. P. Johnston.*

Hints and Helps.

TEN SPECIAL POINTS.

BY JORDAN N. WEBSTER.

WHAT are the points in the teacher which will give him superiority of rank among his fellows?

Professional Knowledge.—This is to be distinguished from his accumulation of general knowledge. It is his knowledge of man as a being capable of growth; of man as able to go on from one stage of progress to another, under certain conditions. He will have a clear knowledge of the evolution of the human race and the causes of that evolution in general. He will have read and studied up specifically the views of writers who have treated this subject; he will have a library of pedagogy.

Professional Training.—This means that he has taught under the eye of some competent critic. Usually a teacher goes away by himself and labors as best he can; his experiments are often very unsatisfactory to the pupils. He has no clear standard in his mind: if there is silence, if the group before him seem to stand in awe of him, if they recite their lessons, if the patrons do not complain—these are the usual standards. A professionally trained teacher looks at the mental evolution going on.

Natural Aptitude.—The patrons of a school are apt to say he is a "natural teacher;" it means something. Some have no aptitude to direct the thoughts of others; they cannot direct their own. It is true that the Creator intended all to possess teaching ability, "but in many cases the timber is poor," as Mr. Beecher explained it. The aptitude in every one can be improved, and it is fortunate it is so.

Classification of his School.—When fifty persons are gathered, a keen eye sees at once that they are susceptible of classification, that they can be benefited only by classifying them. The teacher of one grade in a city school knows that it is best to divide his forty pupils into four classes. Good classification is a primary consideration.

Course of Study.—There must be a plan or scheme of work; for this occasion let us suppose the teacher is to make out his own. What will he do? Will he say there shall be reading, spelling, arithmetic, geography, and grammar in this school? That is to act like a mechanic. He must look to life as giving the key to the course of study. We eat to live, we study to live; children go to school for life purposes. As a gardener works around trees to enable them to have a broader and more glorious life, so must the teacher labor in his garden of human beings.

Creating Interest and Industry.—The measure of the success of the teacher is not the amount the pupils learn, but the mental activity that exists. It may be roughly stated that interest is the measure of progress in a school. The teacher who can create an interest has the basis of success in him; but that interest must be properly directed. A ballet dancer may create an interest, but it does not result in anything; the interest the teacher creates must result in education.

Governing Ability.—There is such a thing as directing the operations of a body of persons to chosen ends with unerring certainty; they are under authority and move towards the object in view. There must be some control of the pupils of a school; it is best for them, leaving education out of the case. The restraint should be enough, and not too much. The government of a school needs to be made the subject of much thought; somehow interest and industry are dependent on it.

The Moral Atmosphere.—There are thousands who can get good lessons out of pupils, and keep good order, who leave no moral impress; rather let us put it, who do intellectual training, but not moral training. The child grows physically, though the teacher takes no note of

it; the parent supplies him with food. Who is to supply the pupil with food for his moral growth? It is worthy of consideration that the teacher who can keep good order, cause industry and interest, is the one who can easily train pupils morally—if he has a solid moral character himself.

Neatness and Sanitariness.—Here is yet a wide field. Every school-room should be swept daily. No ink stains on the desks. Books should be covered, and when soiled new covers put on. The steps should be inviting, the closets neat as the Shakers make theirs at Lebanon, the windows kept bright and with curtains. If there is an inviting room in the district it should be the schoolroom. A thorough teacher must not lack in neatness; a good school means many excellencies, not one.

Relationship.—What is the teacher in the society in which his school is placed? Said a superior teacher: "My mistake was in not being an influence in the towns where I taught." He further said that his carelessness in dress and inattention to social forms were serious obstacles that he now regrets. What is the teacher among his fellows? At the institute, at the state associations, as a secular contributor to educational journals, where does he stand? Does he help move the educational world along?

The teacher must not be a mere hearer of lessons: in fact, if that describes him he is not a teacher.—*The School Journal.*

COLLECTIVE NOUNS.

THE following will afford material for an interesting and profitable exercise on the different applications of collective nouns of similar meaning:

A <i>fleet</i> of ships;	A <i>heap</i> of rubbish;
A <i>flock</i> of sheep;	A <i>drove</i> of oxen;
A <i>bevy</i> of girls;	A <i>school</i> of whales;
A <i>pack</i> of wolves;	A <i>congregation</i> of wor-
A <i>gang</i> of thieves;	shippers;
A <i>host</i> of angels;	A <i>corps</i> of engineers;
A <i>shoal</i> of porpoises;	A <i>band</i> of robbers;
A <i>troop</i> of buffaloes;	A <i>swarm</i> of locusts;
A <i>covey</i> of partridges;	A <i>crowd</i> of people;
A <i>horde</i> of ruffians;	A <i>galaxy</i> of beauties.

—S. W. *Journal of Education.*

THE RURAL SCHOOL.

At least three-fourths of our people get their early training in our rural schools. Hence the following important suggestions, made in a late address by Hon Henry Saben, of Iowa, come to be of special significance. He says:

"The teacher in the rural school may not do the same work that is done in the graded school, but she can do work equally as good; she can do it in the same spirit, she can avail herself of the love of nature, which is inborn in the child, of that self-activity of mind which is the motive power of education.

"There is a wide-spread idea that the country school is inferior. If it is it is not a matter of necessity. It ought not to be so any longer. It is not so in many parts of the country. Let the teachers in our rural schools avail themselves of all the means at their disposal, throw their life into their work, and the country schools can do for Iowa that which the city schools may not even hope to accomplish.

"We must first know the end which we hope to reach, the aim which we may rightfully have in mind, and then fix upon the method to be adopted. But when we exalt "the method" above the end failure is inevitable. Education consists of two things, obtaining knowledge and using knowledge. We must in our schools have less to do with percentages and so-called results, and more with capacity, power to acquire, ability to retain and skill to use.

"Any system which makes the promotion of children from grade to grade during the first four or five years of school life dependent upon a certain per cent., as determined by written examinations, is faulty in its construction and injurious in its results. It is not only that the flushed cheek, the excited eye, the trembling nerve, tell that the brain is being forced to do

unwonted work, but the wrong aim held up before the child is a far greater evil. An honest effort on the part of the child is always to be commended, even though it appear to result in failure. Praise should be proportioned in accordance with the effort put forth, rather than with the success achieved."—*American Journal of Commerce.*

Book Notices, etc.

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The United States. An outline of political history, 1492-1871. By Goldwin Smith, D.C.L. New York and London, Macmillan & Co., 1893. Toronto, Copp, Clark Co. Price \$2.

Probably not since the issue of Green's great work on the English People has any history proved so instructive and so interesting to all classes of readers as the clearly-printed well-bound volume that lies before us. Many who are not ashamed to acknowledge a dislike for history as it is generally written may, like one young man, find themselves unable to do any other work or read anything else until they have finished it.

In no other piece of work of equal length are the characteristics of the writer more noticeable than in the opening chapter—the colonies. In his own periodic, yet smooth and flowing style, he challenges our attention by his majestic disregard for common belief and enthusiasms concerning the character and work of the discoverers of the western world. The early history of the continent and the settlement of the different States is then sketched in that unbiassed spirit which the well-known cosmopolitanism of the writer infuses into all his work. The Englishman, for whom the book is primarily intended, must find particularly interesting the clear explanation of the origin of the differences in characteristics in the different sections of the United States, which strike even the most casual observer. To the American, on the other hand, it will be instructive to look through the eyes of so unprejudiced an observer on the relationships and the beginnings of misunderstandings which were so soon to cause the rupture between the colonies and the mother country. To a reader accustomed to the partizanship of Macaulay this dispassionateness may seem lack of enthusiasm, but even that reader will, as he proceeds, be roused by the noble tributes paid to the characters of Washington and Lincoln, and thrilled by the pictures of the sufferings of the American army at Valley Forge or the horrors of the Southern prisons.

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No reader will lay this book down without regretting that it is finished and without hoping that its promised companion volume and sequel may soon be given to the public.

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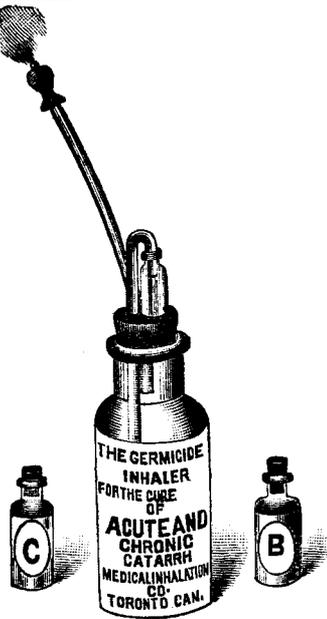
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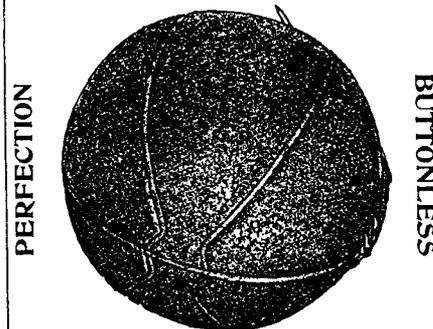
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