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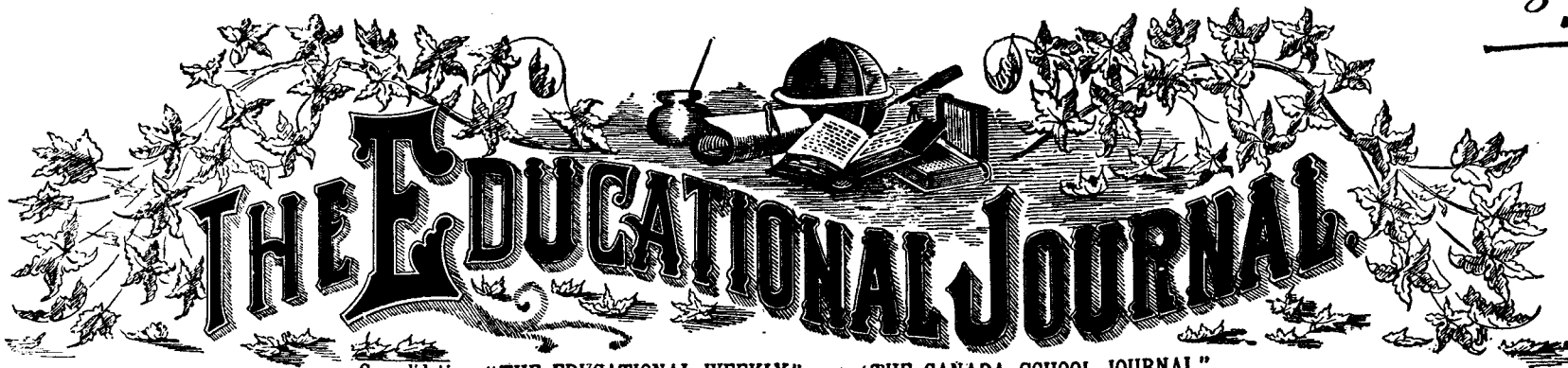
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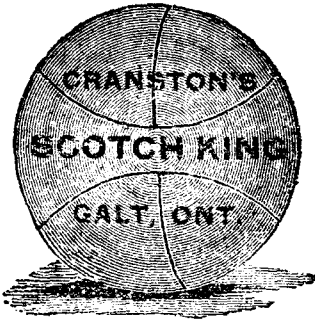
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TORONTO, APRIL 15, 1896.

Vol. X.
No. 1.

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Editorial Notes.

IN 1867 there were in Ontario 4,890 teachers, of whom 2,849 were male, and 2,041 female. In 1894 the numbers were, male 2,795, female 6,029—total 8,824. These figures are exclusive of those holding old county board and certain other certificates, of whom there were more than one thousand.

A GOOD plan has been adopted for the next meeting of the East Middlesex Teachers' Association, which takes place next month. "The Teaching of Arithmetic" has been chosen as a leading topic for discussion, and arrangements have been made to give every member an opportunity of reading Mr. McLean's recent book, "Hints on the Teaching of Arithmetic," before the meeting. This method will, no doubt, secure an unusually pointed and profitable discussion. Each teacher should come with some fresh thoughts of his own.

WE had intended to give in this and the preceding number of THE JOURNAL some special exercises suitable for use on Arbor Day, but the multiplicity of subjects pressing upon our columns makes it impossible for us to afford the requisite space, without crowding out other matter, the place of which would have been as easily supplied. To say nothing of the many special collections which the

press is constantly turning out at prices so small as to bring them within the reach of everyone, all literature abounds with matter suitable for use in Arbor Day readings, songs, and recitations.

"THE worse the material, the greater the skill of the worker." This is one of the celebrated axioms which the late Edward Thring, of Uppingham, said had been given him by his experience in the National schools in the suburbs of Gloucester. The maxim is one that should be laid to heart by every teacher. The temptation to neglect the dullards, and to give an extra amount of attention to the bright boys and girls, is very great. To do so is unjust and wrong. To fail with the dull ones is to prove oneself deficient in the highest qualifications for the teacher's office.

THERE were in 1894 (latest statistics given in Minister's Report) 5,691 schoolhouses in the Province, distributed as follows: In counties, 5,325; in towns, 211; in cities, 161. The log schoolhouse is fast disappearing, there being in 1894 only 453, as against 490 in 1893, and 1,466 in 1850. In the same period brick schoolhouses have increased from 99 to 2,243, sixteen having been erected within the year. There were, in 1894, 5,287 school sections and 5,277 schools open, the remaining ten being either closed or not reported. The number of maps now used amounts to 49,525. In 1850 there were only 1,814.

THE Department of Education for Manitoba has issued a circular giving the "Regulations for Entrance to Collegiate Schools." These prescribe that an Entrance examination to the Collegiate Schools of the Province shall be held by the Department of Education, along with the examination for teachers, in July of each year. Diplomas are to be issued to the successful candidates. The prescribed subjects are: Oral Reading, Literature, Composition, Grammar, Spelling and Writing, Arithmetic, Algebra (including simple rules, simple equations, prob-

lems, easy exercise in factoring), Geometry (Hill's Lessons, chapters one to five), Music, Geography, History, Drawing, Agriculture. The work included in each subject is carefully specified.

IT is encouraging to note that the average of attendance of Public School pupils, in proportion to the whole number registered, is steadily increasing from year to year. In 1893 the total school population of the Province, as ascertained through the assessor, was 592,503; in 1894, 593,840. The total number of pupils registered on the school rolls was, in 1893, 481,068; in 1894, 483,203. The average number in daily attendance was, in 1893, 259,426; in 1894, 268,334. The percentage of daily attendance to the whole number attending school was, in 1893, 54; in 1894, 56. In 1867 the percentage was only 41; in 1887, 50; 1892, 52. Still it will be seen that considerably less than one-half of the children of school age in the Province were in regular attendance at the Public Schools in 1894. The figures showing irregularity of attendance are painfully suggestive of one of the great hindrances to progress with which teachers have constantly to struggle.

A CORRESPONDENT asked information a few weeks ago touching the working and usefulness of the Ontario Truancy Act. This we were not able at the time to give very satisfactorily. We now find from the Minister's Report for 1894 that during that year 2,962 cases of truancy were reported, 135 complaints were made before police magistrates and justices of the peace, and fifty-one convictions were recorded. We are still unable to ascertain to what extent the cases reported were so effectually dealt with as to bring about the needed reform, or what was done in the cases of the fifty-one convicted. Consequently we have not all the facts needed to enable us to form a sound judgment as to the efficiency and utility of the system. Yet there can be no doubt that these formal complaints and occasional convictions must have the effect of bringing a considerable pressure to bear in the right direction.

English.

All articles and communications intended for this department should be addressed to the ENGLISH EDITOR, EDUCATIONAL JOURNAL, Room 5, 114 Richmond Street West, Toronto.

PRIMARY LITERATURE.

EASTER EXAMINATION, 1896.

- A. "Your grace shall understand that the receipt of your letter," etc.
1. Quote this letter in full.
 2. Name the writer and the person to whom it is sent.
- B. "Thee haughty tyrants n'er shall tame."
3. Name the author, the poem, and quote a parallel passage.
 4. Name the poem, and give a short outline of it.
 5. Classify the poem, and state your reasons for putting it in that class.
 6. Quote a poem describing the effect of a foolish woman's vanity.
 7. Classify this poem, and point out the marks by which your classification is guided.
 8. Who wrote the line: "With weeping and with laughter still is the story told"?
 9. Relate the story in briefest fashion. Point out its chief merits.
 10. How is the unity of "To the Evening Wind" attained?
 11. Restate the instances given by the poet, and the general conclusion.
 12. How is the unity of "The Hanging of the Crane" secured?
 13. What is the subject of this poem?
 14. What is its greatest merit?
- D. "'Tis the hard gray weather Breeds hard English men."
15. Who wrote that? Name the poem? What is its main purpose?
 16. From examples in "The Lord of Burleigh" show what is meant by complex alliteration, liquid alliteration, pathos, and the contrast of emotions.
 17. Compare and contrast the Old English ballad with the modern ballad in several points.
 18. Quote one number of the "Revenge," and exhibit the scansion.
- E. "Death lies dead."
19. Who wrote that line? For what qualities is his poetry famous?
 20. Name the poem; subdivide it into sections; write proper titles for each section, and explain how the human interest is maintained in several ways.

NOTES AND HINTS.

1. No marks should be allowed for the answer unless the quotation is "letter-perfect."
2. The object of this question is to test the accuracy of the student's acquaintance with the *whole* scene. Hence no marks should be allowed for one name without the other.
3. The parallel passage is the most important part of this question. Any pupil should be able to quote from some other patriotic poem a statement—"Britons never shall be slaves."
4. The outline need not exceed fifteen or twenty lines, and should follow the exact order of the poem. No marks should be given for the title alone.
5. Pastoral poetry, domestic poetry, the poetry of family life, etc. The reasons should be clearly stated. Descriptive poetry, or nondescript lyric, would be indefinite.
6. The quotation of Leigh Hunt's ballad should be verbally exact to earn marks. Every error should subtract one-third to one-fifth of the total marks allowed.
7. The several distinguishing marks of the ballad should be clearly stated.
8. This question is merely nominal. One or two marks in 100 is full value.
9. The two parts are of about equal value—say 3 and 2, on a scale of 100.
10. The personification in the introduction, the details in the body of the poem, the wider rela-

tions of the conclusion—all turning about the personal metaphor.

11. This should be answered in short, clear sentences, giving the connection of each particular instance, with the benevolent motive attributed to the wind.

12. The continuity of the development of two conjoined lines is the central relation. The discontinuous scenes *assume* an unbroken connection in the whole poem.

13. The title dimly shadows the subject. Fifty years of married life, the origin and history of a family, etc. To most pupils such questions are found difficult; good answers deserve high marks.

14. Some of these are: Intense human interest and universality, great suggestiveness of actual experience, the property of exciting pleasure for numerous re-readings, fidelity to facts in human life, etc. Tastes may differ in the selection of the greatest.

15. The difficult part is to name the purpose, and this should count 3, if each of the others is allowed 1 mark. The quotation gives the hint, viz., the beneficial effect of a severe climate in developing a hardy race of men.

16. The first two parts are best answered in diagrammatic form. The other two parts are best answered together, and the answer should refer to three or four passages in the poem very definitely, so as to exhibit the meaning clearly and with emphasis.

17. "The Well of St. Keyne," or "Lucy Gray," would be suitable to show the old ballad characteristics.

18. The diagram with metrical symbols furnishes the best answer.

19 and 20 require a minute knowledge of "The Forsaken Garden." The skill of the author should be proved, (a) as a great master of language and metre, (b) as a vivid word-painter of still life—the most difficult to portray. The close connection of the parts and the composite unity should be pointed out in detail. The human interest in the landscape, the old associations, and the final destiny of the garden as part of the world, should be shown.

The general purpose of the paper is to ascertain how far the student has mastered and memorized the outward expression of the writers studied, and also how far he has comprehended the logical architecture, the inner meaning, and the artistic beauty of each passage. No written or oral examination can fully *measure* these things in the mathematical sense, but we can ask definite questions that require knowledge and appreciation to enable the pupil to give definite and precise answers. From a survey of these answers we can roughly classify and grade the papers, and we can easily separate the students into three or four distinct groups with sufficient exactitude for practical purposes.

C. C.

Hints and Helps.

A SMALL HISTORY FOR SMALL PEOPLE.

BY MISS M. A. WATT.

CHAPTER I—A BOY WHO BECAME KING.

Once upon a time, more than a thousand years ago, there lived in England a little boy whose name you may have heard, and which you may tell me when you have heard a little more of what I am going to tell you about him. His father, the king, loved his little boy very much, and we are told that he sent his dear little son, only four years old, to stay with a very learned man in Rome. (See if you can find Rome on the map, it is a good way from England). This learned man was the Pope Leo, and he thought so much of his little visitor; that he had a grand procession to a church where he "hallowed" the boy to be king of England (or of the part where his father lived, West Saxony). Everybody stared at the little fellow, and wondered at the great sight, especially as there were so many older brothers who would have the right to be king instead of our boy. While he was in Rome his dear mother died, and after two years he went back home again, where his step-mother, Judith, was very kind to him. Then his father, Ethelwulf, died, and the eldest son became king; then he died, and

the next brother was king; he died and the third brother was king; and when he died, the fourth brother was crowned, and very soon he died, too, and Pope Leo's little king was really and truly the king of the West Saxons of England! He was now a young man of twenty-two, and the first thing he had to do was to go to war!

CHAPTER II—THE KING FIGHTING HIS ENEMIES.

There was a fierce race of men who came in ships, like pirates, to trouble the English people. They had been doing it for about a hundred years, so our king knew something of them. He got ready to meet them, and they fought the battle called "Wilton," in which the fierce Danes were badly beaten. There was a peace, and a good many Danes stayed in the country in a friendly way.

But now came the first sea-fight. Other Danes came over, and the king went out to meet them. Oh, but the English were proud of him when he came sailing in home with one queer Danish boat, heavy, and slow, and strong, after driving away six others!

Perhaps you think the Danes never came back. I am sorry to say they did. They had a promise that was thought to be very sacred, "To swear on the Holy Bracelet," but they broke even their most sacred promises, and came sailing back whenever the English were not watching them. One sad day, about New Year's Day, they stole in so quietly that every one was surprised. Many were killed and others fled, some in boats, and some to the woods. Among the last was the king, about whom some stories are told. I must tell you one which I think is true, and which will amuse you, and teach you a good lesson of how a real "gentleman" should act.

The king escaped alone, and wandered on until he found a hut. He entered it, and found a man who minded pigs in the woods. It is said that the man knew the king at once, but was too fond of him to tell the Danes, who would have given the poor herd money for telling. The herd did not tell his wife either, for fear she might be tempted to tell. So a funny thing is said to have happened. The wife was baking cakes of bread on the hot ashes (they had no stoves then), and she said to the stranger, who was sitting mending his bow (they had no guns, then, either, you know).

"Mind my bread, soldier, while I go out to get some sticks in the woods."

The king smiled, and said he would. But, alas! he got to thinking of how strange it was for him to be sitting idle when there was so much trouble, and he began to plan what he would do to help his country, when, *bang!* a strong hand hit him on his ear, and a shrill voice cried out:

"There, don't you see the cakes on fire?"

"Then wherefore turn them not?"

"You're glad enough to eat them,

When they're piping hot."

The king, to his great credit, turned gently round, and said:

"Well, mistress, that is true enough. It would surely be too bad if I would not take that much trouble when you have been so kind to me. Try me again," and he carefully watched a second batch until they were baked. He rewarded the loyal herd and his wife afterwards, you may be sure."

Did I hear some of you say you knew now who our king was? Ah! the *cake-story* let the cat out of the bag, did it? Yes, it was Alfred the Great; and why was he called "great," do you think? Let me finish the story and we shall see.

After hiding in the wood he managed to get his men together secretly, and by Easter they fought the great battle of Ethandune (878 was the year), in which he gave the Danes the worst beating they ever had. The leader, Guthorm, was baptized and became friends with Alfred, and the Danes settled in the country, though they did not become good all at once. At the end of all this fighting Alfred was thirty-one years old, so he had been working hard since he was twenty-two. How long ago was that?

CHAPTER III—THE KING AT PEACE.

When once the country was quiet, Alfred had a chance to do the things he loved to do. He loved learning, so he wrote many books, and started schools in which boys could learn grammar. He loved his own language, and did not write his books in Latin, as was the fashion, but translated

the Latin into English. He got others to write books, too, such men as Asser, a Welshman, Grimbald from Flanders, and John the old Saxon. He hired a whale-fisher to travel around the northern countries, and when he came back he wrote down what the fisher told him about what he saw. He made laws, and was so strict about carrying them out that the poets sang that golden bracelets could be hung up by the roadside and no one would dare to touch them. He helped the churches and the poor, so that he was beloved by the high and the low. He built ships (not steamers, of course; you must remember there were none then), some with sixty oars, some more, big, heavy things, apt to get aground, but very good for chasing Danes. He caught some pirates one time, and dreadfully frightened all the rest by hanging the whole lot in one day.

What a wonderful man, and how strong he must have been! Oh, no, he was very sickly, always was in pain, and died at fifty-two! But he worked! He did his work by measuring the time for everything: so much for reading, so much for sleeping, so much for eating, so much for other things. But he had no clock and no watch, for there were no such things then; so he had candles burning all the time, and changed his work as so much of his candle burned away. His palace walls were full of cracks, and he had to make a lantern of "parchment" (no glass then, you know, dears) to keep the wind off his candles.

So that is the story of Alfred the Great, who had not half the chances to learn that you little boys have, and who never saw the wonderful sights you see, such as trains of cars, sewing machines, china dishes, glassware, telegraph messages, telephones, electric lights, gas, coal-oil lamps, nor yet such books, pictures, and even eatables, as are common everyday things to you all. I hope you will try to be like him by doing the best work you can.

LANGUAGE LESSON EXERCISE.

ERRORS IN SPEAKING.

Teachers will find the correction of the following sentences, with the reason for the same, a good exercise for their pupils:

- I had rather wait.
- I doubt not but I shall be able.
- He was too young to have felt his loss.
- I seldom or ever see him now.
- I expected to have found him.
- I intended to have visited him.
- I hoped you would have come.
- He can write better than me.
- A child of four years old.
- Be that as it will.
- All over the country.
- I propose to visit them.
- I will leave town in the latter end of July.
- I should have much liked to have seen him.
- He plunged down into the water.
- He must do this last of all.
- Where is it? says I to him.—*National Educator.*

TEACHING ORTHOGRAPHY.

Each word has a physiognomy. Some words have plain faces, some have features peculiar to themselves; but all are learned, not by describing them orally, but by using our *sense of sight*. Words of as many letters as they have sounds may be learned by seeing and pronouncing them. If the teacher dictates such words as *paper, lamp, pencil*, etc., and carefully pronounces every sound, they will be written correctly. But the number of such words is comparatively small in English. Words in which the number of letters is greater than that of sounds, as *book, street, slate, ring*, etc., will have to be observed more closely, and oftener, by the young learner. In order to make the peculiarity of these words out, and strike the attention, it is well to mark them thus: *book, street, slate*, etc. This should be done on the board. Such words as *separate, eulogy, forfeiture, gayety, etiquette* (I take a few out of the multitude haphazard), are often misspelled. If marked on the board as indicated, and left there a few days, it may be safely said that their peculiarities will be remembered or recalled.

The secret of vivid knowing is vivid seeing. If every spelling lesson is conducted according to the principle that we learn orthography more through sight than through the sense of hearing, I am sure

we shall find little difficulty in obtaining good results. In higher grades, words may be grouped according to rules, but no rule should be given; it should invariably be discovered by the pupil. If the teacher put the following words on the board in a column, *pavement, amusement, chastisement, achievement, infringement*, etc., and opposite to these in another column, such as *judgment, abridgment*, and others, it will not be long before the pupils have discovered why the final *e* of judge, for instance, in the second column is dropped. This is mixing in a little brains in the otherwise dry study. At every stage of the course, however, this paradox remains true: "The more crayon a teacher consumes, the better her instruction."—*Hon. Leroy D. Brown, in the American Teacher.*

School-Room Methods

SPELLING.

By—

Since November, 1894, I have been a constant reader of THE JOURNAL, with ever increasing pleasure and profit. Among the many good things, I have particularly read the articles on Schoolroom Methods. While reading I have been thinking, and it seems to me that there is a tendency to lay too much stress on method, forgetting that the method that is successful in the hands of one teacher may be a total failure in the hands of another equally as competent; also that the same method is not alike suited to all pupils. Especially in teaching spelling does a teacher require to vary the method, not only to suit each individual case, but to break the monotony of a study most uninteresting to the majority of pupils, even when presented in the most attractive manner. All oral and all written spelling, whether the words were isolated or connected, have, in my own experience, equally failed to produce good spellers. I have known pupils who seldom made a mistake in any formal spelling lesson or test, yet who, when told to write a simple composition, or to write the answers to questions on their school studies, made most wretched blunders in spelling.

Now, sir, I have come to the conclusion that the fault does not lie altogether in the teaching of spelling, but that at least some of it lies in the mental training, in carefulness, and in assigning too much writing for a given time, thus causing hurried work and, consequently, faulty spelling. In this our system of examination is productive of many mistakes in spelling and also in writing. I claim that if the pupil is trained to be careful and precise in his work, to examine and correct his own, and is allowed ample time to think about what he is writing, many of the difficulties will vanish.

In my own work there is a formal, written, spelling lesson twice a week, consisting sometimes of isolated words, and at other times of sentences and extracts from the Readers. The pupils correct their own slates without making any alterations; write the words in which mistakes were made, correctly spelled, in books kept for that purpose; and then put both slates and books on my table for inspection. On Fridays only the mistakes are given. Once a month we have an oral spelling-match in which all above the Junior second class take part, using the words from the Readers. We began with the Second Reader, and are now about half way through the Third Reader. In these matches the senior pupils very much dislike to be spelled down by the juniors; consequently the words are carefully studied. In addition to the formal spelling lesson, every written exercise is an exercise in spelling. I have found the following a good exercise, viz., after a pupil has written his answers to his history or geography to require him to read it aloud, stopping at and marking each misspelled word. I also direct the pupils' attention to words having same sound, but different spelling and meaning to the different combinations of letters representing the same sound, and see that the pupils have clear ideas of the meanings of the words, and that they can use them correctly.

With the above method, and much patience and perseverance, I have succeeded in reducing the bad spellers to a very small minority.

With best wishes to THE JOURNAL and fellow-teachers.

Langley, B.C.

BY—

1. *Assigning Lessons*—(a) Pupils pronounce individually on error made, class or teacher pronounce, then erring pupils give correctly. (b) Suggestions on meanings of different words. (c) Call attention to syllables usually misspelled.

2. *Home Study*—(a) Bring words neatly written three or more times. (b) Pupils look up meanings and place unusual words in sentences.

3. *School Study*—(a) Teacher writes one or two words on board; pupils notice—erase—write. When lesson is done, open spellers; compare—rewrite correctly two or more times. (b) Spellers open; notice two or three words; at signal, close and write. (Rather train to take mental picture than to learn by mere mental repetition.)

4. *Recitation*—(a) Use ink. (b) To save time and cultivate the power of attention, dictate but once. (c) Occasionally let a pupil stand, spell 10 or 12 words, and others write correctly all misspelled words.

5. *Examination*—(a) Use lead pencil. (b) To avoid temptation, often vary mode of changing papers. (c) Teacher collect and verify.

6. *Correction*—(a) Rewrite correctly. (b) Spell simultaneously. (c) Spell "letter about" or "syllable about."

7. *Review*—(a) Keep list of most troublesome words and give occasionally for spelling, or give for transcription at home or in school. (b) Place hardest words along top of front board.

Take off one-fourth for each misspelled word in all work.

Teachers' Miscellany.

THE LAND OF THE BOERS.

Pronounce it "Boors."
The word means "farmers."

The legislature consists of two bodies of twenty-four members each, one-half retiring every two years. The president's term is five years.

The area of the Transvaal is 121,865 square miles, or about that of Illinois, Iowa, and Massachusetts combined.

In parts of the country the climate resembles that of Colorado, and is regarded as healthful for consumptives.

It is there that the famed tsetse fly, whose bite is death to oxen and horses, is most prevalent.

Population is 679,200; the whites number 119,128, and about half of these are of Dutch descent.

There are about 20,000 farms, wheat and tobacco being the chief crops.

The largest town is Johannesburg, with a population of 15,000, a mining town. Pretoria has 5,000, and is a most beautiful city.

"Transvaal" means "across the Vaal," or the country north of the Vaal River.

Two-thirds of the Christians belong to the Dutch Reformed Church.

Finished or in progress are 3,700 miles of telegraph.

Gold was discovered there in 1886.—*Selected.*

CONCERT RECITATION.

Who likes the rain?
"I," said the duck, "I call it fun,
For I have my little rubbers on;
They make a cunning three-toed track
In the soft cool mud; quack! quack!"

"I hope 'twill pour, I hope 'twill pour,"
Croaked the tree-toad from his gray bark door,
"For with a broad leaf for a roof
I'm perfectly weather-proof."

Sang the brook, "I laugh at every drop,
And wish it would never need to stop,
Until a broad river I'd grow to be,
And could find my way out to the sea."

—*Anon.*

A well-cultivated memory means an intelligent manhood and an active old age. He who remembers most, thinks most, for he has most to think with.—*Chas. G. Leland.*

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Editorials.

THE ASSOCIATION MEETING.

WE congratulate the officers and members of the Ontario Educational Association on the growing success and influence of the society. The meeting which was held in Toronto last week was, we believe, the best, in respect not only to numbers in attendance, but also to the character of the papers and addresses presented, which has yet been held. Comparisons are, however, proverbially odious, and are not, we suppose, very useful, save in an estimate of progress.

We are sorry that the shortness of time between the close of the meetings and our going to press prevents us from giving more than a comparatively small part of the pretty full report which we have provided. The greater part of it must, therefore, be reserved for next number. This report, in advance of the official one, which will, we presume, be published as usual, in due course, by the Association, will supply thoughtful teachers with material for reflection, as well as with hints for practical application, for many months to come. We shall probably take occa-

sion to discuss some of the views presented, as such discussion may seem likely to be helpful, in future numbers of THE JOURNAL. We shall hope, also, to find room in subsequent issues for the publication in full of a few of the papers, selecting those, so far as we may, which seem to us likely to be the most directly interesting and helpful to the largest number of our subscribers.

We are well aware that teachers, as a class, are not marked by their readiness to take new ideas on the authority even of distinguished educators, or to accept without thought any educational or pedagogical novelties which may be put before them. It is unnecessary, therefore, to add that we are far from thinking that the amount of benefit derived from attendance at a convention of this kind, or from reading a report of it, is in direct ratio with the individual's ability to accept without reserve the teachings of the various speakers. In fact, it not infrequently happens that, from an educational point of view, the maximum of benefit is derived from the reading of the paper, or listening to the speaker, whose propositions do not command our assent throughout, but arouse antagonisms which set us at once to bringing into action the mental forces which array themselves on the other side of the question. It was by no means the worst feature of some of the exercises at the meetings of the Association, both general and sectional, that they gave rise to keen and vigorous discussion.

PROBLEMS IN MORALS.

ONE of the first and highest duties of every teacher is to cultivate the moral nature, the conscience, of the pupils. In order to do this he must take frequent opportunities to set them thinking about moral questions, and forming their own conclusions, under proper guidance, about the right and wrong of things. The occurrences of school life will often supply material for discussion of this kind; but in order to secure freedom from prejudice and personal feeling, it is often desirable to present questions with which no such influences have to do. The following, taken from the *Christian World* (London, Eng.), affords a good problem of the kind. It would be curious to know how many children of average intelligence and character in a Public or High School would see anything wrong in the transaction:

"Has a person who discovers that somebody else is the owner of a masterpiece of art, of the value of which he is

entirely ignorant, a right to take advantage of his own knowledge and the other's ignorance to buy the work for the merest trifle? The question suggests itself by the account of the discovery of a picture of Rembrandt in France. It was left among the goods of an old lady at Pecy to be sold by auction. It had been thought worthless, but a picture-dealer who saw it discovered its value, kept his knowledge to himself, and bought it through a workingman at the sale for 4,500 francs. A few hours later he was offered 75,000 francs for it, and has now fixed its price at 250,000 francs, which, as it is pronounced by the best judges to be a masterpiece of the great Flemish painter, he will probably get."

The *Christian World* says: "In the present state of brokers' ethics, it is to be feared that, with a few honorable exceptions, all in the trade will simply envy the purchaser, and wish that such a chance might fall to themselves; judged by the ethics of Christianity, however, the transaction cannot appear other than a cruel and shameless robbery." Will not some of our readers put it to their classes, give them time to think it over, and let us know the results? It would not be a bad plan to let them express their opinions, with or without reasons, in writing.

TOUCHING the effect of college training in fitting or unfitting a young man for business pursuits, several things are to be borne in mind. For instance, the studiously inclined young men, those whose inclinations urge them most strongly in the direction of the university, are often unfitted by nature for business success. Such young men, whether they go to college or not, will never put sufficient enthusiasm into their business to insure success. Then, again, it would be a poor collegiate education that would not unfit any young man who has a soul in him for the practise of the methods which are counted by many the successful business methods. Nor can one who has learned to think, and who enjoys the higher and broader outlook which a true mental cultivation gives, consent willingly to give the best energies of his life to mere money-making. But the common-sense rule is, and we venture to say that true experience will sanction it, that the more the brain power is developed by education, the better fitted is the man or the woman for any business pursuit. There is no sphere of honest work, we care not how humble, in which developed brain-power will not tell in favor of its possessor.

The business of the teacher is to assist and direct the pupil in the organization of his ideas.—*Harriet M. Scott.*

ONTARIO EDUCATIONAL ASSOCIATION.

Reported for THE EDUCATIONAL JOURNAL by Mr. John Spence, principal Clinton street school, Toronto.

The annual gathering of teachers and trustees of the Province of Ontario, which was convened on Tuesday, Wednesday, and Thursday of Easter week, was more than usually successful, not only in point of attendance, but also in the number of really valuable and interesting papers contributed by many able and cultivated educators of both sexes, who read papers and gave addresses on a great variety of topics, of interest to those engaged directly and indirectly in the education of the children, old and young, of this great and progressive Province. Early on Tuesday morning the representatives began to assemble, and at nine o'clock several of the sections of the Association were at work. On Wednesday morning the number in attendance had beaten any previous record, and the faces of the Managers were wreathed in smiles of satisfaction. The steady growth of the Association is the best indication of the necessity for the annual Convention and the wisdom of the Department of Education in selecting the Easter vacation, instead of the early part of the midsummer holidays, as the time of meeting. The many Public School teachers of rural sections have hitherto been prevented from attending, owing to the fact that the law required them to be in attendance at their schools immediately after Easter Monday. Now that the vacation has been extended in rural districts to the length accorded to teachers in towns and cities, it will be seen that hundreds more of the teachers will be in attendance at future meetings of this great teachers' parliament. Those who come once rarely fail to return next year, and thus the attendance has gone on increasing yearly, and will continue to do so, I believe, until it will be only the few who, from adverse circumstances, cannot possibly attend, who will not be found in the halls of the Education Department and Normal and Model School buildings during the time of the meeting, there to exchange ideas on great educational topics, and thence to return to their work with fresh inspiration and improved equipment for the greatest and most important vocation under heaven.

With such intelligent men and women engaged in the work of teaching, it is impossible for the most inconsiderate and inattentive instructor of youth not to return with a loftier ideal and a secret determination to make the succeeding year brighter and better. I have heard the remark made that it was tiresome, and took too much of the time of the vacation; but even these apparently dissatisfied ones have felt lifted up out of their narrow surroundings and invigorated by some soul-stirring address or cleverly written paper. While the mouth may give utterance occasionally to such a note of discontent, it is none the less certain that much good seed has been sown from which there will be a sure and abundant harvest. It is an undeniable fact that as one keeps to himself, he becomes narrow and prejudiced.

This is especially true of teachers, who are associated so much with the young, whose range of thought is necessarily limited. Then, too, particularly in rural districts, the teacher is largely isolated, and, except at such meetings as this, never has the opportunity of rubbing shoulders with those who are intimately acquainted with the nature and scope of his work, and whose sympathies are drawn out in the same direction as his own. No other teacher needs this meeting so much as the country teacher, and he it is who gets the most benefit from it. His surroundings prevent his profiting by the opportunities that urban teachers have of meeting and conversing with or listening to the famous men and women who have climbed to the topmost rung of the ladder of success in the political, social, intellectual, and moral spheres. In this Association all meet on a common level, and each one ought to feel, and generally does feel, that he is commingling with brothers and sisters. The best of good fellowship prevails, and each vies with the other in friendliness and responsiveness.

The good is not all for the rural teacher. The urban teachers profit just as much. Some of the most useful discoveries in pedagogics are made by the intelligent, painstaking young teacher whose field of work is far removed from "the madding crowd." The beauties of the natural world, with its health-giving surroundings, and the homely common sense of our rural population, give to the rural teacher advantages and opportunities that

city teachers sigh for as pleasant but fading memories of their earlier years. I know from past experience that the rural teacher can give "pointers" to his brother in the town. The idea prevails sometimes that the teachers occupying the best paying positions look down upon the less fortunate confrères, but it is a false one. No true teacher does this. There is a rapidly increasing feeling of fraternity developing among teachers, as a result of county and provincial associations, and the proof of this is the evidence that their power and influence are being felt and appreciated. The Minister of Education, in the Legislature this session, has in a bill given representation to the teachers of Ontario in the new council that is to control education for the Province. Now that union is developing our strength, we are showing that we need only to speak with a united voice to secure just recognition and our legitimate influence. Though this association is far in advance of any preceding one, there is still room for great increase in numbers. Only one out of every twenty teachers in Ontario was present. Think what a grand gathering we should have if this proportion were doubled, or quadrupled! How quickly would our influence tell upon public policy! How attentively would our deliberations be watched!

There is a growing danger about which I should like to utter a few warning words. The trustees are an integral factor in the success of the association. There seemed to be some feeling among trustees present this year that they were not receiving as full and fair consideration as they ought to receive. While I am convinced that there is no foundation in fact for this feeling, yet I think the board of directors ought to take sure steps to remove any possible ground for such an impression. The trustees' section is just as important as any other, and their co-operation is just as valuable. It would be a serious loss if they should secede. We need them. They need us. Our interests are almost coincident. There should be no discord. Their meetings should receive as careful consideration as those of any other section, and every effort should be made to make them completely successful. Never let the impression get abroad that they are regarded, as one trustee said they were, as "The tail of the Association."

PUBLIC SCHOOL SECTION.

Tuesday, April, 7, 1896.

Mr. David Young, of Guelph, took the chair at 9 a.m. as president of the Public School department, and delivered an able and interesting address, chiefly upon the need of better organization among the teachers of the Province. He dwelt upon the very favorable consideration the requests and recommendations of the associations had received from the Minister of Education. Every topic on the programme should have its proper share of the time at the disposal of the department, so that fair discussion of each would result. The work of the Public Schools, as a whole, should be improved. The great need of the age was experienced teachers, and much of the defective work was due to immaturity of beginners. Teachers should try everywhere to remove grievances where any are found to exist in the profession, and should use all their influence to shape legislation affecting the educational interests of the country into the proper form. He urged every member of the Public School department to seek the hearty co-operation of the other departments. The best representation that could be obtained from the association should be secured in order to exert the greatest influence with the Minister of Education. This idea so favorably impressed the department that a committee was appointed to confer with representatives selected for the same purpose by the other departments. The committee consisted of Messrs. Young, McMillan, and Smith.

Miss Carey, of Doncaster, read a valuable paper on Phonics. She claimed that the system gave better results than any other. The "Look and Say Method" was condemned on the ground that it led to memorization of forms and obliterated thought-recognition. The two purposes of reading were word-recognition and thought-recognition. She dwelt upon the necessity of careful preparation and independent research by the teacher, who should be full of enthusiasm and interest. She explained the principles of teaching phonics, and impressed the necessity of careful attention to the elementary sound. Teachers should be careful not to present too many diffi-

culties at once. These should be thoroughly mastered one by one. The claim was made that it aided the child to spell. She said also that it aided very young children to read books readily. The clever essayist received a very attentive hearing, and was heartily applauded.

Professor Baker, of Toronto University, president of the General Association, then briefly addressed the department, and endorsed the remarks of Mr. Young on the necessity of better organization and representation.

Mr. Hugh Simpson, of Orono, read an instructive paper on "How Teachers May Gain Influence Outside of School in Rural Sections." He pointed out the importance of having public opinion in the teacher's favor. He should sedulously try to obtain the good will and active co-operation of parents, and should obtain their opinion on the various matters pertaining to the education of their children. He should not disregard their wishes and ideas, but should carry them out whenever possible and expedient. He should choose rather to have a good name than riches, though how the latter can be obtained was left in obscurity. Many opportunities are given the teacher to use his resources and experience. He should be able, willing, and ready to speak in public, and in this way make himself felt as a potent factor in the public life of the community in which he dwells. Force of character ought to be developed to the utmost. He should enter the social life of the people whose children he teaches, and visit them as often as possible. The educational system and all public questions should be well understood by him to enable him to speak with authority and understanding. His constant aim should be to reach a high standard in his profession. While developing the mental and moral nature of the pupil, he should also aim at the vigorous development of their physical nature, and at the same time, by constant study and practice, make himself physically, and mentally, and morally the equal, if not the superior, of every man in his section.

Mr. Husband, of Oakville, read a paper on "Grouping Subjects for Examinations and Grading Certificates." He thought the papers now set were hard enough, but thought the percentage required too low. He would exact 60 per cent. on each paper and 75 per cent. on the total. If a pupil failed to make 60 per cent. on any paper, he should be required to take that subject again the next examination, and should be refused a certificate until he had reached that minimum. No candidate should be required to write again on any subject he had once received the 60 per cent. He would group subjects as mathematical, English, etc. The higher percentage exacted would raise the age limit and prevent a large number of very young teachers being given control of rural schools. The profession would not be so overcrowded, and, as salaries would naturally increase, the best men and women would have a sufficient inducement to remain in the profession.

Mr. Kirk, of London, gave an address on "Canadian Meteorology." The study of this subject was long hindered by lack of suitable instruments, but this is no longer an objection. He stated that the general principles of the science were not all discovered yet. Children should be instructed to observe the common daily phenomena, direction of winds, strength of current, etc. He dwelt upon the cause and effects of the prevailing winds, and the influence of changes of temperature on the nervous system. He spoke of our diversified climate, and declared that it was with pleasure he noted that this important study was receiving much greater attention in our Public Schools, and showed how beneficial it was to pupils in developing their power of observation. Our sense of patriotism should impel us to defend our climate, the finest in the world.

(To be concluded next issue.)

A man fifty years old has, according to a French statistician, worked 6,500 days, slept 6,000, amused himself 4,000, walked 12,000 miles, been ill 500 days, has partaken of 36,000 meals, eaten 16,000 pounds of meat and 4,000 pounds of fish, eggs, and vegetables, and drank 7,000 gallons of fluid, which would make a lake of 800 feet surface of three feet deep.

No book in any literature can be for one moment compared with the Bible in its completeness, as a means either of ethical or spiritual culture—*Ian Maclaren.*

High School Entrance and P. S. Leaving Department

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With the assistance of several
special contributors.

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LITERATURE.

THE CAPTURE OF QUEBEC, P. 233, FOURTH
READER.

This lesson should be studied in connection with the history of the Seven Years' War. As an introduction to the lesson, a review of the historical facts leading up to the events narrated in the lesson should be taken. The pupils should then be asked to read over the lesson as a preparation for the study of it in class.

The main purpose of the lesson.—To describe the battle which was the turning point in the destiny of the European colonies in North America.

Theme 1.—The general circumstances under which the contending forces met, developed in paragraphs 1 and 2.

Closing scene.—The term *scene* suggests a drama. The scene commences with Braddock's march from Virginia to Fort DuQuesne, and ends with the capitulation of Montreal.

Episode.—The battle of Quebec was an incident in the scene referred to above. The scene was an important part of the great military drama performed by the British and French in North America from the time of the early settlements till the Peace of Paris in 1763.

Military strength.—The composition of the two armies is given in paragraph 13 of this lesson. Both armies were commanded by generals of experience and distinction. The French army was larger than the British; but the latter was composed of better soldiers, all being regulars.

Montcalm.—Louis Joseph Saint Veran, Marquis de Montcalm, was born in the south of France in 1712. Having entered the army, he distinguished himself in several campaigns in Europe, and in

1756 he was appointed to the chief command of the French troops in Canada. He captured Oswego, Fort William Henry, and Ticonderoga, but was defeated at the battle of the Plains of Abraham. He was wounded in the engagement, and died the following day. He is described in the lesson as *chivalrous*. This implies that he was imbued with a military spirit, that he had a lofty devotion to the female sex, that he loved adventure, and that he desired glory; in short, that he was a true knight.

Wolfe.—James Wolfe was born at Westerham, Kent, in 1726. He entered the army, and was present at the battles of Dettingen, Fontenoy, Falkirk, Culloden, and Laffeldt, being wounded in the last. He afterwards distinguished himself in the engagements between the French and British in America, particularly at the capture of Louisbourg in 1758, where he commanded a division under General Amherst. He was appointed by Pitt to command the expedition against Quebec. He was wounded in the battle, and died in the moment of victory. The author describes Wolfe as a *hero*. This implies bravery, nobility of character, and devotion to duty.

The firm trust of the French was based on the fact that the strong position was guarded by an army commanded by a general who they believed was wise enough and had the requisite military skill not to allow any advantage to be taken by the enemy. The English based their hope on the courage of their general, supported, as he was, by a comparatively small but thoroughly trained army.

Stronghold.—Compare Quebec with Gibraltar and Aden.

Theme 2.—Wolfe's plan of attack. Paragraph 3. *Lofty eminence.*—A high elevation. The word *lofty* is used here descriptively.

Left bank.—The north side of the St. Lawrence.

Plains of Abraham.—The plains were named after a former owner of a portion of the district—Abraham Martin, a pilot.

Theme 3.—*The secret landing.*—Paragraphs 4, 5, 6.

Wolfe led in person.—He was quite ill at the time; but, through a sense of duty, he desired to attempt the difficult and dangerous undertaking. This shows his heroic spirit. He felt the responsibility to such an extent that he could not delegate the command to another.

Flotilla.—A fleet of small vessels (in this case, "flat-bottomed boats"). James Cook, who afterwards became the great navigator, Captain Cook, acted as pilot.

Ebb-tide.—The return of tide-water toward the sea; opposed to flood, or flow-tide.

Midshipman.—A petty officer in the navy, next

in rank to the superior officers. This was John Robinson, afterwards a professor in Edinburgh University.

As.—*As* is here a relative pronoun, object of the verb *related*, and it has for its antecedent the incident given in this sentence. The stanza of Gray's "Elegy" which has been associated with this story is the ninth. The subject of this stanza is *inevitable death*.

Vent.—Expression to restrained emotions.

Light company.—A subdivision of a regiment, commanded by a captain, and equipped with light arms and accoutrements, so that rapid movements may be made.

Theme 4.—The ascent of the cliff. Paragraphs 7-11.

"Qui vive?"—The challenge of the French sentry. Literally, this means "Who lives?" The English equivalent is, "Who goes there?"

"La France."—The French. This was, probably, the password agreed upon by the French. It had been learned from a deserter. The deception was all the more easily accomplished as the French expected a convoy of provisions from Montreal.

The conduct of the French soldiers on guard indicates how completely they were taken by surprise. It is evident that no attack was expected at this particular point.

Monckton and Murray.—Two of the officers who commanded under Wolfe. Murray became Governor of Quebec after the capture of the city, and afterwards Governor-General of Canada in 1763.

Disembarkation.—Landing.

The battalions formed, etc.—This shows that military order was thoroughly observed. A battalion is a division of a regiment.

Ready alacrity.—Cheerful readiness in acting.

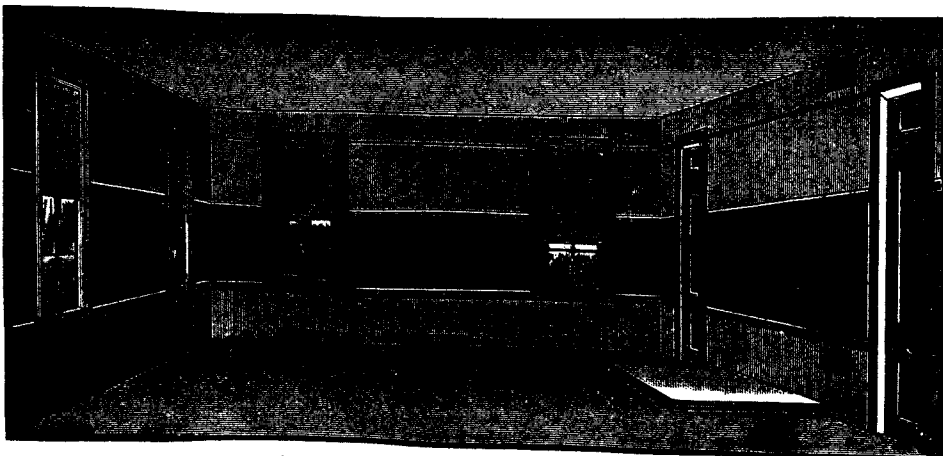
The whole disposable force.—This was much less than that given in paragraph 13. All were not actively engaged in the battle which followed.

Cove.—Now called Wolfe's Cove, a mile and a half from the city.

Theme 5.—The contending forces on the Plains of Abraham. Paragraphs 12 and 13.

Demonstrations of the fleet.—This refers to the movements of the fleet under Admiral Saunders, by which a pretended attack was to be made on Beauport, in order to conceal the movements of Wolfe's army, which was to make the real attack on Quebec.

Worsted as a general.—Beaten in military skill. Montcalm was not in Quebec at the time, but below the city where the attack was expected. Instead of taking advantage of the protection which the ramparts of Quebec offered, he hurriedly proceeded to the open plains and formed his men in thin lines to oppose the British.



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Column.—A formation of troops, narrow in front and deep from front to rear.

About one-half of Montcalm's troops were "disorderly peasantry."

"Field state."—An official statement, giving the number of officers and men.

Theme 6.—The details of the battle, commencing with the French attack and ending with the French rout. Paragraphs 14-21.

Skirmishers.—Small detachments of soldiers, sent out in advance of the main body of the army, to lead the attack or to conceal the real movements of the troops in the rear; in this case, to lead the main attack. This shows the eager haste of Montcalm to retrieve, if possible, what he had lost in the manoeuvre by which Wolfe secured a position on the Plains. The plan of attack made by the French and the conduct of the British showed clearly the impetuosity of the former and the determined resistance of the latter. Wolfe, although wounded, still pressed on.

Matchless endurance.—Unequalled patience.

Parade.—The assembly of troops for inspection.

Pennons.—Small pointed flags.

Redoubt.—A small fort. Spelled also *redout*. Note the advance of the British, first steady, then carrying all before them in their charge.

Grenadier.—Formerly, a soldier that threw grenades, a shell filled with powder and having a fuse inserted in it, so that it could be fired and then thrown into the enemy's line. Now it applies to a tall, stout soldier. Note Montcalm's last effort to rally his men. In attempting to do this he was mortally wounded.

Theme 7.—The retreat of the French; Wolfe's last order; Wolfe's death. Paragraphs 22-24.

Webb's Regiment.—Colonel Webb was at one time commander-in-chief of the British forces in America. He was succeeded by General Abercrombie. His regiment was the strongest in the battle of Quebec.

Theme 8.—The feelings of the people of England on learning the news of the victory and of the loss of the heroic general. Paragraphs 25, 26.

"Then the sounds," etc.—This line is a quotation from Campbell's poem, "Battle of the Baltic."

Theme 9.—The feelings of the army towards their late general as they carried his body to the vessel for conveyance to England. Paragraph 27.

Theme 10.—The destiny of the English and French colonies in America. Paragraph 28.

Momentous.—Important on account of the consequences involved.

When a few English and French . . . began.

—The first permanent settlement of English colonists in Virginia was made at Jamestown in 1607 by London companies. The first settlement in Canada proper was made by Champlain at Quebec in 1608.

Anglo-Saxon.—The United States, although politically independent, is still Anglo-Saxon. The name is derived from the names of two of the tribes that conquered Britain in the fifth and sixth centuries.

PEN-AND-INK DRAWING.

BY MR. A. C. CASSELMAN.

Every pupil above the Entrance grade should be taught to use pen and ink in the drawing of objects. In the Model School, Toronto, nearly all in the Entrance class this year draw with pen and ink, and a few in the grades below have begun its use. As to when pupils should begin pen-and-ink drawing with advantage, I cannot answer, as we have not generally introduced it in any grade below the Entrance grade, but hope to do so next year. Any

pupil who through hard work or ability has shown some skill in the use of the pencil may be taught the use of the pen. This will react on those who have been your greatest worry in the drawing class. The careless boy with ability, and the lazy boy who never works, will experiment at home, and in course of time they will ask permission to record their work in pen and ink. I have known this plan to work a revolution in the drawing of the most careless boy in the class. The novelty of the method attracts the attention of the indifferent, and, in consequence, they improve.

Nearly all the drawing from objects is done at home in the common scribbling books with pencil. The teacher supervises the work, and, if he approves of it, the pupil records it in his book in pen and ink. There are many reasons why some pupil's work has not been approved of. There is the boy who forgets to do it, and the boy who forgets or is too careless to get the object to draw from, and draws from memory either at home or in the spare moment of school hours. Such pupils have to be dealt with in some way. The plan generally adopted in the Model School is to treat it as a neglected exercise, and the pupil is required to do the work after hours from the object that the teacher has used in teaching the object before assigning the lesson.

Then, again, a boy may have fulfilled all the requirements, but hurried his work so that his technique only is not up to the standard. He must copy his picture again, paying more attention to rendering. If anyone has failed, through not understanding the principles, or who has not observed the outline correctly, then it is the teacher's duty to take the object and teach its representation again. In most cases, a slight change in the position of a line will correct the drawing, and the pupil is allowed to record his work in his book. While the pupils are recording their work the teacher observes their method of handling the pen or pencil, and, where necessary, shows them by example how they may improve.

All the type objects and their parts, and such objects that can be conveniently brought to school by the pupils, are drawn in school, so that the teacher may assist the pupils in observing and placing objects—in fact, in every way but in actually expressing the object by drawing, which must, in all cases, be done by the pupil.

This introduction may seem too long to some teachers, and to others it may not be just what they want; they may wish to see the pictures of the objects.

I may say to the first class that I consider that the great secret of teaching drawing is in getting the pupils to see the object correctly and to draw what they see. The only way that the teacher is absolutely sure of that is to get the pupils to do the work at first in school until drawing from the object becomes habitual. To those who wish to see the pictures of the objects, I may say that they are the most difficult class to get along with. I have pupils who wish me to draw every object on the board. Such ones have no confidence in their own eyes when looking at objects. You must steadfastly refuse to draw for them, point out and show all you wish on the object, but get them to do the drawing, and don't leave them until you are sure they can see, and draw correctly what they see.

The blackboard is for the purpose of explanation, but is not to be used for drawing pictures on for the pupils to copy. Explain by diagram all points in rendering, in the suggestion of surface, in the suggestion of light and shade, and anything else requiring general illustration, on the blackboard;

but the real progress of your pupils in drawing will be inversely proportional to the amount of pictures you draw for them to copy.

Therefore all will understand that the pictures appearing in connection with these papers are not to be copied without looking at the object at the same time. They are given to illustrate the different methods of rendering, and are reproductions of the actual pen-and-ink drawings, and, of course, do not look quite so well as the originals.

MATERIALS FOR PEN-AND-INK DRAWING.

Joseph Pennell, the author of "Pen Drawing and Pen Draughtsmen," says: "The making of a pen drawing is the simplest process possible. Only four things are absolutely necessary—that is, besides the rather indispensable qualification, ability. First, a piece of white paper; second, a hard lead pencil, with its adjuncts, a very sharp knife and a rubber; third, a pen; and, fourth, a bottle of ink."

First, any paper will do to draw on that is good to write on; but if the drawing is to be photo-engraved the paper must be white, and possess a smooth, hard surface that will not break up under the pen. Hard white Bristol board is the best.

A. W. Faber's HH or HB are the best lead pencils. Until the pupil can make a light line that can be rubbed out and not indent the surface of the paper, it is better to use the HB.

The best pen for beginners to use is Gillott's No. 303. Pennell recommends Gillott's Lithographic Crow Quill No. 659 as the best all-round pen; but No. 170 may be found useful. When the pupil has gained some skill, he can use any pen he thinks will make the kind of line he requires, as often two or three are used in the same drawing. Never use a pen you draw with for ordinary writing.

The best ink is Higgin's American Liquid Drawing Ink, which may be had in the ordinary or in waterproof. Keep the bottle corked. The cork is furnished with a handle and quill running to the bottom of the bottle. This ink is jet-black, and dries quickly, and will be found just what you want.

These recommendations are made so that all may use the best materials, as the best results are obtainable only by their use.

The other qualification—ability—must be furnished by the pupil.

To make a pen drawing, first make a light outline drawing with the pencil, which is not to be rubbed out until the drawing is at least partly worked in by the pen. The rubber should not contain any substance that will destroy the grain of the paper, as much rubbing will make the ink lines gray. The rubber should be soft. The best for general use that I have found is Faber's No. 2227.

It is taken for granted that most Entrance and Public School Leaving pupils can make a perfect outline drawing.

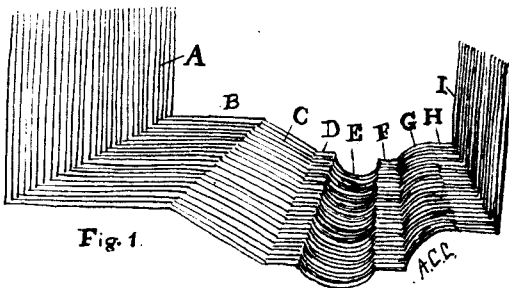


Fig. 1.

It will be noticed that an outline drawing does not fully represent the object. To express the object more fully, the first thing to do is to suggest the kind of surface of the object, and at the same time suggest light, shade, and shadow.

First, as to the suggestion of surface. Surfaces may be either plane or curved. Plane surfaces may be either in a vertical, horizontal, or oblique position. Lines are either straight or curved.

To teach suggestion of surface draw Fig. 1 on the blackboard. Question somewhat as follows: What kind of surface does A appear to be? What kind does B? C? etc., to I. What is the apparent position of A, of B, of C, of D, of F, of H, of I? A and I are vertical. B, D, F, and H are horizontal. C is oblique. How are curved surfaces suggested, or represented? By curved lines. How are plane surfaces suggested, or represented? By straight lines. How are vertical plane surfaces suggested? By vertical straight lines. How are horizontal plane surfaces suggested? How are oblique plain surfaces suggested? What determines the curvature of the lines when suggesting curved surfaces?

If the pupil thoroughly understands the above, he can suggest any kind of surface in any position.

As a preliminary practice, place a sphere (a white rubber ball about the size of a baseball is a good substitute) on a piece of white paper with another piece as a background. If the ball is placed on the fly leaf of a book, and the cover fixed in a vertical position, it will answer all purposes. Draw the sphere in outline and a line to represent the union of the vertical plane, or background, and the horizontal surface. Don't represent any other edge of the background, or the horizontal surface, except the nearer edge of the horizontal surface. The book should be placed so that the imaginary line from the eye to the horizontal surface of the book makes an angle of about 30°.

Now by horizontal lines suggest the horizontal surface, and by vertical lines suggest the vertical surface. The curved surface of the sphere can then be suggested by two sets of curved lines crossing each other as in Fig. 2.

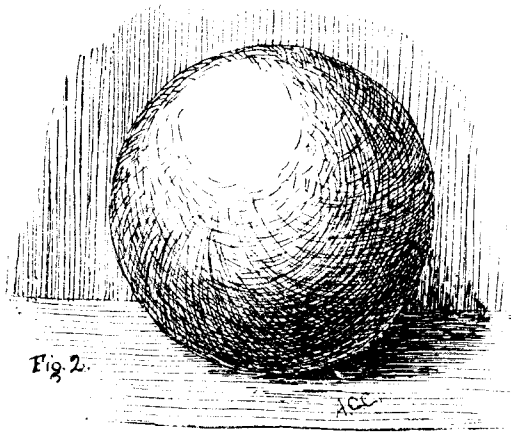


Fig. 2.

Place the object and book so that the light shines from the left and above the object and a little in front of it. Notice the gradation of light and shade. Notice the darkest part and the lightest part. Notice that the light is prevented from shining on part of the vertical and horizontal surfaces. This is the cast shadow. It is darkest nearest the object, and gradually gets lighter towards its limit.

The light, shade, and shadow can be suggested when suggesting the kind and position of surface. The greatest shade may be suggested by placing the lines nearer together, and at the same time making the lines heavy. The highest light is represented by the white paper. The gradation from dark to light may be represented by drawing lighter lines farther apart. Try to suggest this by working out the shades by lines here and there. Don't do this in a mechanical way. Try to enter

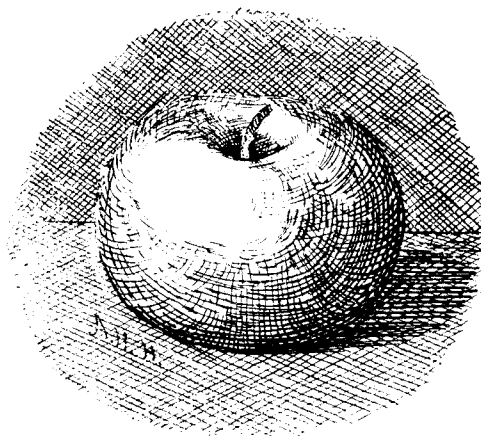
into the feeling of the subject, and you will put this feeling into your lines. Make every line have some meaning.

Practise this lesson again and again till you gain a certain amount of skill and confidence. The lines on both the curved and plane surfaces are not continuous, but are short, and their union is scarcely observable.

A pen drawing is not merely a tracing over with pen and ink a pencil drawing. As said above, the pencil sketch, is only a guide, and the feeling must be placed in every line drawn with the pen.

In these drawings the means and method are more prominent than the result or effect; that is, the means of shading and suggestion strike the eye first. This is done intentionally. In the high-class pen drawing the result or effect should strike the eye first, not the means.

The student of pen drawing should study the work of the best masters of the subject. Very good examples may be found in the best Canadian, American, and English magazines. Every school library that can afford the expense should have a copy of "Pen Drawing and Pen Draughtsmen," by Joseph Pennell, published by Macmillan & Co., of London and New York. The price is, I think, 42s. net. It is immeasurably superior to any other work of its kind in explanations and in the abundance of examples by the greatest pen artists in the world.



The drawing of the apple in this paper is by Mr. Andrew H. Harkness, a graduate of the School of Practical Science in the department of Architecture. Notice carefully the method of rendering by cross-hatching and the boldness and freedom of the lines. Indeed it does not make much difference what method you pursue, so long as you bring out the proper result. Practise the drawing of the apple.

Any questions or difficulties in drawing will be discussed in these columns if addressed to the editor of this department, or to the writer.

In the next issue examples of the regular class exercises in the Model School and School of Pedagogy will be given.

SOLUTIONS OF PROBLEMS.

- Find the L.C.M. of 1 sq. link and 1 sq. foot.
1 link = $\frac{3}{32}$ of a foot.
 \therefore 1 sq. link = $\frac{9}{1024}$ of a sq. foot.
L.C.M. of $\frac{9}{1024}$ and 1 = 1024
 \therefore the L.C.M. required is 1024 sq. feet.
- A square field contains 3 ac., 49 sq. rods. Find the cost of fencing it at 6 shillings per rod (1 shilling = 24 $\frac{3}{4}$ c.).
3 ac., 49 sq. rods = 529 sq. rods.
 $\therefore \sqrt{529} = 23$
 \therefore perimeter of field = $23 \times 4 = 92$ rods.
 \therefore cost = $\frac{3}{4} \times 6 \times 92 = \134.32 .
- H.S.A., p. 215, No. 21.

$\frac{3}{100}$ of $\frac{3}{5}$ of value of house = $\frac{9}{500}$ of value = premium paid

and $\frac{3}{5}$ of value = owner's loss on house.

$\therefore (\frac{3}{5} + \frac{9}{500})$ of value = \$522.50.

$\therefore \frac{209}{500}$ " " = 522.50.

\therefore value of house = 1250.

4. H.S.A., p. 215, No. 26.

$\frac{1}{2} \times \frac{1}{100}$ of 1st part = interest on 1st part.

$\frac{1}{3} \times \frac{1}{100}$ of 2nd part = " " 2nd "

$\frac{1}{4} \times \frac{1}{100}$ of 3rd part = " " 3rd "

\therefore 2nd part = $\frac{1}{3}$ of 1st part

and 3rd part = $\frac{1}{4}$ of 1st "

$\therefore (1 + \frac{1}{3} + \frac{1}{4})$ of 1st part = \$612

$\therefore \frac{20}{20}$ " " " = 612

\therefore 1st " = 240

2nd " = 190

3rd " = 180.

5. H.S.A., p. 217, No. 20.

The merchant sold 35 $\frac{3}{4}$ inches for the cost of 26 $\times \frac{6}{5}$ inches,

\therefore selling price = $\frac{36 \times \frac{6}{5}}{35\frac{3}{4}}$ of cost

= $\frac{864}{115}$ of cost.

\therefore gain = $\frac{149}{115}$ of cost.

$\therefore \frac{149}{115}$ of cost = \$134.10.

\therefore cost = $\frac{715}{115} \times \$134.10$

= \$643.50.

6. H.S.A., p. 217, No. 24.

A travels 7 miles per hour.

And, since $\frac{1}{4}$ of B's rate added to his rate will make the result equal to A's rate,

$\frac{1}{4}$ of B's rate = 7 miles

\therefore B's rate = $\frac{1}{4} \times 7$ miles

= 5 $\frac{3}{4}$ miles.

7. H.S.A., p. 218, No. 11.

$\frac{4}{7}$ of one investment = 1st dividend.

$\frac{10}{13}$ of the other investment = 2nd dividend.

And, since the two investments were the same,

$(\frac{10}{13} - \frac{4}{7})$ of one investment = \$27

$\therefore \frac{27}{102 \times 87}$ of one " = \$27

\therefore one " = \$102 \times 87

= \$8,874.

NOTES AND ANSWERS TO QUESTIONS.

In teaching the railways of Ontario, use the latest railway maps issued by the C.P.R. and G.T.R. Each pupil in the class might secure a copy of the latest time-tables of these two leading roads. They will be found to contain good maps. Do not burden the pupils with minute details which are of little value; the main lines, important branches, the chief cities, towns, and junctions on them, should be sufficient to undertake.

K.—In teaching Geography to an Entrance class, special attention should be given to the study of Canada and the other British possessions. Pupils should be required to draw maps of all important countries, and place on them only places of historical or commercial note.

Questions on British history will appear on the Entrance paper.

Teachers will find Prof. Meiklejohn's "New Geography" a valuable aid in teaching the subject of Geography.

A.M.—The analysis which you give of the sentence, "The method is good," is not satisfactory, and would not be accepted by any examiner. The predicate is not merely *is*, but *is good*. In such a sentence, the verb *is* is a mere copula which unites the subject and predicate. When so used, the word *is* does not mean exists.

When such a word as James or Charles is used in the possessive case, the apostrophe only should be used, if the noun following commences with an *s* sound. If the noun following does not commence with an *s* sound, either the apostrophe alone or the apostrophe and *s* may be used. Both practices prevail, and, therefore, both are correct. The only principle involved in such cases is euphony.

In the sentence, "Lord, who art merciful as well as just, incline thine ear to me," the clause introduced by *who* is purely descriptive, and refers to *Lord*. As well as may properly be taken as a compound co-ordinate conjunction, joining *merciful* and *just*. There is no need to expand *just* into a clause.

A candidate who has failed on the Entrance may write on the Public School Leaving Examination.

It is true, the "nine days" have, etc.—This refers to the proverb, "A wonder lasts nine days, and then the puppy's eyes are open," alluding to dogs, which are born blind. This is equivalent to saying that the eyes of the public are blind in astonishment for a time, then their eyes are open, and they see too much to wonder any longer.

Gala Water and Leader Haughs are two rivers of Scotland, which flow into the Tweed on the north side; the former near Abbotsford, the latter lower down the river, not far from Melrose. In 1803 Wordsworth, accompanied by his sister, Dorothy, and Coleridge, visited — Scotland, and, on returning, met Scott at Melrose. Some incident of this visit gave rise to the poem, "Yarrow Unvisited."

Person is not an inflection of nouns. The inflections of words are changes of forms, and not mere uses of words in a sentence.

Heath.—This word should be pronounced heth.

M.—You will find the following book very useful in teaching object lessons—Class II: "The Handy Book of Object Lessons." By J. Walker. Published by Jarrold & Sons, Paternoster Buildings, London, England. It supplies hints on method as well as matter.

In the sentence, "Christ died in order that we might live," *in order that* is a compound subordinate conjunction.

"*Midnight Sun*."—This name is applied to the sun, when seen at midnight. If a person were within the Arctic circle at the time of the summer solstice, this would be possible.

If the writer who asks for an explanation of "Water being in blossom" will give the context and where it is used, it will be considered.

A mere soldier.—One who is a soldier by trade. The forced recruit at Solferino was a true patriot, and showed by his conduct that he had the cause of Italy at heart.

*"With a smile on his lips, over tender
For any mere soldier's dead mouth."*

The tender smile indicated refinement of character, a loving interest in the cause he favored, and a past life of purity. These elements are the very opposite of what might be expected in a man who is a soldier, and nothing more.

"Of all things this is the truest."

Truest is here used as a predicate noun. The phrase of *all things* is an adjectival modifier of *truest*.

COUNTY OF BRANT PUBLIC SCHOOLS PROMOTION EXAMINATIONS.

December, 1895.

ENGLISH GRAMMAR.—JUNIOR 3RD TO SENIOR 3RD.

Value, 100. Questions of equal value. Only 7 to be attempted. The last and 6th compulsory. Time, 1 hour.

1. What is (a) English Grammar? (b) English composition?
2. Name the parts of speech and write definitions of: Noun, pronoun, adjective, verb, adverb, conjunction.
3. What is a sentence? Give its principal parts and define them.
4. Form (a) two sentences in which the word "tree" shall occur as (1) subject, (2) object; (b) a sentence in which "evening" shall perform (1) the duty of a noun, (2) the duty of an adjective.

5. Distinguish (a) *bare* subject, *complete* subject, (b) *bare* predicate, *complete* predicate, and (c) with a simple sentence, underlining *bare* subject and *bare* predicate.

6. Analyze the following: "The beautiful bride was charming and attractive," and write under their proper heads the parts of speech contained in it.

7. Compare or quote (a) two sentences in which adverbs shall modify verbs, (b) two in which adverbs shall modify adjectives, (c) two in which adverbs shall modify adverbs.

8. State the difference between a "clause" and a "phrase," giving one example of each.

9. Distinguish "proper" nouns from "common" nouns, "proper" adjectives from "common" adjectives, and give examples of each kind.

10. Parse as far as you can the words in the following sentence: "Our pear tree has not a single pear on it."

ENGLISH GRAMMAR.—SENIOR 3RD TO JUNIOR 4TH.

Value, 100. Questions of equal value. Only seven to be attempted. Last two compulsory. Time, 1½ hours.

1. What does "inflection" mean? Name the inflected parts of speech with the inflections of each.

2. Give examples of (a) assertive, (b) interrogative, (c) imperative sentences.

3. Out of the following make a compound sentence: They saw their leader fall; they thought him slain; they at once gave up the contest; this was in accordance with the practice of their ancestors.

4. Classify nouns according to (a) meaning, (b) form, giving examples in each case.

5. Classify adjectives, giving examples of each class.

6. Classify pronouns, giving examples of each class.

7. How do you determine the part of speech to which a word belongs? Give examples, making your answer clear.

8. Write (a) the corresponding genders of: Monk, damsel, Francis, Sultan, testator, Madame; (b) the corresponding numbers in the plural of: Plateau, index, pea, belle.

9. Analyze fully the following: *He took one of the nice little trouts on his plate, and touched its tail with his finger.*

10. Parse the words in italics in the foregoing sentence.

ENGLISH GRAMMAR.—JUNIOR 4TH TO SENIOR 4TH.

Value, 100. Questions of equal value. Only 7 to be attempted. Last two must be taken. Time, 1½ hours.

1. Name the inflected parts of speech, defining each, and naming the inflections.

2. Define number, and give all the rules for the formation of plurals of nouns and pronouns.

3. Write the plurals of—folio, motto, penny, child, plateau, scarf, index, formula, cherub, muselman.

4. Classify pronouns and give an example of each class.

5. Inflect the following: He, she, it, who, which.

6. Classify verbs. Name and define the inflections of the verb.

7. Write out in full (*i.e.*, in the three persons) the present indicative active of "praise" and the future indicative active of the verb "to be."

8. Write the feminine forms of—colt, margrave, signor, Julius, swain, stag, earl, mayor, sir, peacock.

9. Analyze the following:
"The broken soldier, kindly bade to stay,
Sat by his fire, and talked the night away;
Wept o'er his wounds, or tales of sorrow done,
Shouldered his crutch and showed how fields
were won."

ENGLISH LITERATURE.—JUNIOR 3RD TO SENIOR 3RD.

Value, 100. Questions of equal value. Only 7 to be attempted. Time, 1 hour.

1. Third Book, page 33 (books open). What is the substance of the first stanza? *i.e.*, what is it about?

2. Explain (a) "Journey," (b) "Safe and sound," (c) "Now I'm myself," (d) "So glad you would eat me up."

3. Third stanza. What is it about? Write explanations of (a) Paris and Rome, (b) "City's stifled air," (c) "Bustle and glare," (d) "Deafen your ears and batter your bones."

4. Fourth stanza. Give substance of it. Explain (a) "Money is king," (b) "Fashion is queen," (c) "The man is raking and scraping all he can," (d) "The town is a perfect Babylon."

5. Page 74. "Wreck of the Hesperus." Explain (a) "Schooner," (b) "Skipper," (c) "Cheeks like the dawn of day," (d) "Veering flaw," (e) "Spanish main," (f) Hurricane.

6. Page 44. "Old Arm Chair." Explain (a) Sainted prize, (b) Learn the spell, (c) Hallowed seat, (d) Truth for my creed, (e) Memory flows with lava tide.

7. Page 6. "Cassabianca." Write explanations of (a) Battle's wreck, (b) Heroic blood, (c) Unconscious of his son, (d) Booming shots, (e) Sail and shroud, (f) Mast and helm.

8. Write in your own words the substance of the lesson: "The Emperor and the Major."

9. Write the story of the poem, "After Blenheim."

10. Quote from memory a stanza from each of the following: (a) The Pet Lamb, (b) Cassabianca (c) Lucy Gray, (d) Canadian Boat Song.

LITERATURE.—SENIOR 3RD TO JUNIOR 4TH.

Value, 100. Questions of equal value. Only 7 to be attempted. The last compulsory. Time, 1 hour.

1. Books open, page 182. What is the substance of the first paragraph? Use other words or phrases for (a) "nearest," (b) "precious," (c) "unselfish."

2. Write out substance of the second paragraph. Write notes on (a) "Sir Philip Sidney," (b) "Netherlands," (c) "Philip of Spain."

3. Write out substance of the third paragraph. Explain meaning of (a) "Looking longingly," (b) "Necessity."

4. Books open, page 207. Tell the story of the poem in your own words.

5. Write a short sketch of the author's life.

6. Give the substance of the thought in the first stanza. Write notes on "Legion," "Algiers," "dearth," "comrade," "faltered," "native."

7. Give the substance of the thought in the second stanza. Write notes on "Vineyard ground," "ghastly pale," "morn decline," "Bingen."

8. Page 187. What is the thought in the first stanza? Write notes on "Siloam," "shady rill," "Reginald Heber."

9. What is the thought in the second and third stanzas? Write notes on "decay," "maturer age," "Father's shrine," "bounteous."

10. Write from memory a stanza from each of the following: (a) "Song from the Princess," (b) "The Gray Swan," (c) "Prayer," (d) "Somebody's Darling."

LITERATURE.—JUNIOR 4TH TO SENIOR 4TH CLASS.

Value, 100. Questions of equal value. Only 7 to be taken, of which the tenth must be one. Time, 1 hour.

1. State what you understand by the term "Literature."

2. How is the subject divided? Distinguish the divisions.

3. Books open at page 37. State the subject of the first paragraph.

4. Write notes on the following: (a) "Confessor's Funeral," (b) "Park of Rouen," (c) "Ambassadors to Harold."

5. Write a brief summary of "The Little Midshipman."

6. Page 45, books open. "The Evening Cloud." What kind of poem is it? How is the "kind" distinguished from other poems?

7. What is the thought in the first four lines? Explain (a) "Cradled," (b) "Braided Snow," (c) "Glory," (d) "Still Radiance."

8. What comparison is made in the poem? State your opinion of the poem as a whole.

9. Write notes on (a) The sixth line, (b) "Beauteous West," (c) "Emblem methought," (d) "Golden gates," (e) "Glorious destinies."

10. Quote (*i.e.*, write out from memory) a stanza from each of the following: (a) "I'll Find a Way or Make It," (b) "The Bells of Shandon," (c) "Lament of the Irish Emigrant," (d) "The Face Against the Pane," (e) "Bruce to His Troops Before Bannockburn."

Science.

Edited by W. H. Jenkins, B.A., Principal Owen Sound Collegiate Institute.

EDUCATION DEPARTMENT, ONTARIO—
ANNUAL EXAMINATIONS, 1895.

THE HIGH SCHOOL SENIOR LEAVING AND
UNIVERSITY HONOR MATRICULATION.

PHYSICS.

NOTE.—Experiments must be described in detail, must be capable of giving moderately accurate results, and be such as can be performed with simple apparatus.

1. (a) Define "g," and give a method of determining it.

(b) Two masses, each 1 kilo, are attached to the ends of a light flexible string and hung over a pulley which moves very easily. Upon one mass a gram weight is put. Neglecting the mass of the string and pulley, find the space the weights will pass through in 10 seconds. [$g = 980$]

2. (a) A steam-engine supplies power to a dynamo which is used to produce electric lights, and also to work a motor, which, again, runs a circular saw in a mill. Trace the transformation of energy as far as you can, beginning with the fuel fed to the engine.

(b) A body of mass 50 grams falls from a height 30 centimetres above the ground. Find the kinetic and the potential energy at any point on its way down, and hence show that the sum of these two quantities at all points in its path is the same as the energy at the highest point, or that on reaching the ground. [Give units.]

3. A stone is thrown at an angle of 60° with the horizontal with a velocity of 30 metres per second. Find the height it will rise, and the range on the horizontal.

4. You wish to find the specific gravity of some oil, and have only a U-tube and a graduated ruler. Explain how you would do it.

5. (a) State Boyle's Law, and describe how to verify it.

(b) Oxygen gas is sold for lecture purposes at 15 cents per cubic foot, at, say, 15°C ., and atmospheric pressure. A steel circular cylinder containing the oxygen is 5 feet high and 14 inches in diameter, and the gas is under a pressure of 10 atmospheres, temperature 15°C . After being used at a lecture, the pressure was found to be 6 atmospheres, but the temperature was 21°C . How much should be charged? [$\pi = 2\frac{2}{7}$]

6. (a) Give full explanation of a method of finding the latent heat of fusion of ice. Deduce the formula required, allowance being made for calorimeter, and state where errors will likely appear.

(b) If the latent heat, using the centigrade scale, is 80, what is it on the Fahrenheit scale?

7. A thermometer (such as is used by physicians) is graduated only from 95° to 110°F ., and you wish to find the temperature of some water, but it is somewhat lower than the lowest graduation, which is just above the bulb. How could you determine its temperature? Illustrate your method numerically.

8. What is meant by the *polarization* of a common voltaic cell (copper and zinc in dilute acid)? Show how you would demonstrate experimentally that there is a back electromotive force?

9. Describe either a copper, a silver, or a hydrogen voltmeter. Give composition of liquid, size of vessel, of electrodes, and what current you would expect to measure. Describe how you would prepare the voltmeter for use, and, if the hydrogen apparatus is taken, how you would determine the temperature and then allow for it in working out the result.

10. Six similar cells are arranged in series, and the circuit completed through a coil of wire and a galvanometer. The resistance of the battery, coil, and galvanometer are 10, 50, and 20 ohms respectively. If the difference of potential between the terminals and the galvanometer be 2 volts, what is the E.M.F. of each cell of the battery?

ANSWERS.

(BOOK-WORK NOT GIVEN.)

1. (b) Mass to be moved 2 kilos. + 1 gram = 2001 grams.

Moving weight is 1 gram = 980 dynes fc.
1 dyne fc in 1 sec. can give to 1 gram a velocity of 1 cm per sec.

980 dynes fc in 10 sec. can give to 2001 grams a velocity of $\frac{980 \times 10}{2001}$ cm per sec.

Average velocity = $\frac{1}{2}$ sum of initial + final velocities
= $(0 + \frac{980 \times 10}{2001}) \div 2 = \frac{980 \times 5}{2001}$

distance = average velocity \times time
= $980 \times \frac{5}{2001} \times 10 = 24.48$ cm.

2. (a) The chemical energy of union of fuel and oxygen of air gives rise to heat; heat causes kinetic energy of the molecules of water; this energy is expended mechanically in moving piston of engine; this mechanical energy is transformed to electrical energy in dynamo, and electrical energy into energy in the form of light; or, if the electric energy is used to run a motor, it is again converted into mechanical energy.

(b) Measure of energy = $\frac{m \times v^2}{2}$

Units: of mass 1 gram, of velocity 1 cm per sec.
Initial velocity to send a mass of 50 grams 30 cm high is the velocity the mass would have in falling 30 cm.

$v^2 = 2gs$ $v^2 = 2 \times 980 \times 30$ $v = \sqrt{2 \times 980 \times 30}$
Potential energy at height of 30 cm = $\frac{50}{2} \times 2 \times 980 \times 30$

Kinetic energy on reaching ground = $\frac{50}{2} \times 2 \times 980 \times 30$

These are same.

Let v = distance fallen. $30 - x$ = distance to fall.
Then kinetic energy falling x cm = $\frac{50}{2} \times 2 \times 980 \times x$

" potential energy at $30 - x$ cm = $\frac{50}{2} \times 2 \times 980 \times (30 - x)$

Sum of these is $\frac{50}{2} \times 2 \times 980(x + 30 - x) = \frac{50}{2} \times 2 \times 980 \times 30$

which is same as potential energy at 30 cm high, or kinetic energy on reaching ground.

4. A velocity of 30 m. per sec. at an angle of 60°

with horizontal = a vertical velocity of $15\sqrt{3}$ m. per sec. and a horizontal velocity of 15 m. per sec.

A body with a vertical velocity of $15\sqrt{3}$ m. per sec. can rise for $\frac{15\sqrt{3}}{9.8}$ sec. Space traversed = ut

$\frac{gt^2}{2}$

$S = 15\sqrt{3} \times \frac{15\sqrt{3}}{9.8} - \frac{9.8}{2} \times (\frac{15\sqrt{3}}{9.8})^2$

= 34.48 metres.

Range: Since horizontal velocity is uniform,

and time of horizontal flight = $2 \times \frac{15\sqrt{3}}{9.8}$

range = $15 \times 2 \times \frac{15\sqrt{3}}{9.8}$ metres.

4. See any text-book.

5, 6, 7. These questions are on heat, which is no longer a part of the Senior Leaving course.

8. In a zinc-copper cell, if the zinc be well amalgamated, the hydrogen gas is evolved almost entirely at the negative or copper plate; at this point chemical action seems to be set up, thus making the difference of potential less between the plates.

The negative plate thus becomes more like the positive plate. This is known as polarization. To illustrate experimentally the presence of a back current, connect two such cells in opposition with a delicate galvanometer in circuit; after allowing the action to go on for some time, rub off from one of the plates its coating of bubbles. A deflection of the needle of the galvanometer implies a difference in current strength, and, since the resistances of each circuit are the same, the difference in current can only be due to a difference in E.M.F.

9. See any text-book on electricity. Perren & Maycock's First Book of Electricity and Magnetism discusses this question.

10. Let x be E.M.F. in volts per cell.

Then current in amperes = $\frac{6x}{80}$

But it requires 2 volts to maintain this current against a resistance of 20 ohms.

$\therefore \frac{6x}{80} = \frac{2}{20}, \therefore x = 1\frac{1}{3}$ volts.

PROBLEMS IN PHYSICS.

FOR PRIMARY EXAMINATION.

1. Give diagrams of apparatus used, and state concisely and clearly how to use it to:

- Find the specific gravity of alcohol.
- Find the specific gravity of a piece of wood.
- Find the specific gravity of a gas.
- Find the specific gravity of a piece of lead.

2. A bottle half filled with water, other half with air, is placed mouth downward under water in a pan, and set in a room. The barometer stands at 75 cm. Find the volume of gas in the bottle when the barometer is 8 cm. above normal.

3. In a vessel of water a cent is placed 10 inches below the level, and the pressure on the cent is 8 oz. What are the pressures on it at depths of 12 inches, 30 inches, 5 inches?

4. In a bottle containing 100 ccm. of hydrogen and oxygen, in the proportions of 64 to 36, a porous plug is inserted in the mouth. Compare the volumes of hydrogen and oxygen which will diffuse through the plug in three minutes, oxygen being 16 times as dense as hydrogen.

5. A piece of cork totally immersed in water displaces 20 ccm.; when allowed to float it causes the water to rise 5 ccm. Find its specific gravity.

6. A piece of wood weighing 10 grams. has attached to it a piece of lead weighing 5 oz. in water, and the two together weigh 4 oz. in water. Find the specific gravity of the wood.

7. Find the pressure on the bottom of a glass jar 120 cm. in diameter, when filled with water, when the barometer is at 70 cm. The normal atmospheric pressure on a sq. cm., when the barometer is at 76 cm., is 1000 grams. Depth of vessel, 70 cm.

8. How far will a body with a velocity of 200 cm. per sec., and an acceleration of $(-.001)$ metre per sec., travel before coming to rest.

9. A ball falls from rest for 3 sec., passes through a pane of glass and thus loses one-half its velocity, and afterwards reaches the ground in 3 sec. How high was the glass?

A BUTTERFLY STORY.

WHAT PAPILIO SAW.

One bright summer day, when there was the smell of clover and ripe harvest apples in the air, and the hum of bees and the drumming of locusts was heard all around, Lepidopter was busy as he could be eating up the platform he stood on. How could he? you ask. Why, you see, he was standing on the leaf of an apple tree. You think he couldn't stand on that? Oh, yes, he could, for he was only about as large as your little finger, and he had six strong little arms with claws to them to hold on with, and ten stout little legs with hooks in place of toes. After a little Papiilio crept along the branch, and began to eat the next leaf, for the leaves of apple trees were what they lived on, except when they took to wild cherry leaves for a tonic. Presently Papiilio stopped eating, and said: "Dop, what do you think? Old Articulate is building his house."

"What house?" mumbled Lepidopter, with his mouth full.

"Why, the one he's going to go to sleep in. He says he doesn't feel like eating any more."

"What an old goose he must be!" Dop said, chewing away with all his might.

"And he's so sleepy he can hardly keep his eyes open."

"Humph!"

"So he's pulling the edges of a big leaf around him, and tying and gluing it fast, so as to keep out the rain. And, do you know, Dop, I think he'll come out after a while ever so much finer than he is now, and with great beautiful wings to fly with."

Lepidopter stopped eating a second, and looked at Papiilio in a way that said, "What a little goose you are!" Now Dop was very fat, fatter and bigger than Papiilio, and thought that on that account he knew a great deal more. He could see but a little way in front of his big mouth, and he thought that what a big caterpillar like him couldn't see wasn't worth seeing. So he said, in a cross way:

"Have you lost your head? Did you ever see a caterpillar that had wings?"

"Yes. I did once."

"Yes," growled Dop, his mouth full again, "When you were asleep, you did!"

"No, it was in the daytime. It was ever so long ago—six or seven weeks, I should think. It was just after we got our second suit of clothes. I was eating on a leaf one afternoon, and busy as I could be, when suddenly there was a terrible noise overhead, a kind of a roar. I looked up to see what it was, and there was a great big face over me, and a big, big voice called out—

"Oh, Katy, see what I've got."

"Then two big fingers pulled off the leaf I was on, and carried it down the tree to the ground, and, oh, how I was jounced! Next I felt myself carried through the air as fast as the wind, until another big creature's face was right in front of me—a creature bigger than the first one, and with lots and lots of clothes on. This big creature gave a frightful scream when she saw me, and jumped back out of the way.

"Johnny, Johnny, you naughty boy," she cried; "throw away that horrid worm."

"Johnny laughed and threw me over by the fence, where some dead leaves were, and how they did hurt when I fell on them! I was so sore and frightened I could hardly move, but as soon as I could I crept under the leaves and hid myself. When I looked out again it was early the next morning, and the sun was peeping through the fence. I started for our apple tree, but before I'd gone far I saw a curled-up brown leaf shaking as though it would go to pieces. It did break in a minute, and the most beautiful and wonderful thing came out. It was something like a caterpillar, only it hadn't any legs. It had six arms, though, like ours, and oh! such lovely wings. They were like two leaves, they were so big, and they were all covered with the most beautiful cloth.

"His wings," Papilio went on, "were weak and shrivelled at first, but as the sun came through the fence and fell on him and warmed him, he spread them out, and pretty soon began to fly from flower to flower. And then I saw that he had a wonderful long tongue, all curled up, that he could unroll and run down into the flowers to suck their juices. He caught sight of me after a little and came up to me."

"You're a caterpillar, aren't you?" he said.

"Yes," I answered, hardly daring to speak to such a beautiful thing.

"I know," he said; "I used to be one just like you, and wanted to do nothing but eat, eat, eat; and such coarse stuff—common apple leaves and that sort of thing. But I got sleepy after a while and shut myself up in a leaf, and that's all I knew for a long time. There was something going on inside of me, but I couldn't tell what it was; and now here I am, and I'm going to have just lots of fun. I'm hungry already for something sweet, and there must be plenty of lovely juices there in that clover field, from the way it smells; so I'll just go over there and get breakfast. Good luck to you, and he spread his broad, shining wings and flew away in the sunshine. And, oh, Dop, I wanted to go with him ever so much; and I think we'll be able to some day, for we'll get our wings, too."

"What nonsense!" said Lepidopter. "You were dreaming. I never saw such a thing, and ain't I bigger than you? You've been eating too many wild cherry leaves, and they've gone to your head. They're too strong for little fellows like you. Get out of my way; I'm hungry, awfully hungry! I haven't had anything to eat for nearly two minutes!" and eat he did with all his might and main.

About a week afterward, however, he and Papilio did curl leaves around them and glue them fast. Lepidopter only knew that he wanted to go to sleep, and thought of nothing else; but Papilio made his little house, fully expecting to wake up after a time with a beautiful body and broad, wonderful wings. When winter had passed, and June of the next year had come, two bright, happy butterflies fluttered about that garden. One of them was Lepidopter, who was a little ashamed of himself as he thought what a blind, dull caterpillar he had been the year before; and the other was Papilio, who was very glad because he had become just what he hoped to be.—*William Forbes Cooley, in The Outlook.*

ANSWERS TO CORRESPONDENTS.

TEACHER (Simcoe).—(1) Will you please give an outline lesson on respiration, suitable for En-

trance candidates? (2) Where can I get a book on nature study?

ANS.—(1) Your questions were received too late for this issue. This lesson will be given in the next science column, May 1st or 15th. (2) "Nature Study," by J. C. Payne, will give you help; but the best text-book is nature itself. Begin with common flowers, insects, and objects surrounding you everywhere. Observe with your pupils, and grow with them. Read the "Butterfly Story" in this issue.

A correspondent without a name asks for questions suitable for primary physics. A paper is given in another column.

BEGINNER says: "I have no apparatus, but I would like to teach a practical lesson by experiment on carbonic acid gas. Will you give me help?"

Get a pickle bottle, a pail, a straw, and a lump of lime, some small limestone pebbles, and some strong vinegar, or, better, a small quantity of any acid.

Place the lime in a small bottle of water, and allow to stand for a day or two, and then pour off the clear liquid into a clean bottle. This is lime-water. Fill the pickle bottle with water, turn it mouth downward into a pail partly full of water. Take a long breath, and, through the straw, fill the bottle with the gas that comes from the lungs. Into this bottle put a glowing splint of wood, also a splint with a flame, also a little lime water, and shake.

Place the limestone pebbles in a saucer, pour on a small quantity of dilute acid, and cover with a bottle, mouth down, over the pebbles. Compare this gas with the last. This will be a start on your lesson. If a mouse has to be killed, its death is less painful by putting it in a bottle of this gas than by crushing or beating it to death, and will illustrate the injurious effects on animal life of rebreathing expired air.

QUESTIONS IN CHEMISTRY.

1. How can I get iodine as (1) a liquid, (2) as a gas?

2. I performed the following experiment, but it was not satisfactory: Heated charcoal; when it was cool put it in a vessel containing NH_3 (gas), allowed to stand. It did not absorb the NH_3 , as I expected it would. Can you direct me?

Bath.

J. MOR GWYNN.

ANSWERS.

1. Iodine at ordinary temperature is a solid. Place a small quantity in a test tube and heat in an alcohol or Bunsen flame. The tube becomes filled with the violet vapor of iodine gas. Iodine does not liquefy on heating, but passes directly from the solid to the gaseous condition; consequently, it cannot be liquefied. You may get a solution of iodine by putting it in hot water and shaking.

2. Put the charcoal in while still hot, cork the bottle, and after a few moments remove the charcoal, and smell. Also try the following: Fill a test tube with NH_3 (gas), put in a piece of hot charcoal and invert over mercury. The mercury rises. Explain.

Special Papers.

PRACTICAL EDUCATION.

What a pity it is that the considerable amount of education that is necessary to qualify one for the profession of a school teacher fails to fit the individual for anything else. In consequence, those who follow this avocation are practically at the mercy of a body of comparatively ignorant school trustees, who are manifestly impressed with the advisability of having a comparatively extensive curriculum, but, for the mere sake of economy, fail to realize that, in order to have effective results, it is necessary to give the teachers adequate remuneration. It must be confessed that our Public School teachers are able to make something like a show of scholarship, as the list of subjects and the marks obtained at their annual examinations attest; but it has been well remarked that, with all this, but comparatively few of them are able to accord to their scholars much of what may be described as practical education, such as shall

qualify them in the most efficient manner to discharge, with credit to themselves and satisfaction to others, the duties devolving upon them in everyday life. In consequence, many people of both sexes who are highly qualified from what may be spoken of as the educational point of view are comparatively ignorant when the education for one's daily life comes to be considered.

A business and mathematical education would be much more useful to most young men than all the classics that can be crammed into them. Skilled labor is in greater demand than ever. In many departments special abilities are demanded which involve not only deftness and dexterity of hand, but a mental grasp of all that is related or contributory to the end in view. The successful manager of a modern plant—indeed, not only the manager, but the individual mechanic—has to understand what a machine can and ought to do. Not only so, but he should be thoroughly posted as to the material he uses, and the bearing of other related products on the one he is handling. Moreover, existing competition demands increasing productive power at a declining rate of time and cost, the best man and the best machine being co-ordinate in modern conditions of manufacture.

We want manual and technical classes for both boys and girls, and, indeed, a change of methods. If we underpay our teachers, we cannot expect them to keep pace with the new conditions; whereas, on the other hand, if we properly compensate them, it may be expected that they will enter heart and soul into the work of preparing the youth of the present generation—girls and boys alike—to become skilled laborers in the fields which are opening up all around, of which the present curricula take comparatively little account. We have spoken of technical education for both girls and boys, but we must add that we fear that, with respect to the former, too little attention is paid to the cultivation of the domestic virtues and accomplishments whose more general exercise would make a wonderful difference in the conditions of the sterner sex, who may more properly be described as the family bread-winners.—*The British Columbia Commercial Journal.*

Primary Department.

PRIMARY COMPOSITIONS.

RHODA LEE.

The picture, rightly used, is truly a valuable aid in teaching primary composition. Several most successful teachers have assured me that they could find no better inspiration to real effort in language than that derived from a good picture. Only a day or two ago one for whose ability as an educator I have the highest regard, when discussing this subject, stated that the best compositions his pupils ever wrote were from a picture which he said he fastened on the door in the morning, allowing the children, at recess and noon, to examine it, and converse about it freely.

Before the little ones can write a story they can tell it. Training them to do this, let them describe a picture which they have at home. I remember the first time I asked my lowest class to tell me a story about a picture at home, either on the wall or in a book; one child gave me a remarkably good description of that familiar picture, "The Young Scholar"; another, "Daniel in the Lions' Den." Good oral training lays the best foundation for written work.

An exercise frequently assigned to little ones is that in which they are asked to write what they see in the picture. This they do in simple statements, such as: *I see a boy; I see a dog; I see a boat*, etc. As an elementary exercise this may be

given occasionally with advantage, but is by no means the best use to make of the picture. The mind, roving from one little detail to another, loses sight of the real conception. A good picture should have one central, well-defined idea, and the best language exercise consists in putting this idea into words. Imagination may supply names, places, and other accessories to a narrative that the picture, of course, cannot give.

Teachers who live in neighborhoods in which maple syrup is being made have in it a good subject for composition. I wish some of my readers would send to the Primary Department stories descriptive of syrup-making and "sugaring-off."

Another exercise in composition we must not overlook. It is that of letter-writing. This should be commenced as early as possible, and be given a prominent place in the composition work of every grade. I have seen children seven or eight years of age write very presentable letters—better, indeed, than some third-book scholars. After considerable practice on slates and in blank books, let each child bring a sheet of paper and an envelope to write a genuine letter. Those who cannot get the material will have to be supplied by the teacher. For the composition of the letter an outline of the matter placed on the blackboard is a great help. For example:

Tell (1) What your teacher wishes you to do.

(2) Something about the schoolroom and work.

(3) Something about outdoor games.

(4) Other news.

Points to be taught and well impressed are: *Heading, form of address, use of capitals, punctuation, paragraphing, closing, and address on envelope.* We cannot go into any particulars of the different kinds of letters in a primary grade, but it is quite possible and most desirable to teach the correct writing of a friendly letter.

A READING—LEONARD DI VINCI.

In Florence, a city of Italy, there lived a good man whose name was Leonard Di Vinci.

He loved the birds very dearly, and he was happy to see them fly from tree to tree, enjoying themselves to their hearts' content.

One day, as he was walking along the streets of Florence, he saw a man with a number of birds for sale, in a cage. He stood still, looked at the birds, and then he thought he heard them talking to him, saying:

"Oh, dear sir, if you set us free,
We will thank you heartily."

As soon as he felt the little birds were trying to make him understand their whisperings, he turned to the man, saying:

"What do you wish for these birds?"

"All?" said the astonished vendor.

"Yes, I should like to buy them all."

"Well, let me count; there are quite a number." So the man counted each one, and then said, "I'll sell them all for ten lire."

"Very well," said Di Vinci, "here's

your money." Then he took the cage in his hand, and said:

"Yes, little birds, I heard you say,
You would like to be free to-day;
I am glad it was in my power
To give you freedom within this hour.
So fly, little birds, and have your fun,
Back to the woods you'll quickly run."

Do you not think that Leonard Di Vinci must have been a very good, kind man to set the little birds free? Where do you think birds are more happy, shut up in a cage, or living in the woods, where they can fly from tree to tree to talk to the flowers, and sing pretty songs with their other little bird brothers and sisters? I wonder if it will be hard to guess the right answer to this question?—*The Teachers' World.*

THE TWO BUCKETS.

There was once a well in which two buckets were hung so that when one went down the other went up. They did not often have a chance to talk together, for they had only time to nod to each other as they passed on the way. But one day the boy who went for the water stood with his hand on the rope, talking to the milkmaid, and the buckets rested half way down the well.

"What a hard life we have!" one said with a sigh. "No matter how full we come up, we always go down empty."

"How strange!" cried the other. "I was just thinking that no matter if we go down empty, we always come up full."

—*Mrs. Charles Lane, in Eclectic School Readings for First Grade.*

AIMS AND IDEALS OF LITTLE CHILDREN.

(Questions to be answered by the child.)

Tell something that makes you happy.

Tell something that makes you sorry.

What story do you like best? Why?

What song do you like best? Why?

What picture do you like best? Why?

What game do you like best? Why?

What lesson do you like best? Why?

What is the bravest thing you ever did?

Tell some brave thing you would like to do.

Tell something you think funny.

Tell something that is wrong to do.

Tell something that is right to do.

What is the most useful business? Why?

What is the most useful animal? Why?

If you were not yourself, whom would you like to be?

What do you wish to be when you grow up? Why?

—*Barnard Club.*

THIRD YEAR LANGUAGE—KINDS OF SENTENCES.

During the month, pupils are to study different kinds of sentences as to use. After pupils have been drilled on each class of sentences, until they can readily distinguish them, an exercise like the following, from Swinton's "New Language Lessons," will be interesting:

Express each of the following statements in the form of a question, a command, and an exclamation:

1. Dogs delight to bark and bite.
2. The fire burns brightly.
3. Time flies rapidly.
4. The storm rages fiercely.
5. The scholars rejoice.
6. The lion roars.

MODEL.

- (a) *Dogs delight to bark and bite.*
- (b) *Do dogs delight to bark and bite?*
- (c) *Let dogs delight to bark and bite!*
- (d) *How dogs delight to bark and bite!*

—*School News.*

A PRINCE OF NEWFOUNDLAND.

The shower had ceased, but the city street
Was flooded still with drenching rain,
Though men and horses with hurrying feet
Swept on their busy ways again.

The gutter ran like a river deep;
By the clean-washed pavements fast it rushed,
As out of the spouts with a dash and a leap
The singing, sparkling water gushed.

A little kitten, with ribbon blue,
Crossed over the way to the gutter's brink;
With many a wistful, plaintive mew,
She seemed at the edge to shudder and shrink.

And there she stood while her piteous cries
Were all unheard by the heedless throng,
Looking across with such longing eyes;
But the torrent was all too swift and strong.

Up the street, o'er the pavements wide,
Wandered our *Prince from Newfoundland*,
Stately, careless, and dignified,
Gazing about him on either hand.

The sun shone out on his glossy coat,
And his beautiful eyes, soft and brown,
With quiet, observant glance took note
Of all that was passing him, up and down.

He heard the kitten that wailed and mewed,
Stopped to look and investigate
The whole situation understood,
And went at once to the rescue straight.

Calmly out into the street walked he,
Up to the poor little trembling waif,
Lifted her gently and carefully,
And carried her over the water safe.

And set her down on the longed-for shore,
Licked her soft coat with a kind caress,
Left her and went on his way once more,
The picture of noble thoughtfulness.

Only a dog and cat, you say?
Could a human being understand
And be more kind in a human way
Than this fine old *Prince of Newfoundland*?

Oh, children dear, 'tis a lesson sweet;
If a poor dumb dog so wise can be,
We should be gentle enough to treat
All creatures with kindness and courtesy.

For surely among us there is not one
Who such an example could withstand;
Who would wish in goodness to be outdone
By a princely dog from Newfoundland?
—*Celia Thaxter, in Harper's Young People.*

BIBLE SELECTIONS.

"Whatsoever thy hand findeth to do,
do it with all thy might."

"He that is slow to anger is better than the mighty, and he that ruleth his spirit than he that taketh a city."

"A good name is better to be chosen than great riches, and loving favor rather than silver and gold."

"A word fitly spoken is like apples of gold in pictures of silver."

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Book Notices.

SOUTHEY'S LIFE OF NELSON. Edited, with an Introduction and Notes, by Albert L. Blaisdell. x + 242 pages. Ginn & Company, Publishers, Boston, Mass.

Judged from a strictly historical point of view, Southey's "Life of Nelson" has no great value; but the fact that it has retained its charm for readers, both young and old, for more than eighty years easily puts it in the first rank of readable and popular biographies. Southey was master of a style which has always commanded admiration for its clearness, vigor, and simplicity. He was fortunate in his subject. He wrote the life of England's greatest admiral, a man of commanding genius, whose remarkable exploits in the naval service of his country made him a popular hero while he lived, and has endeared his memory to mankind for nearly a century.

In this edition of Southey's masterpiece, which is more particularly intended for school use, the editor has prepared an introduction, and supplemented the text with a suitable number of notes. A few passages, which have little or no interest at the present time, have been omitted.

Literary Notes.

The following editorial note is conspicuously printed in the *Minneapolis Tribune*: "In certain advertisements heretofore published in this paper, certain statements reflecting upon the Standard Dictionary, published by Funk & Wagnalls Company, of New York, have been made. Lest the impression should be had that *The Tribune* originated these statements, and has given them circulation on its own account, we wish to say: *The Tribune* was not and is not responsible for these statements; and that *The Tribune* does not endorse the charges therein contained. These charges were made by the purchasers of those advertisements."

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Official Calendar

OF THE

Education

Department

For the year 1896

April.

15. Reports on Night Schools due (session 1894-5) (Not later than the 15th April.)

Art School Examinations begin. (Subject to appointment)

23. Toronto University Examinations in Law begin. (Subject to appointment.)

May.

1. Toronto University Examinations in Arts begin. Examinations for Specialists' certificates (except Commercial) at the University of Toronto begin. (Subject to appointment.)

Notice by candidates for the High School Entrance and Public School Leaving Examinations to Inspectors, due. (Not later than 1st May.)
By-law to alter School boundaries—last day of passing [P.S. Act, sec. 81 (3)]. (Not later than 1st May.)

ARBOR DAY. (1st Friday in May.)

2. Inspectors to report to Department number of papers required for the High School Entrance and Public School Leaving Examinations. (Not later than 3rd May.)

Inspectors' nominations of presiding Examiners for High School Entrance and Public Schools Leaving Examinations, due. (3rd May.)

23. Notice by candidates for the Departmental Primary and the High School Leaving and University Matriculation Examinations and Commercial Specialists' to Inspectors, due. (Not later than the 24th May.)

24. QUEEN'S BIRTHDAY (Sunday.)

25. Notice of the same by Inspectors to Department due. (Not later than 25th May.)

Nomination of Presiding Examiner for same, due. (One month before Examination.)

26. Examination at Provincial School of Pedagogy at Toronto, begins. (At close of session.)

29. Close of session of Provincial School of Pedagogy. (Shall end on 31st May.)

N.B.—The Departmental Examination papers are not supplied by the Department, but can be obtained from the trade through Messrs. Rowell & Hutchison, Toronto.