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The Educational Journal

Editorial Notes.

WE are aware that we ought, according to the good old custom, to have put a good deal of special Christmas matter into this number. But the fact is that we had so much "copy" of a distinctively educational kind on hand that it seemed better to make use of as much of it as possible. It is not likely that any of our readers will want for Christmas verses and stories. We, therefore, while fully alive, we hope, to all the happy associations and hallowed joys of the Christmas season, content ourselves with wishing from the bottom of our hearts every reader of THE EDUCATIONAL JOURNAL a very happy Christmastime!

WE are obliged to the friend who has kindly sent us a full report of the proceedings in connection with the recent trial and conviction of certain persons before the county judge in East Toronto for assault upon the principal of the Public School in that municipality. The teacher's offence, which provoked the assault, consisted in his having flogged the son of one of the parties who afterwards made the assault. The case will be of interest to many teachers. The charge of Judge McDougall, in pronouncing the sentence, is important as showing the sufficiency of the law—and, we may add, the readiness of the courts—to protect, to the fullest extent, teachers in the exercise of their authority. We have not room for the report in this number, but will publish it in the next.

SPEAKING of the temptation to dishonesty at school examinations, Professor W. B. Jacobs, in the *School Review* for November, affirms his belief that there are "two facts which perhaps unconsciously yet with right (?) influence the boy": First, the boy recognizes that a more or less overdrawn and more or less artificial importance is placed upon the examination test. Second he has learnt by experience that the element of chance enters into every examination, that "within cer-

tain limits it does not differ so very much from a respectable raffle after all." There is, no doubt, a good deal of truth in this view, but the boy must have a very poor standard of morality who can quiet his conscience with such narcotics.

PROFESSOR JACOBS takes a rather pessimistic view of the resources of the teacher in the matter of securing honesty at examinations, especially as regards the possibility of making the examination a means of character-training. He must sail, he thinks, between the Scylla of watching the pupil with falcon eye, and so giving him the impression that his teacher judges him capable of knavery, and the Charybdis of placing all confidence in the boy's integrity, and devoting himself to other work. In the former case the boy, with feeble but fatal logic, concludes that he may as well get the profit of his reputation, and so makes the exercise a contest of wits. In the latter the temptation may often prove too strong, and honor fall. Surely these alternatives do not exhaust the possibilities.

THE foregoing reminds us of a suggestion made in a postal card which we received some time since, the contents of which were, from its having been wet or some other cause, only partially legible. The legible part contained a suggestion which is worth considering. It was that the candidate be required to put the printed question paper back into the envelope with his answer papers, and that no marks of any kind be permitted upon such question paper. This would prevent one student from assisting another by exchanging his question papers, with hints or solutions written upon them. The influence of the teacher who is distrustful and suspicious is sure to be morally worthless, if not worse. On the other hand, confidence misplaced and betrayed tends only to evil. After all, it should not be difficult to convince any reasonable pupil that the regulations for the conduct of examinations have necessarily to be made for the lowest, not for the highest or even the average, type of candidate.

"MYRA," who kindly sends us the lesson on Queen Victoria for the Intermediate Department, says: "Many teachers say they can always get articles suitable for supplementary reading in junior classes, descriptive of famous men of the United States, but not of those with whose history we would particularly wish the children of our Public Schools to be familiar." We shall be glad to have other similar stories of persons celebrated in British and Canadian history from "Myra" and others, for use as supplementary reading lessons in the classes referred to. "Myra" says that the Intermediate Department has added greatly to the usefulness of THE JOURNAL as a paper for teachers of rural schools. This is one of its special designs. We trust that many teachers will, like her, help us to perfect this department for that purpose.

HENRY ROSTE, Rawdon, writes THE JOURNAL expressing his full agreement with Mr. Boyle that maps and charts should be hung on the walls of the schoolroom, and not tucked away in closets or corners, when not in use. Mr. Roste thinks that there is another thing in respect to which every teacher should feel bound to do better than most do, viz., the improvement of the school grounds. He says: "I know of grounds fifty or sixty years old that are still covered with stones that have lain there for five or six thousand years." We do not understand that the present teachers have been passing by those stones and neglecting to have them removed during all those centuries, but only during the period of each one's incumbency, whether longer or shorter. That is bad enough. We have had the impression that so good a use had been made of Arbor Day that few cases would now be found in which an Ontario schoolyard remains in a state of nature, such as that described by our correspondent. It is not too soon for the teachers to begin planning for the improvement and decoration of their school grounds next Arbor Day. We should be glad if those who have had experience would think about the matter, and send us a large number of short letters containing facts, hints, and suggestions touching this matter. These we should like to have for publication in our next Arbor Day number, which will be either the first or the second number in April.

Science.

STUDY OF A BROOK.

The following notes attempt to present a lesson, or several lessons, on a brook. They are intended to serve as a basis for the reading and appreciation of Tennyson's charming song, "The Brook." Nature study, of course, precedes. After the main facts expressed by the poet are obtained by the pupil from observation, the poem may then be read by the teacher and pupils, the former now pointing out how exactly suitable the author's language is in the delineation of nature. The subject, as thus presented, resolves itself into two parts : (a) The actual study of a creek or brook, and (b) the reading of the poem and the literary expression of the observations.

In any rural section, and most urban ones, there may be found one or more streams which will probably present most of the features of the one outlined in the poem. At the outset the teacher may, by careful questioning, find out just what information the pupils possess. From this he may know what questions to give, to be answered from the pupils' further observations. It is not to be expected that pupils will give the results of their observations in the words of the poem, and no teacher should insist on this. Let the boy or girl present his or her facts in language familiar to themselves.

Selecting any local stream, the teacher may put such questions as the following, without indicating whether the answers received are correct or not. Get first the children's ideas. Ask several pupils their answers to the questions : In what direction does the water of ———— creek flow?

The answers to this question will probably vary, some saying south, others south-east, etc.

Why does the water flow in all these directions?

This question will probably bring the information that obstructions cause the water to turn.

Where does the water flow the fastest? Where slowest?

Answers, from previous knowledge, to these questions may be expected?

Where does the creek water come from?

What do you call the starting point of a creek?

What are usually the sources of creeks?

In all these questions get the pupils' ideas. Do not indicate in any way, at least in any preliminary lessons, whether the answers are right or wrong. If the answers are wrong, the pupils must get the right ones, not from the teacher, else *nature* study is meaningless, but from the object studied. Many answers will conflict as to the facts. If the teacher takes either side he determines for the pupil. Those who are wrong will be put right in the wrong way, and those who are right will lose the triumph of their better observation. Emulation will be destroyed.

After the teacher has obtained all information which the pupils possess, or when he thinks, from their answers, observation work may be profitably undertaken, he may give such problems as the following. If a particular brook is studied (and this is best) the pupils should be expected to say just where on the brook each phenomenon is found. This insures that the pupil has done the work himself and not relied upon others' observations. If this list is too long for one lesson it may be subdivided :

Where does the water chatter? Where bicker? Where does it babble? Where bubble? Where and how are eddies produced?

What effect has the water on the bank against which it flows?

What becomes of the water in the brook?

Where does the water sparkle? Where hurry?

If these should prove sufficient facts for the pupils to find out at one time—and the teacher must judge from his knowledge of his pupils and locality—it may be well, after getting the pupils' answers, to tell them he will read to them what Mr. Tennyson found out in answer to these questions Before doing this, however, the teacher must be again the judge as to whether the pupils' answers are sufficiently clear and accurate to imply correct observation. If so, he may read. Words are italicized merely to indicate the points of contact of the poem with the problems submitted to the pupils :

THE BROOK.

I *come from* the haunts of coot and hern ;
   I make a sudden sally,
And *sparkle* out among the fern,
   To *bicker* down a valley.

By thirty hills I *hurry* down,
   Or slip between the ridges ;
By twenty thorpes, a little town,
   And half a hundred bridges.

Till last by Phillips' farm I flow,
   To join the brimming river ;
For men may come and men may go,
   But I go on for ever.

I *chatter* over stony ways,
   In little sharps and trebles ;
I *bubble* into *eddying bays*,
   I *babble* on the pebbles.

With many a curve my banks I *fret*,
   By many a field and fallow,
And many a fairy foreland set
   With willow-weed and mallow.

Another series of questions may follow this lesson, such as :

What is the prettiest thing you observed on the water? in the water?

Where is the water foamy? Where silvery?

Where does the water *steal* along? Where slide?

Where does the water gloom? Why?

Where does the water linger? Where murmur?

When can the murmur be most distinctly heard?

When correct answers have been obtained to these questions the teacher may read the remainder of the poem ; better, of course, if the pupils have the opportunity of reading it for themselves.

I wind about, and in and out,
   With here a *blossom* sailing,
And here and there a *lusty trout*,
   And here and there a grayling.

And here and there a *foamy flake*
   Upon me as I travel,
With many a *silvery water break*,
   Above the golden gravel.

I *steal* by lawns and grassy plots ;
   I *slide* by hazel covers ;
I move the sweet forget-me-nots
   That grow for happy lovers.

I slip, I slide, I *gloom*, I glance,
   Among my skimming swallows ;
I make the netted sunbeam dance
   Against my sandy shallows.

I *murmur* under moon and stars
   In brambly wildernesses ;
I *linger* by my shingly bars ;
   I loiter round my cresses ;

And out again I curve and flow
   To join the brimming river ;
For men may come and men may go,
   But I go on forever.

The writer can remember when, as a boy, this beautiful and accurate nature-poem made no further impression upon him than a pleasing sensation, due solely to its rhythm. Its meaning and appropriateness were as foreign to him as a dress-coat to a Hottentot. No attempt was made by the teacher to show any of the appropriateness of diction or accuracy of fact. Surely boys and girls may be made to see that this poem is the product of a master observer, and to hear again in the music of its language the multitudinous notes of the stream along which they have played.

It is in the belief that this previous study of nature often opens the way to the interpretation of literature, that these notes, imperfect as they are, are offered.

CORRESPONDENCE.

J. M. P., Abingdon,—(1) Red phosphorous (small quantity) is put up into an evaporating dish, nitric acid is poured on and the mixture is now gently heated for some time, until red fumes cease to come off. Express the reaction of the equation. (2) Thirty centigrams of iron filings, two of caustic potash, and two of nitre are placed in a test-tube and heated. Express reaction by equation.

ANS.—(1) $P + 34NO_3 = H_3PO_4 + N_2O_3 + NO_5$.
(2) $10Fe + 10KOH + 2KNO_3 = 10 FeO + 6K_2O + 2NH_3 \div _2H_2$.

TEACHER, Artemesia.—What does the second expression "per sec." mean in the phrase "An acceleration of 2 feet per sec. per sec."?

ANS.—If a train at the instant of observation has a velocity of 8 feet per sec., and one second afterwards its velocity is 10 feet per sec. its *change* of velocity is 2 feet per sec. It might have taken 5 minutes to make this change instead of one second. In the former case the acceleration would have been described as 2 feet per sec. per 5 minutes. The second time-phrase denotes the time during which the given change in velocity was being made.

ENQUIRER, Simcoe.—Which way was the water-fowl, mentioned in Bryant's poem, going ?

ANS.—For the appreciation of the poem it is immaterial to know. The bird was evidently on either its north or south migration. I am inclined to think the bird was going northward. In the early summer and spring the sun sets far to the northwest, and the sky is frequently rosy at that time in the evening.

F.W.P., Minnedosa.—Will you please solve the first question on the last Senior Leaving paper in Physics ?

ANS.—I have not the paper mentioned at hand. Solution will appear in next Science number.

There is a pleasure in the pathless woods,
   There is a rapture on the lonely shore ;
There is society where none intrudes
   By the deep sea and music in its roar.
I love not man the less but Nature more,
   From these our interviews, in which I steal
From all I may be, or have been before,
   To mingle with the universe, and feel
What I can ne'er express, yet cannot all conceal.
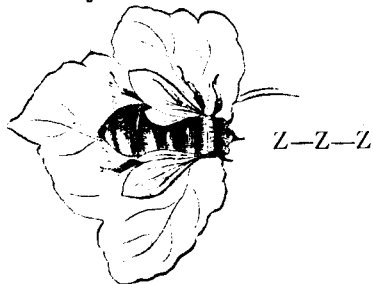   —*Lord Byron.*

Primary Department.

READING.

RHODA LEE.

LESSON XXVIII.—LETTER "Z."

We call this the "bee-letter," the sound being likened to that of a bumble-bee in search of honey.

Z—Z—Z

New words. — Buzz, zig-zag, dizzy, puzzle, muzzle, dazzle, lazy, crazy, froze, freeze, sneeze.

LESSON XXIX.—COMBINATION "TH."

There are two sounds for this combination : (1) That contained in the word *that* ; (2) that found in the word *thin*.

New words.—This, that, these, clothe, thus, with, within, than, them, thus, thy.

Thin, thick, path, lath, moth, cloth, froth, bath, think, thank, three, both, throne, thum*b*, thre*a*d, this*t*le.

LESSON XXX.—COMBINATION "CH."

Introductory story.—Train starting out from the station, steam escaping. The noise made is "ch-ch-ch."

New words.—Chap, chop, chip, cheer, chill, chil-dren, chin, rich, chick-en, child, cheek, stitch, sketch, much, bunch, lunch, bench, chest, cheese, cherry, pinch, such.

LESSON XXXI.—COMBINATION "EA."

The twins "ee" have already been taught, To introduce "ea," tell a story of one of the twins being sick; "e" then had to get "a" to help her say her name.

New words.—Fear, tear, hear, dear, near, spear, leak, speak, neat, seat, beat, meat, tea, sea, meal, steal, mean, bean, lean, seam, cream, dream, please, teaze, steam, clean, clear, read, teach, peach, cheap, preach, dear-est, mean-est, clean-est, neatly, pea-cock, pea-nut, repeat, repeatedly, leaves, sheaves, feast, east, each, reach, eagle.

LESSON XXXII.—COMBINATIONS "OA" AND "OW."

Introductory story.—A story may be told of the letter "o" wishing to say her own name. The letter "a" offers to help her provided she never has to go at the end of a word. "W" also volunteers help with the understanding that he is almost always to go at the end of the word.

New words.—"oa" :—Coat, boat, goat, toad, load, float, coal, road, goad, board, soap, coach, loan, loaf, groan, toast, throat, hoarse, roast, boast, roar, foam, roam.

"ow"—Row, low, crow, show, throw, flow, mow, slow, blow, grown, window, thrown, slowly, own, bowl.

LESSON XXXIII.—COMBINATION "WH."

The sound of "wh" is equivalent to "hw."

Develop as in previous lessons.

New words.—Whip, whim, which, while, white, whine, whisk, whiskers, whisper, whimper, whale, whack, wheel, whis*t*le, whittle, wheat, why, whack, whizzing.

LESSON XXXIV.—COMBINATIONS "AI" AND "AY."

A story similar to that in Lesson xxxii. may be told in connection with this lesson.

New words.—*ai*—Pail, tail, mail, nail, snail, hail, sail, rail, laid, lain, grain, train, brain, strain, hair, fair, stair, jail, chair, chain, pain, paint, a-fraid, com-plain.

ay.—May, day, lay, hay, say, gay, tray, gray, pray, bay, stay, way, away, stairway.

LESSON XXXV.—COMBINATION "NG."

New words.—Ring, rang, rung, sing, bring, long, sting, thing, something, play-ing, song, cry-ing, ring-ing, go-ing, throw-ing, strong, ding-dong, cling-ing, string.

LESSON XXXVI.—COMBINATION "NK."

Nk = ngk.

New words.—Ink, sink, think, rink, drink, bank, tank, sank, flank, frank, crank, drank, shank, thank, thanks-giving, sprinkle, ankle, tinkle, twinkle, shrink.

LESSON XXXVII.—COMBINATIONS "OI" AND "OY."

New words.—*oi*—Oil, boil, soil, toil, spoil, spoilt, loin, join, noise, coin, oint-ment, moist,

oy.—Toy, boy, coy, joy, floy, oyster, enjoy, enjoy-ment, employ, destroy.

LESSON XXXVIII.

ar, or, er, ir, ur.

ar is equivalent to the name of the letter "r."

or is equivalent to *ōr.*

er, ir, and *ur* have the same sound as the letter "r."

New words.—*ar*—Car, tar, far, bar, harm, charm, cart, tart, start, barn, park, lard, lark, mark, dark, shark, starch, harp, march, carpet, market, garden, garment, sharp, darkness, remark, remarkable, Richard.

or.—For, torn, born, horn, storm, story, stork, fork, cork, pork, corn, forest, Lord, reform, north, thorn.

er.—Her, nearer, corner, herd, ever, fern, farmer, teacher, Albert, jerk.

ir.—Girl, sir, dirt, fir, chirp, firm, thir-teen, thirty, thirsty, girth, birthday.

ur.—Fur, cur, purr, burr, curl, curtain, hurt, furnish, furniture, purple, burning, turning, churning, church, Arthur, mur-mur.

ST. NICHOLAS AND HIS REINDEER.

'Twas the night before Christmas, when all through the house
Not a creature was stirring, not even a mouse ;
The stockings were hung by the chimney with care,
In hopes that St. Nicholas soon would be there ;
The children were nestled all snug in their beds,
While visions of sugar-plums danced in their heads ;
And mamma in her 'kerchief and I in my cap
Had just settled ourselves for a long winter's nap ;
When out on the lawn there arose such a clatter
I sprang from the bed to see what was the matter.
Away to the window I flew like a flash,
Tore open the shutters and threw up the sash.
The moon, on the breast of the new-fallen snow,
Gave the lustre of mid-day to objects below,
When what to my wondering eyes should appear
But a miniature sleigh and two tiny reindeer,
With a little old driver, so lively and quick,
I knew in a moment it must be St. Nick.
More rapid than eagles his coursers they came,
And he whistled and shouted and called them by name ;
"Now, Dasher ! now Dancer ! now Prancer ! and Vixen !
On, Comet ! on, Cupid ! on, Donder and Blitzen !
To the top of the porch ! To the top of the wall !
Now dash away ! dash away ! dash away, all !"
As dry leaves that before the wild hurricane fly,
When they meet with an obstacle, mount to the sky,
So up to the housetop the coursers they flew,
With a sleigh full of toys and St. Nicholas too.
And then in a twinkling I heard on the roof
The prancing and pawing of each little hoof.
As I drew in my head and was turning around,
Down the chimney St. Nicholas came with a bound.
He was dressed all in fur from his head to his foot,
And his clothes were all tarnished with ashes and soot ;
A bundle of toys he had flung on his back,
And he looked like a pedler just op'ning his pack.
His eyes ! how they twinkled ! his dimples—how merry !
His cheeks were like roses, his nose like a cherry !
His droll little mouth was drawn up like a bow,
And the beard of his chin was as white as the snow ;
The stump of his pipe he held tight in his teeth,
And the smoke it encircled his head like a wreath ;
He was chubby and fat, a right jolly old elf,
And I laughed when I saw him in spite of myself ;
A wink of his eye and a twist of his head,
Soon gave me to know I had nothing to dread ;
He spoke not a word but went straight to his work,
And filled all the stockings, then turned with a jerk,
And, laying his finger aside of his nose,
And giving a nod, up the chimney he rose ;
He sprang to his sleigh, to his team gave a whistle,
And away they all flew like the down of a thistle.
But I heard him exclaim, ere he drove out of sight,
"Happy Christmas to all, and to all a good-night !"

—*C. C. Moore.*

SANTA CLAUS.

ANON.

A jolly old fellow whose hair is so white,
  And whose little bright eyes are blue,
Will be making his visits on Christmas night,
  Perhaps he will call upon you !

A funny old name has this funny wee·man,
  You know what it is without doubt ;
He climbs down the chimney as fast as he can,
  And then just as quickly creeps out.

He carries a bagful of candies and toys,
  And leaves them wherever he goes,
For good little girls and good little boys ;
  So hang up your little white hose.

RHYME FOR MOVEMENT EXERCISE.

This is east and this is west,
Soon I'll learn to say the rest ;
This is high and this is low,
Only see how much I know.
This is narrow, this is wide,
Something else I know beside.

Down is where my feet you see,
Up is where my head should be ;
Here's my nose, and here my eyes,
Don't you think I'm getting wise ?
Now my eyes wide open keep,
Shut them when I go to sleep.

Here's my mouth, and here's my chin,
Soon to read I shall begin ;
Ears I have as you can see,
Of much use they are to me !
This my right hand is, you see,
This my left, as all agree ;
Overhead I raise them high,
Clap ! clap ! clap ! I let them fly.

If a lady in the street
Or my teacher I should meet,
From my head my cap I take,
And a bow like this I make.
Now I fold my arms up so,
To my seat I softly go.

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Editorial.

CURRENT HISTORY.

THAT, which is attracting most attention just now in Canadian newspapers, and probably in the minds of most Canadians who take an interest in the public affairs of their country, is the work of the Tariff Commissioners. This Commission consists of Sir Richard Cartwright, Minister of Trade and Commerce; Sir Oliver Mowat, Minister of Justice; Hon. W. S. Fielding, Minister of Finance; Hon. Wm. Patterson, Controller of Customs. Their mission is to gather information with regard to the working of the present protective tariff, for the guidance of the Government in framing the new tariff bill which they are pledged to introduce at the approaching session. The larger number of the deputations which have so far been heard by the Commissioners have been composed of manufacturers. Most of these, naturally enough, plead for the continuance of the protection which has, no doubt, enriched many of them. Some mercantile deputations have also been heard, and two or three representatives of the farmers. The former held various opinions; the latter denounced protection as injurious and unfair to the users or "consumers" of the manufactured goods. The question is one of great difficulty for the new Government.

Two paragraphs of President Cleveland's message to Congress, which was delivered about a week ago, are of special interest to all British subjects. In the first, the President assures Congress that there is no longer a difficulty between the Government of Great Britain and that of the United States in regard to the Venezuelan boundary; in the second, that progress has been made in the direction of an agreement between the two governments for the construction of a general treaty of arbitration, for the settlement of all difficulties which may hereafter arise between the two countries.

PRESIDENT CLEVELAND deals at length and cautiously with the insurrection in Cuba. He points out, for the benefit of Spain, that the Cubans have an undoubted right to redress of grievances and a measure of self-government; and that the insurgents are scarcely to be blamed for refusing to lay down their arms on the bare promise of Spain to grant reforms, without some guarantee for the fulfilment of those promises. Such a guarantee the United States has offered to Spain to furnish, if desired. At the same time, as the only government at present existing in Cuba is that of Spain. Inefficient though it is, the time has not arrived either for recognition of the insurgents, or for intervention, by the United States. It is plainly intimated, however, that the struggle cannot be permitted to go on much longer.

Two or three projects of great interest to the Dominion, and to other British colonies, are now under consideration. One is the proposal to establish a line of fast Atlantic steamships between a Canadian and a British port. Under the late Government the project was favorably considered, and a large subsidy promised by Parliament, but other necessary conditions have not yet been obtained. The scheme has ardent and influential advocates, who are of opinion that many and great advantages would accrue to Canada from the establishment of such a line, as it would materially shorten the ocean voyage between Europe and America, and the route (by the Pacific line already established) between Great Britain and the East, making Canada the highway of a large part of the travelling in both cases.

A second project referred to is that for the construction of a submarine cable between Vancouver, or some other point on the Pacific Coast of the Dominion, and Australia. A number of British and colonial delegates are now considering the matter in England. Their sessions are, for the present, secret, but in all probability their conclusions will be given to the public in a few weeks. Such a cable would bring not only Canada, but the Mother Country as well, into direct and independent telegraphic communication with the Australian colonies, and with the great Eastern world, over British territory. There is, to say the least, a good prospect of the early completion of this enterprise, but the report of the delegates is eagerly looked for.

The third project is the greatest of all. It is nothing less than the Federation of the British Empire, that is, of the United Kingdom and the Colonies, especially the self-governing colonies. This large conception is warmly advocated by a number of prominent Canadians, among them some members of the teaching fraternity. Dr. Parkin, at present Principal of Upper Canada College, it will be remembered, "stumped the Empire"—to borrow an expression from the *Pall Mall Gazette*—on behalf of it. As the thoughtful reader will readily conceive, the difficulties in the way of framing and carrying out such a scheme are enormous, and are made almost, if not quite, insuperable by its being now complicated, whether necessarily or otherwise, with a proposal for preferential tariffs within the Empire, as against foreign countries. This would involve on the part of those colonies which, like Canada, tax British goods at the same rate as foreign a reduction of tariff in favor of the Mother Country as against outsiders. This might seem both reasonable and practicable, but for the fact that the Mother Country, acting on free trade principles and already admitting colonial products free, could not reciprocate save by taxing the products of foreign nations, and so not only raising the price of the bread-stuffs and other necessaries which she so largely imports for her own people, but incurring the danger of retaliatory tariffs by those nations.

WE thus briefly mention these important matters mainly in order to remind our readers that our Dominion seems just now to have reached a very important point, we might almost say a crisis, in its history, and is likely to make history very fast during the next few years. Teachers of the young should be among the most deeply interested and intelligent students of events.

AFFAIRS in relation to the Eastern question appear to be just now in a quiescent state. It is altogether likely that diplo-

matic correspondence is still being carried on among the Powers, and it is not unlikely that some agreement for the relief and protection of the poor Armenians, or those who remain of them, may before long be reached. Meanwhile the wretched survivors in Armenia, or hundreds of thousands of them, are in a state of the most fearful destitution, and very many will almost inevitably perish through exposure and starvation in spite of the best efforts and most generous gifts of their English-speaking benefactors. Dr. Geikie, of Toronto, the treasurer of the Canadian relief fund, makes a powerful and touching appeal to Canadians on behalf of the destitute women and children.

THE NEW REGULATIONS.

IN THE JOURNAL of November 16th we printed a circular containing the special provisions for the examinations of 1896 and 1897. The following are the other most important changes in the revised Regulations affecting the Public Schools. It is satisfactory to know that these Regulations are to remain as they now are for a period of five years.

COURSE OF STUDY.

As before, the course of study is to be taken up in five forms. Pupils who have passed the High School Entrance Examination, and such other pupils as are considered qualified by the teacher and inspector, shall be entitled, in both rural and urban schools, to receive instruction in the subjects of the Fifth form, provided that, in a municipality having a High School, if resident pupils of the First form are not charged fees, it will not be deemed obligatory for the Public School Board to have a Fifth class. The following are the optional subjects of the course of study for the Fifth form:

Botany, Agriculture, Latin and Greek, French and German. These optional subjects shall be taken up only with the consent of the trustees and the inspector, and when the teacher is the holder of a First or Second class certificate, and has passed an examination in the option which he undertakes to teach. The trustees of any rural school may, by resolution passed at a regular meeting of the Board, require Agriculture to be taught in the Fourth and Fifth forms. Not more than three periods of thirty minutes each shall be given per week to the study of all the optional subjects. In urban schools instruction may be given in domestic economy.

CONTINUATION CLASSES.

As this is the most important change made for some years, we give both the section of the Public Schools Act and the Regulations dealing with the subject:

PUBLIC SCHOOLS ACT. SECTION 8.

(1) Subject to the Regulations of the Education Department, the school corporation of any municipality or section in which there is no High School shall have power to establish a Continuation class for pupils who have completed the course

of study prescribed for Public Schools, and who have passed the Public School Leaving Examination, and also to provide for such class suitable accommodation, and to impose such fees for tuition upon the pupils in attendance who have passed the said Leaving Examinations, whether residents or non-residents of the municipality, as they may deem expedient.

(2) The school corporation may admit to such Continuation Class pupils who have passed the Entrance Examination to a High School, but all such pupils who are residents of the municipality or section shall be exempted from tuition fees. Where non-residents are admitted such fees may be charged as the trustees may deem expedient.

(3) The course of study for Continuation classes shall be the course prescribed for the Primary Examination of the Education Department. Teachers of Continuation classes shall possess at least the qualifications of an assistant in a High School, subject to the Regulations of the Education Department in that behalf.

(4) The Minister of Education may apportion to any school conducting Continuation classes, out of any money appropriated by the Legislature for that purpose, a sum equal to the average amount per pupil paid by the Legislature towards the maintenance of High School pupils. The municipal council of any county may pay for the maintenance of such classes a sum equal to the legislative grant appropriated by the Minister of Education for such class, or such further sums as may seem expedient.

REGULATIONS.

In schools where instruction for the Primary Examinations has been given under former regulations similar to what may be given by the establishment of a Continuation class in connection with any Public School under the provisions of section 8 of the Public Schools Act, 1896, the Principal of the school shall be deemed qualified so long as he remains Principal of such school. In the case of any subsequent appointment as Principal, the qualifications shall be a First Class certificate for schools in class (a) hereinafter mentioned.

Any grant made by the Legislature for Public School Leaving Examinations and Continuation classes shall be distributed by the Minister of Education among the schools of the three grades hereafter mentioned, viz.: (a) Schools in which the Principal holds a First Class certificate (unless occupying the position in 1896), and gives regular instruction only to pupils who have passed the High School Entrance Examination (one or more of whom have also passed the Public School Leaving Examination) and who are taking the full course required for Primary standing. (b) Schools in which there are two or more teachers and a class in regular attendance of at least ten pupils who have passed the High School Entrance Examination (one or more of whom have also passed the Public School Leaving Examination) and who are taking the full work required for Primary standing. (c) Schools in which there is a class in

regular attendance of at least five pupils who have passed the High School Entrance Examination (one or more of whom have also passed the Public School Leaving Examination) and who are taking the full course prescribed for Primary standing. Any person holding a Second Class certificate shall be deemed qualified to conduct the classes in schools under divisions (b) and (c). Before a grant is paid to any school for a Continuation class the Inspector shall certify to its efficiency, and to the competence of the teachers employed to give the instructions required by the Regulations of the Education Department. Any school receiving a grant under this Regulation shall not receive any additional allowance on account of pupils who may pass the Public School Leaving Examination.

PUBLIC SCHOOL LEAVING EXAMINATIONS.

Public School Leaving Examinations will be held annually at every High School and Collegiate Institute, and at such other places as may be recommended by the Inspector. A person who wishes to write at the Public School Leaving Examination must, before the 24th of May, give the necessary notice to the Inspector on a form to be obtained from him. The answer papers will be examined at the Education Department immediately after the examination is held, and a report of the results will be forwarded to the Inspector, or to the High School Principal, if the examination was held at a High School centre. The Board of Trustees where such examination is held shall pay all the cost of the examination, but will receive from the Inspector half the fees paid by candidates.

Candidates at the Public School Leaving Examination shall take the following subjects, to be valued as herein mentioned, viz.: Reading, 50; Drawing, Writing with Bookkeeping and Commercial Transactions, English Composition, English Literature, History, Geography, Algebra, Geometry, Botany, each 100; English Grammar and Rhetoric, Arithmetic and Mensuration, each 150. Any candidate who obtains one-third of the marks in each subject, and one-half (67 per cent. for honors) of the aggregate marks, shall be considered as having passed the Public School Leaving Examination, provided, also, that a candidate who fails on one or more subjects may, if he makes considerably more than fifty per cent. on the total, be awarded a Public School Leaving certificate. The Board of Examiners for High School Entrance Examinations may admit to a High School candidates who have failed at a Public School Leaving Examination, providing they have made one-quarter of the marks on each Entrance Examination subject.

After 1897, every candidate for a Primary, or a Junior or Senior Leaving certificate, must pass this Public School Leaving Examination.

In our next issue we will give the remaining changes and modifications in the Regulations affecting the High and Training Schools.

Entrance Department.

DRAWING.

BY A. C. CASSELMAN.

THE RECEDING CYLINDER.

Place three cylinders as in Fig. 1 and make a drawing of them. The axes of these cylinders *recede in the direction in which the spectator is looking* and are called *receding cylinders*. The ends of receding cylinders are circles. This may not be at once evident, but if the pupil will place three cylinders below the eye-level, with their axes parallel, horizontal and receding in the direction in which he is looking ; and between him and the cylinders place a pane of glass parallel to the plane ends of the cylinders, and then trace the outline of the cylinders on the glass, taking care to keep the eye in one position while doing so, he will see that the tracing of the visible ends are circles. The invisible ends must be circles also, but smaller, as they are farther away. To get the correct size of the invisible circle proceed as follows : Draw a horizontal line A B across the paper to represent the horizon. *All horizontal lines appear to converge to a point on the horizon,* and those lines *running in the direction in which the observer is looking* appear to meet on the horizon *opposite the eye.* This will be evident if the pupil will look at the receding rails on a level stretch of railway track. Mark a point P about

Fig. 1
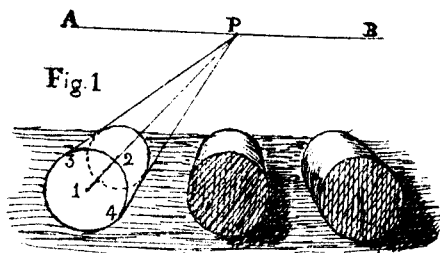
the middle of this line, to represent the point on the horizon at which the observer is looking. Draw a circle to represent the near end of the cylinder ; join 1, the centre of this circle, to P. This line will represent the axis of the cylinder if it were extended to the horizon. Cut off 1-2 from this line equal to the apparent length of the axis of the cylinder to be drawn. Note that this axis is apparently very short. From P draw lines P 3 and P 4 touching the circle. Using 2 as a centre draw freehand another circle touching the lines P 3 and P 4. Be careful with the last circle, as it is difficult to get it circular. Erase the invisible part of the circle just drawn and the construction lines, and shade as shown in the other two cylinders.

Fig. 2 shows an *oblique cylinder.* Its axis is oblique, that is, it recedes horizontally to the right, not in the direction the observer is looking. Place a cylinder in several positions, receding obliquely,

and draw it. The ends are ellipses, but notice that when the cylinder is below the eye-level the long axis of the ellipses is not vertical. Why ? What
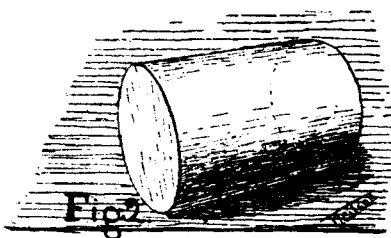
will be the position of the receding cylinder when the axes are vertical ?

The cup and saucer shown was drawn by W. R. Tyrrell, of the Boys' Model School, Toronto. It is not copied from a picture of the objects, but drawn from the objects, and was handed in as a regular class exercise.

EXERCISES.

1. Draw a rolling-pin developed from a receding cylinder and from an oblique cylinder.

2. Draw a pair of cuffs, one as a receding cylinder and the other as a vertical cylinder.

3. Place two fruit jars in different positions and draw them.

The next paper will deal with the cone and the frustum of the cone.

FROM " THE DESERTED VILLAGE."

ANSWERS TO QUESTIONS IN ISSUE OF NOV. 16TH.

DIVISION II.

"Evening's close." Means just as night was coming on, or day ended.

"Village murmur." Was called "sweet sound" in preceding line.

"There." On yonder hill.

"Careless steps." Careless steps means free from care, or aimless steps.

"Mingling notes." It means that the sounds came up the hill at the same time and were there confused or mingled together. The "notes" were the "swain's" song, the "low" of the cattle, the "gabbling" of the geese, the "chatter" of the children, the "bark" of the watch-dog, and the "laugh" of the happy people.

"Below." That is below the hill where the author is standing.

"Swain responsive." Means that the peasant boy was singing a song in answer to the song of the milkmaid.

"Sober herd." Sober is very appropriate, because the cattle have such a sedate, sober appearance.

"The noisy geese that gabbled o'er the pool." The best words in this line are "noisy" and "gabbled"; they are so expressive of the actions of geese.

The author secures a fine contrast by bringing the "sober herd" and "noisy geese" side by side.

"Let loose." This phrase suggests to us the suppressed feelings of the boys at school, as though all the activity was pent up until the hour of dismissal, to be then "let loose."

"Bayed." Is that peculiar bark or howl which a dog has as he sits and barks at some distant object.

"Whispering wind." A personal metaphor, see "smiling spring," division 1. Also "onomatopœia"; see "Flow Gently, Sweet Afton," stanza 1.

"Spoke the vacant mind." Showed a mind free from care.

"Sweet confusion." The sounds were more sweet because of their being mixed. For instance, the "gabbling" of the geese would not be so pleasant if heard alone.

"Sought the shade." Came to the shade, which was under the trees on the hill.

"Filled each pause the nightingale had made.' The nightingale was singing in the trees on the hill near the listener. When the nightingale sang the author heard naught but the song, but when the nightingale paused then the village sounds were apparent. Nothing could add more to the *picturesqueness,* "the power of an author to call up in the mind of his reader a vivid picture or idea," of the passage.

QUESTIONS TO BE ANSWERED IN NEXT ISSUE.
DIVISION III.

"Copse." What is a copse ?

"Garden smiled." What is meant ?

"There." What is gained by the use of this word?

"Torn shrubs the place disclose." Give the meaning of "torn" and "disclose."

"Passing rich." Explain fully.

"Godly race." Express in your own words.

"Nor e'er had changed—varying hour." Write in your own words the meaning of this.

"Far other aims." What aims are referred to ?

"More bent to raise the wretched than to rise." What does this mean ?

"Vagrant train. How is this afterwards expressed ? Why is a dash used after "train " ?

"Chid their wanderings." What is meant ?

"Long-remembered beggar." Why was he long-remembered ?

Why is the beggar described as a man whose "beard descending, swept his aged breast " ?

" No longer proud, claimed kindred." Why is this thought introduced ?

" Broken soldier." What is the force of broken ?

" Pleased with the guests." What does " pleased " mean ?

" Careless their merits." Give the force of " careless."

" Pity gave ere charity began." Explain this fully.

" Thus." What is gained by the use of this word ?

" His failings leaned to virtue's side." Write this in your own words.

" As a bird——led the way." What two things are here compared ? Point out the points of similarity between them. What is the name of the figure of speech. Write out the comparison in your own words.

" Parting life." What is meant ? What is there beautiful in this use of " parting " ? Give instances of a similar use of words.

" By turns dismayed." Explain.

" Champion." Why is the preacher termed a " champion " ?

" Meek and unaffected grace." Put this in your own words.

" Look adorned." Why ?

" Prevailed with double sway." What is meant ?

" Service past." How do you explain the construction of " service " ?

" Steady zeal." What does this mean ?

" Endearing wile." What is meant by " wile " ? Why was it " endearing " ?

" As some tall cliff——on its head." What things are here compared ? Does the comparison please you ? Why ?

Write a full statement of the comparison in your own words.

DIVISION IV.

" Straggling fence." What does this mean ?

"Blossomed furze unprofitably gay." What was "blossomed furze"? Why was it " unprofitably gay " ?

" Noisy mansion." What is there about this that is very appropriate ?

" I knew him well, and every truant knew." How should this be read so as to bring out the meaning ?

" Boding tremblers." Who ?

" Day's disasters in his morning face." Explain fully.

" Counterfeited glee." Why " counterfeited " ? Why did they laugh ?

" Full well the busy whisper——he frowned." What are the best chosen words in these lines ? Why ?

" The love—was in fault." What does this mean ?

" Knew." Why is there a dash after this word ?

" Terms and tides presage." What does this mean ?

" Gauge." Explain fully.

" For even——argue still." What gives this line its special force ? How is this strengthened in " One small head could carry all he knew " ?

" Many a time he triumphed." What does this mean ?

PHYSIOLOGY.

BY F. A. CLARKSON.

1. What is the color of a blister formed on a negro's hand ? Why ?

2. A man enters a heated oven where meat is cooking. He remains in it for five minutes, and comes out unharmed. Why ?

3. In a procession in Florence, a child was gilded over all its body with gold leaf, and, as a result, died in a few hours. Why ?

4. Explain how it is that a juggler can drink standing on his head,

5. From your knowledge of the nature of bile, suggest a use to which oxgall might be put in the household.

(Answered in full in our next issue.)

ADDITIONAL QUESTIONS FOR ENTRANCE CLASS.

1. What represent living and what lifeless nature ?

2. How do animals and plants differ from minerals ?

3. What are the chief functions of the heart ?

4. What are the chief functions of the lungs ?

5. Distinguish between stimulant and narcotic ?

6. Why is exercise not good just before or just after a meal ?

7. What parts make up the nervous system ?

8. What are the functions of the nervous system ?

9. Of what two portions is the blood composed ?

10. Name some of the uses of the blood.

11. Describe the organs of digestion.

ENGLISH.

These exercises are intended for " busy work." Have a pupil write one exercise on the board, and your Third or Fourth class, or both, write the answers while you are at work with the other grades.

I.

Correct the following errors :

1. I don't know but what I will go. 2. It was no other but James. 3. Neither him or her done it. 4. Have you heard if he was elected ? 5. The space between three lines is a triangle.

II.

Change the structure of each sentence :

1. By whom was the telephone invented ? 2. Who discovered the source of the Nile ? 3. To become a good mechanic requires skill and patience. 4. Columbus discovered America. 5. There was nothing seen.

III.

Use words instead of the italicized phrases :

1. *At what place* shall we stop ? 2. It is wrong *that any one should steal*. 3. Blessings on thee, boy *with bare feet* ! 4. He bought the doll *for his little daughter.*

IV.

Use equivalent expressions for the italicized elements :

1. *Shorten* the statement. 2. Do not *attempt* to cross the river. 3. I am *ruler* of *everything* I *see*. 4. The money *belonging to him* was soon spent. 6. She gave the money *to him*.

V.

Deny the contrary :

1. He is wise. 2. Only a small part of Arabia is fertile. 3. I am unhappy. 4. I will remain with you. 5. We looked on nothing we could call our own.

VI.

Combine the following into sentences forming a continuous paragraph :

A crow stole a piece of cheese. It had lain in a cottage window. She had discovered it there. She flew into a tree. The cheese was in her beak. A fox observed this. He came near. He sat under the tree. He began to praise the crow. He said this : " Your feathers are of a lovely color. I never saw any so beautiful. This is true. You have a fine shape. Your air is quite elegant. I never heard your voice. It must be sweet. I am sure of it. A melodious voice always goes along with such beauty. In that case no other bird can compare with you." The crow was delighted. She wriggled about on the branch. She put on graceful airs. She thought : " My voice is as fine as my feathers. I will show this to the fox." She opened her mouth. She was going to sing. The cheese dropped. The fox was watching for this. He caught the cheese. It had not yet touched the ground. He ran off with it to his hole. His family were there. They all ate it together. He told them the story. They laughed at the crow's silly vanity.

ENGLISH GRAMMAR.

QUESTIONS TO BE ANSWERED IN OUR NEXT ISSUE.

I. *When* I landed, *one* of the very few differences *that* I observed *between* the people *whom* I had left *and* those *among* whom I had come was a calmer and more placid *expression* of countenance. —*Richard Grant White.*

(a) Write in full each subordinate clause in the above extract. Point out clearly and fully the grammatical function of each, and indicate in each case the word or words modified by such clause.

(b) Show clearly the grammatical function and relation of the italicized words.

(c) Select all the prepositional clauses, stating their kind and connection.

ANSWERS TO QUESTIONS IN LAST ISSUE.

The mystic glory swims away ;
From off my bed the moonlight dies ;
And, *closing eaves* of wearied eyes,
I sleep till dusk *is dipt* in gray.

And then I know the mist is drawn
A lucid *veil* from coast to coast ;
And in the dark church, like a ghost,
Thy tablet *glimmers* to the dawn.

ANALYSIS.

(1) Clause—The mystic glory swims away.
Kind and connection—Principal assertive.

(2) Clause—The moonlight dies from off my bed.
Kind and connection—Principal assertive.

(3) Clause—And I, closing eaves of wearied eyes, sleep till dusk is dipt in gray.
Kind and connection — Principal assertive, copulative co-ordinating with (1) and (2).

4) Clause—Till dusk is dipt in gray.
Kind and connection—Subordinate adverbial of time, modifying *sleep* in (3).

(5) Clause—Stanza IV.
Kind and connection — Principal assertive, copulative co-ordinating with (3).

(6) Clause—(That) the mist, a lucid veil, is drawn from coast to coast.
Kind and connection — Subordinating noun, object of *know* in (5).

(7) Clause—And (that) thy tablet glimmers to the dawn in the dark church like a ghost.
Kind and connection—Subordinating noun, object of *know* and copulative co-ordinating with (6).

(8) Clause—Like a ghost (glimmers).
Kind and connection—Subordinate adverbial of manner, modifying *glimmers* in (7).

NOTE.—(a) It will be noticed that each subordinate clause is included in the principal clause on which it depends.

(b) Also that no verbs are supplied to form clauses where it is possible to give the function (use) of each word without doing so, but where this is not possible, as in the case of *ghost* (stanza 4), a verb has been supplied and a clause formed. Ghost is not in the objective case after *like*, as like is never a preposition. Some would treat like as an adverb, meaning " in the manner of," and ghost as the object of the " of " understood.

II. PHRASES.

(a) There is only one participial phrase in the extract :

(1) Phrase—Closing eaves of wearied eyes.
  Kind and relation—Adjectival, modifying I.

(b) The verbal phrases are two in number :

(1) " Is dipt" is a verbal phrase, the present indefinite, passive of the verb to dip.
(2) " Is drawn " is a verbal phrase, the present indefinite, passive of the verb to draw.

(c) The only other phrase in the extract is " From off," two words used to form one preposition, a preposition phrase.

III. PARSING.

1. *Closing.* Relation—I closing.
  Classification—Verb, infinite, transitive, weak conjugation, imperfect participle, derived.
  Function—Used attributively to modify eaves.

2. *Eaves.* Relation—Closing eaves.
  Classification—Noun, common, concrete, simple.
  Inflection—Plural number, objective case.
  Function—Used objectively, the direct object of *closing.*

3. *Is dipt.* Relation—Dusk is dipt.
  Classification—Verb, finite, transitive, weak conjugation, passive voice, composed of *is,* the auxiliary of the passive voice, and the perfect participle of the verb " to dip."
  Inflection—Indicative mood, present indefinite tense, third person, singular number.
  Function—Used to make an assertion about *dusk.*

4. *Veil.* Relation—Mist veil.
  Classification—Noun, common, concrete, simple.
  Inflection—Singular number, nominative case.
  Function—Used appositively in apposition with *mist.*

5. *Glimmers.* Relation—Tablet glimmers.
  Classification—Verb, finite, intransitive, weak conjugation, active voice, derived.
  Inflection—Indicative mood, present indefinite tense, third person, singular number.
  Function—Used to make an assertion about *tablet.*

ARITHMETIC.

Below are given ten questions in arithmetic suitable for testing the Entrance class at this time in the session. Answers and solutions in our next issue :

1. A farmer built a stone fence 3 ft. 6 in. high, 2 ft. thick at the bottom and 1 foot thick at the top, and 72 rods long. How many cords (128 ft.) of stone did he use?

2. A merchant tailor used three pieces of cloth containing 95, 205 and 280 yards in making suits, using the same amount of cloth for each suit, and the greatest amount possible without leaving remnants. How many suits did he make?

3. Of a 50-acre farm three-sevenths was planted with corn, three-fourths of the remainder with potatoes, and the balance was sown with wheat. How many acres of each kind of crop were there?

4. A rectangular cistern 12 ft. long, 10 ft. wide and 9 ft. deep will hold how many barrels of water?

5. Explain what is meant by dividing 3,680 ft. by 110 ft.

6. How many pickets 3 in. wide and 3 in. apart will be required for a fence around a lot 18 rods long and 12 rods wide?

7. A tradesman added to the cost of his goods a profit of one-eighth. What was the cost price of an article which he sells for $4.50?

8. How many bricks 8 in. by 4 in. by 2¼ in. placed on edge will be required to pave a rectangular yard 42 feet by 24 feet?

9. Show why a fraction as divisor has to be inverted.

10. Prove by a figure that there are 30¼ sq. yards in a sq. rod?

LITERATURE.—THE WELL OF ST. KEYNE.

1. In a single phrase or short sentence give the subject of this poem.

2. This story is made up of how many clearly marked divisions? Give the subject of each. Show that a natural order has been followed in developing the story.

3. In what ways does the poet give beauty to the poem? Point out, in illustration, examples of each.

4. Give the story in your own words, reproducing as far as you can the spirit of the original.

5. Describe, after the poet, the " Well of St. Keyne."

6. This is a " humorous ballad." Point out from the poem itself examples of :

(a) Humorous passages.

(b) Artifices adapted by the poet to give the poem the ballad style.

" West country." What is meant?

" Not a wife." Why are the wives especially mentioned here? " Beside," " behind," " above," and " below," Give the function and relation of these words.

" Joyfully he drew nigh." Why?

" Cock-crow." What do you consider beautiful in the use of this word? How does it add to the force of the verse?

" There was not a cloud in the sky." Why is this line introduced?

" Bade the stranger hail." What does this mean?

" Happiest draught." Why?

" Crystal well." Why is " crystal " a very appropriate word here? What are such words called in literature?

" Angel summoned her." What is there very forcible in this mode of expression?

" A spell." What is meant?

" Gifted well." What is the meaning of gifted?

" God help the husband then." On what word should the emphasis fall in reading this line? Why did the poet not allow the Cornishman to finish his sentence?

" The stranger stooped, etc." Why is this action of the stranger introduced?

" Betimes." What does this mean?

" Sheepishly." What is the exact force of this word here?

" Than me." How do you account for this form?

VERSIFICATION.

Below we give a treatment of this subject which we hope will be of use to our readers.

English verse is characterized by rhythm, that is, the regular succession of accented and non-accented syllables. The rhythmic succession of words is thus divisible into distinct pulses, known as measures or feet. Each measure or foot is found to consist of a group of two or three syllables, one of which is always accented.

The principal feet occurring in English poetry are :

1. First, those consisting of two syllables :
  (a) The *Iambus,* as, *to-day.*
  (b) The *Trochee,* as, *dim-ple.*
  (c) The *Spondee,* as, *down-right.*

2. Second, those consisting of three syllables :
  (a) The *Dactyl,* as, *ten-der-ly.*
  (b) The *Anapest,* as, *Is-a-belle.*
  (c) The *Amphibrach,* as, *dis-tri-bute.*

The principal verses occurring in English poetry are :

1. *Monometer,* consisting of one foot, as, Beware.

2. *Dimeter,* consisting of two feet, as, I dwell | alone.

3. *Trimeter,* consisting of three feet, as, Would have | his grief | again.

4. *Tetrameter,* consisting of four feet, as, The wa | ter lil | y sleeps | in pride.

5. *Pentameter,* consisting of five feet, as, Yet not | unwel | come doth | this morn | arise.

6. *Hexameter,* consisting of six feet, as, The dread | ful Judge | in mid | dle air | shall spread | His throne.

7. *Heptameter,* consisting of seven feet, as, The Rhine | is run | ning deep | and red | the is | land lies | before.

8. *Octameter,* consisting of eight feet, as, O all | ye peo | ple clap | your hands | and with | triumph | ant voi | ces sing.

In deciding the versification of a poem, ask the pupil to first find the prevailing foot. It may be necessary to scan two or three lines to do this. Then find the number of feet in a line, and then name the verse.

You will note that the name will be iambic pentameter, trochaic trimeter, or anapestic tetrameter, according to the prevailing foot and the number of feet in a line.

Lines of verse do not always contain an exact number of feet.

(a) When a syllable is wanting the verse is said to be Catalectic.

(b) When there is a syllable over in a verse it is said to be Hyper-catalectic.

(c) When there is neither deficiency nor redundancy the verse is said to be Acatalectic.

Thus, the line " And pure | as gold | for-ev | er" may be described as iambic trimeter, hypercatalectic, or as iambic tetrameter, catalectic.

This will be followed in future issues by an explanation of the mental effects of the different forms of versification, and by an examination of

the versification of each lesson set for the Leaving Examination in July.

GEOGRAPHY.

From issue to issue we intend giving a full treatment of Canadian geography, physical, political, and commercial.

I. EXTENT OF CANADA.

Standing at the southern part of James' Bay about the *centre* of Canada, let us look over its territory.

(*a*) To the south and south-east is the great *woodland region*, embracing the provinces of Prince Edward Island, Nova Scotia, New Brunswick, Quebec, and Ontario. This timber is one of Canada's great sources of wealth.

(*b*) To the east and north-east is the *fur territory*, comprising the vast district of Ungava.

From James' Bay to the most easterly point on the Labrador coast is as far as from James' Bay to South Carolina.

(*c*) To the west and south-west is the *prairie region*, comprising Manitoba, Alberta, Saskatchewan, Assiniboia, and Athabasca.

(*d*) To the north-west is another *fur and fish territory*, comprising the districts of Yukon and Mackenzie.

(*e*) And still further west is the *mountain region*, embracing British Columbia and the Rocky Mountains.

II. CANADA IS DIVIDED INTO SEVEN NATURAL DIVISIONS.

(*a*) The Hudson Bay basin, 2,000,000 square miles, as large as all Europe, outside of Russia, along with the States of Texas and New York.

(*b*) The St. Lawrence basin, 530,000 square miles, of which 460,000 square miles are in Canada.

(*c*) The Mackenzie basin, 550,000 square miles.

(*d*) The Peace River basin.

(*e*) The St. John River basin.

(*f*) The Atlantic Slope.

(*g*) The Pacific Slope.

III. CANADA IS DIVIDED INTO SIXTEEN POLITICAL DIVISIONS, SEVEN PROVINCES, AND NINE DISTRICTS.

(*a*) The provinces in order of size are :

British Columbia, 383,300 ; Quebec, 228,900 ; Ontario, 222,000 ; Manitoba, 73,956 ; New Brunswick, 28,200 ; Nova Scotia, 20,600 ; Prince Edward Island, 2,000. The figures give the number of square miles in area of each.

(*b*) The districts in order of size are :

Mackenzie, 538,000 ; Ungava, 358,000 ; Franklin, 300,000 ; Keewatin, 282,000 ; Athabasca, 265,-000 ; Yukon, 225,000 ; Saskatchewan, 107,092 ; Alberta, 106,100 ; Assiniboia, 89,535.

(*c*) By *proclamation 2nd February, 1895, these four new districts were organized :*

(1) *The District of Ungava ;* bounded on the north by Hudson Strait, on the west by Hudson and James' Bays, on the south by the Province of Quebec, on the east by Labrador, which is a dependency of Newfoundland.

(2) *The District of Franklin ;* comprising the islands of the Arctic Ocean and Hudson Bay.

(3) *The District of Yukon ;* bounded on the north by the Arctic Ocean, on the west by Alaska, which belongs to the United States of America ; on the east by a line drawn from the westerly mouth of the Mackenzie River due south to a point where the 136th meridian cuts the Rocky Mountains,

and then by the Rocky Mountains to British Columbia ; on the south by British Columbia.

(4) *District of Mackenzie ;* bounded on the north by the Arctic Ocean, on the west by Yukon, on the south by British Columbia and Athabasca, and on the east by the 110th meridian to the Arctic Ocean.

(5) The same report recommends that there be added to Athabasca the region north of Saskatchewan to the 100th meridian,. thence north along the 100th meridian to the southern boundary of Mackenzie.

An examiner next July will be very apt to ask a question on this new division of territory.

Intermediate P.S. Department.

A LESSON ON ZONES.

M. A. WATT.

Object : To extend knowledge, to train reasoning powers. Information to be given : causes of boundaries, names of zones, of circles bounding zones, circle of illumination. Materials : A picture of zones, a ball, some chalk. Preparation for lesson : A direction had been given to pupils to observe, at home, the distance to which light would shine on a ball.

Teacher : If I should start on a journey in the direction I am pointing to (points south) and continue going until this time to-morrow, what would I notice at the spot where I should arrive ?

Pupil's answer : It would be warmer than it is here.

Teacher : Yet here it would likely be still colder than when I left. How do you account for that ?

Answers will differ, but some one may reason it out as Walter did when he answered : " We are colder because the sun shines *slanting* on us."

The class were interested when a ruler was held in a slanting direction and an imaginary rain of heat-rays were shown falling vertically from it until the poor man at the north had only the least little heat to get from it ; the idea entered their minds of the difference between the effect of the vertical rays of the equatorial regions and the poor, spent warmth of the Polar districts.

Teacher : Does the sun shine vertically on us ? Think if you have ever seen it so, yourselves.

Answers given and sifted, the general conclusion is in the negative.

Teacher : Then over how far north does the sun ever shine vertically ?

No one knows, and the picture of the zones is produced. The names of the zones attract their attention, and the coloring (red, green, and white) explains the differing character of the climates. When their curiosity is satisfied the teacher leads back to the question of the sun's shining vertically.

Teacher : Why did I put that line between the torrid zone and the north temperate zone just where it is ?

Answers are wide of the mark, perhaps, but interest is excited.

Teacher : What did you say made the difference in the zones in regard to heat and cold ?

Pupil's Answer : The sun shining vertically on some places, and slantingly on others, made the difference.

Teacher : Then, what do you think that line (called the Tropic of Cancer) may mean ? Yes, it

shows over how far to the north the sun's rays shine vertically. And what of this other line (the Tropic of Capricorn) ?

The lesson time was now up, and the Arctic and Antarctic Circles were left for a second lesson. The class was reminded of the experiment they were to make with the ball and a light after dark, at home.

Next day, the lesson was resumed.

Richard explained his experiment, and Walter agreed with him that the light did not reach quite half way around the ball. The ball on the teacher's desk was used to show the " Circle of Illumination " (words put on blackboard).

Teacher (putting end of pointer at Equator at edge of picture of zones) : If what these boys say is true, the poor Esquimaux does not get very much light, nor heat, I am afraid. Show us how far to the north the light would reach if my hand were a sun, Albert.

Albert indicates a point near the pole, and the teacher informs him that a glimmer would reach probably to the pole. The teacher moves her pointer a little north, and another pupil points to where the light would reach. Still the teacher's pointer travels north, until it reaches the Tropic of Cancer, and the boy puts his mark 23½ degrees past the North Pole, touching the Arctic Circle, a fact which the teacher brightly notices.

Teacher : Suppose the sun is shining over this point (the Tropic of Capricorn) where would the sun shine to, now ?

The pupil points to the Arctic Circle at the other side of the picture, and the attention of the class is drawn to the reason for its position. This being understood, the pupils explain the reason of the position of the Antarctic Circle.

A general talk was allowed about the people and their food, the animals and plants of the different zones, and how long it took the sun to travel north and south ; then the map was referred to for our location in the zones, and the lesson finished by the class drawing the picture of the zones, making upon it all necessary names and dates.

They are promised a picture showing the climates of the Western Hemisphere, another of the zones, with pictures of their appropriate animals and birds pasted on them, and perhaps one with the plants also.

SPELLING.

M. A. W.

The eye is the organ by which the child perceives the combinations of letters which go to make up the correct spelling of our English words ; therefore the eye must be often used upon the correct form of words if we want to secure good spelling. A spelling book of graded exercises should be in each child's hands, thus saving the child from making errors, which will cost him much trouble to overcome.

When the class have gone over a few exercises, a review is called for. The teacher writes on the board such words as the pupils tell her they consider difficult, each child spelling orally the word he gives. These words are to be left upon the board for a day or two, or until the next review. For a drill exercise, they are given out, singly, in varied order, each to be written as often as possible before the next is announced by the teacher, the pupils having freedom to look at the board as much as needed. They are also given out in sentences which show fully their meaning, the teacher giving the spelling of any new or difficult words she introduces. For original sentence-building

they may then be used for a home exercise. Correction of errors will not come into view so much as avoidance of errors, a reward for correct exercises having a salutary effect. All errors should be corrected and a list kept at the back of the dictation books. When the second review time comes, the errors still made in the old list should be introduced again into the sentences of the new words. If still occurring, those pupils who make them should be examined as to the cause and a little special attention given them.

PRACTICE WORK IN MULTIPLICATION.

WILLIAM MACKENZIE, BALDOON.

I should like to tell you about our "arithmetic matches," but will have to defer that till some other time. In this paper we are to discuss practice work in multiplication. This practice work in any of the rules may be made use of on many different occasions during the day. For example, a pupil has finished his work and is waiting for his class. Give him a question in subtraction. It will keep him out of mischief, and it will require only a moment for the teacher to put the question down. I have found it a good plan to put a good, long, ten or fifteen minute question on the board when I think any of the pupils will finish the work assigned in, say, geography or grammar, or any other subject, before the allotted time has expired, and say, " Now, if any of you get your work done before your class is called you may work this question and bring it with you to the class." Of course I always look at the work and mark it, either right or wrong, as the case may be. This will often save the teacher much annoyance. As long as children have work before them that they know how to do they are likely to be well behaved. Again, the teacher sometimes finds it necessary to " keep in " a pupil. The assigning of a number of lines to write is an old and still much used plan. I do not like it. A good stiff question in subtraction, or multiplication, or division is much better, for several reasons, the chief of which is that the work will be either right or wrong, and the teacher is able to say which it is in an instant.

After the class have learned to multiply by 4 and by 5, for practice give them work like this :
(1) $23425 \times 4 \times 5$. (2) $432541 \times 5 \times 2 \times 2$. The teacher is able to tell at a glance whether the work is right or wrong. This is our aim in all this work. As the class advance, the work advances too. (3) $648376 \times 5 \times 6 \times 8 \times 5$.

Instead of putting the questions in the above form it is better to put them down like this :

(4) 643682
        5
      ———
        8
      ———
        5

The work may now be made more difficult.

(5) 3276854×37 (6) 6984275×3469
    3276854×63 6984275×6531

In No. 5 you will see the sum of the products is 100 times the multiplicand and in No. 6 it is 10,-000 times. But perhaps the pupils will soon notice that, too. Then we must have variety.

(7) 394825×638 (8) 47623×8473
    394824×362 47626×1527

In No. 7 the sum of the product is (1,000 times 394824) + 638 or 394324638. The reason is obvious. In No. 8 the sum of the products is (10,000 times 47623) + (3 times 1527) or 476234581. Always ask the pupils to add their answers together. If the sum of the answers is correct, the answers themselves must be correct.

(9) 427364×47 (10) 6387653×4685
    427364×54 6387653×5316

In No. 9, if the second multiplier were 53, the sum of the products would be just 100 times 427364, therefore the sum of the products is (100 times 427364) + 427364. The teacher finds the answer mentally by first putting down the units and the tens figures of the multiplicand (there are two figures in the multiplier), thus 64, then add the hundreds' figure and units together to find the hundreds figure in the answer (3 + 4), thus 764 ; then add the thousands' figure and tens' figure to find the tens ; (thus 7 + 6), thus 3764, and so on. With very little practice this may be done rapidly. The answer to No. 10 is found in the same way, thus : 6387653
           6387653
         ————
       63882917653
Mentally, of course.

(11) 468276×2596 (12) 472698×3796
     468276×3487 472698×4872
     468276×7404 472698×6204
     468276×6513 472698×5129

In No. 11 the answer is 468276×2, with four zeros affixed. In No. 12 the answer is $472698 \times 2000 \div 472698$.

Thus we might go on. This will be enough, however, to show how the pupils may be furnished with any amount of practice work, which the teacher may easily and quickly correct.

QUEEN VICTORIA.

SUPPLEMENTARY READING FOR JUNIOR SECOND CLASS.

BY MYRA.

1. Queen Victoria was born in Kensington Palace, on the 24th of May, 1819.

2. Kensington Palace is a very old palace in London, England.

3. The Duchess of Kent, Victoria's mother, took great pains to fit her daughter for the high position she was to occupy.

4. She was required to carefully prepare her lessons.

5. She was taught to love and obey her teachers.

6. She was expected to finish whatever she undertook to do, even in play.

7. Each month she was given a certain sum of money which she could spend as she pleased, but she was never allowed to buy anything that she could not pay for out of her own allowance.

8. It was necessary that one who was to rule others should thus learn the value and use of money, and should be trained to be diligent and obedient.

9. While a child, Princess Victoria several times narrowly escaped being killed.

10. When but six months old her life was endangered by a boy who was shooting pigeons.

11. He carelessly sent a charge of shot through the window of her nursery, and some of the shot passed quite close to her head.

12. When three years of age, she was thrown from a carriage and saved only by the quickness of a soldier, who caught her before the overturning carriage reached the ground.

13. Again, when about fourteen years of age, she had another narrow escape.

14. She and her mother were aboard a yacht when a fierce storm came up. A mast was heard to crack, and the pilot, seeing the Princess's danger, drew her to a place of safety just as the heavy timber fell on the very spot where she had been standing.

15. In June, 1837, her uncle, King William, died.

16. Victoria was then proclaimed Queen.

17. She was only eighteen years of age.

18. She at once removed from Kensington Palace to the Royal Palace of Buckingham.

19. In June, 1838, Victoria was crowned Queen.

20. The coronation ceremony was very grand.

21. The Queen wore beautiful robes and a very rich and costly crown.

22. The carriage was drawn by eight cream-colored horses.

23. In 1840 she was united in marriage to Prince Albert of Saxe-Cobourg-Gotha.

24. They lived together very happily until his death in 1861.

25. They had nine children.

26. The eldest son, Albert, Prince of Wales, is heir-apparent to the British throne.

27. Prince Albert visited Canada in 1860, and was present at the opening of the Victoria Railway Bridge at Montreal.

28. The Queen's fourth daughter, Princess Louise, spent some years in Canada with her husband, the Marquis of Lorne, while he was here as our Governor-General.

29. Victoria has now reigned longer than any other British sovereign.

30. On the 23rd of September, 1896, she completed the term of 59 years and 97 days, the length of time that George III. occupied the throne.

31. Victoria has been a wise and good queen, and is greatly beloved by her people.

32. She has always been kind to the poor and to those in trouble.

33. We in Canada join with all her happy, loyal subjects throughout the world in the hope that " Victoria the Good " may still be spared to rule over us for years to come.

MUSIC IN SCHOOLS.

BY ALBERT E. WINSHIP.

We teach arithmetic for business, geography for commerce, reading for information, language for culture, physiology for health, drawing for industrial art, singing for character and enjoyment. We teach arithmetic and geography for the counting-room, reading and language for society, drawing for the shop, physiology and singing for the home. We study geography and reading that we may know more, arithmetic and drawing that we may do more, language that we may talk and write, physiology and singing that we may be better.

Singing is closely related to health, to choices, to intellectual activity ; consequently, it is vital to the character. A man's success in industrial, commercial, or professional life depends largely upon his courage, peace of mind, freshness, hopefulness, and elasticity. Singing is helpful in all these directions. To make a man is more important than to make a mechanic ; to make a good man is more important than to make a great man ; to make a joyful man is more important than to make a brilliant man.

Singing should be so taught in the public schools as to accomplish something beyond the singing. A child gets a good deal out of arithmetic aside from the ability to extract cube root ; he gets more out of geography than the location of gulfs, bays, and capes ; more out of history than a string of dates ; more out of language than an acquaintance with the subjunctive mood. We must get more out of singing than a knowledge of the scale, or ability to sing a song.

Singing should be taught almost wholly for its effects, aside from ability to sing. Of course, no teaching can be effective that does not produce good singing, but very good singing may be produced with few of the other effects.

One may sing well and not have the health perceptibly the gainer by it, without aiding the voice in reading or conversation, without making the disposition sweeter, courage greater, character more reliable, or thinking clearer ; but singing cannot be well taught that does not, while making intelligent singers, benefit the whole physical being, through attitude, breathing, and vocal

elasticity ; that does not make the thought more keen ; that does not give greater power of abstract conception ; that does not make the choices more correct, the moral perceptions more accurate, the disposition more uniform, the intellectual, moral, physical life more fervent.

These things being so, singing, when well taught, is as important a subject for the school-room as any other branch ; and, unlike most other branches, it needs to be taught from the lowest primary grade to the highest, in the ungraded as in the graded school. It is needed for patriotism, for morality, for health ? It is needed to make dis-cipline lighter, school attendance more regular, school management easier, study more interesting, recitation more spirited.

What the wings are to the bird, what the blos-som is to the plant, what the juice is to the fruit, what the eye is to the face, what fervency is to the voice, singing is to the school.—*Selected.*

CLASS RECITATION.

THE TWO LITTLE STOCKINGS.

Two little stockings hung side by side,
Close to the fireplace, broad and wide.
" Two ?" said Saint Nick, as down he came,
Loaded with toys and many a game,
" Ho ! Ho !" said he, with a laugh of fun,
' I'll have no cheating, my pretty one ;
" I know who dwells in this house, my dear ;
" There is only one little girl lives here."
So he crept up close to the chimney-place
And measured a sock with a sober face.
Just then a wee little note fell out,
And fluttered low like a bird about.
" Aha ! what's this ?" said he in surprise ;
And he pushed his specs up close to his eyes,
And read the address, in a child's rough plan :
" Dear Saint Nicholas," so it began,
" The other stocking you see on the wall
" Is hung for a child, named Clara Hall.
" She 's a poor little girl, but very good,
" So I thought, perhaps, you kindly would
" Fill her stocking, too, to-night,
" And help to make her Christmas bright.
" If you've not enough for both stockings there,
" Please put all in Clara's, I shall not care."
Saint Nicholas brushed a tear from his eye,
" God bless you, darling," he said with a sigh ;
Then softly he blew through the chimney high,
A note, like a bird when it soars on high,
When down came two of the funniest mortals
That ever were seen this side of earth's portals.
" Hurry up," said Saint Nick, " and nicely prepare
" All a little girl wants where money is rare."
Then, oh, what a scene there was in that room !
Away went the elfs, but down from the gloom
Of the sooty old chimney came tumbling low
A child's whole wardrobe, from head to toe.
How Santa Claus laughed, as he gathered them in
And fastened each one to the sock with a pin !
When all the warm clothes were fastened on,
And both little socks were filled and done,
Then Santa Claus tucked a toy here and there,
And hurried away to the frosty air,
Saying, " God pity the poor and bless the dear
        child
" Who pities them, too, on this night so wild."
                                —*Selected.*

Mathematics.

CORRESPONDENCE.

(Concluded from last issue.)

H. L. B., Ont., sent five questions in arithmetic.

R. H. D. sent a problem and some solutions. Many thanks.

D. R. contributes an interesting problem, which will appear by and by.

Capital Y., Maple Ridge, Man., sent three ques-tions. The third is solved on p. 71, No. 31, type solutions, in Clarkson's " Problems in Arithmetic."

LADY SUBSCRIBER, Ailsa Craig, sent five ques-tions from the H.S. Arith., and W.D.V. sent three from the same book.

H. M. LITTLE, Coboconk, sent solutions of IV. Trigonometry. Thanks !

T. GOWAN, Creemore, sent solutions of Nos. 80 and 81. See note appended to No. 89 in this issue.

W. D. VANDUSEN, Wheatland, Man., solved 79, 81, 83, 84, 85, 91, 97.

FORM II., ALGEBRA, 1896.

1. Divide the product of $x^2 - x - 1$, $2x^2 + 3$, $x^2 + x - 1$, and $x - 4$ by $x^4 - 3x^2 + 1$.

2. (a) Show that $x^4 + y^4 + z^4 - 2x^2y^2 - 2x^2z^2 - 2y^2z^2$ is divisible by each of the four expressions $x \pm y \pm z$.

(b) Factor $x^2 + xy - yz - z^2 + x + y + z$.

3. Add together the following fractions and ex-press the result in its simplest form :

$$\frac{1}{x(x-y)(x-z)} + \frac{1}{y(y-z)(y-x)} + \frac{1}{z(z-x)(z-y)} .$$

4. Simplify

$$\frac{\dfrac{1}{x^4+x^2y^2+y^4}}{\dfrac{1}{x^3+y^3}(x+y)} \times \frac{x^3-y^3}{x-y} .$$

5. State and prove the rule for finding the G.C.M. of two or more algebraic expressions.

6. A., B., and C. together subscribed $100. If A. had subscribed one-tenth less than he did, and B. one-tenth more than he actually subscribed, C. must have increased his subscription by $2 to make up the amount ; but if A.'s subscription had been one-eighth more than it was, and B.'s one-eighth less, C.'s would have been $17.50. Find what each subscribed.

7. (a) If $\dfrac{a}{b} = \dfrac{c}{d}$, prove that $\dfrac{ac+bd}{ad+bc} = \dfrac{a^2+b^2}{2ab}$.

(b) If a, b, and c are unequal, and of the frac-tions

$$\frac{(a+b)(c+d)}{ab+cd}, \frac{(a+c)(b+d)}{ac+bd}, \frac{(a+d)(b+c)}{ad+bc}$$

any two are equal, show that each is equal to -1.

8. Given $\begin{cases} 5x - 6y + 4z = 15 \\ 7x + 4y - 3z = 19 \\ 2x + y + 5z = 46 \end{cases}$ to find x, y, z.

9. Find the L.C.M. of
$x^3 + 6x^2 + 11x + 6$, $x^3 + 7x^2 + 14x + 8$,
$x^3 + 8x^2 + 19x + 12$, and $x^3 + 9x^2 + 26x + 24$.

10. If $x + y + z = 0$, prove that
$$\frac{x(y^3-z^3)}{y-z} + \frac{y(z^3-x^3)}{z-x} + \frac{z(x^3-y^3)}{x-y} = 0.$$

SOLUTIONS.

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

$\therefore$ quotient $= (2x^2 + 3)(x - 4) =$ etc. N.B.—Verify the result by putting $x = 0$. Each expression $= -12$.

2. (a) Add $4x^2y^2 - 4x^2y^2$, which is simply add-ing zero, and we have $(x^2 + y^2 - z^2)^2 - (2xy)^2$. This is the difference of two squares, and, therefore,

$= (x^2 + y^2 - z^2 + 2xy)(x^2 + y^2 - z^2 - 2xy).$

Now, each of these factors is again $=$ the differ-ence between two squares, etc.

(b) Pick out y which appears in the same power throughout.

$\therefore y(x - z + 1) + (x + z)(x - z + 1)$,

or $(x + y + z)(x - z + 1)$. N.B.—Verify this by putting $x = y = z = 1$. Then each expression $= 3$.

---

3. 1st fraction $= \dfrac{-yz(y-z)}{xyz(x-y)(y-z)(z-x)}$

2nd " $= \dfrac{-zx(z-x)}{xyz(x-y)(y-z)(z-x)}$

3rd " $= \dfrac{-xy(x-y)}{xyz(x-y)(y-z)(z-x)}$

Hence the numerator of the sum is
$-xy(x-y) - yz(y-z) - zx(z-x)$, which is equal to
$(x-y)(y-z)(z-x)$, as may easily be shown.
Hence the sum is $= 1 \div xyz$.
N.B.—Verify the result by substituting 1, 2, 3, respectively, for x, y, z, and the sum $= \frac{1}{6}$, as it ought to do in each expression.

4. $x^3 + y^3 = (x+y)(x^2 - xy + y^2)$; $x^4 + x^2y^2 + y^4$
$= (x^2 + xy + y^2)(x^2 - xy + y^2)$
$x^3 - y^3 = (x-y)(x^2 + xy + y^2)$, hence
$$\frac{1}{x^4+x^2y^2+y^4} \times \frac{x^3+y^3}{x+y} \times \frac{x^3-y^3}{x-y} = 1.$$
N.B.—To verify this put $x = 1$, $y = 0$. It would not do to put $x = 1$, $y = 1$, since in that case the last factor $= 0$; but $x = 2$, $y = 1$ will serve.

5. Book-work. NOTE.—When the examiners set the question, " Prove *the* rule," they appear to be assuming that only *one* such method exists. This is scarcely accurate. There is only one fun-damental principle, viz., " Every measure of A and B is also a measure of $xA \pm kB$," but there are sev-eral methods of applying it.

6. To avoid fractions, let $80x = $ A.'s share, $80y = $ B.'s, and $z = $ C.'s.
Then $80x + 80y + z = 100 \ldots \ldots 1.$
$72x + 88y + z = 98 \ldots \ldots 2.$
$90x + 70y + 0 = 82.50 \ldots \ldots 3.$
$(1 - 2), 8x - 8y + 0 = 2 ; \therefore x - y = .25$
$\therefore 90x - 90y = 22.50$
$(3), \therefore 160y = 60$ or $80y = $30 = $ B.'s share
$\therefore 80x = $50 = $ A.'s share
and $z = $20 = $ C.'s share.

N.B.—The verification is easy :
(1) $30 + 50 + 20 = 100$
(2) $33 + 45 + 20 = 98$
(3) $26.25 + 56.25 = 82.50.$

7. (a) $\dfrac{a^2}{b^2} = \dfrac{ac}{bd}$; $\therefore \dfrac{a^2+b^2}{b^2} = \dfrac{ac+bd}{bd}$;

or, $\dfrac{a^2+b^2}{b} = \dfrac{ac+bd}{d}$;

i.e., $\dfrac{a^2+b^2}{2ab} = \dfrac{ac+bd}{2ad}$ ..... A.

Also $ad = bc$; $\therefore ad + bc = 2ad$, which substitute in A, and we have $\dfrac{ac+bd}{ad+bc}$.

(b) If *any two* are equal, *all three* are equal. Hence, any one fraction $=$ (sum of all three numer-ators) $\div$ (sum of all three denominators). See text-books for proof. Hence, each fraction
$$= 2\frac{(ab+ac+ad+bc+bd+cd)}{ab+ac+ad+bc+bd+cd} = 2.$$
REMARK.—The -1 given on the paper is evi-dently *wrong !* Similar mistakes occurred on the algebra papers for Forms III. and IV. These mistakes caused candidates great loss of time, and in many cases they were the cause of failure on the succeeding papers.
Of course it is possible that in 7 (b), if
$$\frac{(a+b)(c+d)}{ab+cd} = \frac{(a+c)(b+d)}{(ac+bd)},$$
then each fraction is
$$= \frac{(a+b)(c+d) - (a+c)(b+d)}{(ab+cd) - (ac+bd)} = \frac{ac+bd-ab-cd}{ab+cd-ac-bd}$$
$= -1.$
But the very fact that the application of the same principle leads to contradictory results proves the incompatibility of the data. This inconsist-ency is easily shown. Put the first two equal, and solve for d, and $d = a$. Put the second two equal, and $d = c$; the third pair, and $d = b$; $\therefore a = b = c$ is

the equation of condition; and the given condition, "If a, b, c, are *unequal*," contradicts the other condition, viz., "Of the fractions any two are *equal.*" If the examiner intended "*any two*" to mean *two and only two*, it is very hard to be patient with his abuse of common English. If the equality is not *simultaneous*, the language used is a gross abuse against common sense. We most sincerely regret that our examiners set ambiguous questions almost every year, *often* in arithmetic, and *sometimes* in algebra.

It is *supremely important* for the welfare of our schools that every Third Class teacher should be thoroughly tested before he or she is allowed to begin teaching a Public School; but it is just as important that *fair play* and *common sense* and *common justice* should govern the examiners who are *paid* to set *fair* and *reasonable* questions. When they depart from these governing principles the cry of "Foul!" may properly be raised.

8.

$$5x - 6y + 4z - 15 = 0 \quad \text{I.}$$
$$7x + 4y - 3z - 19 = 0 \quad \text{II.}$$
$$2x + 1y + 6z - 46 = 0 \quad \text{III.}$$

$$\text{I.} \times 2 \;; \quad 10x - 12y + 8z - 30 = 0 \quad \text{IV.}$$
$$\text{II.} \times 3 \;; \quad 21x + 12y - 9z - 57 = 0 \quad \text{V.}$$

$$\text{IV.} + \text{V.} \;; \quad 31x + 0y - z - 87 = 0 \quad \text{VI.}$$

$$\text{II.} \;; \quad 7x + 4y - 3z - 19 = 0$$
$$\text{III.} \times 4 \;; \quad 8x + 4y + 24z - 184 = 0 \quad \text{VII.}$$

$$\text{VII.} - \text{II.} \;; \quad 1x + 0y + 27z - 165 = 0 \quad \text{VIII.}$$
$$\text{VI.} \times 27 \;; \quad 847x + 0y - 27z - 2349 = 0 \quad \text{IX.}$$

$$\text{VIII.} + \text{IX.} \;; \quad 838x + 0y + 0z - 2514 = 0 \;; \quad \therefore x = 3$$
$$\therefore \text{VIII.} = \quad 3 + 0 + 27z - 165 = 0 \;; \quad \therefore z = 6$$
$$\therefore \text{III.} = \quad 6 + y + 36 - 46 = 0 \;; \quad \therefore y = 4.$$

9 $A = (x+1)(x+2)(x+3)$; $B = (x+1)(x+2)(x+4)$
$C = (x+1)(x+3)(x+4)$; $D = (x+2)(x+3)(x+4)$
$\therefore$ L.C.M. $= (x+1)(x+2)(x+3)(x+4) = $ etc.

10. 1st fraction $= x(y^2 + yz + z^2)$
$\qquad\qquad = x(y+z)^2 - xyz = x^3 - xyz$; since
$\qquad\qquad y + z = -x.$
$\therefore$ by symmetry, 2nd fraction $= y^3 - xyz$;
$\qquad\qquad$ 3rd " $= z^3 - xyz$;
$\therefore$ sum $= (x+y+z)(x^2+y^2+z^2 - xy - yz - zx) = 0$,
since $x + y + z = 0.$

Teachers' Miscellany.

TEACHING ON "THE OLD BLIND LINE."

By Thomas C. Robson, Minden, Ont.

II.

In our last we said that we had reached our destination, the home of the secretary-treasurer. As a rule the home of that official is in the centre of the section, but in this case it was six miles outside of it. Owing to the peculiar position of the section the good people had to depend upon an outsider "to do their writing." In the person of the secretary-treasurer we had a fair representative of a body of men in the backwoods, whose religion may be described as that of "Ryerson Educationalists." A desire to spread the advantages of education has taken the place of their religious enthusiasm. While their neighbors are studying the everchanging clauses of the game laws, they spend their Sunday afternoons overhauling the school manual. They are are not very much concerned whether there is a "close time" for frogs, or whether the loon is a "protected" bird or not, but they *are* anxious to know if the ice will allow the teacher to stay until Christmas, or if the state of the weather will compel them to take to snowshoes when they have to put up the school notices for the annual meeting. The fact that their little Bethel is convulsed over the question of open *versus* "close communion" is of less importance to them than the effect of the new one hundred dollar township grant on the people below or at headquarters.

While our secretary had all the peculiarities of his class, he had others which distinguished him among his brethren. He was an Englishman, of spare form, and past middle life. His education might be described as fair, and his proficiency as an engine-fitter as excellent. He believed a great many things outside of the Bible which no one else thought of believing, and held as fabulous a large portion of Holy Writ which other people received as truth. He had a particular antipathy to Moses, but was somewhat lenient to Judas Iscariot, whom he considered a very much abused person, whom all persons in office should defend, as the apostate, like himself, was the secretary-treasurer of the association.

If we add to this that he was an old-time prohibitionist and took so great an interest in the lost ten tribes of Israel that he was on the point of instituting a new sect with temperance as its gospel, Neal Dow as its patron saint, and "The English: the lost ten tribes," as its principal theological tenet, we have finished describing our secretary.

On Sunday morning we proceeded to our school in the company of a young student, who was keeping his usual appointment. This walk was a little longer than the Sabbath day's journey of Scripture, but, nevertheless, it was extremely pleasant and invigorating, as the young man filled in the time with several anecdotes of backwoods life. We were met on the shore by a settler who represented in his own person the educational and religious element of the settlement. He was a big, raw-boned Irishman, as full of hospitality as he was of the wit and Irish bull-ism of his countrymen.

On the present occasion he gave us a taste of the latter quality, for, anticipating an apology from the young man for being late, he got out with, "Sure there's no apology needed, for the boys are quite happy, playing quoits until your reverence arrives." Whether the young men had really been pitching horse-shoes on the Sabbath, or it was the Irishman's way of preventing an apology, I never could find out.

Monday morning saw us at our school, a building 24x16x10. It was undoubtedly a small log school-house, yet sufficient for the small number of scholars that attended it, and, as the Irishman pointed out, there was lots of good air outside that had every opportunity of getting in by way of the many cracks in the unplastered walls.

We have nothing to say against log schoolhouses. We believe them to be healthier and better for purposes of study than "frames," lathed and plastered.

Our scholars consisted, on this occasion, of five boys and seven girls, all children of the farmers and trappers. Their ages varied from five to eighteen years. Three of the boys smoked, and we are afraid that two of the girls chewed tobacco. The first rule that we laid down was that all pipes and tobacco found upon them should be destroyed. The lads felt the rigor of this law very much, but yielded a ready obedience, but no "yellow-breeched philosopher" ever made so straight a line for the hive as those boys did at four o'clock for home and their tobacco pipes. The girls, we were told, broke the law, but this we doubt, as we think that they, like their brothers, kept their tobacco at home.

Our most advanced scholar was a third form boy, who had an "American Reader" presented to him by a "sport" from "the States," who took a great interest in the education of the children.

A few words concerning "the sports," of the United States and Canada. By the term "sports" is meant a class of wealthy people from the United States and our own large cities, who spend their outing in Northern Ontario, fishing and hunting. These men, as a rule, take some interest in the children of their guides, and the homes of the latter are decorated with pictures, books, and knick-knacks that have been given to the children by the sports.

There are, however, among the latter some who have cultivated a taste for card-playing, smoking, and drinking whiskey. Such tastes in highly educated people are to be deplored, especially when they have so many other ways of enjoying themselves. What is even more to be regretted is the fact that the very young people of both sexes, children of the forest, acquire all these pernicious practices. It is not an uncommon thing to see children of nine years of age playing "cards." Nay, we have seen children of six summers engaged

in the game, and we were powerless to prevent it. The language which accompanied their play was as bad as that which you might hear from old sailors in "Old Gravel Lane," "Ratcliffe Highway," or "The Seven Dials." The worst case of this sort was the family of a guide whose principal employer was a very religious man.

But we must return to our school. Although our scholars were far from being advanced, they displayed an amount of intelligence which showed that it was the lack of opportunity to learn which placed them so low in the educational scale. Their mode of life led them to cultivate the habit of observation. The first visit of the Inspector supplied us with several illustrations of their natural powers. Long before we could identify Mr. G. the children had pronounced the driver of the light bob-sleigh to be the Inspector, and scouts were sent out by them to notify the dilatory and idle of the official Inspector's visit and of the necessity of their putting in an appearance at school.

The result of such scouting was that the school of five scholars ran up to seventeen. This might be highly gratifying to the Inspector, who no doubt wondered at the great interest the new teacher had created in school matters, but a glance at the register dispelled this illusion. Several of the so-called scholars had not been at school before, and of some who had occasionally attended a few had not the least inkling of the subject-matter of their lessons. But if they were a little behind in such matters they had a surprising aptitude for grasping the details of the game law.

One little girl was struggling with the line "Is it a net?" and the genial Inspector, thinking to aid her, asked her "Did you ever see a net?" The reply came at once, "No sir, we have no nets. It is illegal to fish with them on these waters." Her brother, a boy of twelve, listened very patiently to the the Inspector's explanation of the picture of the beavers, and then added: "Please sir, beavers do not make houses like those in the picture," and the Inspector was surprised to hear that we had the genuine article within eighty rods of the schoolhouse.

Our paper is becoming too lengthy. We should have liked to tell of our Sabbath school, with the big Irishman as our superintendent, of our night school, with the same gentleman as our very best scholar; of our expedition in search of beaver and bear teeth; of our list of wild flowers and minerals; but space will not permit. Some other time, with the permission of the editor, we may return to the subject.

THE SIMPLE RULES.

(FROM THAT TEACHER'S NOTE-BOOK).

There are times when we wish to have certain pupils add aloud that we place the questions in addition on the blackboard, but there are times also when we wish merely to dictate and have the pupils write as quickly as they can and proceed at once to add. When the sixty seconds are past the time is called, those done stand, no pencil in hand; answer is read, and those correct remain standing, and the test is noted by the teacher as he may choose. Then proceed quickly to the next question. In this way the three questions can be done in little over five minutes, and they are minutes well spent in any grade. This plan avoids the straining of the pupil's eyes to read the question from the blackboard, is done more quickly, the pupils urged to speed and all keep together. The time used in marking is also a rest after the minute of concentrated work.

My class is of one form, but if I had different forms I would let all take the questions, and accept three lines from the second class pupil, four from a pupil in the third class, but ask for full answers from those in the higher classes. This would make it unnecessary for the teacher to leave work to urge the junior pupil to greater speed, and keep before him the equally important matter of accuracy. This plan will supplement Mr. McKenzie's work, which will be good for placing work on blackboard after hours, as so many teachers must do. But you would wonder how quickly some pupils notice these short plans we have known so long.

Now to secure rapidity and accuracy in multiplication, the pupils of Toronto Public Schools are given a number composed of five figures and told to multiply by some number, 2, 3, or 6, as the case

may be. Then multiply the answer by the same number and that answer by the same multiplier, in each case placing down merely the product as obtained. Time is called in two minutes—120 seconds. A certain number of products, according to the multiplier, is expected. Those who have less have not finished the question. Those who have more get extra credit. Some will multiply by 6 and have it correct to fifteen, sixteen, or even seventeen times. There is thus no limit. Do what you can. Do it fast, but also correctly.

I have a small note-book in which I have all my time tests and drills for rapidity and accuracy in the simple rules. Two pages are filled with questions and answers for each of the multipliers from 2 to 9. Here are two sample questions as they appear. Account for the different arrangement :

```
  I.   39654 × 2
     ( 5) 1,268,928
     (10) 40,605,696
     (15) 1,299,382,272
     (20) 41,580,232,704
     (21) 83,160,465,408
     (22) 166,320,930,816
     (23) 332,641,861,632
     (24) 665,283,723,264
          1,330,567,446,528
          2,661,134,893,056
          5,322,269,786,112
          10,644,539,572,224

 II.  67839 × 6
     ( 5) 527,516,064
     (10) 4,101,964,913,664
     (11) 24,611,789,481,984
     (12) 147,670,736,891,904
     (13) 886,024,421,351,424
     (14) 5,316,146,528,108,544
     (15) 31,896,879,168,651,264
     (16) 191,381,275,011,907,584
     (17) 1,148 287,650,071,445,504
     (18) 6,889,725,900,428,673,024
     (19) 41,338,355,402,572,038,144
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School=Room Methods

SOLUTIONS IN ARITHMETIC.*

By F. J. VOADEN, Principal Kingsville Public School.

Anything of practical utility in the actual work of the schoolroom is indeed valuable, and the value of all theories must in the end be tested by their application in the performance of work.

It is to be feared that in the teaching of arithmetic, we fail to see the unity of the subject throughout the whole course, from the kindergarten to the fifth class, and, consequently, do not weave our lessons together upon some common principle into a connected whole. As a result, our teaching is unscientific and wanting in method. Teachers in graded schools too often confine their attention to the work prescribed in the Limit Table for their particular department, and pay little attention to the connection of their work with previous work, and to its bearing upon all succeeding work.

Before dealing with arithmetical solutions, then, it will be necessary to establish some common principle, some basis of procedure from the beginning to the end of the course in arithmetic. This principle will be found in the measuring activity of the child, which manifests itself at a very early age.

Number is the ratio of one quantity to another taken as a unit, and thus number and the unit become the tools by means of which we measure quantity.

Arithmetic is the art of measuring. Rational counting is the measuring of the how many, or the how much of anything with reference to some unit. In this way the vague, undefined whole is made definite. But a child may be trained to count one hundred, and yet know little or nothing about number as the tool of measurement. I have not time to deal with primary number, but it seems to me that measuring is the idea that should be kept before us from the beginning to the end of arithmetic.

4 feet.

1 foot, a unit,

Let us examine this work of measuring. Here is a line. What quality only does it possess? It possesses length. How much has it? What must we first do in order to find the measure of length? We must get something to measure with, a foot measure, a foot, a unit, which itself has length.
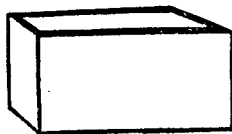
1 pint, a unit.

Here is a box. We wish to know how much it holds, its capacity. We must first get something with which to measure its capacity. Will a foot do. No, because a foot has no capacity. It has length. The unit in measuring the capacity of the box must have capacity, as the unit in measuring the length of the line must have length. What shall we get with which to measure the capacity of the box? A pint, a pint as unit.

A unit is something which we use in measuring quantity. Of course, the whole universe is a unit, the whole line is a unit, the quantity to be measured is a unit in a certain sense, but for purposes of measurement I would not call that a unit which was not used as something with which to measure quantity.

The first step, then, in the measurement of any quantity is the securing of a unit, a something to measure with. The next is to find the measure of the quantity in terms of the unit employed. Any child with the unit, 1 foot, in his hand will set to work to measure the line by fitting the unit upon the line, and then counting the number of times the unit is found in it. The number of times is the measure. It is pure number, a ratio, a ratio of the length of the line to the unit of length.

The length of the line is 4 feet, the unit employed is one foot, and the measure of length, pure number, is 4 when the unit one foot is employed. Those ideas, the unit, the number, the length, must be kept distinct and emphasized.

So, also, in measuring the capacity of the box. Having the pint in hand as unit, the child fills the box by successively filling and emptying the pint, and counting the number of times he does this. He finds he can do it 5 times. The 5 is number, the ratio of the capacity of the box to the pint. The capacity of the box is 5 pints, the unit is a pint, and the measure of capacity is 5 when the unit one pint is employed.

7 inches.

1 inch, a unit.

Take a short line, say 7 inches long. What unit shall we use in measuring this? A foot? No, because there is not a foot in the line. Point out the need of a smaller unit, one inch. With this unit we measure the line as before.

Take a line 12 inches long. Measured with the inch unit, its measure is 12. But this length 12 inches, because it is used in measuring longer lines, becomes itself a unit, 1 foot, and has a name of its own. Thus 12 inches becomes one thing, a unit, which is made more definite by its ratio 12 to a smaller unit, one inch.

Now take the length of the room. How can we measure it? What unit shall we employ? An inch? Yes. Let a boy try to measure it with an inch as unit. He finds his task tedious, and thinks of his foot unit, or, better still, he gets a yard unit, and soon has his task completed. He finds the measure to be, say 10, when he uses the yard unit, and the length 10 yards. Now from the relation of units he finds the measure 30 and 360, according as the foot or the inch unit is used.

We now proceed to measure the length and width of a field, introducing other units, the rod, the chain, etc., as the necessity of the case requires. Thus we teach all the units, connecting them one

with the other, and showing that, while an inch might be used in measuring the distance from Kingsville to Leamington, the operation of fitting the unit upon the length or distance to be measured would be so tedious that we group 792 of them into one, and use that as a unit, calling it one chain.

This is the process of measuring lines, which appear in the length, the width, or breadth, the height, depth, or thickness of objects, and the distance between places. Hence we call these units of line, or linear measure, long or length measure.

A rectangular solid might be presented. What can we measure about the solid, using one inch for a unit? We can measure its length, width, and thickness.

I find it useful in problems to distinguish the terms thickness, depth, and height, thickness being applied to a solid, depth to the inside measurement of a box, and height to outside measurement.

Thus long measure is revealed as an instrument in the process of measuring, the actual work of measuring being done by the class where practicable, as is the case with the smaller units.

9 inches

5 inches
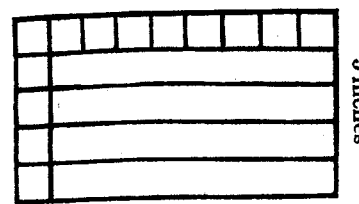
1 square inch, a unit.

Now present to the class a rectangular piece of paper. What qualities does the piece of paper possess? It has length and width. Some pupil might say thickness, but you can dispense with this for the present, since thickness is so little. Now explain that anything that has length and width presents a surface. The amount of surface is area, another quality distinct from length and width. to which we apply our measuring skill. What must we get in order to measure area? We must have something to measure with—a unit. Can we measure area with an inch unit? No, because an inch has no area. It has length only. Cut a piece of paper 1 inch long and 1 inch wide, and use this as a unit for measuring area, calling it one square inch. Now, having obtained a unit, let a boy set to work to measure with it. He will instinctively begin at the corner and make a row of square inches, either along the width or along the length, most likely along the length. He will count them by rows, either along the width or along the length. He finds that there are, say, 9 square inches in a row along the length, and that there are, say, 5 rows, and since 1 row of square inches along the length equals 9 square inches, 5 rows of square inches along the length equal 9 square inches, multiplied by 5, equal 45 square inches. He also finds that 1 row of square inches on width equals 5 square inches, therefore 9 rows of square inches on width equal 5 square inches multiplied by 9, equal 45 square inches.

Thus, there is no difference in the result, according as we take the rows as running lengthwise or crosswise. In one case we have more in a row but less rows, in the other less in a row but more rows.

In other words, 9 square inches × 5, has its correlate in 5 square inches × 9. There is no difference in these operations. In clear thinking, the one implies the other. In 9 square inches × 5, we have a row of 9 square inches, taken 5 times, where 9 square inches becomes a unit. But this 9 square inches consists of 9 minor units, each an inch, and each minor unit is repeated 5 times. If you repeat one minor unit 5 times you have 5 square inches. But we have 9 minor units each repeated 5 times ; therefore, 1 minor unit repeated 5 times equals 5 square inches ; 9 minor units repeated 5 times equal 5 square inches × 9, equal 45 square inches. In this case we look at the rows as running crosswise, but cannot lose sight of the rows running lengthwise.

What only has area? The surface. What other qualities has the surface? Length and width. What must we know about a surface in order to find area? Length and width. We need

these, the one to find the number of units of area in a row, the other to find the number of rows.

> 1 square foot, a unit.

Now take the blackboard. What qualities has it? Length, width, and area. What unit may be employed to measure its area? One square inch? Yes ; but to measure this by fitting down a square inch in rows would be a tedious operation. Show a piece of paper 1 foot by 1 foot. This is a square foot. How will it do? Good. Set a boy to work measuring. He soon finds the area in rows of square feet, the number of rows being determined by one dimension, the number of square feet in a row by the other. Through much practical measuring, the pupils find that the length and width must be known in order to find area. Thus, long measure is involved in finding area, not as supplying units of area, which are in square measure, but as a means in finding the number of square units, a means and not the end.

In this way all the units of square measure are brought out as needed, and the relation of these units is developed from the little square inch to the great square mile.

This process of measuring area by rows of square units is begun in the Second Class and continued to the Junior Fourth. In the Senior Fourth and Fifth, since the nature of the process will by this time have been thoroughly understood, the work may be abbreviated.

Find the area of a lot 66 feet long, 20 feet wide. What unit may we employ? One square foot. How can we find the number of square feet? Multiply 1 square foot by 66 and by 20, the one to get the number of square feet in a row, the other being the number of rows representing the work, thus : Area of lot = 1 square foot × 66 × 20 = 1320 square feet, The area is 1320 square feet, the unit is one square foot, and the measure of area with one square foot as unit is 1320. The measure of area is made up of two factors, 66 and 20, one of which is the measure of length, the other the measure of width in feet.

Find the length of a lot 20 feet wide, whose area is 1,320 square feet.

Measure of area in sq. ft. = 1320
" " width in feet = 20

$$\therefore \text{ " " length in ft.} = \frac{1320}{20} = 66$$

that is, the length is 66 feet.

Find the width of a lot 66 feet long, whose area is 1,320 square feet.

Measure of area in sq. ft. = 1320
" " length in feet = 66

$$\therefore \text{ " " width in feet} = \frac{1320}{66} = 20$$

that is, the width is 20 feet.

In solution of all such problems, the units of length and width in long measure have their corresponding units in square measure, and these must be made to correspond. This fact will be impressed in measuring area.

Let us discuss a point upon which teachers are not agreed. The point appears in the solution of the following problem : If one book cost 75c., what will 5 books cost? Some teachers say :

If 1 book cost 75c., 5 books will cost 5 × 75c., rather than 75c. × 5, and read 5 times 75c. rather than 75c. × 5. I would say nothing about this apparently insignificant point, but it seems to me to interfere with my plan of measuring.

All measuring demands, first, the recognition of a unit, then the multiplicity or repetition of that unit. There is no such thing as measurement, there is no such thing as number, without first recognizing a unit. In this case the 75c. becomes a unit, by which we measure the value of 5 books, therefore the unit first, 75c. × 5.

Again, all problems find solution in adding, subtracting, multiplying, or dividing. Hence in a problem the teacher fairly asks, "What must we do to find such and such a thing required?" and the pupil fairly answers, "We must add, subtract, multiply, or divide." If one book costs 75c., what must we do to find the cost of 5 books? We must multiply. What must we multiply? We must multiply the unit first, 75c. by 5.

(To be concluded in next number.)

THE POSITION OF TEACHERS IN CAMBODIA.

All children who present themselves at the Véat for study are received. It is not even required that their parents bring them or visit them. The newcomer chooses his professor, and, if accepted, begins at once to study under his direction, installs himself in his cell or in the school hall, and becomes his servant. If the professor has already too many pupils, he refuses the new pupil and advises him to choose another teacher ; sometimes he guides his choice, directing him to a master who has few or no pupils, or takes him to the superior, who will select a teacher for him. The choice of a professor is always a grave affair, because it is held in Cambodia, as in all Buddhist and Brahmanic countries, that professor and pupil are bound by strong ties of spiritual affinity, and that the pupil ought to respect his master as he does his father and mother. The law inflicts the same penalty upon an offense of the pupil against his master and an offense by a son against his father and mother, and it prescribes that in certain cases the pupil may be the heir of his professor when he has cared for him or supported him or served him when studying under his direction ; not only a family bond, but a religious bond, too, is established between them, for the professor makes it his business to teach his pupil the course by which he may earn a more advantageous reincarnation and reach the Nirvana, and becomes his spiritual guide.—*From " A Cambodian Primary School," by Adhémard Leclère, in Appleton's Popular Science Monthly.*

For Friday Afternoon.

"You have quizzed me often and puzzled me long ;
　You have asked me to cipher and spell ;
You have called me a dolt if I answered wrong,
　Or a dunce if I failed to tell
Just when to say lie and when to say lay,
　Or what nine sevens may make,
Or the longitude of Kamschatka Bay,
　Or the I-forget-what's-its-name lake.
So I think it's my turn, I do,
To ask a question or so of you."

The schoolmaster grim, he opened his eyes,
But he said not a word for sheer surprise.

"Can you tell what 'phœb-dubs' means ? I can.
　Can you say all off by heart
The 'onery, twoery, hickory ann !'
　Or tell 'commons' and 'alleys' apart ?
Can you fling a top, I would like to know,
　Till it hums like a humble-bee ?
Can you make a kite yourself that will go
　Most as high as the eye can see,
Till it sails and soars, like a hawk on the wing,
And the little birds come and light on the string ?"

The schoolmaster looked, oh, very demure,
But his mouth was twitching, I'm almost sure.

"Can you tell where the nest of the oriole swings,
　Or the color its eggs may be ?
Do you know the time when the squirrel brings
　Its young from their nest in the tree ?
Can you tell when the chestnuts are ready to drop,
　Or where the best hazel-nuts grow ?
Can you climb a high tree to the very tip-top,
　And gaze, without trembling, below ?
Can you swim and dive, can you jump and run,
Or do anything else we boys call fun ?"

The master's voice trembled, as he replied,
"You are right, my lad, I'm the dunce," he sighed.

Teaching is the process by which one mind exercises, incites, and develops the mind of another. Some do it by their presence merely, some by their conversation—these are rare. Others make a special business of it. They excite the curiosity, they demand thinking by putting questions, to answer which the pupil studies. True teaching keeps ever the growth of the child in view. The greatest work of the world is teaching. It is so great that but few can do it. It is the most exhausting of all kinds of work. It demands will-power, sympathy, insight, kindliness, sweetness and stimulation.—*Exchange.*

Book Notices.

TENANTS OF AN OLD FARM. Leaves from the Note-book of a Naturalist. By Rev. Henry C. McCook, D.D., Sc.D., with 140 illustrations from nature by Dan Beard and others. 480 pages, with index. Eighth edition. 12mo., cloth, $1.50. Philadelphia : Geo. W. Jacobs & Co.

This is another of those "nature" books of which the last five years have been so fruitful. These popular accounts of scientific subjects are of especial value when they are given us by one who is not only perfectly reliable, but has himself observed everything he describes. The great value and the variety of information, which this charming account of the author's excursions over woodlawn and meadow can supply, will be best seen from a reproduction of some of the chapter headings : "Winter Tenants of our Trees," "Cave-Dwelling Insects," "A Tour Through a Texas Ant Hill," "Music-making Insects," "Nature's First Paper-makers."

If every Canadian farmer would purchase this book for his boys, it would enable them to see many things on the "old farm" to which they are now blind, and add an increased interest to farm life, and help relieve the monotony which stagnates the youthful mind. The book is a beautiful one as far as the printer's art and wealth of illustration can make it, and would be a charming gift book. P.

OLD FARM FAIRIES. A Summer Campaign in Brownie Land against King Cobweaver's Pixies. By Rev. Henry C. McCook, D.D., Sc.D., with 150 illustrations by Dan Beard, Henry L. Poore, and others. 12mo., cloth, 432 pages, $1.50. Philadelphia : Geo. W. Jacobs & Co.

This is a companion volume to "Tenants of an Old Farm." Written in a style easily within the apprehension of a child, interesting in every chapter and page, full of curious information regarding the habits of spiders, possessed of a fascination only begotten of the author's enthusiasm as a naturalist, this book cannot fail in winning its way into the hearts of our boys and girls. The scope and aim of the book will be best understood by the following extract from the author's preface :
"Some of my readers will know that for more than twenty years I have studied the habits of our spider fauna. During the first years of these studies, the thought came to me to write a book for youth wherein my observations should be personified in the imaginary creatures of fairy lore, and thus float into the young mind some of my natural history findings in such pleasant form that they would be received quite unconsciously, and at least an impression thereof retained with sufficient accuracy to open the way to more serious lessons in the future."

We know of no book more fitted to arouse in the minds of our intelligent youth an interest in the natural objects surrounding them. P.

FIRST BOOK IN GEOLOGY. By N. S. Shaler, S.D., Professor of Palæontology in Harvard University. 252 pages. Illustrated. 75 cents. Boston, New York, Chicago : D. C. Heath & Co.

This is an admirable introduction to the study of geology, and as a book to show the relation between geology and geography it can not be excelled. At present it would prove invaluable to teachers who are preparing pupils for Form I. examination in our High Schools, as a supplement to the information given in the early chapters of the High School Geography. Tracing the causes which have been at work in the formation of the earth, the author proceeds from water, the most easily seen of these geological agents, through a natural progression, to the advent of animal and vegetable life ; thus a complete history of the changes which have gone on in the "world's great workshop," is laid vividly before the reader. The chapters on "Coal," "Volcanoes," "Origin of Valleys and Lakes," "How Fossils are Formed," "The Earth Before Organic Life Began," "History of Organic Life," and "Crystalline Rocks" seem to be especially luminous and helpful. P.

We hear a great deal about purifying the blood. The way to purify it is to enrich it. Blood is not a simple fluid like water. It is made up of minute bodies and when these are deficient, the blood lacks the life-giving principle. Scott's Emulsion is not a mere blood purifier. It actually increases the number of the red corpuscles in the blood and changes unhealthy action into health.

If you want to learn more of it we have a book, which tells the story in simple words.

SCOTT & BOWNE, Belleville, Ont.

Books—Continued.

SUGGESTIONS FOR KINDERGARTEN WORK. By Marion Strickland, Supervisor of Kindergartens, Syracuse, New York 50 cents. C. W. Bardeen, publisher.

This little book, which is one of the "Bulletin Publications," will, we should think, be found very useful to kindergarten teachers. It contains, in addition to an introductory chapter on the founder, aims, methods, and benefit of the kindergarten, lesson-work for three months of the school year, skilfully prepared, entertaining and instructive.

A Handbook of Geometrical Wood Carving, by Gustaf Larsson (E. L. Kellogg & Co., N.Y. Price, 50 cents), is a manual that will be very useful to all who are interested in the training of the hand. The system of wood-carving here outlined is the Swedish, practised among the nations of northern Europe for many years. The book describes and illustrates the tools to be used, gives general directions as to their use to assist the learner, and outlines a series of exercises which are fully illustrated. Indeed, the more than one hundred illustrations are what make the book of great practical value. It renders the learning of wood-carving, without any other teacher, easy.

PHILIP'S SEMI-UPRIGHT COPY BOOKS.

We have received from the publishers, George Philip & Son, London and Liverpool, a set of their series of twelve copybooks. The semi-upright system adopted—fifteen degrees vertical—aims at the golden mean between the perfectly upright and the average slope of oblique writing. This is a running round hand, and is known as the "Civil Service" style. The writing, as it appears in these copies, is certainly both legible and beautiful. In the contest of styles, which, it seems, is now going on in England as well as in Canada, this semi-upright is sure to find many adherents. It is, to our thinking, vastly superior to the oblique, while the position required is easy, natural, and healthy.

Literary Notes.

Hezekiah Butterworth contributes to the December Review of Reviews a stimulating article on "The Kindergarten Age" (illustrated). In the same number

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Prof. E. A. Kirkpatrick writes on "Child-Study in the Training of Teachers," describing the work of that character as conducted in the Minnesota Normal School at Winona. His article is illustrated with portraits of educators throughout the country who are interested in the child-study movement. These articles will interest all teachers.

The Canadian Home Journal for December, published in Toronto, edited by the well-known writer, Faith Fenton, late of The Empire, is artistically gotten up, full of the Christmas spirit, well illustrated, and in every way creditable to editors and publishers. Lady Aberdeen herself, president of the National Council of Women, edits and controls the department devoted to the interests of this influential organization. Music, art, fashions, games, the household, fascinating and seasonable stories, written specially for the Journal, bright, timely articles on books, people, and current events, are among its leading features, and commend it to every woman in the Dominion. Single copies, ten cents, or $1 a year. Address, Home Journal Publishing Co., Globe Building, Toronto.

"The Progress of the World," the editorial department of the Review of Reviews, touches, in the December number on a great variety of topics of national and international significance. After devoting several paragraphs to a lucid and instructive analysis of the results of the presidential election, the editor proceeds to review the history of the efforts to obtain arbitration of the Venezuelan boundary dispute with Great Britain, which have finally resulted successfully, explaining the attitude of the United States in the controversy ; discusses the merits and demerits of the Cleveland administration now drawing to a close, criticizing with especial vigor the President's Turkish policy ; describes the latest phases of the European situation, with reference to the Eastern question and the Franco-Russian alliance ; comments on Lord Rosebery's resignation, and the resulting complications in English politics—making altogether a most interesting and valuable summary of the world's important doings for the month just passed.

The importance of The Living Age to every American reader, as the freshest and best compilation of gleanings from the field of British periodical literature, has been long recognized. Founded by E. Littell in 1844, it has never ceased to occupy a prominent place among the foremost magazines of the day. In pursuance of the same general plan adopted by its founder, and to give the best the world can offer, the publishers have arranged for the introduction of certain "New Features," so widening its scope as to embrace translations of noteworthy articles from the leading publications of France, Germany, Spain, Italy, and other continental countries, many of which contain matter of great interest and value to the American reader, yet which, for obvious reasons, are absolutely beyond his reach but for the timely help of this delightful medium. In addition, a monthly supplement will be given, containing three departments devoted to American literature. A year ago the price was reduced from $8 to $6 a year. This reduction brings the magazine within the reach of a much wider class, and certainly at this price, with these improvements, it is at once one of the cheapest and best literary weeklies in existence. To new subscribers remitting now for the year 1897, the intervening numbers of 1896 will be sent gratis. The Living Age Co., Boston, are the publishers.

It is as important how children learn as what they learn.—Dr. Mayo.