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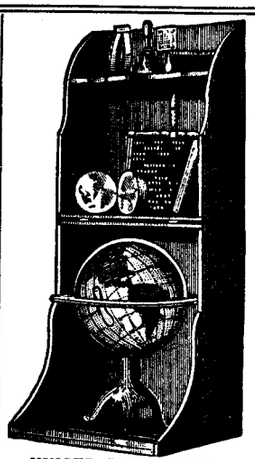

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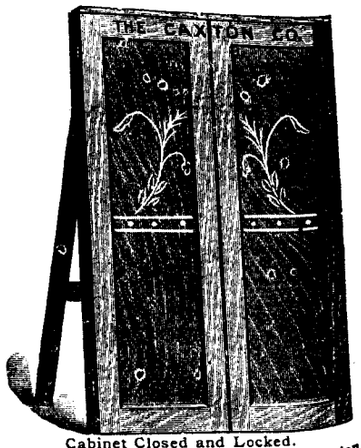

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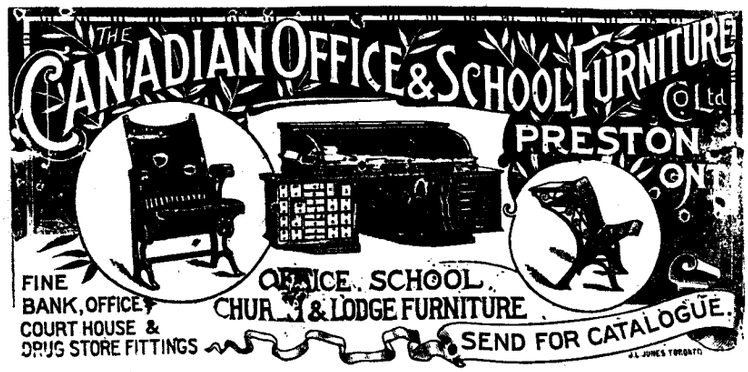

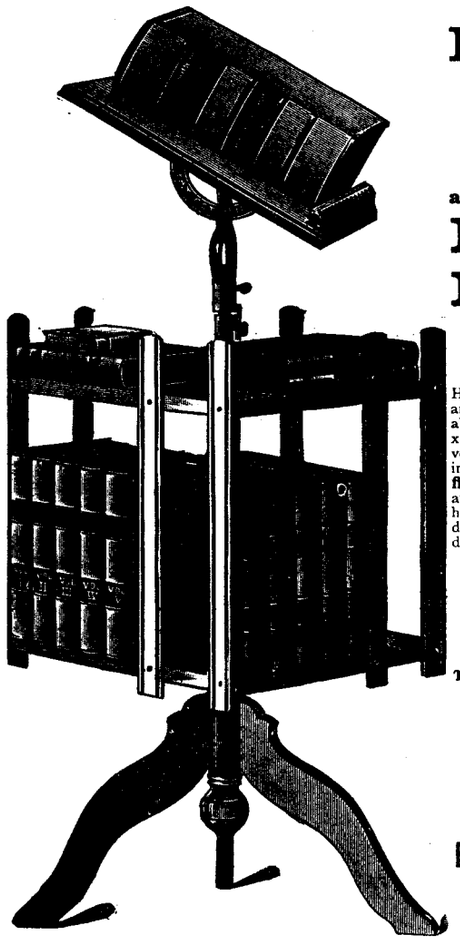

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Editorial Notes.

WE are glad to be able to commence our special ENTRANCE DEPARTMENT in this number, with Principal McIntosh as editor. It occupies the four pages commencing with page 280. Note the provision for furnishing the four pages constituting this department, in separate form for schoolroom use, at low rates, to SUBSCRIBERS of THE JOURNAL *only*.

THE character of the typical Canadian of the next generation is being to-day moulded in the schools. The teachers are, in a large measure, the national character-builders. It would be well for each teacher to ask himself, or herself, what is the tendency of his or her daily influence in this respect. What is the spirit of the school? Are the boys becoming narrow-minded, jingoistic, boastful, or are they learning self-restraint, love of fair play, and sweet reasonableness, loving their own country first and best, but ready to think fairly and justly of other nations?

PRESS ENGLISH.

WHILE we commend the proper use of newspapers of the better class in the schools, as one of the best available means of cultivating the intelligence of the children, and leading them to take an interest in current historical events, which is in itself highly educative, we feel that we ought to put teachers on their guard against permitting the children to take these papers as models of good English. As a matter of fact it would be easy to find in almost all these papers, solecisms which mark them as fertile sources from which to cull, were such a method desirable, abundant examples of false syntax. For instance, a correspondent sends us the following batch of specimens, clipped from Toronto papers of a recent Saturday—clipped, too, as the writer observes, from papers which pride themselves on their good English:

"Mr. Gillespie in North Ontario only escaped forfeiting his deposit by forty votes."—*Montreal Gazette, Dec. 14th.*

"When a man or a woman writes such a letter as the above, he or she ought to have the decency to put their name to it. This charming epistle is, naturally, from a woman."—*Toronto Mail and Empire, Dec. 14th.*

"Some kindly person, no doubt the author, whom, I am told, resides in Toronto, forwarded me this week a marked copy of a country sheet."—*Toronto Mail and Empire, Dec. 14th.*

"Here is the curious fact of two reporters describing the same thing, at different times, on the same day, neither of whom had spoken to one another or seen each other's 'copy' until it appeared in type."—*Toronto Mail and Empire, Dec. 14th.*

"For serious-minded people there are an abundance of new books on the market—too many, for one knows not which to choose."—*Toronto Saturday Night, Dec. 14th.*

As every observant reader knows, it would be easy to multiply such specimens by the hundred from the pages of the best of our dailies. It will be observed that the errors are just of the kind which are most common in speech, most of them occurring in the use of personal and relative pronouns and the verbs corresponding to them. Were we to extend the collection indefinitely, we should no doubt find that a very large proportion of the whole arise from a difficulty, which may perhaps be regarded as a serious defect, in the language—the want of a third personal pronoun of the singular number and common gender. The use of the cumbersome "he or she," "him or her," to which careful speakers and writers are sometimes driven by the exigencies of the case, is too roundabout a construction to become fixed in the language of common life, in either speech or writing. It often seems as if grammarians would be obliged to give up the struggle in despair, and accept the forms "they," "them," "their," as either singular or plural, instead of as always plural, as all the grammarians have hitherto taught.

Of course, the newspapers abound in errors of many other kinds. We must not be too hard on them, although it is true that if their writers and proofreaders were better trained and accustomed to use correct English in ordinary speech, the right expression or construction would come to their pens as readily and spontaneously as the wrong one now does. But newspaper work is usually done under great pressure. Much of the writing is the production of men and women whose scholarship is, to say the least, by no means of a high order. The main object is to make the ephemeral production intelligible to ordinary readers, nine out of ten of whom care not two straws about the style in which the thing is said, if only the meaning is clear. None the less is it true that by this very means the newspapers of the day are corrupting the language, and are largely responsible for its deterioration.

The moral is plain. Let every teacher remember that correct speech can be acquired by practice only, not by parsing or learning rules, indispensable though the theoretical study is to the determination of the correct practice. Let them watch carefully and correct persistently their own language and that of their pupils, and the speech and writing of the next generation will be a great improvement upon that of the present.

English.

All articles and communications intended for this department should be addressed to the ENGLISH EDITOR EDUCATIONAL JOURNAL, Room 5, 11½ Richmond Street West, Toronto

BEGINNING OF THE YEAR.

MISS M. A. WATT.

Most of us have a new class in whole or in part and if it is a senior third class, we have the task of teaching grammar before us. The junior third class has made them acquainted with the parts of speech, and we find them familiar to a fair extent with the noun, the pronoun, the verb, the adjective, and, to a lesser extent, with the adverb, the conjunction, the preposition, and the interjection. It is advisable to begin again to review the parts of speech, and, if we are giving definitions, to see that they are very simple, that they are understood, and that each and every pupil can recite them and write them at a moment's notice. It is delightful to the class to be allowed to recite one after another, and teachers taking a new class will find it a good plan to have such recitations, taking time to do it, in a deliberate manner, announcing in the meantime the next definition to be called for, to keep the rest busy. We may fairly assume that the noun and pronoun may be let alone for a time without loss, and so begin at the interjection. Deal lightly but thoroughly with it, and pass to the preposition. Show by example the correctness of its name; use often some such expression as a "*tie-string* for words," and show how like an adverb the prepositional phrase usually is. The conjunction comes in as "a *tie-string* for sentences," and is contrasted with the preposition. The adverb, answering the questions how? when? where? and why? and modifying verbs, adjectives, and other adverbs, may take up more time, as examples must be given of each of these uses, and the pupils must show that they understand, by giving examples themselves. A week spent in a careful grounding will be very well spent indeed.

There need be no break in the connection between the work of the first week and that of the second. The second week's work may be sentences, clauses, and phrases, with a continual reference to the first week's work. (No, there is no need to begin the kinds of nouns, the gender, etc. Let us get a grasp of the generals before we begin to dissect for particulars.) Put on the board a sentence, "John ran." They have learned before that a sentence is "a set of words expressing a thought," and they recognize your set of words as a sentence. You notice, with their help, that there is a noun and there is a verb, and that no sentence can be made up without a noun (or a pronoun) and a verb. You notice the period and the capital, incidentally. Now, you add to your original sentence the words, "and James walked." Ask how many thoughts you now have, and what each is. Bracket each. Mark the "tie-string" and get its name. Again add, "but Mary skipped along." The class will tell you that there are three thoughts, and, therefore, three sentences. But show that the word "clause" is useful to keep matters clear, and that there is one *sentence*, containing three *clauses*. Give now the simplest definition you can make, and have it learned word for word. I use, "A clause is a sentences that is joined to one or more other sentences to make a larger sentence." Watch for the child who mixes *clause* with *conjunction*, and says, "A clause is a sentence that *joins*, etc. Be sure you have one or two such children in your class, and so mark the conjunction as a "tie-string" merely, but mark it each time.

Get examples written on the board; criticize them kindly; by help of class, bracket off the clauses, and mark conjunction. The phrase follows naturally, the prepositional phrase being the only one supposed to be taught in this class. By previous lessons they have learned the meaning of *preposition*, from *pre*=before and *position*=place. Then, what is it *placed before?* By the sentences upon the board they can readily see that it is *placed before* a noun. It will be well not to touch upon adjective phrases until they have a good grasp of adverb phrases which answer the questions How? When? and Where? so readily that their value is easily seen as adverbs. Take the sentences upon the board such as, "John jumped over the fence." Ask, "Where did John jump?" and upon the answer being given bracket "over the fence," ask what question it answers, what it is equal to, and write the word "adverb" above it. Ask, "Is it a clause?" and, when they answer in the negative, ask how they know it is not. Make it clear that the verb is a necessary part of a clause; there is no verb here, therefore it is not a clause. Then, what is the name given to a set of words consisting of a preposition and its noun? The name "prepositional phrase" may look formidable, but will be valuable further on. Add the word "phrase" after the word "adverb" already above the words "over the fence." The class may repeat the definition, "A prepositional phrase is a set of words consisting of a preposition and its accompanying noun," after they have had several examples of phrases answering the questions, How? When? and Where? Some one will remark that you have not given one that answers the question why? and an opening is given to introduce the adverb *clause*, "*because*" "he was told," explaining *why* "John went home." No haste should be made to leave the adverb in its three forms, as word, clause, and phrase, until any ordinary child can go to the board and write a sentence containing an adverb, an adverb phrase, and an adverb clause. It would be better to take another week rather than leave a dim idea of this part of the work upon the minds of the general class.

After the class is sure of this, the next step may be pleasantly introduced by the teacher wondering if an adjective can be expressed by a phrase as well as an adverb can. If no one gets it very quickly (which will be rather strange, for they are generally eager to put their thoughts upon record), the teacher may say, "I want the boy to come here. Now, what boy do I mean?" No one knows. "Well, I want the boy *in the grey coat*." The boy in question blushes, and every eye is upon him. "How did you know that I wanted Tommy"? She writes the words they give her, "in the grey coat," asks what word they belong to in the sentence, puts "boy" before them. What part of speech is "boy"? What part of speech modifies a noun? Then what part of speech is the phrase "in the grey coat" the same as? The words "adjective phrase" are written above the words "in the grey coat." Original examples criticized by class should continue until a delightful sense of knowledge is shown. Further on, a lesson upon very clear examples of adjectives and of adverb phrases may be given, but they should be kept very distinct for a time. The adjective clause may follow, and the noun clause will come in as the subject of the verb "to be" as "That (*he is a good boy*) is well known," or as object of the verb "said," as "He said that (*he got a prize at school*)." Let all the examples be simple and cheerful, and, as far as possible, the pupil's own words. It may be well to leave the work for a time to take up other new work, so as not to weary the class, but if well-grounded now, the work will be very valuable further on during the term, and, indeed, in the advanced grades. If they learned nothing else, they will prove a joy to the teacher of analysis of compound and complex sentences, if thoroughly up in this section of the work.

"NOTES ON ENGLISH GRAMMAR."

(By A. Allen Brockington, B.A. Toronto: The Copp, Clark Co. Pp. 101.)

This little book bows its way into public notice under the distinguished names of Principal Adams and Dean Allnatt, of Bishop's College, and Principal Petry, of Bishop's College School, who, the author informs us, "have kindly (p. iv.) read" and "carefully revised" (p. 98) "the proof sheets." The substance of the book is due to the author's own experience, bettered by the invaluable instructions of Professor Arber and Professor Sonnenschein, and by the observations and instructions of Mr. W. A. Brockington and Mr. Auden. So fathered and so chaperoned, the little book deserves more than the ordinary greeting of the reviewer.

A chief object of the book, says the preface, is "to enable pupils to parse fairly completely at an early age." Here the language of the newcomer warns the reviewer to be on his guard, and he is further disturbed by the mention of philological instruction for those of tender years, being only partly satisfied to learn that "the philological part has been subordinated to other more rudimentary matter, but it is believed to be accurate and up to date."

Soon the caution of the reviewer is justified, not by the misprinting of all long vowels with a mark for stress (*e.g.*, *gō's* (p. 20) for *gōs* or *gós*, and so throughout the book), which may be due to the poverty of the printer's font of type, but by positive errors. On page 21 they begin, by classing the fem. suffix in "margravine" as Greek. Any schoolboy knows that *-in* is the common Germanic feminine affix, and that "margravine" is only the regular Dutch margravin (Ger., *Markgräfin*), the same suffix as in "vixen" and A.-Sax. *gyden*, goddess. The derivation for "alms" should not be *alimosina* (p. 24), but *eleemosyna*. Verbs such as "teach," "seek," did not form in A. Sax. their past tense "by vowel change" (p. 36). The difference of vowel in the present and past stems was due, not to ablaut, but to the absence of umlaut in the past tense. The paradigms of *bēon* and *wesan* (p. 39) are faulty: *beoth* should be *bēoth; si'n* should be *sīen; wæs, wære, wæ's, wæron*, etc., should be *wæs, wæ're, wæs, wæ'ron*, etc. "Second" is from Fr. *second*, not *seconde* (p. 46). "Both" is from Scand. *bathi(r)*, not A.-Sax. *begen, bā* (p. 47). The paradigms of the pronouns (p. 50) are inexact. *Thi'ne* should be *thīn; hi* should be *hī; uncer, unc*, given as the dual second person, are the dual first person. One author astounds us on p. 51 by the statement that "she, her, they, them are not derived from the A.-Sax. personal pronoun, but from the A.-Sax. demonstrative *se', se'o*, thaet." "She," in truth, is the demonstrative *sēo;* "her," however, does not come from *thæ're*, but from the personal pronoun *hire*, while *they, them* are Scand.; *thei(r), theim*, etc.—A.-Sax. demonstrative. On p. 53 we read "its" is derived from the A.-Sax. *his*. It is, of course, only a newly formed possessive of "it" in analogy with the common possessive form of nouns and pronouns. The statement that the edition of 1611 of the Bible contains one instance of "its" (Lev. xxv. 5) (p. 53) is erroneous. This "its" is a change after 1611 (*vide* Skeat, *Et. Dict.*, "it"). What will our author say about his statement (p. 56) that "yon did not exist in A.-Sax.," in face of Alfred's line *Past. Care*, p. 443, "tō geonre byrig," to *yon* city. "Other" is from A.-Sax. *ōther*, not *o'der* (p. 58); "few" from A.-Sax. plural *fēawe*, not singular, *fe'a* (p. 59). The connection of *by* in "by-law" with *by* of "Whitby," asserted on p. 96, is no longer held. The explanation of umlaut (p. 92 f.) is partly erroneous, and altogether inadequate. The author is referred to Skeat's "Principles of Etymology" for information. For the number of vowel sounds in English, asserted to be thirteen, and of diphthongs, asserted to be four (p. 90), he might perhaps mention variation in vowels as long or short. The Standard Dictionary, by the way, uses twenty-five signs of vowels and six of diphthongs.

In matters of philology, "accurate and up to date," our author, we may gather from the preceding, may not be regarded as safe. We may therefore be excused from any serious discussion of statements like this: "'The' before a comparative (*e.g.*, 'the more, the merrier') may be considered as a conjunction" (p. 64).

It is to be hoped, in the interests of English scholarship in this province, that this edition will be at once recalled. A new edition, thoroughly revised, may allow a consideration of its value in the elementary teaching of grammar, which is impossible in the present state of the volume.

DUTY'S RECOMPENSE.

If you have a work to do
You'd better do it;
If you don't it's sure that you
Will always rue it.
There's no manhood and no sense
In being a shirk;
The idle have no recompense
That comes from work.
The secret of true happiness
Is duty done;
Sweet peace of mind you can't possess
And duty shun.
So, if you would have peace of mind
And joy complete,
Just do your duty, and you'll find
That life is sweet.

—*M. H. Peters.*

Primary Department.

A PLAN FOR SUPPLEMENTARY READING.

BY RHODA LEE.

Collect a number of pictures, mount separately on pasteboard, and place a suitable title below. These may be obtained from some business and Christmas cards, children's magazines, and old school Readers. The following are examples of titles: "Feeding the Chickens," "Skating," "Christmas Morning," "Mrs. Puss and her Family," "The Dog and the Shadow," "Fishing," "The Crow and the Pitcher," etc.

On other blank cards write a story about each picture, giving it the same title. When the hour for reading arrives give to each child either a picture or a story. Ask each of those receiving a picture to study it carefully, and then write a story about it; those who receive a story read and either reproduce it in their own words or give it as written.

A certain pupil is asked what picture she has. She replies that she has "Feeding the Chickens." The teacher then inquires who has the story about this. The child who has it stands and reads a short story of a little girl who went to visit her grandmother in the country. She had never been on a farm before, and took great pleasure in hunting the eggs and feeding the young chickens. The pupil who has the picture is then asked to read what he has written. He reads as follows: "The little girl in the picture is feeding the hens and chickens. She has just began, for there are three hens running over from the other side of the yard. She has filled a dish with water for them to drink. The little girl is living on a farm, and she looks very nice and seems happy."

At first glance there may appear to be a great amount of preparation necessary to the carrying out of this exercise; but such is not the case. The children will bring the pictures, and some of the older pupils may on a Friday afternoon do the mounting, and there remains nothing more than the writing of the stories, which will not occupy a great deal of time.

NUMBER FAMILIES.

BY RHODA LEE.

A device, simple yet effective, for reviewing and impressing number combinations, came to my notice recently. It consists in dividing the combinations into families in which the *numbers* are always seen in pairs. In the 10 family, 6 goes with 4, 5 with 5, 7 and 3 play together, and likewise 8 and 2.

Mrs. 4 had four children, 2 going with 2 and 3 with 1. Mrs. 7's children are 5 and 2, 6 and 1, 4 and 3.

Draw a hill, and picture the children coasting. Suppose it is Mrs. 9's family you wish to review. The sleighs will hold 5 and 4, 7 and 2, 8 and 1, 6 and 3.

Picture them going to school on a rainy day. Under one umbrella will be 5 and 4; under another 8 and 1, etc. Picture the families out boating, placing the different pairs in separate boats.

For a busy work exercise let the children write stories about the families. The following was one written about Mrs. 8's family: "Mrs. 8 was very busy on Saturday morning, and her children helped her all they could. 4 and 4 did the dusting; 5 and 3 went to market; 6 and 2 washed the dishes; and 7 looked after little 1, the baby. They were a very happy family."

The exercise is, of course, a review, and is to be one worked out by the children themselves. In making up the families the teacher gives one number, the children the other; or, as in the above story, the pupils do the entire work.

MORNING HYMN.

Can a little child like me
Thank the Father fittingly?
Yes, O yes! Be good and true,
Patient, kind, in all you do;
Love the Lord, and do your part,
Learn to say with all your heart,
"Father, we thank Thee."

For the fruits upon the tree,
For the birds that sing of Thee;
For the earth in beauty dressed,
Father, mother, and the rest;
For Thy bounty and Thy care,
For Thy blessings everywhere,
Father, we thank Thee.

STORIES FOR REPRODUCTION.

THE POLITE BOW.

Fido was a very knowing dog. At least he had always believed himself to be. And many a time he had heard his good master say, "Fido is the smartest dog we have had in the family."

But there were a few things that Fido does not to this day understand.

One day an organ grinder came into the yard to play. Now Fido rather liked organ music, so he lay quite still listening; but suddenly he caught sight of a strange little creature hopping along towards the house. Without stopping to think, Fido rushed at the little creature, barking furiously. As he came near, he noticed that the strange little creature was stranger even than he had suspected. It was dressed in green and red, and it had a little hat upon its head, with a tall, nodding plume. In its little hand was a basket; but it was such a strange little hand.

Fido stopped in the very middle of a bark. His ears grew very tall, and his tail grew big, like a cat's tail.

Then Fido's courage came back, and he gave an odd little yelp, and was about to fly at the little creature again. But, to the big dog's amazement, the strange little creature that looked like an animal but dressed like a person raised its hat, bowed very low, and extended its little basket.

Fido's ears dropped. His tail grew very limp. He turned and sneaked back to the piazza, where he sat down and blinked at the little creature. Fido knew good manners when he saw them, and he knew he should be ashamed of his own rudeness; but to this day he wonders what that polite little creature was that came with the man that played the organ.

M.

FARMER APGAR'S PIGEON.

Farmer Apgar was hauling wood. Suddenly down upon the wheel of his cart there fluttered a young pigeon, frightened and excited.

"Strange," thought Farmer Apgar, "when pigeons are such timid birds."

The farmer threw a cord stick into the cart. The pigeon fluttered and rose from the wheel. Then, with a cry, he flew straight to the farmer's shoulder.

"Well, well!" said Farmer Apgar, in surprise. But just then, looking up, he saw a hawk circling high in the air.

"Oh, I see, I see!" and, drawing the frightened little bird down from his shoulder, he smoothed his ruffled feathers, put him inside his big warm coat, and carried him to the farmhouse, where he fed him, and put him in a warm, safe little coop.

This was months ago, but the pigeon still lives in the little coop, and every morning awakens good Farmer Apgar by alighting upon the window-sill of his bedroom and pecking against the glass.

M.

THE CHILD GARDEN.

Our Lord hath a beautiful garden,
We have chosen our life work there,
Where the little ones of His kingdom
Need constant and loving care.

Guard we these tender flow'rets,
Turning them towards the light;
With sunshine of loving kindness
Helping them grow aright.

Then let us look ever upward,
That they may look upward, too,
And take for our motto in all things,
"Unto the least be true."

A FRIEND IN NEED.

An English boy wrote to the London *Times* an account of how he cared for some birds during the severe cold of last winter:

"I thought perhaps you would allow a schoolboy to tell you how very tame and fearless the cold and hunger have made the wild birds around our house.

"Of course, we feed them with bread and all sorts of odds and ends, and the ground is simply black with our hungry visitors. Even the suspicious rooks come quite close to the house for their share.

"A little blue-tit passes its day in our basement, heedless of sleepy pussy baking herself before the stove.

"Most of all, I wish to tell you about my strange bedroom companion, a little robin, which has taken up its residence in my bedroom; and though I leave the window open, he never goes out except to take a short fly. We pass the night together, and he makes his bed in one of my football boots.

"The other morning he woke me up by singing on a chair at the side of my bed. I suppose he thought I ought to be at my lessons."—*The Outlook.*

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Editorials.

THE SALARY QUESTION.

"PERMIT me to say that I believe the case is even worse than you suppose." So writes a teacher of standing, in reference to our article in last number on the question of teachers' salaries. The writer of the letter proceeds to justify his fear by giving us a few facts within his own knowledge. These facts are such as the following: Teachers fresh from the Normal School all around him are engaged for salaries ranging from $330 to $350 a year. These sometimes officiate also as janitor, without increase of salary. They, of course, are young men. Young women in the same localities receive, many of them, $225, some even less.

Evidence is also given to show that a serious reduction of salaries is going on. Instances are given in which schools which formerly paid salaries of, say, $500, now give not more than $300. Teachers out of employment sometimes give their services for a year for the poor pittance of not more than half the last-named sum, and do their own janitor work into the bargain. The teachers are hardly to blame for this state of things, save those —we hope they are an exceptional few— who resort to underbidding in order to supplant those already engaged. Many who have recently emerged from the Normal and Model Schools, after longer or shorter courses of preparation, cannot, we dare say, afford to remain idle, and are in a manner forced to accept the best terms available, however unsatisfactory they may be. A trustee-board has been heard to declare, "We will hire the cheapest teacher, no matter who it may be." Another teacher is brought to terms by the assurance, "We can get a lady teacher for half what you're getting, who will do the work *well enough*." From a strong article which appeared in a recent number of the Cobourg *World*, some extracts from which we reprint in another column, we take the following "specimens":

Specimen 1.—A university graduate, with second-class standing, offered his services for a school near Trenton for $300 per year.

Specimen 2.—A young woman, an undergraduate of Victoria University, offered to teach a school, not fifty miles from Cobourg, for whatever the trustees were willing to pay.

Specimen 3.—A fair aspirant for pedagogical honors applied for, and secured, a school in the township of Haldimand for the magnificent sum of $225—just $125 less than her predecessor.

Specimen 4.—An ambitious youth proffered his brain and muscle for a large school near Brighton, at the rate of $175 per annum. Ye gods and little fishes!!!

Specimen 5.—An enterprising dominie in Brighton township applied for, and secured, a school, then held by an old and well-tried teacher, for $50 less than was paid the latter, who had given satisfaction, and who had signified no intention of resigning.

With regard to the remedy for the evil which undoubtedly exists, and which, if permitted to continue and work out its legitimate results, cannot fail to cause a lamentable deterioration in the character of our schools, the opinions of those from whom we have heard are almost unanimously in favor of the first of the three methods we have suggested, viz., the raising of the standard of qualification and the age of eligibility. One writer suggests raising the minimum age of qualification to twenty-one, and, at the same time, cutting off all third-class certificates, making the Junior Leaving Examination the lowest non-professional qualification, and requiring, say, two years of professional training in a Normal School. This is, perhaps, rather radical, especially if the changes were to be made suddenly, and it is questionable whether two years would not be an overdose of professional training. But the suggestions are certainly in the right direction. Whatever other changes may be helpful, raising the age and the scholarship qualification, are the two fundamental conditions without which the great reform needed cannot be effected. Of course, too great or too sudden a change of the law in these respects would be an injustice and hardship to the thousands of young people who are now in the schools preparing, on the strength of the present requirements, to win certificates, and might also cause temporary embarrassment to the schools by diminishing too suddenly the supply of teachers. Changes must needs be made gradually. Mr. D. H. Lent, writing in the Cobourg *World*, wisely suggests that the Minister of Education might give notice that the age will next year be raised to nineteen, and within three years to twenty-one, as the minimum for a certificate as master or mistress, while assistants' certificates might be granted at nineteen.

We are glad to read that, in his address at the opening of the Toronto Normal School, the other day, the Minister threw out a hint that the Normal School term might soon be raised to a full year. It may be hoped that he is also considering favorably the other reforms so much needed. We are glad to hear that these questions are likely to come up at the next meeting of the Provincial Association. We hope that they may receive thorough and vigorous discussion.

"STATE SALARY REQUIRED."

WE have often referred to the above most objectionable requirement of many, probably by far the greater number, of the advertisements for teachers, which are constantly appearing in the columns of the Ontario newspapers. There is, we believe, no one practice which tends more directly to lower the dignity and efficiency of the teaching profession than this of calling on them to compete for situations in a Dutch auction. We are glad to see, from time to time, articles in the press dealing with this bidding for cheapness as it should be dealt with. Some friend has sent us a copy of the Cobourg *World* of recent date, in which the practice is set in its true light. We quote a paragraph or two.

The writer prefaces his remarks on this part of his general subject, "Professional Honor," with a sample "Teacher Wanted" advertisement.

After some preliminary remarks on the qualifications required for teaching, and the hardships, we might almost say "indignities," to which the teacher in the

rural districts is too often subjected, the writer proceeds :

" The above (advertisement) is taken from the *Globe*, and is but an example of the scores that appear in the daily and weekly papers throughout Ontario every year. Who is to blame for this condition of affairs ? Both trustees and teachers, especially the latter. We do not advocate exorbitant wages for teachers, but maintain that a fair living salary, based on qualification and experience, should be paid them. The mistake with trustees is that they put up their school to a kind of Dutch auction, and " knock down " the education of their children to the lowest bidder, irrespective of age, qualification, or experience, apparently forgetting that the proper education of the child is something the value of which cannot be estimated in dollars and cents. Yes, often they go so far as to dismiss a competent, tried, and faithful teacher, to whom they have been paying only a fair wage, in order to accept the services of a novice whose only recommendation is that he is cheap, and glow with satisfaction and self-congratulation at the thought of a few dollars saved. The most objectionable feature of the standard advertisement is that it contains the clause, 'state the salary required,' for through it one teacher is pitted against another as to the least amount he is willing to accept. But the great blame rests on the teachers themselves. Fearful lest they may be left without a school, they offer to teach for five, ten, twenty, fifty, or one hundred dollars less than the present incumbent. Disreputable practice! No teacher who respected himself or his profession would be guilty of the unmanly act."

After pointing out how utterly impossible it must be for a married teacher to support and clothe respectably himself, wife, and children upon a salary of, say, $225 per year, to which figure the wage is often forced down by this auctioneering process, the writer offers the following " suggestions " looking to a remedy :

" Let school boards fix for their schools a minimum and a maximum salary, so arranged as to increase from the former to the latter, according to tenure of office. With such an arrangement, underbidding would be useless and impossible. One teacher of our acquaintance, and a man of long experience, maintains that the salary of a teacher in rural sections should be based on the assessed value of realty in the section, that is, the law should require every section to pay a certain amount for school purposes, the amount expended being in proportion to the assessed value. Another teacher of many years' experience in this county recommends the formation of a Teachers' Association for the purpose of keeping salaries at a living figure. The salaries are to be fixed by the association according to the work done, the scholarship, the professional standing and experience of the teacher. He recommends also that the teachers bind themselves to abide by that scale of salaries, and to treat with contempt and scorn, and, if possible, drive from the profession, every teacher who so far forgets the respect due to the profession or his own honor as to be guilty of underbidding. The project seems to be a feasible one. Many of the trades have their labor organizations and their tariff of wages. Why cannot teachers unite in a common cause, and strive to accomplish something in this much-needed reform ? The inspector might be called in to aid in classifying the teachers of his inspectorate according to teaching ability. The scale of salaries would have to be governed by reason and equity. No other class of workmen is in so good a position to form a mutually protective association as the teaching profession, for the very simple reason that the people are by law compelled to employ them. A revolution is needed ; may it come soon ! "

Writers in our columns have from time to time advocated the formation of a union or guild of the kind, and for the purpose suggested in the above extract. In England the Elementary Teachers' Union, which has become an efficient and powerful organization, does much to promote the interests of its members in various ways. But many teachers of experience seem to regard it as utterly useless to attempt to work by such an organization in Ontario. If teaching were really in practice a profession, and, consequently, a life-work, the thing would be comparatively easy. But where so very large a proportion of those who engage in the work expect to continue in it but two or three years at most, there is no bond of common interest sufficiently strong to endure the strain of temporary sacrifice which would sometimes be necessary to the success of such a movement.

But while we agree with some of our correspondents that the natural and only satisfactory and permanent cure lies in the direction indicated in another article —that of elevating the standard in respect both to age and to scholastic and professional qualifications—we are still unable to see why immediate and, to some extent, effective relief may not be had in the way we have before suggested—the fixing of a minimum of salaries by the Education Department. A correspondent, well up in the profession, is of opinion that " the commercial side of this question must be settled according to the general commercial law, viz., supply and demand." We are not convinced of the validity of this conclusion, for two reasons. First, the fact that the schools are under the control of the Government —are, in fact, a branch of the Government service—and that a part of the salaries is paid by the Government, removes them from the class of industries in which the law quoted is held by the adherents of the old school of economists to be supreme. It is surely the right and duty of the Government, as the trustees and distributors of the people's school bounty, to affix such conditions to its distribution as they believe most conducive to the highest well-being of the country. It rightfully imposes certain conditions which must be strictly complied with before the appropriation from the public chest can be bestowed. Why may it not, with equal propriety, add to these conditions that the teachers of the various grades of schools must be paid a certain minimum of salary, according to a carefully arranged system, or the Government allowance cannot be given ? In the second place, we are glad to believe that the claims of the old law of supply and demand, in other words, of ruthless competition, to be supreme arbiter in such matters, are being disputed in most influential circles. If, as is now pretty widely conceded, a city council, or a government of any grade, may justly make it a condition of awarding a contract that the contractors shall pay their employees not less than a minimum wage per day, why should not the Government, which is held responsible to the people for the efficiency of the Public Schools, *a fortiori* impose a similar condition ? The old notions of political economy are, we are glad to believe, undergoing radical and righteous revision in these days.

TEACHERS need to bear in mind, that every school has a public opinion, a moral standard, of its own, and that in the school, as in the community, this public opinion becomes, to a great extent, the regulator of conduct. Everyone knows how, in social and business circles, the great majority aim at nothing higher in the way of integrity and morality than the common standard set by public sentiment—the opinions and practice of the many. Just so it is in the school. Suppose the practice of cheating at examinations, or departing from the strict truth in reporting one's own marks or misdemeanors, has come, by imperceptible degrees, to be widespread. The probability—what we might call the natural consequence —is that perhaps nine out of ten newcomers into the school will quickly fall in with the methods of those around them, and the tenth, whose conscience is, by nature or home-training, too active and tender to permit of his doing as those around him, will very likely become an object of suspicion and dislike. Study the public opinion of your school, and seek to guide it in the right channels.

Entrance Department

Edited by A. McINTOSH, Headmaster Boys' Model School, Toronto.

ISSUED SEMI-MONTHLY

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INTRODUCTORY.

The Entrance Examination is, in many respects, the most important test applied in the educational system of Ontario, as it affects so many interests. It determines the general scope of teaching in the great majority of the Public schools and fixes the minimum standard for admission to the High School course. It is therefore of the first importance that, in preparing candidates, the educational value of the teaching should be the main consideration. Even in the mere matter of passing the examination, it will be found that a systematic treatment of all the subjects will prove the surest way to success. It is proposed to deal, in this department, with all the subjects of the course, and in order to make THE JOURNAL as helpful as possible to teachers a special effort will be made to suggest methods by the arrangement of matter as well as by notes and comments.

It is requested that anyone who desires information on any of the subjects, whether in regard to matter or method, will communicate with the Editor of this department, and as much definite explanation as the space will permit will be supplied.

Success at any examination cannot be attained without direct and accurate instruction and systematic reviews. Pupils must be required to write out their answers in the review tests under similar conditions to those under which they will be placed at the official examination. As Entrance candidates are comparatively inexperienced in writing on examinations, explicit directions must be given them, in the construction of their answer papers, and that early in the term, so that they may have sufficient practice. To do well at any examination, a candidate must prepare directly for that particular test, and not in a general way. Nothing perhaps, in the whole range of preparation, gives so large a return for the little effort required as the attention paid to the writing out of answers to questions. Every practice test should be as nearly perfect as the pupil is able to make it. The writing, spelling, paragraphing, spacing, etc., etc., should all be of such a character as to favorably impress the examiner at once. Even the arrangement of the different sheets should indicate that the candidate knows how to plan his work for inspection.

Besides the regular official directions given to candidates, the following suggestions may be useful to them:

(1) Candidates should first carefully examine the note, if any, at the top of every question paper, to see whether or not any option is allowed.

(2) In no case should more questions be attempted than are required.

(3) The mechanical test on the arithmetic paper should not be worked first, even if it should stand as No. 1. It would be better to take it last.

(4) Write the subject of examination on line No. 1 in the middle and not at the top of the sheet.

(5) Leave line No. 2 blank on each sheet.

(6) Leave two lines blank between different answers on the same sheet.

(7) Do not number the sheets till the last, so as to take advantage of a regular arrangement of sheets, as far as possible.

The following are the subjects of examination: English grammar, arithmetic, geography, history, English literature, composition, physiology and temperance, dictation, drawing, writing, and reading.

ARITHMETIC.

(1) A certain number is divided by 2, 3, and 7, leaving remainders—1, 2, and 5 respectively, and the sum of these three quotients is 618; find the number. Ans. 635.

(2) What is the value of a semicircular tract of land whose radius is 109 rods, at $70 per acre? Ans. $6,875.

(3) Find the product of the factors of 3795 and 6105, which are not common. Ans. 851.

(4) What are the dimensions of a lot, the side of which is ⅞ of the length and area 4,536 sq. yds.? Ans. 63 × 72.

(5) The square of a number differs from the square of the next greater number by 75; find the two numbers. Ans. 37, 38.

(6) A merchant marked his goods at an advance of 50 per cent., but afterwards sold them at 50 per cent. less than the marked price; what was his loss per cent.? Ans. 25.

(7) A piano was imported, on which was paid a specific duty of $30 and an *ad valorem* duty of 20 per cent. The total price paid was $390; find the invoice price. Ans. $300.

GRAMMAR.

Prof. Meiklejohn gives the following eight kinds of subjects:

(1) A noun, as, England is our home.
(2) A pronoun, as, It is our fatherland.
(3) A verbal noun, as, Walking is healthy.
(4) A gerund, as, Catching fish is a pleasant pastime.
(5) An infinitive, as, To swim is quite easy.
(6) An adjective, with a noun understood, as, The prosperous are sometimes cold-hearted.
(7) A quotation, as, "Ay, ay, sir!" burst from a thousand throats.
(8) A noun-clause, as, That he was a tyrant is generally admitted.

And six kinds of predicates:

(1) A verb, as, The stream runs.
(2) "To be" + a noun, as, He is a carpenter.
(3) "To be" + an adjective, as, They are idle.
(4) "To be" + an adverb, as, The books are there.
(5) "To be" + a phrase, as, She is in good health.
(6) "To be" + a clause, as, His cry was, I die for my country.

Eight kinds of objects:

(1) A noun, as, All of us love England.
(2) A pronoun, as, We saw him in the garden.
(3) A verbal noun, as, We like walking.
(4) A gerund, as, The angler prefers taking large fish.
(5) An infinitive, as, We hate to be idle.
(6) An adjective with a noun understood, as, Good men love the good.
(7) A quotation, as, We heard his last "Good-bye, Tom!"
(8) A noun-clause, as, I know what was the matter.

LITERATURE.

The Changeling, page 205, Fourth Reader.

Introduction: The first four stanzas describe the real child as it appeared to the father, and the last three the substitute supplied by memory and developed by the imagination. The real child is dead; but the intense love of the father for his daughter so impresses the picture of her in his memory that it becomes real to him, and his fancy develops the child according to his expectations had she lived.

Stanza 1.—The object of the child's life—to teach the father the love of God for his soul by the natural love which he had for his child.

l. 3, *Backward—knee.*—This implies that he has wandered from God, and that the mission of the child was to again bring him into a state of loving obedience to God.

l. 5, *The force of nature.*—The natural love which the father had for his child.

l. 6, *Dim wise divine.*—Understand to some slight extent.

Stanza 2.—The description of the child as the father saw her. To him she was perfectly beautiful, reflecting the light of heaven, from which she came. The same idea is expressed by Wordsworth in Intimations of Immortality:

" — trailing clouds of glory do we come
From God, who is our home."

ll. 1-4.—These lines directly state what the father saw in her beauty, and the last four lines supply the illustration in the reference to the brook.

Stanza 3.—The unaffected smile of the child. It was the complete innocence and perfect naturalness of the child which affected the father most.

l. 8, *Sun—love.*

Stanza 4.—The early death of the child Death is here represented as the stealing of the soul by angels, and, again, by the opening of the cage door and allowing the soul to fly away. The first implies the care of God for the soul, and the second figure the desire of the soul to return to God.

l. 5, *Zingari* (Italian).—Singular form, Z ngaro, a gypsy. This word is, no doubt, introduced as a preparation for the use of the name "changeling," which appears in the next stanza.

Stanza 5.—The appearance of the changeling and the comparison of the father to the lonely, helpless violet.

l. 1, *Changeling.*—A changeling is a child left in place of another which has been stolen, and the reference is to the superstition that fairies often stole little children and substituted others in their places. Here the word is applied to the picture of the real child left on the memory of the father.

l. 3, *That seems like her, bred in full blossom.*—This line states the development of the spirit-child by the imagination.

Stanza 6.—The father realizes his true relation to God and the whole universe. This change has been brought about by the life and death of his child. He feels his own weakness, but the goodness and love of God inspire him with faith and confidence.

Stanza 7.—The contrast between the real child and the changeling.

l. 4, *Bliss—caress.*—This is an unusual verbal use of the word. It involves the idea of making the child happy by acts of tender affection.

l. 8, *Transfigures.*—Gives a glorified appearance to. The father now sees, by imagination, in the changeling, his own glorified child who is in heaven.

The most important stanzas are the last three of the poem. In stanza 5 there is expressed the father's humility, in No. 6 his hope, and in No. 7, his turning from the tender human relations of this life to God.

EDUCATION DEPARTMENT, ONTARIO—ANNUAL EXAMINATIONS, 1895.

HIGH SCHOOL ENTRANCE.

DRAWING.

Examiners: J. C. MORGAN, M.A. and J. E. HODGSON, M.A.

1. Draw two horizontal lines, each 4 inches long and half-inch apart, divide (by perpendicular lines) the space between them into squares, draw all the diagonals of the squares, above each square draw an isosceles triangle having the upper side of the square as its base, and each of its sides equal to half its base, and below the squares draw semicircles having as diameters two of the lower sides of the squares.

2. Draw from memory a vase 4 inches high, containing a spray of any flower with which you are acquainted.

3. Make a drawing of an ordinary square four-legged table with a small coal oil lamp standing on it, the top of the table being slightly below the eye.

Values—9, 8, 8.

WRITING.

Examiners: D. ROBB. and J. E. HODGSON, M.A.

1. Write the following:

LL.B., MSS., N.Z., Y.P.S.C.E., S.T.D., Brig.-Gen., inst., ult., My Dear Sir, July 1st, 1895.
1, 2, 3, 4, 5, 6, 7, 8, 9, 0.

2. Write the following :

Sunset and evening star,
And one clear call for me !
And may there be no moaning of the bar
When I put out to sea.

For tho' from out our bourne of time and place
The flood may bear me far,
I hope to see my Pilot face to face
When I have crost the bar.

Values – 13, 12.

NOTES AND ANSWERS TO QUESTIONS.

Under the Departmental Regulations now in force, the classification of pupils is entirely in the hands of the principal. Having passed the Public School Leaving Examination does not give the pupil the right to claim a place in any particular form.

A student who studies privately may write on the Entrance Examination. It is not necessary that he should be a member of a Public School class.

Those who desire information regarding the conditions on which district certificates are granted, should apply directly to the Deputy Minister of Education.

The next Entrance Examination will be held on June 24, 25, and 26.

In the line, "Beneath a roof *projecting* some small *space*," the word *projecting* means extending, and *space* means distance. The literal meaning of space is distance rather than area or volume.

In the line, "In Indian wilderness found," the word *Indian* refers to India.

EAST SIMCOE PROMOTION EXAMINATIONS.

December 12th and 13th, 1895.

COMPOSITION—PART SECOND, CLASS I.

1. Use each word in a sentence : See, sea, hear, here, dear, deer, buy, by.

2. Fill the blanks with *was* or *were :*

The old man.....working.
.....the boys and girls home?
He.....to town yesterday.
Sam and Ned.....punished.
The boys.....making taffy.

3. Arrange the letters in each of these words so as to make a new word : There, saw, from, reed, harps, quite, wake, mean, odors, file.

4. Write questions beginning with : Who, which, do, was, am, may, can, has.

5. Tell in sentences one use that is made of each of these : Paper, glass, oil, tin, iron, wood, leather, gold, silver, lead.

6. Add "ing" to each of these words : Burn, come, be, sit, spin, get, rise, make, hope, stand.

7. Write the names of four trees, and of four things we get from trees.

8. Write a note asking one of your schoolmates to come and spend Saturday with you.

COMPOSITION—SECOND CLASS.

Juniors take first six ; seniors last six.

1. Use each word in a sentence : Rein, rain, so, sew, blue, blew, their, there, through, threw.

2. Use each pair of words in a sentence :

Flower, pale, by, made, piece,
flour, pail, buy, maid, peace.

3. For the words in *italics* write three particular ones :

Cruel animals are caged.
She put some *pretty flowers* on the table.
Some months are pleasant.
Mr. Smith grows *many fruits*.
We play *games* at school.

4. Write questions beginning with : Do, does, is, are, am, was, were, has, have, may.

5. Write words meaning the opposite : Feeble, careful, difficult, merry, danger, coarse, tame, awkward, large, rougher.

6. Correct :

Me and Ned seen two deers.
Aint you going to toronto.
How many is there ?
will brought me a peace of cheese.
I knowed i seen them before.
Sit the pail down and help me rise the log.

7. Write a story about "Tea," telling :

(1) What it is.
(2) Where it grows.
(3) When the leaves are picked.
(4) How they are dried.
(5) How tea is packed.

8. Tell the meaning of each of the following :

Hate from hate is sure to grow.
Hoe your own row.
A soft answer turneth away wrath.

9. Combine each set into one sentence :

(1) A bird sang. It was a small bird. It sang at sunset. It had red wings. It sang in a tree. It sang sweetly. It had a black body.

(2) We followed a path. It was a narrow path. It was made by cattle. It led to a glen. There were many rocks in the glen.

10. Write a note to your teacher asking to come home at recess, and telling the reason why.

COMPOSITION—THIRD CLASS.

Juniors take first five ; seniors the last six.

1. Write out in your own words the story of "Lucy Gray."

2. Paraphrase the following stanzas :

(*a*) "Blue were her eyes as the fairy flax,
Her cheeks like the dawn of day,
And her bosom white as the hawthorn buds,
That ope in the month of May."

(*b*) "Not blither is the mountain roe :
With many a wanton stroke
Her feet disperse the powdery snow,
That rises up like smoke."

3. Re-write, using other and appropriate words or phrases for those in *italics :* "The little girl *drew another match.* And *as soon* as it *struck a light* she *saw* a most beautiful Christmas tree, *much larger* and *more splendid* than any she had ever seen *before.* A *vast number* of *lighted* candles *hung among the branches ;* and a *multitude* of pretty *variegated* pictures *met her eyes.*

4. Rewrite the following, putting in all the punctuation marks necessary :

Sisters and brothers little maid
How many may you be
How many seven in all she said
And wondering looked at me.

5. Combine the following sentences into one :

A terrible battle began.
It began early in the morning.
It began before daybreak.
It was the French and Germans who were fighting.
The battle ended in the defeat of the French.
It lasted till sunset.

6. Write a short story of not more than two pages from the following outline :

(*a*) A little boy lived near a great forest, which his parents had cautioned him not to enter.

(*b*) He was picking a bouquet of wild flowers for his mother when he saw some pretty wild flowers in the forest. He crossed the fence to pick them.

(*c*) While picking the flowers he caught sight of his favorite rabbit, which had been lost for some weeks. He gave chase and caught bunny, but was lost in the forest.

(*d*) After some hours he heard the barking of his dog, which had missed him and gone in search. His dog knew he was lost, and led him home again.

7. Write a short letter to a friend, accepting an invitation to spend the Christmas holidays with him, or her, showing how to begin and end a letter, and, also, how to address an envelope.

8. Write out in your own words the story of the "Gray Swan," or of the "Road to the Trenches."

COMPOSITION—JUNIOR 4TH.

1. Suppose you keep a hardware store and are out of coal oil. Write a business letter to Elias Rogers & Co., Toronto, asking them to send you 3 bbls. of coal oil to your nearest railway station.

2. Combine the following elements into a compound sentence :

Adam Daulac was a young man.
He was commandant of a garrison.
The garrison was Montreal.
He made a request of the Governor.
He requested that he might be permitted to lead a war party against the Iroquois.
The Governor thought it a good plan.
The Governor granted his request.

3. Give a single word that means the same as the following phrases :

(*a*) A great mass of humanity.
(*b*) A man who pretends to be something he is not.
(*c*) One who offers to do a thing of his own free will.
(*d*) A man who commands a fleet.
(*e*) The leading man in the Cabinet or Ministry.
(*f*) Not occurring at regular intervals.
(*g*) Always on time.
(*h*) One who is afraid when there is no cause for fear.
(*i*) A person of extraordinary talent.

4. Paraphrase the following stanza :

"And often in those grand old woods
I'll sit, and shut my eyes,
And my heart will travel back again
To the place where Mary lies ;
And I'll think I see the little stile
Where we sat side by side,
And the springing corn and the bright
May morn,
When first you were my bride."

5. Rewrite the following sentences, putting the verbs in (*a*) and (*b*) in the Active and in (*c*) and (*d*) in the Passive Voice :

(*a*) The battle was won by Marlborough.
(*b*) America was discovered by Columbus.
(*c*) After a hard struggle they won the victory.
(*d*) Many times he was deeply grieved by such conduct.

CHATHAM CITY SCHOOLS, PROMOTION EXAMINATIONS.

DECEMBER, 1895.

GEOGRAPHY—SENIOR 2ND TO JUNIOR 3RD.

1. Draw a map of Kent county, showing townships, towns, and villages, rivers and railroads.

2. Name the continents touching the Pacific, Arctic, and Indian Oceans.

3. Make a drawing of and also write a description of gulf, strait, volcano, cape, canal.

4. Name two oceans that separate America and Europe, and two that separate America and Asia.

What separates Africa and Europe, Africa and Asia ?

5. Where do the following live : Polar bear, lion, reindeer, ostrich, camel, whale ?

From what countries do we get cotton, oranges, ivory, coffee, sugar, tea ?

6. What products of March and April have farmers of Kent county to bring to market ?

What products of September and October have they ?

Values—15, 9, 15, 8, 12, 8. 60 marks counted full.

GEOGRAPHY—JUNIOR 3RD TO SENIOR 3RD.

1. Draw a map of North America. Mark on it correctly, 5 large rivers, 5 large lakes, 2 mountain ranges, 5 islands, 3 gulfs or bays, 3 straits, 2 capes, the 3 countries in the continent with their capitals.

2. (*a*) Give the definitions of which the following are examples, and tell where each example is found : Panama, Race, West Indies, Juan de Fuca, basin of the River Thames.

(*b*) Define and give an example of : Watershed, equator, confluence, estuary, volcano. Tell where your example is found.

3. (*a*) Draw a zone map, marking the zones and their boundaries.

(*b*) Name two animals and two trees which are peculiar to each zone.

4. (*a*) Name the counties of Ontario along Lake Erie, with their county towns.

(*b*) What are the products of this portion of the province?

5. In going from Port Arthur to Kingston, name, in order, the bodies of water through which you would pass.

6. Name five of the chief products of Ontario, and five important minerals, telling where each is found.

Values—15, 10, 10, 10, 10, 6, 4, 8, 10.

GEOGRAPHY—SENIOR 3RD TO JUNIOR 4TH.

1. Define isthmus, plateau, cataract, mountain range, tributary, basin. Tell where there is an example of each.

2. Make an outline map showing (1) the four great lakes forming part of the boundary between United States and Canada, (2) cities on their borders, (3) rivers and canals, connecting them, (4) position and name of one river flowing into each lake.

3. Name the counties on the River St. Lawrence and the River Ottawa, and the county town of each

4. Where are the following rivers, what direction do they flow, and where do they empty? Columbia, French, Colorado, Mississippi, Ottawa?

5. What do you understand by "imports" and "exports"? Name six imports of Canada, and tell from what country they are obtained. Name the exports of Canada.

6. What, where, and for what noted are: Regina, Victoria, New York, Chicago, Montreal, Cuba, San Francisco.

Values—10, 15, 15, 15, 13, 14.

GEOGRAPHY—JUNIOR 4TH TO SENIOR 4TH.

1. (*a*) Define: Longitude, height of land, plateau, delta, isthmus.

(*b*) Explain the cause of the seasons, using diagrams.

2. Through what waters will a ship pass in sailing from Liverpool to Hong-Kong?

3. Name the cities of Ontario and give the position of each.

4. What and where are: Crimea, Ganges, Madrid, Canso, Bombay, Albert Nyanza, Melbourne, Sumatra, Apennines, Baltic, Obi, Buenos Ayres?

5. Sketch an outline map of Africa and mark in it:

(*a*) British possessions.

(*b*) Two rivers.

(*c*) Four capes on the northern, southern, eastern and western extremities.

Values—15, 12, 13, 18, 22.

For Friday Afternoon.

DREAM MARCH OF THE CHILDREN.

BY JAMES WHITCOMBE RILEY.

Wasn't it a funny dream?—perfectly bewilderin'!
Last night and night *before*, and night before *that*,
Seemed like I saw the march o' regiments o' children,
Marching to the robin's fife and cricket's rat-tat-tat!
Lily-banners overhead, with the dew upon 'em,
On flashed the little army, as with sword and flame;
Like the buzz o' bumble wings with the honey on 'em,
Came an eerie, cheery chant, chiming as it came.

Where go the children? Travelling! Travelling!
Where go the children, travelling ahead?
Some go to kindergarten; some go to day-school;
Some go to night-school; and some go to bed!

Smooth roads or rough roads, warm or winter weather,
On go the children, tow-head and brown,
Brave boys and brave girls, rank and file together,
Marching out of babyland, over dale and down;
Some go a-gipsying out in country places—
Out through the orchards, with blossoms on the boughs.

Wild, sweet, and pink, and white as their own glad faces;
And some go at evening, calling home the cows;
Where go the children? Travelling! Travelling!
Where go the children, travelling ahead?
Some go to foreign wars and camps by the firelight—
Some go to glory so; and some go to bed!

Some go through grassy lanes leading to the city—
Thinner grow the green trees, and thicker grows the dust;
Ever, though, to little people, any path is pretty
So it leads to newer lands as they know it must.
Some go to singing less; some go to listening;
Some go to thinking over ever nobler themes,
Some go an hungered, but ever bravely whistling,
Turning never home again, but only in their dreams.

Where go the children? Travelling! Travelling!
Where go the children, travelling ahead?
Some go to conquer things; some go to try them;
Some go to dream them; and some go to bed!

—*St. Nicholas.*

THE MEANEST BOY IN SCHOOL.

BY MABEL GIFFORD.

If you want to see the smartest fellow in Topton you just inquire for Blanchard Bixby. He is the jolliest fellow, too. He is always close to one hundred in his per cents. at school, and he is ready and hearty for a game of baseball or tennis, or any fun that is on hand.

Joe Flavin is always boasting what he can do, but you never hear Blanchard Bixby boasting. He never calls a fellow a cheat, or a liar, either; he never calls names. Now, that means a good deal on a playground. When Joe Flavin is in the game there is always a row, for he is sure to call names before the game is finished.

Pratt Hovey is the fellow they call the meanest boy at the Brick street school, and he is always setting Joe on. He likes a row; that is, he likes to see it going on. You don't catch him in it, no siree!

One day (it was about a month before the holiday vacation) Blanchard Bixby came striding home with the hottest face anyone had ever seen him show. He rushed through the hall and burst into grandmother's room like a young cyclone.

"I am going to fight Pratt Hovey to-morrow," he broke out in an angry voice. Blanchard was not afraid to tell anything to grandmother—she never was shocked.

Grandmother put her hands over her ears, and smiled at her grandson. "I don't wonder," she said heartily; "he's the boy they call the meanest boy in school, isn't he?"

"Yes, he is, and rightly named. He is meaner than mean. He called me a cheat to-day, and then he called me a coward because I did not fight Joe Flavin for cheating. I won't stand any more of his talk." Blanchard was breathing pretty hard, and brought his fists down on his knees with force enough, grandmother thought, to crack his kneepans.

"And you think a flogging will do him good?" asked grandmother.

"Yes, I do. It will teach him to keep his mouth shut, and to let me alone in the future."

"Do you suppose that it will teach him to let any of the other boys alone?" asked grandmother.

"I don't know about that, but I can't help what he does to the other boys. I can fight my own battles, but I should have to be in a fight all the time if I followed him up."

"Are the other boys able to fight their own battles?" asked grandmother.

"I—don't know about that; Pratt is a tough one, and heavy. All the boys are afraid of him."

"Do you think your blows will reach his heart?" asked grandmother.

Blanchard looked keenly at grandmother. "Pratt hasn't any heart to reach," he said, scornfully.

"But supposing he had?"

"Well, no; of course, blows would not affect his heart any. He'd be raving mad, and hate me the worst kind. But what else can a fellow do with such a mean cur as Pratt Hovey?"

"If we could only find some way to reach his heart," said grandmother, "and I am sure he has a little, just a little. Then, you see, it would help all the other boys as well as yourself, and, best of all, it would help Pratt. He is the one that needs helping the most."

There was another kind of a flush on Blanchard's face now. "I reckon you are right, grandmother," he said, frankly; "but it would be a puzzle to find the way to Pratt's heart."

"Let us put our heads together," said grandmother, "and see what we can make of this puzzle. If we find the right solution, it will be worth more than any prize puzzle you ever studied out. It is deserving of some pretty hard thinking. And we will just tack your school motto, 'Never say fail,' to it, and see what will come of it."

"I wish," said Blanchard, "that Pratt Hovey had a grandmother like you."

"I would like to be a grandmother to him. I just ache to set my eyes on him," said grandmother. "Couldn't you coax him here sometime?"

"Coax him!" Blanchard drew himself up to his highest point of dignity and frowned a most emphatic refusal. "Coax him! You'd have to coax me a spell, I reckon, before I would do so much as allow Pratt Hovey to step across our dooryard."

Grandmother's eyes twinkled. "Well, I am pretty good at coaxing," she said. "I shall try it."

Nobody knew what was the result of grandmother and Blanchard putting their heads together, nor of grandmother's coaxing, but this much was known, to the great amazement of the boys at the Brick street school: Blanchard Bixby did not fight Pratt Hovey the next day. The two boys, with all the other boys at their heels, met at the appointed hour, at the appointed place.

Some of the girls found out what was "in the wind," and ran to the teacher, Miss Willby, some crying and wringing their hands, some scolding and calling Pratt Hovey and Joe Flavin all the hard names contained in their private dictionaries. Pratt's sister went home crying because none of the girls would speak to her, and Joe Flavin's little brother ran into the woods and hid because the boys told him they would "knock spots out of him" if Blanchard was beaten.

Miss Willby, greatly distressed, hastened to the scene of action. The boys were so intently watching the pugilists that they did not observe her approach. The girls halted at a safe distance, and Miss Willby went on alone. When within hearing distance Pratt Hovey was rolling up his sleeves and shouting, "Come on, McDuffy!"

Blanchard did not make any preparations to remove his jacket, and said, quietly, "I am not going to fight to-day."

Pratt came puffing up in a great rage. "You sneak of a coward," he said, "what do you mean by that?"

"I mean that I have postponed this fight," said Blanchard, calmly.

"Till when?" roared Pratt.

"I cannot say when."

Pratt burst into a derisive laugh, in which some of the other boys joined, while the rest looked wondering and discomfited. This was so unexpected of a fellow like Blanchard.

"Well, if you won't fight me, I'll fight you!" blustered Pratt, doubling up his fists and making an onset.

Before Pratt reached Blanchard, a whole posse of boys had seized him and thrown him. Joe Flavin was left standing alone, and even he was heard to mutter, "He might have waited for fair play." But, in duty bound to aid his chum, he began kicking the boys outside the struggling heap of legs and arms. Blanchard collared him, and choked him so uncomfortably that he agreed to keep quiet.

Miss Willby was standing just within the shadow of the trees that bordered the battlefield, waiting to see how the affair would end, reserving her authority until things took a desperate turn. As a teacher of the public school, her authority was limited to the boundary lines of the schoolyard, but as a resident of Topton she could do something. "If I were in your place," she said to Blanchard, "I would go home while they have him down."

"That hardly seems the thing to do," said Blanchard. "He would be likely to fly at me the first time he saw me. We had better have an understanding before we separate."

"Perhaps you are right," said Miss Willby, "but it frightens me to see a boy in such a fury."

Pratt was begging to be let up. He had cursed and threatened without avail, and, finding himself helpless, began to quiet down.

"Will you let him alone?" said one.

"Yes, yes; you are breaking my ribs; ease up a bit, can't you," groaned Pratt.

"Will you wait peaceably till he sets the day for the fight?" demanded the same speaker.

"Yes, yes; anything, so you let me get my breath," answered Pratt, gasping.

The boys came up like one man, and stood silently looking at Pratt, who, after resting a moment, slowly rose to his feet, picked up his cap and jacket, and, without a word or look to any one, walked away.

The boys looked as if they wanted to cheer, but were too glad to get him off peaceably to rouse him again by crowing. Joe Flavin sulked at a distance, evidently to see all that was to be seen.

One of the boys sidled up to Blanchard and half whispered, "Say, Bixby, going to fight him?"

"Yes," said Blanchard.

"He's a-going to! he ain't backed out!" shouted the boy to his companions; "he just said so."

Then the boys could not be kept under. "Hooray! hooray for Bixby!" they shouted at the top of their lungs, while Miss Willby looked at him with troubled eyes.

Blanchard returned her look with such a frank smile that she somehow felt reassured, and stepped back to the place where the girls had crouched, whispering, and exclaiming, and holding their breath by turns. They were greatly puzzled by what they saw, and eagerly welcomed Miss Willby, plying her with questions.

When all had been told, the girls were hardly the wiser. "It is as good as a continued story," said one. "I never shall stop wondering about it until they have that fight. But I can't endure the thought of Blanchard Bixby fighting. Just imagine him with a black eye and blood on his face, and his clothes torn! I wish boys had some other way of settling their disputes."

"What other way is there to settle with a fellow like Pratt Hovey?" asked another.

Day after day the boys waited for another appointment for the fight, but a week went by and Blanchard seemed to have forgotten it. The boys began to feel doubtful. "But he said he would," the boy who had questioned Blanchard repeated every time the subject was mentioned.

Pratt Hovey had taken no notice whatever of Blanchard since the fracas in the field, but one night after school he found Blanchard walking beside him.

"Hello, Pratt! Some of the fellows are coming over to my house to-night for a jolly time. Going to have some games and a little spread, you know. Come over, will you?"

Pratt stopped short, and looked at Blanchard as if he could not believe his ears. It was the first invitation he had ever received from Blanchard, who was very choice of his invitations. And now, when things were at their worst, what did it mean? Perhaps it was some kind of a trap. But no, that would not be Blanchard Bixby.

"Will you come?" asked Blanchard. "I have a new book full of tricks and games. We fellows want to try them, and then we are going to have an exhibition."

There was nothing that made Pratt hate Blanchard so much as the very select spreads he had at his home—and now he had the chance to see the inside of the enchanted circle. And there was nothing he liked so well as tricks. "I'll come," he said.

Pratt wondered how the other fellows would treat him, and was greatly relieved to be greeted in a hearty, hail-fellow-well-met fashion, just—he thought to himself—as if he was one of them.

They had a hilarious evening, and it is certain Pratt Hovey never had enjoyed himself so much in his life. After the treat, Blanchard proposed that they go into grandmother's room and ask her for a story. Grandmother had a reputation among the boys of Topton for telling "jolly" stories—stories of war times and stories of the times when she lived out West in a log cabin.

Grandmother's story was all that had been promised, and Pratt was quite won over to grandmother's side after seeing and hearing her.

He had a good many questions to ask about the log cabin and the great prairies, and while the other boys were talking all at once, he found his way to the chair next grandmother's, and, encouraged by a friendly smile, began conversing with her.

One after another the boys left the room, and Pratt suddenly became aware that he was alone with grandmother. It came over him like a shower-bath of mingled ice-cold and burning hot water that he had been entrapped here, that Blanchard's folks might settle with him for his insults to their son. He longed to rush out of the room, but would not have any one know that he was frightened. He sat nervously on the edge of the chair and shuffled his feet, and kept a sharp lookout at the door.

Grandmother talked on and on, and gave him no chance to make an excuse to leave. She asked him about his studies and his playmates, and he grew more restless with every question. Then she talked about his parents.

At last grandmother paused and said: "I expect the boys want you by this time. I hope I have not kept you too long. I always like to become acquainted with Blanchard's friends."

"I ain't his friend," blurted out Pratt. "I don't know what he invited me here for. He never liked me, and I never liked him. I sassed him the other day, and he challenged me to fight him. He set the day and then backed out. But he's going to fight me when he gets good and ready."

"Meanwhile," smiled grandmother, "you two can be friends, I suppose."

Pratt laughed a little uneasily and awkwardly. He momentarily expected something to happen, and he was by no means sure how friendly Blanchard's and grandmother's intentions were.

Grandmother appeared to take his smile for assent. "That's right," she said; "and come in any time. I like to have the boys drop in when they are going by. Good-night."

Pratt joined the gay company in the dining-room, and found them preparing to take leave. They invited Pratt to go along with them. This young man had never been in quite such a dazed condition in his life. He could not make it out; and the boys gave him no chance to say anything. They acted as if they had been in the habit of having him with them, and they all agreed that he had been most skilful with the tricks, which pleased him greatly.

"The next time," said one, "we will try the ribbon trick."

The next time? Was he to be invited again? Pratt was more and more bewildered. It seemed like being taken up and set down in a new world.

The following day at school Pratt actually felt shy in Blanchard's presence; things were strange. But Blanchard did not seem to be troubled or bewildered about anything, and greeted him cordially. Pratt was so engrossed that he forgot to hector the small boys. They thought he must be feeling sick.

The next week another of the boys invited Pratt to his house. "We take turns," he said. "We are going to try some more tricks; and bring your violin—we shall have some music."

Next to tricks Pratt delighted in music. The boys formed an orchestra that night, and asked Pratt to take the part of first violin. He was quite overcome by this honor; Blanchard Bixby had proposed him. "He ain't such a set-up fellow as I thought he was," said Pratt to himself, as he took his homeward way.

Week after week passed, and nothing was said about a fight between Blanchard Bixby and Pratt Hovey, except when some curious lad ventured to ask Blanchard, "Are you going to fight Pratt?" And he always answered, "Yes."

Nobody believed it now, however, for Pratt had become a member of the very select boys' club, and also of their orchestra, and it was plain to all that the two boys were the best of friends. Why they had made up, and how, no one knew. The puzzling thing about it was Blanchard's invariable "Yes" when asked if he was going to fight Pratt.

It was the last week of December that the invitations were sent out for Blanchard Bixby's New Year's eve party. It was to be a "Ladies' Night," for the sisters and friends of the boys were invited. Pratt Hovey dared not hope to be included in the list. He had always been as cordially detested by the girls as by the boys. He was quite overcome when one of the tiny white envelopes was handed to him by the postmaster.

No doubt this was Blanchard's doing, and no doubt he meant it kindly, but could he stand the averted faces and whispers, the curt civilities, and the little schemes to avoid him that he would be sure to meet? He used to think that he enjoyed making himself disagreeable; he was not so sure about it now. Ever since he could remember, Pratt Hovey had been called the meanest boy in school, and he certainly had striven to merit his name. But of late he had undergone a revulsion of feeling. He hardly knew himself—it seemed as if he were some one else.

Pratt went to the party. He had been undecided until the last minute. He left his hat and coat in the hall, and went diffidently toward the door that hid the merry party from his sight. Suddenly it came open, and a vision of bright lights, flowers, and dainty maids fairly dazzled him.

Before he had time to realize what was happening one of the maids had pinned a ribbon badge, worked with the club's initials, to his coat, another fastened a carnation pink just below it, and a third came up with a written slip and told him he must find the mate to that line. He hardly knew whether he was walking on his feet or his head as he followed his pilot to the group of girls who were looking at their slips, and chatting and laughing as they read them.

His courage nearly deserted him when he reached them; he thought to see them shrink away and lose their smiles. Not so; they all came forward with a sweet "Good evening, Pratt," and held out their slips for his inspection.

Pratt never had believed in fairy stories, and had teasingly laughed at his little sister many times, until she cried, when she came to him with glowing accounts of the fairy princes and princesses; to-night he almost believed in them. Certainly there was some enchantment at work. He did not see the significant glances exchanged slyly between Blanchard and grandmother.

Grandmother went all around the room and shook hands with every boy and girl there, giving an extra squeeze to Pratt's hard hand, and saying to all, "Bless you, children! have as good a time as you can."

The party was to last until midnight. Five minutes after twelve all were to take leave.

They had a merry evening of it, and at last seated themselves for a little quiet amusement before refreshments were served. Blanchard stepped out and began to make a speech. "On the last night of the year," he said, "all debts should be paid and accounts balanced. I owe Pratt Hovey a chance to fight me, and I am ready to square accounts now. If you will put on your wraps, and come out on the lawn, we will square accounts. It's bright moonlight, and the snow is hard as rock."

The girls looked puzzled and frightened, and shrank back, but Blanchard called out, "Come on, girls! we want you all to witness that there is fair play."

Whoever heard of such a thing as a fight at a party? It was a very silent little company that slowly walked out into the moonlight. The two boys took their places. The girls wished they had remained at home, and the boys inwardly reproached Blanchard for spoiling such a merry time. Why should he choose this night of all nights to square accounts with Pratt Hovey?

The two boys looked at each other, and Pratt stepped back a little to get into position. It was so still on the lawn that no one would have mistrusted there was a living being there.

"I offered to fight you once," said Pratt, drawing nearer to Blanchard.

"Yes," said Blanchard.

"And you backed out?"

"Yes."

"Well, now you offer to fight me?"

"Yes."

"And I back out."

And back out he did, into the midst of the group of boys holding their breaths and waiting the onset. Such a shouting as went up from their united throats! They seized Pratt by the arms and legs, and ran, cheering and laughing, back to the house, while the girls followed, clapping their hands and crying, "Three cheers for Pratt Hovey!" Blanchard Bixby followed, smiling to himself in the moonlight, and thinking of grandmother.

When Pratt had been set upon his feet, very red and happy, and Blanchard had arrived, looking serene and contented, Pratt remarked, "You see, Blanchard, you have been fighting me so hard ever since that day you backed out that you have taken the fight all out of me."

There was a great handshaking then between the two boys, and Blanchard led the way to the supper-room, saying, "There is nothing now to interfere with the toasts, or the "Happy New Years" after twelve."

Nothing more was ever heard of the Meanest Boy in School.—*The Outlook.*

Mathematics.

Communications intended for this department should be written on one side only, and with great distinctness; they should give all questions in full, and refer definitely to the books or other sources of the problems, and they should be addressed to the Editor, C. CLARKSON, B.A., Seaforth, Ont.

TO OUR CORRESPONDENTS.

To our correspondents, a word. Our acknowledgements are due to a band of gallant hearts, many of whom have not only sent a lot of work to help THE JOURNAL, but have accompanied their contributions with warm expressions of something bordering on affection for this paper, on account of the help they themselves have received. We hope to overtake this part of the work next month; meantime we are happy to believe that the present number is likely to prove satisfactory to our readers. We would like to receive solutions of questions 14 to 18, inclusive, and the others that follow in the January issue, page 249.

Has THE JOURNAL made your work any brighter? Have you done anything to make the paper better known? When do you intend to write to THE JOURNAL on some practical topic within your own knowledge and experience? Do it now. Ask all your friends to join hands in this enterprise.

SOLUTIONS OF PROBLEMS.

Sent by correspondents. See January 1st, page 249.

No. 1. By W. M. GOVENLOCK, B.A., Ingersoll.

The ornament contains $2\frac{1}{4}$ oz. of gold and $\frac{3}{4}$ oz. alloy.

$\therefore$ value of the material $= 84$ shillings $\times 2\frac{1}{4} + 3\frac{1}{3}$s. $\times \frac{3}{4} = 191\frac{1}{2}$s.

$\therefore$ value of the workmanship $= \frac{1}{4}$ of $191\frac{1}{2}$ shillings.

$\therefore$ total value $= \frac{5}{4}$ of $191\frac{1}{2}$s. $= £11$ 19s. $4\frac{1}{2}$d.

No. 2. By MR. GOVENLOCK. The trains will be 5 miles apart when they have travelled altogether either 90 miles or 100 miles. But they approach at 36 miles per hour; hence the time will be either $90 \div 36$, or $100 \div 36$, *i.e.*, $2\frac{1}{4}$ hours or $2\frac{7}{9}$ hours.

No. 3. By the EDITOR. Let x = number of hours before meeting of the trains.

$\therefore$ A.'s rate : B.'s rate $=$ x : 36; and also

A.'s rate : B.'s rate $= 25$: x. Therefore we have $x : 36 = 25 : x$; *i.e.*, $x^2 = 25 \times 36$;

or $x = 5 \times 6 = 30$ hrs.

The times are $30 + 25 = 55$ for A.; $30 + 36 = 66$ hours for B.

N.B.—See Clarkson's "Problems in Arithmetic," Teachers' Edition, pages 57 and 154, for a similar question. The original problem was proposed on the B.A. examination, Cambridge, 1820.

No. 4. By W.M.G. Man does $\frac{2}{3}$ of work in $15\frac{1}{3}$ days, or whole in 23 days. $\therefore$ he does $\frac{20}{23}$ of work in 20 days. Assistant must do $\frac{3}{23}$ in $4\frac{2}{3}$ days. And they should be paid in proportion 20 : 3; or $\$26\frac{2}{23}$ and $\$3\frac{21}{23}$. Also, assistant does $\frac{3}{23}$ in $1\frac{4}{5}$ days, or whole in $35\frac{7}{9}$ days.

No. 5. By W.M.G. A., B., and C. do $\frac{1}{5}$ work in a day; B. does $\frac{1}{2}$ as much as A. and C. $\therefore$ B. does $\frac{1}{15}$ per day, or 15 days for the whole. Again, C. does $\frac{1}{3}$ as much as A. and B. together, $\therefore$ the whole in 20 days. And A. does $\frac{1}{5} - \frac{1}{15} - \frac{1}{20} = \frac{1}{12}$ per day; or whole in 12 days.

No. 6. By W.M.G. The P.W. by first plan $= \$700$. By the second plan the yearly payment is \$132, and the P.W. of all the payments is

$$= \frac{132}{1.07} + \frac{132}{1.07^2} + \frac{132}{1.07^3} + \text{etc.} + \frac{132}{1.07^7}$$

$$= \frac{132}{1.07^7}\left[1.07^6 + 1.07^5 + \text{etc.} + 1.07 + 1\right]$$

$$= \frac{132}{1.07}\left[\frac{1.07^7 - 1}{1.07 - 1}\right] = \frac{132}{1.60578} \times \frac{.60578}{.07} = \$711.38$$

Therefore the first method is the better by \$11.38.

N.B.—For more details of this method of calculation see December number, 1895, page 218. Also Clarkson's "Problems in Arithmetic," pages 52 and 145, Teachers' Edition.—ED.

No. 7. By W.M.G. Liquor costs \$1,000; $\frac{19}{20}$ of a pint sells for 4c.; *i.e.*, 1 gallon for $\frac{20}{19}$ of 4c. $\times 8$; or 7,000 gallons for $\$2,357\frac{17}{19}$.

No. 8. By W.M.G. Boy should get $\frac{7}{12}$ of \$100 $+ \frac{7}{12}$ of suit.

But he really gets $\frac{6}{12}$ of $\$100 + \frac{1}{12}$ of suit. These are, therefore, equal, and hence $\frac{1}{12}$ of $\$100 = \frac{5}{12}$ of suit. Ans. \$100.

No. 9. By W.M.G. £1,800 is of the same value as \$8,800; $£1 = \$\frac{44}{9}$.

But par of exchange is $£1 = \$\frac{40}{9}$ premium $= 4$ on 40 or 10%; exchange is @ 110.

No. 10. By W.M.G. P.W. of first $= \$450$, and P.W. of second is

$$\frac{150}{1.10} + \frac{150}{1.10^2} + \frac{150}{1.10^3} = \frac{150}{1.10^3}\left[\frac{1.10^2 - 1}{1.10 - 1}\right]$$

$= \$373.03$ nearly.

Thus, second method is cheaper by \$76.97. See N.B. above.

No. 11. By W.M.G. The P.W. of \$25 due in 9 months $= 25 \div 1.045 = \$23.9234$.

\$24.50 due in 6 months $= 25 \div 1.03$ cash $= 23.786$

$\therefore$ \$24.50 @ 6 months is the better by 13c. per M.

No. 12. If d = depth, the contents of cistern $= \frac{22}{7} \times 3^2 \times d$

$\therefore \frac{22}{7} \times 9d \times \frac{25}{4} = 286$ gallons; $d = 1\frac{139}{225}$ feet.

No. 13. The point is the centre of the circumscribing triangle of which the radius = (product of the three sides) $\div$ (2 area of the triangle)

$= 80 \div \sqrt{7}$ feet from each angle.

N.B.—No answers have been received to the next five questions.

Page 190, H. S. Arithmetic. By W.M.G.

1st yr. A. has in	\$ 7,500;	B., \$15,000;	C., \$22,500
2nd " A. "	6,750;	B., 13,800;	C., 20,150
3rd " A. "	6,000;	B., 12,600;	C., 18,800
4th " A. "	5,250;	B., 11,400;	C., 17,450
5th " A. "	4,500;	B., 10,200;	C., 16,100

A. has in for 1 yr. \$30,000; B., \$64,000; C., \$95,000

$\therefore$ gain must be divided in proportion to 30 : 64 : 95. Now an ambiguity arises. Do they (*a*) take out their money at end of 5th year, or (*b*) is it counted in with the \$42,900?

(*a*) Suppose they take it out. Then A. has in \$3,750; B., \$9,000; C., \$14,750; altogether they have in \$27,500, $\therefore$ gain is \$15,400.

Of this, B. gets $\frac{64}{189}$; $\frac{64}{189}$ of $\$15,400 = \$5,214.81$.

But \$9,000 capital belongs to B., $\therefore$ B.'s share $= \$14,214.81$.

(*b*) If, however, they do not take out this sum the last year, but include it in the \$42,900, total capital at the end of 5th year $= \$30,800$, $\therefore$ gain is \$12,100.

B.'s share of this $= \frac{64}{189}$; $\frac{64}{189}$ of $\$12,100 = \$4,097.30$.

$\therefore$ B.'s share $= \$10,200 + \$4,097.30 = \$14,297.30$.

THE HIGH SCHOOL SENIOR LEAVING AND UNIVERSITY HONOR MATRICULATION.

TRIGONOMETRY.

1. (*a*) Define those units of measurement called respectively the degree, the grade, the radian; and show the relation of each to two right angles.

(*b*) The sum of the measure of a certain angle in degrees and twice its measure in radians is $23\frac{2}{7}$; find its measure in degrees ($\pi = \frac{22}{7}$).

2. (*a*) Express in terms of its cosine the other trigonometrical functions of the angle x.

(*b*) Given $2 \sin^2 45° = 1$ and $\sin 30° = \frac{1}{2}$; find $\tan 15°$.

3. (*a*) Prove geometrically that

$\cos(A - B) = \cos A \cos B + \sin A \sin B$.

(*b*) If $\cos(A - C) \cos B = \cos(A - B + C)$, show that tan A, tan B, and tan C are in harmonical progression.

4. Prove the following identities:

(*a*) $\tan \frac{x}{2} = \frac{1 - \cos x}{\sin x}$.

(*b*) $\cos A + \cos 3A + \cos 5A + \cos 7A = 4 \cos A \cos 2A \cos 4A$.

(*c*) $\cos(A + B) - \sin(A - B) = 2 \sin\left(\frac{\pi}{4} - A\right) \cos\left(\frac{\pi}{4} - B\right)$.

5. Define the logarithm of a number and prove

(*a*) $\log_a \sqrt{\frac{n}{m}} = \frac{1}{2}(\log_a n - \log_a m)$.

(*b*) $6 \log_a \frac{2}{3} + 4 \log_a \frac{9}{10} + 2 \log_a \frac{25}{8} = 0$.

6. In the triangle ABC, show that

(*a*) $\tan \frac{1}{2}(A - B) = \frac{a - b}{a + b} \cot \frac{C}{2}$.

(*b*) $p = \frac{c \sin A \sin B}{\sin C}$, if p denote the perpendicular from C upon c.

7. From the point A on a plane the angular elevation of a tower on the same plane is β. From the point D, which is c feet nearer the base of the tower, the angular elevation is γ. Show that the height of the tower is

$$\frac{c}{\cot \beta - \cot \gamma}.$$

8. In any triangle, ABC, prove that

(*a*) $R = \frac{abc}{4\triangle} = \frac{c}{2 \sin C}$, where R is the radius of the circumcircle, and $\triangle$ is the area of the triangle.

(*b*) $\triangle = 2R^2 \sin A \sin B \sin C$.

9. At the foot of a mountain the elevation of its summit is 45°. Ascending the face of the mountain a mile on a slope of 15°, the elevation is found to be 60°. Find the height in miles; given $\sin 15° = \frac{\sqrt{3} - 1}{2\sqrt{2}}$, $\sin 30° = \frac{1}{2}$.

SOLUTIONS.

BY J.H.P., OWEN SOUND.

1. (*b*) Let x = number of degrees in angle.

Then its measure in radians is $\frac{\pi x}{180}$,

and twice its measure is $\frac{\pi x}{90}$,

then $x + \frac{\pi x}{90} = 23\frac{2}{7}$.

$\therefore x = 22\frac{1}{2}°$.

2. (*b*) $\tan 15° = \frac{\sin 15}{\cos 15} = \frac{2 \sin 15 \cos 15}{2 \cos^2 15}$

$$= \frac{\sin 30}{\cos 30 + 1} = \frac{\frac{1}{2}}{\frac{3}{2} + 1} = 2 - \sqrt{3}.$$

3. (*b*) $\cos(A - C) \cos B = \cos(A - B + C)$.

Then $\cos A \cos B \cos C + \sin A \cos B \sin C = \cos A \cos B \cos C + \cos A \sin B \sin C - \sin A \cos B \sin C + \cos C \sin A \sin B$;

or, $2 \sin A \cos B \sin C = \cos A \sin B \sin C + \sin A \sin B \cos C$;

$2 \cot B = \cot A + \cot C$;

$\frac{2}{\tan B} = \frac{1}{\tan A} + \frac{1}{\tan C}$;

i.e., tan A, tan B, tan C are in h.p.

4. (*a*) $\tan \frac{x}{2} = \frac{\sin \frac{x}{2}}{\cos \frac{x}{2}} = \frac{1 - 1 + 2 \sin^2 \frac{2x}{2}}{2 \sin 2 \cos \frac{x}{2}} = \frac{1 - \cos x}{\sin x}$

(*b*) $\cos A + \cos 3A + \cos 5A + \cos 7A = 2 \cos 4A (\cos 3A + \cos A) = 4 \cos 4A \cos 2A \cos A$.

(*c*) $\cos(A + B) - \sin(A - B) = \sin\left(\frac{\pi}{2} - A - B\right) - \sin(A - B)$,

$$= 2 \cos\left(\frac{\pi}{4} - B\right) \sin\left(\frac{\pi}{4} - A\right).$$

5. (*a*) Let $\log_a n = x$ and $\log_a m = y$,

then $n = a^x$ and $m = a^y$,

i.e., $\frac{n}{m} = a^{x-y}$, and $\sqrt{\frac{n}{m}} = a^{\frac{x-y}{2}}$,

$\therefore \log_a \sqrt{\frac{n}{m}} = \frac{1}{2}(x - y) = \frac{1}{2}(\log_a n - \log_a m)$.

(*b*) $6 \log \frac{2}{3} + 4 \log \frac{9}{10} + 2 \log \frac{25}{8}$

$= 6 \log 2 - 6 \log 3 + 4 \log 9 - 4 \log 10 + 2 \log 25 - 2 \log 6$

$= 6 \log 2 - 6 \log 3 + 8 \log 3 - 4 \log 5 - 4 \log 2 + 4 \log 5 - 2 \log 3 - 2 \log 2$

$= 0$.

6. (*b*) $p = a \sin B$, and $a = \frac{c \sin A}{\sin C}$.

$\therefore p = \frac{c \sin A \sin B}{\sin C}$.

7. Let x = height of tower and y = distance of D from foot of tower.

Then $\frac{c+y}{x}=\cot\beta$, and $\frac{y}{x}=\cot r$ (r, *i.e.*, gamma)

$\therefore \frac{c}{x}=\cot\beta-\cot r.$

$\therefore x=\frac{c}{\cot\beta-\cot r}.$

8. (b) $\triangle=\frac{1}{2}$ bc sin A, and b$=2$R sin B and C $=2$R sin C.

$\therefore \triangle=2R^2$ sin A sin B sin C.

9. Let A be foot of mountain, B the point 1 mile up, and C the summit, CE the height, and D a point in CE on a horizontal with B.

$\therefore$ CB$=\frac{\text{AB sin } 30}{\sin 15}=\frac{\sqrt{2}}{\sqrt{3}-1}$ miles.

Since $\angle$ CBD is 60° $\angle$ BCD$=30$,

Then CD$=$CB cos $30=\frac{\sqrt{2}}{\sqrt{3}-1}\cdot\frac{\sqrt{3}}{2}$ miles,

and DE $=$ AB sin $15=\frac{\sqrt{3}-1}{2\sqrt{2}}$ miles

$\therefore$ CE $=$ CD $+$ DE $=\frac{\sqrt{2}(3+\sqrt{3})}{4}$ miles.

EUCLID.

1. The three medians of a triangle, taken in both length and direction, can form a triangle; and the area of the new triangle is three-fourths that of the original.

2. P is a fixed point and L is a fixed line not containing P. PA and PB are perpendicular to one another, and meet L in A and B respectively. Show that the sum of the reciprocals of the squares on PA and PB is constant.

3. Draw a circle to pass through a given point and touch two given lines.

4. Show how to inscribe a circle in a triangle, and how to describe a circle about the same triangle. Euc. IV., 4 and 5.

5. (a) Describe a regular pentagon in a circle. Euc. IV. 11.

(b) Show that every diagonal of the pentagon is divided in extreme and mean ratio by another diagonal.

6. If two triangles have their three sides proportional they are equiangular (or similar), and have the equal angles opposite homologous sides in each. Euc. VI., 5.

7. Find a mean proportional between two given straight lines; and thence find a square equal to the sum of two given rectangles. Euc. VI., 13.

8. Equiangular parallelograms are to each other as the rectangles contained by a pair of adjacent sides of each. Euc. VI., 23.

9. In a concyclic quadrilateral the sum of the rectangles on the sides taken in opposite pairs, is equal to the rectangle contained by the diagonals. Euc. VI. D (Ptolemy's theorem).

10. APBQ are four points in line such that AP : PB $=$ AQ : BQ. If C be the middle point of AB, show that the square on AB is equal to four times the rectangle contained by CP and CQ.

SOLUTIONS.

BY J.H.P., OWEN SOUND.

1. Let ABC be the triangle, and AD, BE, CF the medians. Bisect BD and DC at G and K.

Join FG and EK; produce FG and make GH $=$FG.

Join BH and HE; then HCF is a triangle whose sides are respectively equal to the medians and parallel to them, as is easily shown. Secondly, CG $=\frac{3}{4}$ BC, and, therefore,

FGC $=\frac{3}{4}$ FBC. Double each triangle, and

FHC $=\frac{3}{4}$ ABC.

2. APB is a right-angled triangle, $\therefore$ AP$^2+$BP^2 $=$AB^2

$\therefore \frac{1}{AP^2}+\frac{1}{PB^2}=\frac{AB^2}{AP^2.BP^2}=\frac{AB^2}{4\,(\text{area})^2}=\frac{AB^2}{AB^2(\text{perp})^2}$

$=\frac{1}{(\text{perp.})^2}$, a constant.

3. See Todhunter's "Elements of Euclid," pp. 296, 297.

5. (b) ABCDE is a regular pentagon in a circle. The diagonals CA and CE cut the diagonal DB at F and G.

DF $=$ CF $=$ CG $=$ GB

also DC $=$ DG

DC$^2=$ DF$^2+$FC$^2\times$DF.FG (II, 12), since FG $=2$ proj. of H on DF

i.e., DG$^2=$ DF.BG$+$BG$^2+$DF.FG

$=$ DB.BG. (II, 1.)

10. A C P B a

Given AP : PB $=$ AQ : QB, prove AB$^2=4$ CP.CQ.

Since AP : PB $=$ AQ : QB,

then aP$+$PB : aP$-$PB $=$ AQ $+$ QB : AQ $-$ QB;

hence AB : 2CP $=$ 2CQ : AB.

$\therefore$ AB$^2=4$CP.CQ.

A METHOD IN FRACTIONS.

BY INSPECTOR PRENDERGAST, B.A., TORONTO.

Sec. 1. Let $\frac{a}{b}$ be a vulgar fraction in its simplest form.

Then $\frac{a}{b}=\frac{a}{b}=\frac{10a}{10b}=q_1+\frac{r_1}{b}=\frac{q_1}{10}+\frac{r_1}{10b}$

$\frac{r_1}{b}=\frac{10r_1}{10b}=q_2+\frac{r_2}{b}=\frac{q_2}{100}+\frac{r_2}{100b}$

$\frac{r_2}{b}=\frac{10r_2}{100b}=$ etc., etc.

$\frac{a}{b}=\frac{q_1}{10}+\frac{q_2}{100}+\frac{q_3}{1000}+\frac{r_3}{1000b}$

$=\frac{100q_1+10q_2+q_3}{1000}+\frac{r_3}{1000b}.$

Hence we are able to find a fraction which shall have for its denominator a specified power of 10 and shall be less than a given fraction by as small a quantity as we choose.

Sec. 2. For example,

$\frac{3}{7}=\frac{\frac{3}{7}}{1}=\frac{\frac{30}{7}}{10}=\frac{4\frac{2}{7}}{10}=\frac{4}{10}+\frac{\frac{2}{7}}{10}$;

$\frac{\frac{2}{7}}{10}=\frac{\frac{20}{7}}{100}=\frac{2\frac{6}{7}}{100}=\frac{2}{100}+\frac{\frac{6}{7}}{100}$;

$\frac{\frac{6}{7}}{100}=\frac{\frac{60}{7}}{1000}=\frac{8\frac{4}{7}}{1000}=\frac{8}{1000}+\frac{\frac{4}{7}}{1000}$

$\therefore \frac{3}{7}=\frac{4}{10}+\frac{2}{100}+\frac{8}{1000}+\frac{\frac{4}{7}}{1000}$

$=\frac{400+20+8}{1000}+\frac{4}{7000}=\frac{428}{1000}+\frac{4}{7000}$;

or, by continuing the process,

$\frac{3}{7}=\frac{4285}{10000}+\frac{5}{70000}=$ etc.

Section one is intended for teachers; pupils who have learned vulgar fractions can easily understand examples like that of section two, and should by practice in a multiplicity of such examples be made familiar with the reasoning of process and nature of result before they are told the conventional method of writing fractions whose denominators are powers of 10, and before the word decimal is ever mentioned. It is a shocking thing to start the subject by telling the pupils to use the denominator of the given fraction as a divisor and the numerator, with zeros added, as dividend, etc., as is very often done. The "why" and the "what" before the "how." Delay long before giving mechanical devices in mathematics. Short solutions and convenient methods spring freely and naturally from thorough knowledge.

REMARK.—It may be a shocking thing, as the writer supposes. We wish only to call attention to the fact that the usual process merely assumes the principle of notation, *i.e.*, a unit $=$ 10 tenths; a tenth $=$ 10 hundredths, etc.; while the operation is merely long division. In the method given above much more is assumed, and the operation is not less simple. All the same, we are greatly obliged to the writer, and hope to hear from him often. Anything is better than stagnation.—EDITOR.

CORRESPONDENCE.

A.M.B.—"Does the number of pages for book-keeping work in the P. S. L. course mean twenty pages for each book, *i.e.*, day book, journal, and ledger; or, does it mean twenty pages in all?" If you will address a note to John Millar, Esq., M.A., Deputy Minister of Education, you will almost certainly receive a courteous and satisfactory reply. The interpretation of the Regulations can only be given by the Education Department. No teacher should hesitate a moment to ask the Department a necessary question about school work. Put your query concisely and clearly. Refer to page and paragraph in the official circular, and you will generally get the information you want. Be quite sure that you have read everything in the circular. Very likely your own inspector could tell you at once what you wish to know.

S.T.C.—The following correspondence will satisfy your questions. A fellow-teacher in your own district sent it to THE JOURNAL—a very kind and thoughtful proceeding. "To the Education Department, Toronto: In Regulations—Circular No. 4, June, 1895, section 2, p. 15.—Does this apply simply to those who take advantage of this 'Provision'; or, will it also apply to those who will write for the Primary in July, 1896? If the latter, will it exempt from all the Form I. examination, including Botany and Geography, as it seems to read, or simply *pro tanto?*" Candidates for the Primary in July next, who have already passed the Commercial Examination, will not be required to pass the examinations of Form I. There is no danger that the Education Department will issue another circular before July—as you seem to fear—reversing this decision. Students who hold commercial certificates will not be examined in Geography and Botany, that is clear. How they will *teach* them is another question.

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One day, in huckleberry-time, when little Johnny Flails
And half-a-dozen other boys were starting with their pails
To gather berries, Johnny's pa, in talking with him said
That he could tell him how to pick so he'd come out ahead.
"First find your bush," said Johnny's pa, "and then stick to it till
You've picked it clean. Let those go chasing all about who will
In search of better bushes; but it's picking tells, my son—
To look at fifty bushes doesn't count like picking one."
And Johnny did as he was told; and, sure enough, he found
By sticking to his bush while all the others chased around
In search of better picking, 'twas as his father said;
For, while all the others looked, he worked and soon came out ahead.
And Johnny recollected this when he became a man;
And first of all he laid him out a well-determined plan;
So, while the brilliant triflers failed, with all their brains and push,
Wise, steady-going Johnny won by "sticking to his bush."

—*St. Nicholas.*

As memory scans the past, above and beyond all the transitory pleasures of life there leap forward those supreme hours when you have been enabled to do unnoticed kindnesses to those round about you, things too trifling to speak about, but which you feel have entered into your eternal life. —*Drummond.*

Swift kindnesses are best; a long de'ay
In kindness takes the kindness all away.

Question Drawer.

All questions for this department, like all communications for any other department of THE JOURNAL, must be authenticated with the name and address of the writer, and must be written on one side of the paper only. Questions should also be classified according to the subject, *i.e.*, questions for the English, the Mathematical, the Scientific, and the general information departments should be written on separate slips, so that each set may be forwarded to the Editor of the particular department. If you wish prompt answers to questions, please observe these rules.

A.C.—Canadian metal currency is coined in the Royal Mint, London, Eng.

G. B. MAC.—Write to the Education Department and get the information officially.

The following circular from the Education Department will answer other questions which have been asked. "Dear Sir,—In reply to your request, the Minister desires me to inform you that a copy of the School Law and Regulations has been sent, gratuitously, for each school board, through the county inspector. Additional copies will be supplied at 75 cents each. Your obedient servant, John Millar, Deputy Minister."

J.W.R.—(1) Besides the twelve you name, Chatham is the only other city in Ontario. It was incorporated a few years ago. We cannot give the exact date. (2) The districts are Algoma, Manitoulin, Nipissing, Rainy River. (3) The county town or capital of Algoma is Sault Ste Marie; of Manitoulin, Gore Bay; of Nipissing, North Bay; of Rainy River, Rat Portage. (4) The District of Columbia. The territories (organized) are Arizona and New Mexico; (unorganized) Indian Territory, Alaska.

Book Notices.

FREE-HAND DRAWING, pp. 112; MECHANICAL DRAWING, pp. 197; COLOR STUDY, pp. 75. Boston: Ginn & Co., 1895.

These books are intended for teachers chiefly, and senior students. They are admirable in printing and binding, and the Free-hand Drawing Manual is one that contains a very large amount of matter of great interest, to both public and high school teachers in Ontario. The Color Study will be of much interest to kindergarteners and to painters.

STEPHENS' CATECHISM OF PRACTICAL AGRICULTURE, pp. 85. Twenty-second thousand. Blackwood & Sons, 1895. Price one shilling.

If any teacher is in doubt as to how Agriculture ought to be introduced as an "obversational" subject in the lower classes, this little book will show him how to begin. A large number of the questions would form suitable home exercises for junior pupils in rural sections. Some of the details given will provoke audible smiles! But we need such a book here.

TRANSLATIONS AND REPRINTS FROM THE ORIGINAL SOURCES OF EUROPEAN HISTORY.—No. 5 of Vol. I. and No. 2 of Vol. II. of this interesting series of publications are concerned with the period of the French Revolution and the rise of Napoleon. No. 5 of Vol. I. contains, among other reprints, the decree of the National Assembly abolishing the Feudal System, the memoirs drawn up by Mirabeau in 1789, and the famous Declaration of Pilnitz. In an introductory bibliography, the reader is referred to the best histories, both French and English, dealing with this important epoch.

No. 2 of Vol. II. contains reprints of the articles of the treaties of Campo Formio and Luneville, documents relating to the continental system, the texts of the Berlin and Milan decrees and of the English orders in council, the decree reuniting the Papal dominions to the French Empire, and other valuable historical matter.

No. 1 of Vol. II. of this series deals with the rise of English towns and guilds. It contains charters of cities and boroughs such as Lincoln and Chester, ordinances and other records of guilds merchant, craft guilds, and social and religious guilds, and a list of towns at various periods, *e.g.*, towns mentioned in Anglo-Saxon chronicle, towns mentioned in Domesday book, towns summoned to send representatives to parliament by Edward I., etc.

(Published by the department of history of the University of Pennsylvania, Philadelphia, Pa., 1895. Single numbers, 15 cents; double numbers, 25 cents. Price of each annual series $1.00.)

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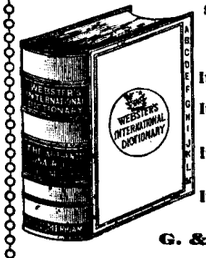

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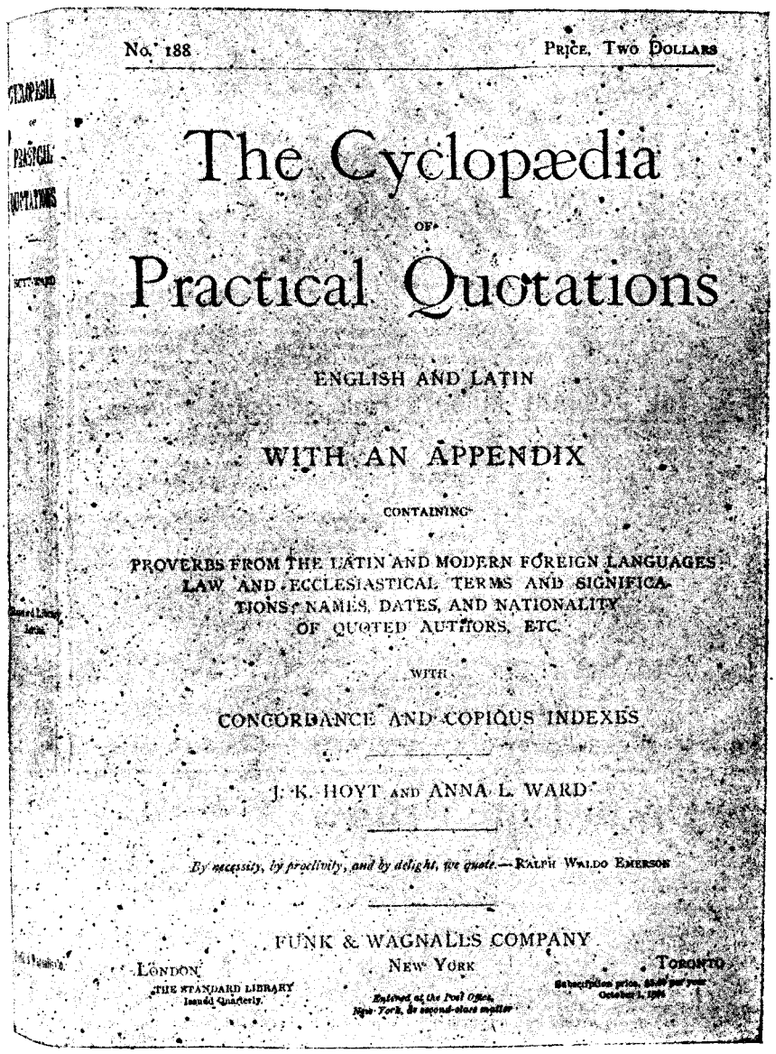

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OF THE

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February.

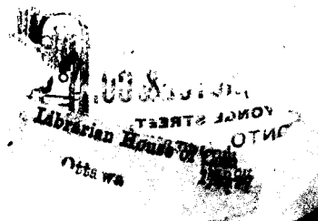
5. First meeting of High School Boards and Boards of Education. [P. S. Act, sec. 106 (1); H. S. Act, sec. 13 (1).] (*1st Wednesday in February*)

29. Inspectors' Annual Reports to Department, due. [P. S. Act, sec. 155 (5).] (*On or before 1st March.*)

Inspectors' summary, townships and village Reports to Department, due. (*On or before 1st March.*)

Annual Reports from High School Boards, to Department, due. (This includes the Financial Statement); [H. S. Act, sec. 36 (2).] (*On or before 1st March.*)

Financial Statements of Teachers' Associations to Department, due. (*On or before 1st March.*)

Separate School Supporters to notify Municipal Clerk. [S. S. Act, sec. 40.] (*On or before 1st March.*)

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