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Editorial Notes.

WE beg leave to call the attention of our readers to Mr. Thomas O'Hagan's letter, which will be found in another column. With its general tenor and aim we must all heartily agree. The foundation of the habit in reading which is likely to persist to a greater or less extent through all the after-life is, in most cases, laid in the Public and High Schools, and it seems to us that the criticisms which Mr. O'Hagan directs against the deficiencies of the latter in this respect lie with even greater force against the Public Schools. In fact, it seems a wonder how the children who attend the Public Schools, and perhaps more particularly the large city schools, can ever acquire the ability to read aloud even passably. Is it not true that in many, if not in most, of these schools the pupils in all the more advanced classes are scarcely required to read aloud at all. The exigencies of the crowded programme do not seemingly admit of time and place for this most important exercise. We should like much to hear from some of those engaged in these schools, whether in the cities or in the rural districts, in regard to this matter. How often in the week do they, as a rule, find it possible to have lessons in oral reading?

In one particular, however, we confess to some difficulty in understanding, or, if we understand, in assenting to Mr. O'Hagan's suggestion. "Are not," he asks, "how to put the question and the elucidation of the thought the main objects in the teaching and study of literature in our High Schools to day?" We believe they are. Does Mr. O'Hagan mean to imply that, in his opinion, they ought not to be? We so far heartily concur with what we understand to be the main purpose of his timely note that we are sure that a good deal more attention ought to be paid to the vocal interpretation of literature than has ever yet been found possible. In fact, in view of the necessary school limitations, we are inclined to the opinion

that competent masters of this art ought to be specially employed for the purpose. These should be of the highest order of merit procurable, and should go from school to school at suitable intervals, to give instruction and training in articulation, enunciation, and voice-culture, such as it would be quite unreasonable to expect from the ordinary teacher. We have not now in mind the kind of thing sometimes called "elocution," which teaches the child to aim at a great variety of startling voice-effects, ranging up and down the scale all the way from a stage-whisper to a scream or shout, and accompanied with gesticulations and genuflections which are often wonderful to behold. What is needed is such natural modulations of voice and manner as are nature's best means of making clear the thoughts and the various shades of thought which are adapted to convey the meaning of the passage clearly and forcibly. What a boon would it be to society if the children could be trained under the direction of a teacher of true taste and culture at frequent intervals during the school course, to read aloud in a pleasing and impressive manner!

THE REVISED REGULATIONS.

We have received, too late for full reproduction in this number, a copy of a circular which has just been sent out by the Minister of Education to Inspectors and High School Principals. As the information given is of importance to all members of the profession, we shall reprint it in full in next number of THE JOURNAL. Meanwhile we must content ourselves with indicating a few of its chief points.

The revision of the "Regulations," which has been for some time occupying the attention of the Education Department, is now completed. The Regulations, as revised, will be bound with the consolidated High and Public School Acts, which are intended to remain without material change for five years. As soon as the book is ready, a bound copy will be forwarded to each Board of Trustees. This

will, no doubt, in the hands of the chairman or secretary of the board, be made accessible to teachers, so that every teacher may have an opportunity to acquaint himself with it.

Teachers and students will note, as has, indeed, been already intimated in our columns, that no changes have been made that will disturb the organization or work of the schools. For the examinations of July, 1897, there will be no changes in the subjects prescribed, or the mode of conducting the examinations. Changes which will come into operation after that date are explained in the circular, and may be studied when it appears in our next number, if not previously accessible. Pupils now preparing for the Public School Leaving Examinations of 1897, or pupils preparing for the Form I. examination for that year, need make no change in their purposes. For Primary standing in 1897 the examination of Form II. must be taken, also that of Form I., or the Public School Leaving Examination, unless the candidate has received a Form I. certificate, a Public School Leaving certificate, a Commercial certificate, a District certificate, or a Third-Class certificate.

We have sometimes been asked whether the Public School Leaving Examination was likely to be permanently maintained, or to be dropped after a time. It is evident from the intimations contained in the circular that this examination is not only to be continued, but that certain provisions to come into force after the current year will materially increase its relative importance. For instance, District examinations are to be abolished and the Public School Leaving take their place. So, also, any Public School Leaving certificate which has heretofore been, or may hereafter be, awarded will have the same value as a certificate of having passed in Form I. The holder of a Public School Leaving certificate will not be required in 1897 to pass the examination of Form I. of the High School. After 1897 the Form I. examination will be abolished, and every candidate for Primary standing must hold a Public School Leaving certificate.

TO COUNTY MODEL SCHOOL STUDENTS.

FIFTH ARTICLE.

In this article we shall address you on the beginning of your work in your own school. Your "first day at school" will be an important event in your life, to which you will look forward with much interest, and, perhaps, with some anxiety.

In the earlier days in our country it was in many cases a thing to be dreaded, for it was too often a struggle for supremacy between teacher and pupils. The introduction of a new teacher was an important event in the neighborhood, and if the "big boys" could "turn the master out" it was an achievement which always received applause from some people in the section, and which made the victorious youngsters feel more or less as heroes for the time being.

Happily this state of things has passed away forever. It is no longer possible in our schools. Public opinion will no longer tolerate it in any community. If there is any one thing which, more than another, marks the good work done by our schools during the last twenty-five or thirty years, it is the general refinement and cultivation of the tastes of the people, and the high estimate which is almost universally placed upon the work to be done in the schoolroom. Pupils no longer regard the teacher as one to be dreaded or opposed, but rather esteem him as a friend whose companionship they desire, and whose good will they will seek to secure.

This being the condition of things which will meet you in almost every school you may enter, you cannot but feel the importance of so acting your part as a teacher that these kindly feelings extended to you at your introduction may receive no rough shock at your hands, and that the high appreciation in which the teacher is held in the section may only be the more increased as your character as a person and worth as a teacher become the better known.

Notwithstanding this good feeling which will be extended to you at the outset, you must understand that its continuance will depend largely upon the way in which you begin your work as a teacher. Some young teachers—fortunately they are but few in number—have so exalted an idea of themselves because they have obtained a certificate that they go into a section on stilts, as it were. They will seek no advice and listen to no suggestion. Any assistance that may be offered they regard as an interference with their authority, and by this foolish course render themselves offensive and restrict their usefulness.

It is very unwise upon taking charge of a school to make any material change in the organization. When a teacher has become well established in a school he may make changes, but it is very dangerous for a "new teacher" to do this. It is very unlikely that any changes will be necessary.

Uniform promotion examinations are now established in almost every county,

and schools are regularly classified in accordance with these. It will be much better to take the classification of your predecessor, and work under it for some time until you and your pupils have become well acquainted with each other.

It is a rare thing to find pupils do as well when examined by a stranger as when examined by their old teacher. Your manner is new to them, and your method of questioning may be quite different from that to which they have been accustomed. You must make large allowance for this difference, and for the natural diffidence so often found in young children. But if after making due allowance for these things the results are still disappointing, we would advise you to guard against seeking to belittle the reputation of your predecessor in the school. Better throw the mantle of charity over his shortcomings, and feel that you have treated a fellow teacher as you would wish to be treated in return. Even after putting forth your best efforts, your successor may have equal grounds of complaint against you.

If, after sufficient time has elapsed, you feel satisfied that some changes must be made, it will be well to consult the trustees and ask the inspector to visit your school and sanction your course. This will relieve you of any responsibility.

When you have secured a school it will be well for you, if possible, to visit it a few days before it is closed for the present year. You can then meet the present teacher and learn much about the school. You can learn what classes there are, where the pupils are working, how often they recite, and many other things which will enable you to prepare for taking charge of the school. You can also have, by this means, a pleasant introduction to the pupils and to some of the people—an introduction which will indicate an interest, on your part, in the work which you are about to undertake.

Before your "first day," you should prepare sets of examination questions for all classes down to the second class, or Part II., in all subjects, so that you may have plenty of material on hand to furnish work for your pupils. Two or three sets of questions of different degrees of difficulty in each subject will be useful. The questions should engage the class for about an hour. These may be dictated to the pupils or placed upon the blackboard. It may be well to have a few quires of paper ready for a written examination in some subjects by the fourth and third classes. You can thus keep two or three classes busy at their seats while you are engaged with the junior classes. Arrange your questions so that the consideration of the answers will not require much of your time.

The great point is to have plenty of work for your pupils, and to leave yourself plenty of leisure to *observe* the school, and to go around among the pupils to see what they are doing. Do not spend too much of your first day or of your first week on the platform. Keep as close as possible to your pupils. Pass among them quietly, look at their work, see if

you can assist them, give a kind word of encouragement as you go by, and let everyone feel that there is a full, broad eye—not a peering, suspicious eye—on *everything* in the school.

It is a painful thing to see a young teacher standing before his school not knowing what to do to keep the children employed. It has a bad effect upon all. The pupils lose confidence in the teacher, and soon come to regard him as a weakling. On the other hand, if he can, without hesitation or delay, set the school at work, and, by fertility and readiness of resource, keep everything going and in good order, without any apparent effort or nervousness, the pupils will regard him with the greatest respect. And fortunate is the teacher of whom his pupils' impressions at the end of the first day are favorable. A good beginning has been made, and that counts for a great deal. It is not necessary, nor is it desirable, that you should teach much at first. You are not ready to begin regular teaching the first day, or the first week. You are not sufficiently acquainted with your pupils to know where to begin. Your first duty is to find out as far as possible what your pupils know, and to learn all you can of their natural abilities.

It is no more necessary for a builder to first lay a foundation for his building than it is for you to have an accurate knowledge of your pupils' attainments as the guide to your teaching. Much of the discouragement caused to both pupils and teachers and much of the loss of faithful labor are the results of pupils not being ready to receive and to be benefited by the teaching that is placed before them.

In classes above the first form much of the work will be in teaching from the known to the related unknown, and if the foundation or the *known* be uncertain much of the labor must of necessity go for nothing.

We would, therefore, strongly advise you not to be too eager to begin teaching at once, but rather to aim first to secure perfect control of your school and to know your pupils as thoroughly as possible.

To this end it will be wise for you to visit the homes of your pupils and learn of their surroundings. You will often learn more of the inner life of a child from a single visit to its home than can be learned, perhaps, in months of daily contact in the schoolroom.

You may find it necessary to modify your opinions as to a child, and to materially change your treatment of him, from information which you have gained from visiting the fireside around which he has been trained. You cannot know too much of your pupils nor of their environments.

You need not wait for an invitation to make these visits. You will always be kindly received and always be made welcome. If you are influenced by no higher motives than those of personal interest, it will pay you to visit the homes of your pupils and to speak of their school work in a kind and judicious manner. It will please the pupils, and make your task

lighter by drawing them nearer towards you; and by thus manifesting an interest in the welfare of their children you will please the parents, and cause them to place a higher estimate upon your services as a teacher.

In leaving this subject we would especially warn you against expecting too much at first, and against worrying over unsatisfactory results.

As we have said, let your first aim be to get control of your school, to *establish* yourself, so to speak. When this is well done, you can enjoy yourself in your work and put forth your best efforts as a teacher. At the first disorder stop work, not with anger, but rather with surprise. Let there be perfect order before you begin again. Do this twenty times in a day, fifty times if necessary. Do it gently, do it firmly, maintain perfect self-control, but do not let disorder or confusion gain any standing-ground in your school, not even for a single minute. If you pursue this course judiciously, kindly, and firmly, disorder will find that it cannot exist under your administration, and will soon give up the struggle and die out. Persistent quiet effort along this line, supported by kindness of manner and self-control, scarcely ever fails to establish the most satisfactory discipline.

Correspondence

READING AND LITERATURE.

To the Editor of THE EDUCATIONAL JOURNAL:

SIR,—I notice in one of your recent numbers a notelet from Mr. John Seath, one of the inspectors of High Schools, calling the attention of teachers of literature and reading to a little work by Professor Corson entitled, "The Voice and Spiritual Culture." It is generally conceded that Professor Corson is the ablest and most inspiring interpreter of literature now occupying a chair in any American university. He attaches great importance to the voice as a factor in literary interpretation, and greater importance still to the spiritual import of literature. This little volume recommended by Mr. Seath appeared first in a series of papers contributed by Prof. Corson to *Poet Lore* of Boston.

During 1893-94 the writer attended the post-graduate lectures in English Literature at Cornell University, and can readily testify to the remarkable power and sympathy of Prof. Corson as a lecturer in English literature. His vocal capabilities are wonderful. He can interpret vocally with equal ease the involved zigzag thought of Browning, the sublime blank verse of Milton, or a beauty-breathing prose passage from Ruskin. How, you ask, has Prof. Corson attained this excellence? By discarding the pedantry and nonsense of the age in things literary, and by emphasizing the spirit, not the letter, of literature. Prof. Corson is also a rounded scholar—perhaps one of the best Anglo-Saxon and classical scholars in the United States. Touching his gifts as a reader he once told me that he had been accustomed to use his voice an hour a day reading aloud for more than twenty-five years.

What, then, can be done for good reading and the sane teaching of literature in the High Schools of Ontario?—for I take it these are the objects Mr. Seath has in view in recommending to teach-

ers of literature and reading Prof. Corson's little volume. Surely nothing in presence of the existing condition of studies and examinations in our High Schools. The ethical study of literature or its vocal interpretation count for nothing at examinations. Does Mr. Seath, then, think that High School teachers who wish to blazon the sky with the glory of having passed "seventy-five per cent." and "seventy-nine per cent." will exchange this ambition and glory for a pursuance of the point of view obtained by reading Prof. Corson's work? Are not "how to put the question" and "the elucidation of the thought" the main objects in the teaching and study of literature in our High Schools to-day? Let us be honest and rid our educational system of cant and humbug.

THOMAS O'HAGAN.

MEMORY GEMS.

"Kind words are little sunbeams,
That sparkle as they fall;
And loving smiles are sunbeams,
A light of joy to all.
In sorrow's eye they dry the tear,
And bring the fainting heart good cheer."

"We should make the same use of books that the bee does of a flower: he gathers sweets from it, but does not injure it."

Little children, you must seek
Rather to be good than wise;
For the thoughts you do not speak
Shine out in your cheeks and eyes."

—Alice Cary.

Book Notices.

THE RAND-McNALLY ELEMENTARY GEOGRAPHY. Illustrated by diagrams, colored maps, and engravings, specially prepared for this work. Chicago and New York: Rand, McNally & Company.

This admirable volume is specially devised for the topical method of teaching Elementary Geography. Small though it is, it covers much ground. In addition to the usual treatment of surface features and their influences on mankind, such important and too often neglected subjects as "air, water, temperature, material—both organic and inorganic—the sources and uses of mechanical power, the environments and habits of man, and his efforts to subdue nature, receive a due share of attention." The relief maps, and, in fact, the pictorial illustrations throughout, are excellent.

SCHOOL MANAGEMENT AND THE PRINCIPLES AND PRACTICE OF TEACHING. By John Millar, B.A., Deputy Minister of Education for Ontario. Published by William Briggs, Toronto. Price, \$1.

Our apologies are due to author and publishers for our unintentional delay in noticing this excellent work.

It is a book which will prove invaluable to the progressive teacher. Written in a clear, concise, and forcible style, it will be read with pleasure as well as with profit. It will be found to be an admirable guide to the teacher in school organization, instruction, and government, and it will furnish him with a scientific basis on which he may build his own methods and shape his own devices. The chapters on "The Place of Religion in the School," "Character-Building," "School Incentives," and "Written Examinations," may be noted as of especial interest and value, while Chapter XIII, on "Methods of Conducting Recitations," will repay the careful study of teachers of every grade.

THE UNIFORM EXAMINATION QUESTIONS, WITH ANSWERS, OF THE STATE OF NEW YORK, IN DRAWING. Published by C. W. Bardeen, Syracuse, N. Y. Price, 25 cents.

To those teaching the drawing in our High Schools, or to those preparing candidates for the Public School Leaving or Entrance Examinations, this little book will prove of great value. The book

can be made use of in every lesson, and contains just such exercises as a teacher desires. A look at the book will prove an inspiration to the pupil, and it is hard to imagine anything that would be more useful.

THE WEIMER PRIMER FOR BEGINNERS IN READING. By F. Lillian Taylor. Published by The Weimer Company, Chicago and New York. Price, 30 cents.

Send for this little book and see what the printer's art, originality of design, excellence of execution, wealth of illustration, and harmony of color can do to make a first reader a thing of beauty and a joy to a child's heart. Full of new suggestions to the teacher, it will help you with your little ones when they first come to school, and make school pleasant to them and to you.

ENGLISH SYNONYMS AND ANTONYMS, WITH NOTES ON THE CORRECT USE OF PREPOSITIONS. By James C. Fernald, Editor of "Synonyms, Antonyms, and Prepositions in the Standard Dictionary." New York, London, and Toronto: Funk & Wagnalls Company.

Precision in the choice and use of words is one of the chief hall-marks of a good writer. Nothing can compensate for the lack of this quality of style. No one, no matter how great his learning and ability, who allows himself to fall into a careless and slovenly use of words to express his ideas, can ever take high rank as a writer. For the young writer, or, in fact, for any writer, young or old, who is ambitious of literary excellence, probably the best aid which has yet appeared is Fernald's "Synonyms and Antonyms," recently published by the Funk & Wagnalls Company. Its method is admirable. The author does not content himself with choosing pairs or triplets of the most conspicuous words amongst those most likely to be confused by careless writers or speakers, and distinguishing them from each other. Selecting the most prominent or typical word amongst those commonly used to express the same general idea, he groups around that all the similar words in the language which are so nearly related in meaning as to make careful discrimination necessary, and makes clear, not by mere verbal definitions, but by means of well-chosen illustrations, the nicer shades of meaning which the usage of the best writers has appropriated to each. This is the only really effective method, and, so far as we are able to judge, we should say it has been employed by Mr. Fernald in a masterly manner. Of course, no single authority can be accepted as absolute in every case. But no one who intelligently and thoroughly studies this work can easily fail to obtain at least a fair mastery of good English. Every writer and student of the language should keep, besides a first-class dictionary, always within easy reach of his hand, upon his study table, a copy of "Synonyms and Antonyms."

PICTURES IN LANGUAGE WORK. By E. W. Weaver. Second edition from new plates, with 91 pictures for class work. Cloth, 16mo, pp. 110. 50 cents.

This is a new and profusely illustrated edition of what has proved one of the publisher's most successful books. The pictures given for class work are of great variety, including those for simple descriptions, those for fuller descriptions, subjects for stories, historical subjects, etc. Many of them are in series, many are humorous, and all of them are well adapted to cultivate the imagination. Some of them have been used for prize competitions, and the competing compositions have been published. All of them are carefully chosen and intrinsically valuable. This book will be of great value in the composition class.

HORACE MANN. By William Torrey Harris, LL.D., Commissioner of Education. With portraits of Horace Mann and of Henry Barnard. Leatherette, 16mo, pp. 34, 50 cents.

This is the address delivered by Dr. Harris before the National Educational Association, reprinted from copy revised by the author. This estimate of America's greatest educational thinker should find a place in every teacher's library. The analysis of Horace Mann's famous Twelve Reports (pp. 18-23) is of especial value.

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Editorials.

SECONDARY EDUCATION IN ENGLAND.

SOME time ago a commission was appointed by the British Government to report on the best means of improving secondary education in England, keeping in view the many endowments which have been provided for secondary schools by corporate enterprise and private beneficence. Among its members were included such well-known educators as Prof. Bryce, of Oxford; Prof. Jebb, of Cambridge; Sir Henry Roscoe, of Owen's College; and the Rev. Dr. Fairbairn, and such prominent women workers as Lady Frederick Cavendish, Mrs. Bryant, and Mrs. Prof. Sidgwick. The report of the commission has been published in the form of a "blue book," and it is as interesting and instructive in its way as the celebrated reports of the "Committee of Ten" and the "Committee of Fifteen" in the United States.

It would be impossible in a single article to give even a summary of the conclusions arrived at, not to speak of the evidence on which they are based. It is

quite practicable, however, to indicate the general principle adopted by the commission, and by its aid to show that, in comparison with countries assumed to be more favored, England may be better off in the matter of secondary education than she is supposed to be. That general principle is thus defined in the report:

In dwelling on the need of a systematic organization of secondary education we have more than once had occasion to explain that we mean by "system" neither uniformity nor the control of a central department of government. Freedom, energy, elasticity are, and have been, the merits which go far to redeem the defects of English education, and they must, at all hazards, be preserved.

"Uniformity" and departmental "control" are terms so familiar to all who have to do with secondary education in Ontario that there is no need to explain them; "freedom" and "elasticity" are not so well known by practical experience. Whatever merit may be claimed for uniformity we are permitted to claim; our right to boast of freedom may be more successfully challenged. It is a common saying that we cannot have too much of a good thing, and if "system" is good we ought certainly to consider ourselves fortunate, for the organization of our secondary education could hardly be more systematic than it now is.

Under cover of its claim of right to see that each school deserves its share of the grant for secondary education, the Department assumes, not merely to prescribe a general limit table of studies, but to fix definitely the course for each of the four forms comprised in it. At the beginning of the curriculum there is an entrance examination, which the exigencies of the Public Schools have converted into a leaving examination for them, but which every pupil must pass before he is allowed to attend a High School class. At the end of each form course there is a uniform Provincial examination, which is by various means practically obligatory on all pupils as a condition of promotion. These examinations, within the High School curriculum, are conducted by a body of Provincial examiners, who are bound by definite rules, and who are not in a position to modify the results of their appraisal of written answers by a personal knowledge of the abilities or attainments of candidates. A sick headache in the hour for examination in grammar or arithmetic may mean failure on the part of a good student to secure recognition for any part of his year's work.

Is it possible, or would it be safe, for the Education Department to devise

means of securing efficiency in the individual school without requiring all the schools to conform strictly to one type? Has Departmental ingenuity been exhausted by its efforts at systematization, so that it can do nothing to promote freedom and elasticity? All who have any influence over, or any part in, the working of our system would do well to seriously consider this question. Sooner or later there will be a reaction against the strain to which all secondary schools are now subjected, and a revolt against the thralldom which makes the teacher's vocation unattractive, if not intolerable. Opportunity to do the best educational work implies freedom on the part of the school to perform its functions in accordance with the exigencies of its local environment, and the higher qualities of that work cannot be tested by any uniform written examination. System we must have, but not necessarily either the kind or the degree of system which we now have.

SECULARIZATION OF THE SCHOOLS.

WHATEVER basis there may be in fact for the lamentations which are so often made over the alleged degeneracy of the youth of the present day, it is surely unfair and unreasonable to lay the blame mainly at the door of the Public Schools. Admitting, for argument's sake, that the boys and girls of this generation have sadly deteriorated in manners and morals, it is quite too much to assume that the schools are chiefly to blame. The main foundations of morals and manners, both good and bad, are laid in the home, and in the associations of childhood and youth. Even in the schools the influence of schoolmates has usually quite as much to do with the moulding of character as any which the best teachers can bring to bear.

It is, no doubt, the duty, the first and highest duty, of the teacher to do all in his power to counteract evil influences and tendencies operating from without. He must, as far as possible, correct the bad and strengthen the good habits that have been formed in the homes and on the streets. He must strive earnestly and untiringly to lift up the moral tone of the school, and to foster truthfulness, conscientiousness, and a high sense of honor among his pupils. But his success in doing this will depend vastly more upon what he is than upon what he says. If the teacher be cultured, pure-minded, truly Christian in principle and feeling, the incidental teachings and the perpetual

force of his character and example will be vastly more potent for good than any formal religious instruction could possibly be. If, on the other hand, he is lacking in these qualities the pupils will be the first to find it out, and any religious exercises he may conduct *pro forma* will do much more harm than good.

The strength of the opposition to the secularization of the schools in Manitoba and elsewhere lies in the assumption that secularization means forbidding not only religious but moral training. We do not so understand it. All that is necessary is, so far as we can see, that the State refrain from making religious exercises and instruction compulsory, leaving the matter in the hands of the local authorities, where it properly belongs. To forbid religious exercises and appeals to religious motives under any circumstances would be as much an interference with liberty of conscience as to enforce them under all circumstances. In hundreds of cases no patron of the school will object. In every case the simple provision that no child shall be required to attend any exercise to which parents or guardians object will cover the whole ground. What Government has to do is to guard the rights of the minority. It is for the parents and trustees in each locality to see to it that the teachers employed are men and women whose whole influence will be right and powerful in moulding both manners and morals. There is, however, much more to be said on this much-vexed question. We hope, at an early day, to discuss the question of moral training in the schools in a series of articles, for which we shall ask the thoughtful consideration of the readers of THE JOURNAL.

THE man or woman, the boy or girl, who does injury to the character of another, making him or her a worse man or woman, even though it be without malice or forethought, does that other the worst of all injuries, and incurs a fearful responsibility.

UNPROFESSIONAL PRACTICES.

WE learn from our esteemed contemporary, the *Educational Review*, of St. John, that one of the County Institutes of New Brunswick has taken a determined stand against the unprofessional conduct on the part of certain teachers which is injuring, as well as disgracing, the teaching profession in that province. This institute, that of Charlotte County, passed at its last session the following resolution:

"Whereas it has been brought to the notice of the Charlotte County Teachers' Institute that a number of teachers are in the habit of making application for schools without ascertaining that the said schools are vacant, and generally at a reduced rate of salary, and also that a number of circular letters of application are sent to different boards of trustees in the country semi-annually, asking employment at a mere nominal salary;

"And whereas we have found that such unprofessional conduct frequently leads to the disadvantage of worthy teachers, in the lowering of their salaries;

"Therefore resolved, that this institute condemn in the strongest manner such non-professional conduct, and that a committee be named from its members to whom such conduct may be communicated as it comes under the notice of the teachers, with a view to having publicity given to the same in our institute."

What would be thought of a lawyer, or a doctor, or a clergyman, who should thus surreptitiously attempt to underbid and supplant some other member of the profession? Happily for the members of those professions, their clients and patients and congregations are usually too anxious to secure the best rather than the cheapest advice to be susceptible of this kind of influence. Would it were so in the case of parents and trustees!

The *Review* gives a couple of samples of the kind of thing which some individuals, who have received certificates pronouncing them qualified to train the characters of the future citizens of the province, think not beneath the dignity and honor of their high calling.

One teacher sent a circular letter to school boards, offering her services at thirty-seven dollars per term, without inquiring whether teachers were already employed or not. So far as known, this offer found no takers. It would have been strange, indeed, if any self-respecting board of trustees had been found disposed to engage one whose own estimate of the value of her services is so low, and whose course of procedure proclaims so clearly that those services would have been dear even at that low estimate.

Another teacher reports that after she had her school engaged and salary fixed, without the formality of having her agreement signed, a fellow-teacher, aware of this, offered to take the school for so much less. The result was not the engagement of the underbidder, but the reduction to the same figures of the salary of the incumbent.

Were the matter one affecting the interests of no one but the members of the board, one would be inclined to think it a pity that the underbidder was not employed. She and the board seem to be

remarkably well fitted for each other in the dimensions of their mental and moral ideas.

In making these quotations let it not be supposed that we have any thought of throwing contempt upon the educational workers of our sister province. Far from it. Facts which we have from time to time published, as well as other facts which have come to our knowledge, though we have refrained from publishing them, out of regard, not to the feelings of the culprits, but to the interests of others, shew but too plainly that we, in Ontario, are in no position to throw stones.

What is to be done to put a stop to practices so disreputable and damaging? The action taken by the teachers of Charlotte County suggests, probably, the simplest and most effective method. If every institute in Ontario would adopt the plan above indicated, and carry it out rigorously, it is pretty certain that the practices complained of would suddenly cease. To make the thing still more effective it would be better, probably, that the institutes should act in concert, so as to have the name of each offender published throughout the province. Few school boards would care to incur the odium that would attach to the employment of a teacher who had once stooped to such tactics, regardless of the injury inflicted upon others by a course so abominably selfish. Still fewer teachers would think any profit likely to be gained sufficient to compensate for the loss of the respect both of herself and of her fellow-teachers.

WE are sorry to be obliged to hold over several communications and contributions for which we had hoped to find room in this number.

SIR EDWARD CLARKE has been severely criticized for having publicly expressed an opinion hostile to Great Britain's claims in the Venezuela case. But why should he not have expressed such an opinion if he has reached it by fair and thorough investigation? It does not necessarily follow that his conclusion must be the correct one. He may be one of those rare men who are occasionally to be found, and nowhere, perhaps, so frequently as in the Mother Country, who, in the investigation of such a matter, "stand so erect," as has been said, "that they lean the other way." Nevertheless they are worthy of all honor, if only for their astonishing moral courage. Is it not about time for Christian statesmen to feel that they can afford and dare to be frank and honest?

The Entrance Journal

EDITED BY

ANGUS McINTOSH,

Headmaster Boys' Model School, Toronto, Ont.

With the assistance of several
special contributors.

THIS Department covers **four pages** each issue, and is devoted wholly to High School Entrance and Public School Leaving work. It is supplied in separate form at 25 cents a year, or in quantities to EDUCATIONAL JOURNAL subscribers at

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CHAT WITH OUR READERS.

We have decided to shorten the title of our paper to THE ENTRANCE JOURNAL, and to publish it in this new form. Let us know how you like the change. You will see that the size is considerably increased, and we intend to issue twelve pages in future, and, if it is found possible, to still increase the size if the support given to the paper seems to warrant so doing.

During the year each lesson in literature for the Entrance and for the Public School Leaving Examinations will be carefully treated in our new way. We propose to give an exhaustive series of questions on each lesson, and, in the next issue of THE JOURNAL, give suitable answers. By thus writing down to the level of the boys and girls we hope to secure their interest and approval. Let us know if you think the idea a good one.

Send in your club orders now, and secure the whole series of Literature notes.

We have, in the last two numbers, fully treated latitude. You may expect a full treatment of longitude; circles on the globe; climate; products of Canada, where found and where sent; our mineral wealth, exports and imports, and sources of revenue, in future issues.

Teachers and pupils are full of praises of THE JOURNAL, and if our young friends will help us, and send in problems and answers, or questions which puzzle them, in any subject, it will add greatly to the value of the paper.

Remit by express, or post-office order, or registered letter. Stamps may be sent for single subscriptions. Subscribe now.

We are bound to make this the leading pupils' paper in Canada, and, if long experience in Public Schools and a thorough knowledge of the wants of our boys and girls are a necessary qualification for success, then we may reasonably look for a good measure of prosperity to THE JOURNAL.

Show this number to your friends, and see if they would not like to become readers. Remember

ber this is not a *sample copy*, so called, but will be followed by numbers fully up to, if not surpassing, it in quantity and quality of matter.

THE ENTRANCE JOURNAL is designed especially to aid the teacher of an ungraded school who has to teach the Entrance work. It will supply the teacher with abundant exercises in all the subjects, and prove a great saving of the teacher's labor by providing him with suitable material for his class work. Model answers, written by pupils, will be given from time to time, and, it is hoped, will not only prove a help to the teacher, but an inspiration to the pupil.

Have you seen our prize offer for problems in arithmetic? "Stars and Constellations" and "Nature Studies" should be in the hands of every teacher and pupil in Canada.

We expect the liberal offer will bring a hearty response, and that the teachers and the girls and boys will send in many sets of problems. Remember, that if your class prepares such a set, say each member brings in ten problems, and that then the best ten are chosen, solved, and submitted, they will receive more real training in arithmetic than from weeks of class work.

Try our plan of interesting your class in composition. Encourage them to draft a plan and write a composition, according to the scheme shown on page seven. Send in your best results, and we shall be pleased to inspire the pupils by printing those that are most carefully prepared. Let us hear from you often. This is your paper. Why not use it?

Drawing.

BY A. C. CASSELMAN.

CORRESPONDENCE.

We have received a drawing of a half-blown rose, a rosebud, and a pear, from MR. H. E. FAIR, of LONDESBORO. The first two are good examples of line drawing, the shading on the bud is well done. The pear does not show distance and shadow as well as the other two, on account of the method adopted, which is a combination of stump shading and line drawing, done by the pencil.

Pencil drawings cannot be cheaply reproduced in these columns, or we would be pleased to show the readers of THE JOURNAL Mr. Fair's work. Send us some drawings in India ink and we shall be glad to give them a place. The objects drawn should be based on the types explained in these articles.

Mr. Fair writes as follows: "I have done considerable work with the pencil, chiefly in copying, but no work from the object until subscribing for THE JOURNAL. Allow me to thank you for the very great help I have received through THE JOURNAL."

Let us hear from you often, Mr. Fair.

MR. SAMUEL BINETEAU, CANARD RIVER, ESSEX CO., writes, asking for the titles of some books on perspective drawing.

The High School Drawing Books Nos. 1 and 2 deal with the drawing of objects freehand as they appear to an observer. No. 3 of the same course deals with mechanical perspective, or represent-

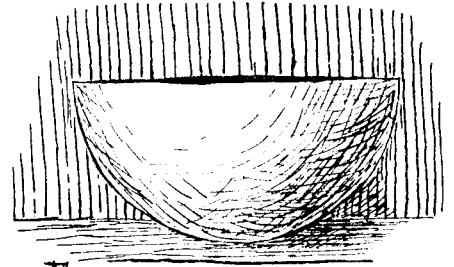


Fig. 1.

ing the appearance of objects according to rules by means of drawing instruments. Another work of the same kind as the last is *The Mechanical Manual*, by Langdon S. Thompson, published by D. C. Heath & Co., Boston.

The last two books give full instructions of how to get a knowledge of the subject.

Will others make use of these columns to make known their difficulties, and tell us of their success in teaching drawing?

THE HEMISPHERE.

After the pupils have drawn the appearance of the plane face of the hemisphere, as in Fig. 3, they should be taught to draw the appearance of it by the aid of *construction lines*. To teach this, draw two diameters on the plane face of the hemisphere, at right angles to one another, with differently colored pencils. Then draw the apparent length of one diameter, which will be represented by, say, 1-2, in Fig. 2, and the other diameter will be represented by, say, 3-4; with these as guide lines, draw the *ellipse*. Observe that an ellipse is slightly curved at the ends of the *long axis*. The whole ellipse that represents the appearance of a circle should be drawn, whether the circle is visible or invisible.

THE CIRCLE.

Surfaces have no existence apart from a solid, therefore, since a child gains a knowledge of a solid first, and, afterwards, of surface from the solid, it is proper that the study of surface should follow, not precede, the study of the solid. Plane faces should be studied first, and the first plane face met with, in the order in which the solids are studied, is the circle.

To study the circle, have each pupil cut one about four inches in diameter out of writing paper. This piece of paper is not a circle, but a cylinder, as it has thickness. A circle is surface.

What bounds the circle? An edge. What kind of edge?

Tell the class that this edge is called *circumference of the circle*, or simply the circumference.

New Map of the Dominion

By JOHN BARTHOLOMEW, F.R.G.S., Edinburgh, Scotland. A beautifully executed map in oil colors, showing the **latest surveys and boundaries**. This is the only map published showing the new territories of

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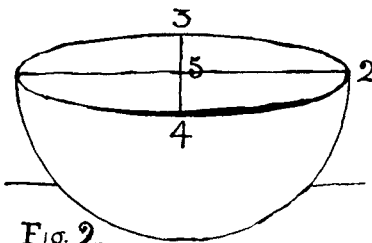
What is the circumference of a circle? The answer that you would expect at this stage is : *A circumference of a circle is a curved edge that bounds the circle.*

Let us find out the *position* of this edge with regard to some point in the surface.

A circle may be drawn on the blackboard, and in this case the *edge* is represented by a *line*.

Now fold the circular paper so that one-half will lie over the other half.

How much of the surface of the circle is seen at once now ?



What would you call it? A *half-circle*. Give the name *semicircle*. What does *semi* mean ?

Fold the semicircle of paper so that one end of the straight edge will be on the other end.

How much of the semicircle is seen now ?

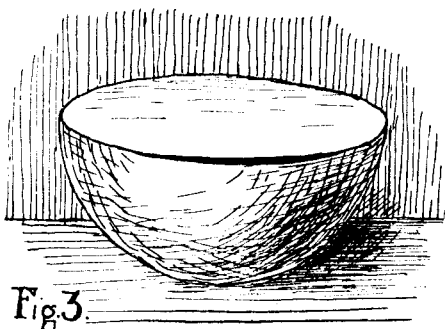
How much of the whole circle is seen now ? One quarter.

Give the name *quadrant*. Open the folded paper. How many creases are there in it that run from one part of the circumference to the other ? Measure them, and compare their lengths. At what point in each do they cross each other ? What name would you give to this point ? It is the *middle* of the creases and the *centre* of the circle. Use *middle* when speaking of edges or lines, and *centre* when speaking of surfaces or solids.

Draw lines in the circle on the blackboard to represent the creases on the circular paper. These lines are called *diameters* of the circle. What is a diameter of a circle ?

Your definition of any line should include the kind of line, where it begins, and where it ends, and any point, or points, it passes through.

How many diameters may a circle have ?



Measure the distance from the centre to the circumference along each diameter. Compare these lengths. The straight line joining the centre to the circumference is called a *radius*.

What is the position of the circumference of a circle? Define a circle, a semicircle, and a quadrant. Do not define a semicircle by saying it is half a circle.

In the next paper, color, and the arrangement of circular tablets will be taken up.

This is the department of drawing called DECORATION.

We cannot make bargains for blisses,
Nor catch them like fishes in nets ;
And sometimes the thing our life misses
Helps more than the thing which it gets.

English.

Below we give a series of exercise in language for Third or Fourth book classes, to be used as "busy work" for the pupils when the teacher is employed with the rest of the school. Have one exercise written on the blackboard by a pupil, and the class write the answers on slates, or, better, on "scribbling," or, more properly, "work" books.

I.

Tell parts of speech of italicized words.
We speak the *English* language.
The *English* made settlements in America.
James is a *poor* boy.
The *poor* ye have always with you.
This is not a large *city*.
The *city* streets are well kept.
Gold is found in California.
Have you a *gold* pen ?
Both are lost.
Both books are on the table.

II.

Write a declarative sentence about—baby, pony, Frank, fire, window.
Change each sentence to the interrogative form.
Change each sentence to the imperative form.

III.

Rewrite these sentences, using the other form of the possessive pronoun.
Mary is our friend.
This is my desk.
Those are their books.
Thy life has been a happy one.
This is her box, but your pencil.
Supply pronouns.
— has brought — dress with —.
Will — go with — ?
— neighbors will leave — horses in — barn.

IV.

In place of italicized words use words of similar meaning.
The *voyage* was *tedious*.
We have had a *dismal* week.
He *vanished* from our sight.
The boys *roamed* about on the *summit* of the *cliff*.
They *approached* the pen where the *poultry* was kept.
I am *loath* to believe it.
We followed the *trail* through the woods.
I could *scarcely* recollect what had *occurred*.
They *won* the prize.
A *monstrous* wave *overturned* our *frail* craft.

V.

Fill blanks with adverbs of *degree*.
Have you had — ? We shall have breakfast — early.
We were — surprised. Were you — ill ?
Are you — ready ? I can — hear you.
Write sentences containing often, always, above, slowly, back, out.

VI.

Write a receipt for rent.
Form adjectives from the following nouns. Use each in a sentence.
Honor, use, courage, health, self, beauty, murmur, sense, life, injury, patience, music, hope, industry, fur.

VII.

Change to prose.
"Across the hills the drifting snow cloud speeds,
And soft, warm flakes fall on the frozen ground ;
Anon fierce winds pass o'er with sullen sound."

Entrance Literature.

FLOW GENTLY, SWEET AFTON.

Below we give a series of questions on this lesson, and in next issue we will furnish answers to them.

1. What is the subject of this poem ?
2. What part does each stanza play in the development of this subject ?

3. In what mood do you think the poet was when he wrote the poem ?

4. Is the poem pleasing to you? If so, how does the poet give you this pleasure ?

STANZA I.

"Flow gently." Why does the poet ask the river to flow gently ?

"Sweet Afton." Tell all you know about the Afton.

"Green braes." What are "braes" ?

"Sing thee a song." What does the poet mean ?

"In thy praise." Prove from the poem that the song was in the Afton's praise.

"Mary's asleep." What is meant ? Who was the Mary mentioned here ?

"Murmuring stream." Why is "murmuring" a very fitting word to use here ?

"Disturb not her dream." What is meant ? Why does the poet use the word dream ?

STANZA II.

Tell what you know of the "stockdove," "black-bird," and "lapwing."

"Whose echo resounds." What is meant by "echo resounds" ?

"Wild whistling." Show why this is very expressive.

"Thorny den." What was the "thorny den" ?

"Green-crested lapwing." What is the force of green-crested ?

"Thy screaming forbear." What is the meaning of "screaming forbear" ? Why does the poet use the word "screaming" ? And why does the poet ask the lapwing to forbear screaming ?

"I charge you." What is meant ?

"Disturb not." How could the lapwing disturb the "slumbering fair" ?

"Slumbering fair." Give this in your own words.

STANZA III.

"Thy neighboring hills." Why "thy" hills ?

"Far marked with the courses of clear, winding rills." Describe in your own words the picture which this line suggests. Why were the words "marked" and "winding" used ? Show that the word winding adds greatly to the beauty of the picture.

"There daily I wander." Where ? Why does he "wander" at this place ? What is the particular force in the word "wander" ? Would the word travel do as well ?

"Mary's sweet cot in my eye." Which do you consider the most beautiful and expressive word in this phrase ? Why ? What is meant by "in my eyes" ?

STANZA IV.

"Green valleys below." Below what ?

"Primroses blow." What is meant by blow ?

"Mild evening weeps over the lea." What is the force of "weeps," and the meaning of "lea" ?

"Sweet-scented birk." Is "sweet-scented" appropriate to the "birk" ? Why does the poet use the form "birk" and not birch ?

What is the picture suggested by lines 3 and 4 of this stanza ?

STANZA V.

"Crystal stream." What is the meaning of "crystal" ?

"Lovely it glides." Do you consider the word "lovely" well chosen here ? If so, what part of speech do you think "lovely" is, and how is it used ?

"Winds by the cot." Why is winds an especially applicable word in this connection ?

"How wanton." What is meant by "wanton" ?

"Snowy feet lave." Give the meaning of "lave."

"Stems thy clear wave." What is meant ?

Select at least six words from this stanza that, in your opinion, are very "poetic," and that add to the beauty of the stanza. In each case state reasons for your answer.

STANZA VI.

"Flow gently, sweet river." Why is "sweet river" used in this line, and "sweet Afton" in the other line?

"Theme of my lays." What is meant? How was "lays" expressed previously in the poem?

These questions are arranged so as to cover every point in the lesson, and in such a form that the teacher may take them up in successive lessons. We hope our young friends will have a written answer for each by our next issue. Discussion is invited on any points regarding the literature; send in your questions.

Physiology.

It will be found to be a great aid in teaching physiology if the teacher can illustrate the teaching by objects. The following lesson on the circulation of the blood will show what is meant:

CIRCULATION.

Apparatus: Heart of a chicken, penknife, fine wire, rubber band, watch, bottle.

1. Draw an outline sketch of the heart, marking apex and base.

Cut transversely, half-way from base to apex. Determine the names of the cavities revealed. Compare the walls of each.

Make a sketch of this transverse section.

What evidence is there that one side of the heart has greater muscular power than the other? Why is this necessary?

With the wire trace the course of the blood through each side of the heart. Name the cavities, also the blood vessels entering and leaving the heart.

2. Wind a rubber band tightly around the little finger. Examine after five minutes. What is the cause of this change? Remove the band. Is the finger immediately restored to its normal condition?

3. Find the pulse at the wrist, also at the side of the neck, the temples, and near the angle of the lower jaw (at a point about an inch in front of the angle, along the lower edge).

How many heart-beats per minute?

When on the playground, note the effect on the pulse of a run or rapid walk.

Write a paragraph on circulation, based on the experiments performed.

REVIEW.

The following ten questions will be found useful for review. The Editor will be pleased to hear from any readers who may have any difficulty in answering the questions:

1. What do you mean by ventilation? Why is it necessary in a room in which several people live for any length of time?

2. How is air taken into the lungs? How is it again removed from the lungs? What change does it undergo in the lungs?

3. State some of the evil results that follow breathing the air in badly-ventilated rooms.

4. What should we try to secure, and what should we avoid, in ventilating a room?

5. Some people breathe through the nose and some breathe through the mouth; what are the advantages of the one, and the disadvantages of the other?

6. Describe the action of alcohol or the heart and head.

7. Give at least three good reasons why we should not use alcoholic drinks as a beverage.

8. Why should young people never use tobacco in any form? Give some of the evils arising from its use.

9. What care should be taken in order to preserve the hearing, the voice, the eyesight, the teeth?

10. State what to do in order to restore consciousness to a person apparently drowned.

Grammar.

The following will be helpful to the pupils and teachers in analysis:

The distant mountains that uprear

Their solid bastions to the skies

Are crossed by pathways that appear

As we to higher levels rise.

1. Analyze this extract so as to show the clauses of which it is composed and their relations to each other.

Answers.

(1) Clause—The distant mountains that uprear

Their solid bastions to the skies

Are crossed by pathways that appear

As we to higher levels rise.

Kind and relation—principal assertive.

(2) Clause—That uprear their solid bastions to the skies.

Kind and relation—Subordinate adjective, modifying mountains in (1).

(3) Clause—That appear as we to higher levels rise.

Kind and relation—Subordinate adjective, modifying pathway in (2).

(4) Clause—As we to higher levels rise.

Kind and relation—Subordinate adverbial, modifying appear in (3).

It will be noticed that each subordinate clause is kept in the clause of which it forms a part. That is, number (1) includes (2), (3), and (4), which are subordinate to it, and (3) includes (4), which is again subordinate to it.

If you are asked to write out the clauses of an extract in full, always include in each principal clause any subordinate clauses depending on it.

EXERCISES TO BE ANSWERED IN NEXT NUMBER.

I. A handful of red sand, from the hot clime
Of Arab deserts brought,

Within this glass becomes the spy of Time,
The minister of Thought.

II. Little did I suppose that in the wild woods of America I was to meet with a man whose eloquence would give to the passion of our Saviour a newer and more sublime pathos than I had ever before witnessed.

(a) Analyze the above extracts so as to show the clauses of which they are composed, and their relation to each other.

This will be fully done in our next issue, and we hope all our young friends will have tried for themselves, and they can then compare their results with ours. We shall be pleased to hear from any who may have difficulties about these exercises.

PARTS OF SPEECH.

As the use of a word in a sentence determines what part of speech that word shall be, we easily see that nearly all words may be used as different parts of speech in different sentences. Therefore it is a matter of first importance that we should thoroughly understand the "function" or use of each word.

The following exercises will aid teacher and pupil in accomplishing this:

1. Let us go *forward*.
2. They will *forward* our plan.
3. Not all *forward* boys become great men.
4. This happy home is *mine*.
5. That stalwart fellow works in a *mine*.
6. The enemy will *mine* the fort.
7. *Little* was expected of the miser's son.
8. The unwise student sleeps *little*.
9. A *little* child shall lead them.
10. The judge will *fine* the prisoner.
11. No one cares to pay the *fine*.
12. In *fine*, all prefer he should suffer.
13. *Fine* feathers do not make *fine* birds.

Give the function of each italicized word in the above sentences and thus determine the part of speech to which it belongs.

Answers in our next issue.

WORD BUILDING.

At the Entrance examination the student is often asked to form words directly from other English words. The following will therefore be a useful exercise.

From the following nouns form corresponding adjectives, and use each adjective thus formed in a sentence:

sense, space, college, toil, office,
ridicule, joke, globe, comb, irony,
miracle, angle, clerk, science, drama,
muscle, apostle, error, history, power,
cylinder, fraud, theatre, fruit, seal.

Let each boy and girl try this, and watch our next issue for full answer.

Examination Papers.

Under this heading will be given in each issue examples of the papers set at the uniform promotion examinations in our cities and counties, also the papers set by the Education Department. It is thought this will be helpful to teachers and pupils as a guide in the work. Give your Entrance class any of the following as an examination test, and note results, and compare your class with Toronto schools. The Editor will be pleased to receive model answers for publication from any pupil readers.

TORONTO PUBLIC SCHOOLS—UNIFORM PROMOTION EXAMINATION.

LITERATURE—JUNIOR FOURTH BOOK.

A.

Bird of the wilderness,
Blithesome and *cumberless*,
Sweet be thy matin o'er *moorland* and *lea*!
Emblem of happiness,
Blest is thy dwelling place—
Oh, to abide in the desert with thee!
Wild is thy lay and loud,
Far on the *downy cloud*;
Love gives it energy, love gave it birth.
Where, on thy *dewy wing*,
Where art thou journeying?
Thy lay is in heaven, thy love is on earth.
O'er fell and *fountain sheen*,
O'er moor and mountain green,
O'er the red streamer that heralds the day,
Over the cloudlet dim,
Over the *rainbow's rim*,
Musical cherub, soar, singing, away!
Then, when the *gloaming* comes,
Low in the heather blooms,
Sweet will thy welcome and bed of love be!
Emblem of happiness,

Blest is thy dwelling place—

Oh, to abide in the desert with thee!

1. State clearly the main idea expressed in this poem.
2. Show clearly what each stanza contributes to the expression of this idea.
3. Give the meaning of the italicized portions.
4. "Matin." What does this word mean? Show that it is very appropriate.
5. "Love gives it energy, love gave it birth." What does "it" stand for? Explain the line fully.
6. "Thy lay is in heaven, thy love is on earth." What does the poet mean by "lay is in heaven" and "love is on earth"?
7. "O'er the red streamer that heralds the day." What is meant by "red streamer"? Show the appropriateness of calling the "red streamer" a "herald."
8. What does the word "blooms" mean? What is meant by "bed of love," and what connection has it with "heather blooms"?
9. What is the relation in thought between the fourth line of the last stanza and the rest of the poem?

B.

It was a mere enclosure of trunks of small trees planted in a circle, and was already in ruin. Such as it was, the Frenchmen took possession of it. They made their fires and slung their kettles on the neighboring shore; and here they were soon joined by forty Hurons and four Algonquins. Daulac, it seems, made no objection to their company, and they all bivouacked together. Morning, noon, and night, they prayed in three different tongues; and when at sunset the long reach of forest on the farther shore basked peacefully in the level rays, the rapids joined their hoarse music to the notes of their evening hymn.

10. Describe in your own words the scene presented in this paragraph.
11. Explain clearly the meaning of "planted," "slung their kettles," "bivouacked," "basked," "hoarse music."
12. "Prayed in three different tongues." Explain fully.
13. "Level rays." Why level?
14. "Long reach of forest." What does this mean?
15. Show in what the beauty of the last sentence consists.
16. Quote any two stanzas of "The Three Fishers."

Geography.

In our last issue we gave notes of a lesson on latitude. If you have prepared that lesson thoroughly, you will find the following useful for review:

- What is latitude?
- Meaning of the word latitude?
- How is it reckoned? From what? What two kinds?
- How can you tell whether a place is in north or south latitude?
- Latitude of any place on the Equator?
- Latitude of any place on Tropic of Cancer? Arctic Circle? Antarctic Circle? Tropic of Capricorn?
- Latitude of the North Pole?
- Latitude of the South Pole?
- Latitude of a place exactly half way between the North and South Poles?
- What do we call this place? (Equator.)
- What city is situated nearly in latitude 0°? (Quito.)

Latitude of a place half way between the Equator and the South Pole?

Name all the large cities in Eastern and Western Hemispheres on or very near the 40th parallel of North latitude. (Others may be given.)

What is the length of a degree of latitude at the Equator? (In miles.)

Do the degrees of latitude vary in length?

If so, why? If not, why not?

Where is the longest degree of latitude?

Meaning of the expression "high latitudes"?

When a ship is sailing away from the Equator, or, as the sailors say, is "making latitude," is it sailing along a parallel or a meridian?

What circles, then, measure latitude?

What circles bound off, or separate, degrees of latitude from each other? What are meridians? What are parallels?

Name some of the most important. Give numbers of some important ones?

Latitude of Toronto? (Any city in child's own rovince.)

Latitude of your town?

If a ship could sail directly north from the Equator over a distance equal to 120°, in what latitude would it be?

A ship was wrecked in latitude 10° south, longitude 10° west; near what land was it?

Is there any place which has no latitude? How many degrees of North latitude? Of South latitude? How many altogether?

What is the greatest number of degrees of latitude any two places may be from each other?

Name two such places?

Public School Leaving.

TO A HIGHLAND GIRL: WILLIAM WORDSWORTH.

William Wordsworth, the poet, was born at Cocker-mouth in 1770, and was left an orphan at the age of fourteen. He was educated at St. John's College, Cambridge, from which he graduated in 1791. Almost from the first he gave himself up largely to the study of poetry. In company with a fellow-student he made a pedestrian tour in Europe in 1771, and in the autumn of the same year, after his graduation, he returned to France. Here he sympathized passionately with the aims of the revolutionists, and so far involved himself with the plans and plots of the Girondists that had not circumstances compelled his return to England he could hardly have escaped the guillotine, as he himself confesses. In 1793 he published "Descriptive Sketches" and an "Evening Walk." These poems failed, however, to make much impression on the public mind. At this period Wordsworth was in straitened circumstances financially, and he was looking out for newspaper employment when an unexpected legacy of £900, left him by Raisley Calvert, a friend who recognized in him the elements of poetic genius, with the express wish that he might have a few years of leisure for the development of his powers, gave him the longed-for opportunity. He turned it to excellent account. "Lyrical Ballads," the joint production of himself and Coleridge, written during a pedestrian tour, appeared in 1798. "The Excursion" (1814), his longest and greatest work, established a reputation which had been slowly but surely built up despite many sneers and gibes of Jeffrey and other critics. Critics are even yet divided in opinion as to whether "The Lake School"—the term used to denote the works of

Wordsworth, Coleridge, and Southey, who happened to live in the same neighborhood, in the lake region of Westmoreland, but whose productions have little in common—was first given seriously or as a nickname. Wordsworth himself certainly deserves to be regarded as the founder of a new and splendid school of poetry. In the words of an appreciative critic: "He recognized a soul in nature and rendered homage to her personality, and it is as nature's high priest that he stands alone among all other poets. In pure originality, *i.e.*, in absolute self-dependence of genius, he had no superior in any age and no compeer in his own. Even Keats and Shelley, with all their unique and splendid powers of imagination, do not disdain to learn from him, but he learns from no one. His thoughts have a divine freshness and beauty, as if nature in some supremely gracious mood had whispered to his soul her inmost secrets, and gifted him with a novel magic in uttering them."

Wordsworth's "serene life was in harmony with his noble teaching." He died in 1850.

NOTES.

Page 202. *Shower of beauty.*—The expression does not seem particularly happy. The word "shower" is too evidently suggested by the necessities of rhyme. Possibly there may be an allusion to the myth of Danaë, of Argos, mother of Perseus, whose Olympian lover visited her in the form of a shower of gold.

Consenting.—(*Con, sentire*) used in its primary sense of agreeing in opinion or sentiment, working together with a common purpose.

A veil . . . withdrawn.—What is the syntactical structure of veil? Explain the meaning and describe in your own words the scene depicted in this bit of word painting.

Page 203. *A quiet road.*—*Road* is probably used in the sense of "roadstead." Cf.:

"My father at the road

Expects my coming, there to see me shipp'd."

—*Shakespeare.*

Together do ye seem.—This description of a quiet scene on the lake shore, as embalmed in memory and idealized by fancy, is strikingly characteristic of Wordsworth's poetic genius. He delights in communion with nature in all her varying forms and moods.

Together do ye.—The girl, together with the rocks, lawn, trees, waterfall, and bay, seem to be such—and forms a repetition or rather amplification of the thought of the preceding lines.

Such forms—asleep.—Express in your own words the meaning of these two lines.

Mien.—What does this word mean?

With a human heart.—Why does the poet choose the word *human*? Would *glowing*, or *throbbing*, or *loving*, or some such epithet have suited the thought as well?

Nor thy peers.—*Peers* is, no doubt, used in the sense of companions or associates, as in Spenser's: "He all his *peers* in beauty did surpass." Does the phrase "or thy peers" seem to add anything to the beauty or force of the thought?

Scattered like a random seed.—Is this use of the word *scattered* in reference to a single object allowable? Give reasons.

Seemliness.—Suitableness or fitness to the surroundings.

Quick and eager visitings.—Justify the use of these adjectives.

A bondage . . . life.—Explain as exactly as you can the nature of the *bondage* and the *strife*, and show how this couplet indicates the close observer and interpreter of natural gestures.

Page 204. *Who art so beautiful.*—A commonplace ending. Why?

O happy pleasure!—Does this epithet seem a happy one? Can you conceive of any pleasure not happy?

But as a wave.—Explain the poet's meaning by a free paraphrase of this and following six lines.

Though but of common, i.e., though it be but the relationship of living in the same neighborhood.

My recompense.—What was his *recompense*?

Nor am I loth.—State in your own words why the poet was not loth to part from one who had given him so much pleasure.

Intermediate P.S. Department.

Designed specially for teachers of Second and Third Class. Edited by M. A. WATT.

HYGIENE FOR JUNIORS.

"Why do we study Hygiene?" is a question often asked by children and oftener by parents. The following simple outline will satisfy the children, and should satisfy the parents to whom the children explain what they have been learning.

Use of Hygiene: To teach us to preserve our health. Diseases are caused in various ways, of which the commonest are:

1. By breathing foul air (so we must study about pure air, and how to get it).
2. By drinking impure water (so we must study about this).
3. By eating bad food; or too much, or too little, of good food (so we must study about foods).
4. By not taking enough rest or sleep. (We must study about how to rest properly.)
5. By not taking enough exercise. (We must study proper ways of exercising.)
6. By want of cleanliness. (We must, therefore, learn about the skin and bathing properly.)
7. By wearing clothing of improper kinds. (We must study the effects of clothing upon the body.)
8. By nervously worrying, etc. (The nerves must be understood, then.)
9. Intemperance. (We need to know the effects of alcohol, then we must understand the nerves, muscles, and blood circulation.)

Other causes of disease are beyond the pupils' power to help, such as "climatic influences" and "heredity," and nothing can be done by the teacher of junior pupils there. But the outline given above furnishes fine scope for good, useful lessons, which may be merely conversations if the the people of the section object, as some do, to stated lessons on hygiene. There is one part, omitted above, to which I have never heard an objection, and that is the "Care of Wounds" in cases of accident, also to the "Help to the Apparently Drowned." These two branches of hygiene are so practical and interesting that the class will be delighted, especially if the teacher shows by actual process the operations needed in such cases. The care of the skin, and teeth, and hair should be very thoroughly taught, and the lessons will result in making life more endurable to the teacher of mixed classes, while the lessons on pure air will give her a chance to ventilate the room with less fear of children complaining about the windows being opened. Of course, it should be remembered that "bad air is a slow poison, but a draught kills like a sword." The lurch of country children is to blame for the large percentage every afternoon of children with headaches (I believe much larger in the country than in the towns), for the child eats at the morning recess, again at noon, and if anything is left it is finished at the afternoon recess, or on the road home at night. And when we examine the lunch basket we find heavy pie made with plenty of lard, cake ditto, doughnuts ditto, all heavy with grease. Very seldom is fruit found, beyond an apple, perhaps, in a basket, and seldom sandwiches. The teacher of a country school who reforms the lunch basket has accomplished a glorious work for the health of her school district, and her influence will not soon fade away.

Now is the time when the teacher in country districts has to look after children with wet feet and damp garments. A number of the larger girls should be selected to see to the little tots, and to

warn the medium-sized. There should be a committee appointed for each road to see that in coming to school and going home the smaller children do not play in the water or sit in damp grass. A kindly word whispered to a child about putting on warmer garments, etc., may have the effect of helping that child into a better state of health for the rest of its life.

M.A.W.

A SUGGESTIVE EXTRACT.

Now is a fine time to study trees, and their leaves and buds. In the spring we are so charmed with the wild-flowers that we can spare no more than a passing remark upon the color and beauty of the foliage; in the summer we are intoxicated with nature's luxuriant charms; and in the season of fruitage we are too engrossed in the luscious fragrance of the autumn's riches to notice anything so plain as leaves. But when all these are past, and we realize that everything is going from us, how we value the leaves, and how charmed we are to find we can keep them in any way! We seek them out, we press them, we wax them, we try melted resin, we varnish them, and all the time we study them. Our room is full of them, pressed on cards and used for drawing lessons; the apexes of leaves on one card, the bases on still another, for botany talks. On one card is seen a horse-chestnut leaf pressed; and on the same card, well glued on, next to it, are a nut, a piece of the husk, a bud, and a piece of wood and bark. Another card shows the locust tree in a similar manner; and to illustrate the two classes of seeds, *monocotyledonous* and *dicotyledonous*, are pressed specimens of a growing corn and a bean, which were grown in a shallow box by one of the children since the holidays. Great interest is always shown in plant lessons.

The little extract from the *Youth's Companion* given below is very suggestive, and will lead to a useful lesson on buds:

THE BUD'S WINTER CRADLE.

Rock-a-bye, baby,
On the tree-top.

This is what the winds are whispering to the large horse-chestnut trees. Not only is there one baby among the horse-chestnut trees, but many hundreds of babies.

To be sure, they are not pink and white babies, with big blue eyes and lovely curling hair, such as we see in sunny nurseries, lying in their pretty little cradles; but they are babies, all the same.

Dame Nature calls them buds, to distinguish them from her flesh and blood babies who live in houses. When Dame Nature was first given charge of all the flowers and trees and birds and little children, and many other things, she said:

"Dear me! How shall I keep those little horse-chestnut babies warm during the long, cold winter?"

She thought about it a long time. Then she fashioned a tiny cradle of brown scales, and covered it with a sticky substance, so that neither the rain nor snow could penetrate to the tender bud.

And— Oh, yes! of course babies always have soft little blankets laid over them when in their cradles. So Dame Nature lined the entire inside of the bud's winter cradle with a thick white blanket, to keep the horse-chestnut baby dry and warm.

It was many years ago that Dame Nature made her first cradle, but every year since then she has made thousands of little cradles. Then she sends the winds to whistle round the bare branches of the horse-chestnut trees.

They bend and twist the bough in every direction, but

When the bough bends
The cradle will rock.

So every gust of wind sets thousands of little cradles rocking to and fro; and thousands of little buds, lulled by the motion, nod and dream and slumber on.

But when the spring rains and warm sunshine come again, just watch the life and stir among the horse-chestnut trees.

All the little buds will waken from their deep sleep. They will grow very rapidly, and some day, in stretching themselves, just as all babies do, they will somehow burst open their snug brown cradles, and will push forth a tiny green head to the world without.

Just watch and see if my story is not true.

PROMOTION EXAMINATION TIME TESTS

(As given in Toronto Schools.)

ARITHMETIC.

1.

69764
87659
76987
58476
95897
69845
87978
56895
78649
67587
98755
87697

This example to be done by Senior 3rd Book in 65 seconds; Junior 3rd Book in 65 seconds; Senior 2nd Book in 70 seconds. If only one figure in the answer is wrong, one-half value may be given.
2. Multiply 847695879 by 9, this product by 6, then this product by 8, and this last product by 7. This example to be done by Senior 3rd Book in 90 seconds; Junior 3rd Book in 2 minutes; Senior 2nd Book in 2 minutes.

Values 10, 10.

June, 1885.	
3.	59847
	74895
	89547
	95874
	58797
	97647
	86975
	79737
	67665
	75879
	68368
	57775
	913006

To be done in 60, 65, and 70 seconds by Senior 3rd, Junior 3rd, and Senior 2nd, respectively.
4.

596874378 × 3678

Time, 100, 115, and 140 seconds, for Senior 3rd, Junior 3rd, and Senior 2nd, respectively. The names of those CORRECT in the given time should be taken down. Nothing for any other.
5.

7586498769
6
45518992614
7
318632948298
8
2549063586384
9
22941572277456
6.

38597
68935
97769
86876
77887
65975
88886
77777
65656
87987
45645
76709
878749

This example to be done in 60, 65, and 70 seconds, respectively, by Senior 3rd, Junior 3rd, and Senior 2nd Book classes.

7. Multiply 5847968796 by 7, then the product by 9, that product by 8, and the last product by 6.
This example to be done in 100, 115, and 140 seconds, respectively, by Senior 3rd, Junior 3rd, and Senior 2nd Book classes.

June, 1887.

8. 76854
93785
39987
58766
68973
79256
98765
57689
34753
97895
69578
53954

830255

To be done in 80 seconds.

9. Multiply 7685947869 by 6, then the product by 7, that product by 8, and this last by 7.

To be done in 100 seconds.

The names of those correct in the given time, in every figure, should be taken down. Nothing for any other.

BUSY WORK ON "4 TIMES."

4 times				
2 = 8	8	18	28	38
4 = 16	32	72	112	152
8 = 32	128	288	448	608
10 = 40	512	1152	1792	2432
12 = 48	2048	4608	7168	9728
3 = 12	7	17	27	47
5 = 20	28	68	108	188
7 = 28	112	272	432	752
9 = 36	448	1088	1728	3008
11 = 44				
1 = 4				
6 = 24				

6	16	36
24	64	144
96	256	576
384	1024	2304
1536	4096	9216
6144	16384	36864
9 × 4	19 × 4	29 × 4
36	76	116
144	304	464
576	1216	1856
2304	4864	7424
9216	19456	29696
36864	77824	111784
147456	311296	475136

× 4 add 4
6 × 4 = 28
5 = 24
3 = 16
2 = 12
4 = 20
10 = 44
20 = 84
3 = 16
7 = 32

97869 × 4	4222 × 4
391476	16888
1564904	67552
6263616	270208
25054464	1080832
100217856	4323328
400871424	17293312
1603485696	69173248
6413942784	276692992
25655771136	1106771968
102623084544	4427087872

96534 × 4	89674 × 4
386136	358696
1544544	1434784
6178176	5739136
24712704	22956544
98850816	91826176
395403264	367304704
1581613056	1469218816
6326452224	5876875264
25305808896	23507501056
101223235584 - 10	94030004224

OBSERVATION LESSONS.

INSTRUCTION ADDRESSED TO SENSE PERCEPTION.

(Adapted from R. Seyfert's "Schulpraxis," *Sammlung Goeschel*, 1896.)

PURPOSE AND AIM.—Observation lessons form the beginning and basis of the study of things. Their purpose is to introduce the child into the province of study; to occupy the senses; to exercise ideation; to begin and place particular emphasis upon language-culture.

Direct, actual observation of the real thing is the principal rule. For this reason instruction-walks into fields, and woods, and gardens must be undertaken as often as possible. The rules for the conduct of these walks are: order and discipline; it must be impressed upon the children that the walks form part of the school programme, and are for purposes of work; no child must leave the road without permission. All instruction on the way must be brief and concise. The teacher must everywhere insist upon the most thorough observation with all senses. The collecting of plants, pebbles, etc., is done by those who are appointed by the teacher. Sing as much as possible, especially on the way home. The story of the walk is then told by the children in their own way, whereby the teacher must insist, above all, upon a logical order of thoughts.

TOPICS FOR STUDY.

1. The home. 2. The school. 3. The seasons.

AUTUMN: (a) Peculiarities of autumn; (b) flowers of autumn; (c) birds and insects of autumn (disappearance of many of them); (d) games in autumn.

Make a similar selection of topics for winter, spring, and summer.

SECOND SCHOOL YEAR.

1. Indian summer: condition of the garden, particularly also of garden soil.

2. Autumn: in the fields, winds, potato-harvest, fall work of the farmer, provisions of the farmer, the pasture, and its boarders and visitors.

3. The dwelling-house, its construction, furniture, stove, and fuel (coal mining).

4. Winter: snow and ice, feeding places for birds.

5. Christmas.

6. Parents and children.

7. Our body: breathing, eating, care of the skin.

8. Domestic animals.

9. A May walk.

10. Work of farmer in spring, his tools, his hopes.

11. Meadow: a bunch of wild flowers, visitors (bees, butterflies, etc.).

12. Sunshine and rain.

13. Garden: work, flowers, etc.

14. Hay-making.

15. The fields: grain, weeds, harvest.

16. Creek: power of water, pebbles.

17. Pond: plant and animal life.

THIRD SCHOOL YEAR.

1. Sun, clouds, thunder-storm, rainbow, drought.

2. Field: woodchuck, harvest, story of a loaf of bread.

3. Orchard: fruit, trees.

4. Garden: flowers, vegetables, fruit.

5. Woods: nuts, squirrel, chipmunk, ant, birds of passage.

6. Field: vegetables, turnip, rabbit, woodchuck.

7. Winter.

8. Christmas.

9. Time divisions, clock and watch.

10. Man: senses, body, heart, limbs, sickness, death.

11. Family life.

12. The coming of spring.

BUSY WORK.—THIRD CLASS.

I.

1. How many apples will pay for 10 peaches, if 5 apples will pay for 8½ peaches?

2. Jane bought a slate for ¼ of a dollar and an arithmetic for ⅓ of a dollar, how many cents did both cost?

3. If you live till you are 8 years less than 3 score and 5 years old, how old will you be then?

4. If a man works 8 hours a day, in how many weeks will he have worked 672 hours?

5. A boy bought 3 bushels of chestnuts for \$2.50 a bushel and sold them at 8 cents a quart, did he gain or lose and how much?

6. A house cost \$1,416, a farm 5 times as much, how much more did the farm cost than the house?

7. Add 19 times \$1.45, 17 times \$6, 15 times \$4.08, and \$128.16.

8. Subtract 14 times \$193.16 from 27 times \$156.

II

1. Add 31¼, 19⅓, 16½, and 22⅞. Subtract 18⅔ from ⅔ of 36.

2. What will ⅔ of ⅔ of 8 bushels of blackberries cost at 7 cents a quart?

3. What will 8 pounds 10 ounces of grapes cost at 6 cents a pound?

4. 6 is 2 less than twice the number of horses a man has; how many horses has he?

5. 18 is 3 more than 3 times the number of cows a farmer has; how many has he?

6. How many days from May 16 to November 18?

7. My mother is 10 years less than 4 score years old, how old is she?

8. Add 75 × \$87.78, 94 × \$6.38, 59 × \$.95, 128 × \$45.63.

9. From 63 times \$56.18 take 29 times \$83.93.—*Selected.*

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.

CORRESPONDENCE.

D.B., Gladstone, says: "On page 125 is a solution of Q. 56 from the May number, page 30. It is taken from the H. S. Arithmetic, and is supposed to be done by arithmetic. I cannot do it, nor have I been able to get anyone else to do it. I found no difficulty in solving it by algebra," etc.

REMARKS.—D.B. is not the first who has fallen into tribulation over an artificial and fantastic distinction between algebra and arithmetic. At one time the Education Department and the University of Toronto insisted on so-called arithmetical solutions. Dear friend, do not weep over imaginary griefs. No man, living or dead, can draw the line between arithmetic and algebra. Arithmetic shades off into arithmetical algebra, and arithmetical algebra shades off into symbolic algebra. All the sorrow of our correspondent is really imaginary. Perhaps if he says *first side* instead of *x*, and *second side* instead of *y*, he will feel better. We are not aware of any method of solving the problem without using the lengths of the sides as two unknown quantities. If the ratio between the sides were given, such a solution would be possible. It is easy to find the sum of the two sides = 56.5 nearly, but to find the separate sides we must appeal to the arithmetical equation, or to the geometrical principles of proportion. If D.B. is so seriously exercised over the introduction of *x* and *y* into a question in mensuration, who can paint his gesticulations and remonstrances against the introduction of geometry into arithmetic? Yet he cannot find the area of a square or of a rectangle without assuming geometrical facts. The truth is that mathematical science is ONE, and not many, and that arithmetic and algebra can no more be separated than etymology and syntax can be separated. N.B.—All the Ontario examinations accept these so-called algebraical solutions, and no

one need have any qualms of conscience about calling the unknown quantities in any problem x and y and z. The opposite view is simply untenable and absurd; but it took some ten years of hard hitting to banish it from our examination papers in Ontario.

R.C. says: "Visiting a school lately for the purpose of learning whatever I could pick up, I saw on the blackboard a proof written out by the teacher which ended with the words, 'hence the L.C.M. of the fractions must be the L.C.M. of all the numerators over the G.C.M. of all their denominators.' The proof seemed clear and explicit; what struck me as odd was the word *over*. Will you please give your opinion as to the accuracy of that word?"

REPLY.—There is only one reply possible. It is provincial *slang*, and cannot be found in any English or American mathematical treatise. No competent teacher should allow himself or herself to circulate provincialisms or slang.

S.W.—We understand that the book is in progress, but the date of publication is still uncertain. The probability is that the author will make a valuable addition to the P.S.A., which will be a boon to many teachers.

PURPLE RIDGE, Man., sends three problems for solution in THE JOURNAL. We regret the impossibility of presenting them within a reasonable time. The second was solved in this column some time ago. A solution of No. 3 will be found among the type solutions in "Problems in Arithmetic" (Gage & Co., Toronto), page 71. It will take three issues to overtake our work on this line.

W. E. M. COBBAN, Toronto, sent solutions of Nos. 59, 77, 78, 90, and 91.

R. H. DAVIS, Sunderland. You will find your clock question, or, at least, a question exactly similar, solved on p. 80 in "Problems in Arithmetic" (Gage & Co., Toronto), type solution No. 59. We have devoted this whole issue to such questions, but evidently the winter winds will be wearily sighing before we can overtake the demands on our space.

PETROLIA sends six interrogations relating to the solutions on p. 156. He does not sign his name, and most of the questions practically require private answers. Please give correct address.

SUBSCRIBER and others inquire with respect to bank discount. The following quotation from a standard work published in Boston in 1893 will probably relieve them from doubt, and prove that "use and wont" enter into the data of such questions: "Banks and business houses in different cities, and even in the same city, have no uniform usage in finding the term of discount. Some count the term of credit in exact days; some in exact days if less than 60; some in months and days for any length of time exceeding a month; some in months and days if more than 60 days; some as the note itself is written (that is, if written in days, by exact days; but if written in months, in months and days, if the time is more than a month); some on the basis of 360 days to the year; some, conforming to strict accuracy, on the basis of 365 days to the year." Neither of the authorized arithmetics gives any definite information on the subject; in fact, the H.S.A. is really a good collection of problems, and is miscalled on the title-page. It says nothing whatever on bank discount. The P.S.A., on page 155, solves a question on the basis of the actual number of days + 3 days' grace, 365

days to the year. If there is any such general agreement in the Dominion banks, or any such law in the statute book, we have never heard of it, and shall be glad to receive light on the question. In the meantime, we must regard all problems of this kind as ambiguous and unsatisfactory unless they explicitly define the term. An instance of this occurred a few years ago, when the Departmental examiners were compelled to accept any one of four different answers as correct. The text-book just quoted gives solved questions in which the time is counted in months and days, each month being counted as $\frac{1}{12}$ of a year and each day as $\frac{1}{30}$ of a month. It would save much annoyance to teachers if this uncertainty and ambiguity were removed by a positive declaration of the particular meaning intended on any examination paper. With regard to Q. 7, P.S.L., 1896, we can only say that the note ("year = 366 days") would be absurd unless the examiner intended the question to be solved on that basis, i.e., the actual number in the year 1896. N.B.—Commercial arithmetic and pure mathematics are not identical.

SOLUTIONS.

No. 58. (See page 90, July 1st, 1896.) N.B.—This question was solved on p. 187, Nov. 1st, 1895; but as there was a slight error in the concluding step, we give a new statement of the work, with some few changes in manipulation.

Solution by the Editor.
Let \$x be the amount invested in each stock
 $\therefore \frac{x}{90}$ and $\frac{x}{95}$ are the number of shares purchased.

First sale :

$$\left. \begin{aligned} \frac{x}{90} \times 95 = \frac{19}{18}x \\ \frac{x}{95} \times 100 = \frac{20}{9}x \end{aligned} \right\} \text{Proceeds} = x\left(\frac{19}{18} + \frac{20}{9}\right) = \frac{721x}{18 \times 19}$$
 Second sale :

$$\left. \begin{aligned} \frac{20x}{19 \times 95} \times 90 = \frac{360x}{361} \\ \frac{19x}{18 \times 100} \times 95 = \frac{361x}{360} \end{aligned} \right\} \text{Proceeds} = x\left(\frac{360}{361} + \frac{361}{360}\right) = \frac{259921x}{19 \times 19 \times 20 \times 18}$$

Difference :

$$= \frac{x}{18 \times 19} \left(721 - \frac{259921}{19 \times 20} \right)$$

$$= \frac{x}{18 \times 19} \times \frac{721 \times 380 - 259921}{380}$$

$$= \frac{x}{18 \times 19} \times \frac{14059}{380} = \$3,514\frac{3}{4} = 14059\frac{3}{4}$$

$$\therefore \frac{x}{18 \times 19 \times 380} = \frac{1}{4}; \therefore x = \$32,490.$$

NOTE.—As this result does not agree with the answer given, it seems necessary to verify the figures.

Verification.— $32490 = 90 \times 19 \times 19 = 95 \times 18 \times 19$. Hence there were 361 shares 3% @ 90; 342 shares 4% @ 95.

First sale, 361 shares @ 95 = 34925
 342 " " 100 = 34200 = \$68,495, proceeds.

Second purchase, $\frac{34200}{95} = 360$ shares 3%, sold @ 90 = 32400
 $\frac{34200}{100} = 342.95$ shares 4%, sold at 95 = 32580.25 = \$64,980.25.

Difference is \$68,495 - \$64,980.25 = \$3,514.75, as it should be.

Solution II. We shall be pleased to have our correspondents point out the fallacy in the following. It is undoubtedly wrong, and makes a false assumption. It will be worth while to find out

exactly where the broken link is introduced that ends by derailing the train of reasoning. Try it, friends and co-workers.

$90 : 95 = 18 : 19$; \therefore 19 shares in 3% and 18 shares in 4% cost the same. Suppose, then, that \$1,710 is invested in each sort of stock.

First sale, 19 shares 3% @ 95 = \$1,805
 18 " 4% @ 100 = \$1,800 = \$3,305, proceeds.

Second sale,
 $\frac{1800}{95}$ shares 3% sold @ 90 = \$1,705.26
 $\frac{1805}{100}$ " 4% " " 95 = \$1,714.75 = \$3,420.01
 Loss = \$3,605 - \$3,420.01 = \$184.99, say \$185;
 \therefore \$185 loss results from investing \$1,710 in each stock

\$1 loss results from investing $\frac{1710}{185}$ in each stock
 $\$3,514\frac{3}{4}$ loss results from investing \$32,487.69, which is \$2.31 less than the correct amount. Where is the fallacy?

No. 59. Solution by the Editor. The numerators are 7×3 ; 7×4 ; 7×5 ; 7×6 ; \therefore their L.C.M. = 7×60 . Hence, multiply both terms of the first fraction by 20; of the second by 15; of the third by 12; of the fourth by 10. The numerators are then equal, and the greatest fraction has the least denominator, and the smallest has the greatest denominator.

Solution II., by W. VANDUSEN, Wheatland, Man. Divide both terms of each fraction by its own numerator; each numerator is then reduced to 1, and the denominators are $104\frac{1}{2}$, $78\frac{1}{2}$, $62\frac{2}{3}$, and $51\frac{1}{2}$; hence, the first fraction is the *least* and the last one the *greatest*.

No. 60. Sixteen years ago A's age was $\frac{7}{5}$ B's age

\therefore A's age - B's age = $\frac{2}{5}$ B's age 16 years ago.
 Now, A's age - B's age = $\frac{1}{4}$ B's present age.
 But the difference between their ages remains constant,

$\therefore \frac{2}{5}$ B's age = $\frac{1}{4}$ (B's age + 16)
 or $\frac{2}{5}$ B's age = $\frac{1}{4} \times 16$; B's age 16 years ago was 16, etc.

N.B.—For similar problem and solution see "Clarkson's Problems in Arithmetic," p. 57, type solution No. 5.

Solution II. By W. H. VANDUSEN.
 A's age : B's age = 9 : 4
 A's - 16 : B's - 16 = 7 : 2, whence A's = 72, B's = 32 years.

No. 61. N.B.—The statement lacks precision in the words, "he gains as much per cent. on one kind as he loses per cent. on the other." Of course there is no ambiguity; but it would be just as easy to say *former* and *latter*, or *first* and *second*, and it is a pity that examiners and authors do not take a little more pains to leave no uncertainty as to the exact meaning of the question.

Solution. 1 lb. of each costs $5 + 3\frac{1}{2} = 8\frac{1}{2}$; \therefore cost per lb. = $\frac{17}{4}$ shillings.

Let x = selling price, $\therefore 5 - x = \text{loss}$; $x - \frac{7}{2} = \text{gain}$
 i.e., loss = $\frac{5-x}{5}$ of cost; gain = $\frac{x-\frac{7}{2}}{3\frac{1}{2}}$;

or loss = $20(5-x)\%$ of cost; gain = $\frac{100}{35}(2x-7)\%$ of cost,

$\therefore 20(5-x) = \frac{100}{35}(2x-7)$; $5-x = \frac{5}{7}(2x-7)$, $\therefore x = 4\frac{2}{7}$ s.

Gain on the whole = $\frac{17}{4} - \frac{17}{2} - \frac{9}{8}$ on $\frac{17}{4}$;
 i.e., $\frac{9}{8} \times \frac{4}{17} \times 100$ per cent. = $32\frac{3}{8}\%$. N.B.—This is substantially the same as Mr. VanDusen's solution, with a slight correction.

No. 62. Solution. 8% for 73 days = $\frac{100}{1000}$; discount = \$40.

\$2,750 sold @ 100 $\frac{1}{2}$ gives \$2756.875
 Less discount 40.00
 2716.875, proceeds.

N.B.—The ambiguity resides in the absence of

any hint as to whether the discount is to be taken off the *face value* or off the *proceeds* @ 100½. The latter procedure would give $\frac{5.5}{100} \times 401 \times \frac{100}{100.5} = \2712.765 , a difference of more than \$4.

No. 63. Let x = the sum deposited at the end of each year.

$$\therefore x(1 + 1.06 + 1.06^2 + 1.06^3 + 1.06^4) = \text{amount at the end of the fifth year};$$

$$= x(1 + 1.06 + 1.1236 + 1.19102 + 1.26248) = x(5.637).$$

The present value of the perpetuity at that time will be

$$\$500 \div (.06 \times 1.06^2) = 5000 \div (6 \times 1.1236) = x(5.637);$$

$$\therefore x = \frac{25,000,000,000 \div (3 \times 11236 \times 5637)}{25,000,000,000 \div 190,011,996} = \$131.57 +$$

N.B.—To those of our readers who are perplexed with problems of this kind we recommend "Sangster's National Arithmetic," page 361, as the shortest possible statement. Formulas I., V., VII., IX., and XV. cover all common cases. The book may probably be had for a few cents from any second-hand dealer, e.g., Frank Porter, Toronto.

No. 64. Let x = deposit at the end of each year. In six years the amount will be

$$x(1 + 1.04 + 1.04^2 + 1.04^3 + 1.04^4 + 1.04^5)$$

$$= x \cdot \frac{1.04^6 - 1}{1.04 - 1} = \frac{.26532}{.04} x.$$

NOTE. $\frac{a^6 - 1}{a - 1} = a^5 + a^4 + a^3 + a^2 + a + 1$. Hence, when $a = 1.04$, the preceding result follows and materially shortens the work shown in No. 63.

The value of the deferred annuity at the end of these six years will be

$$\frac{500}{.04} \left(\frac{1}{1.04^2} - \frac{1}{1.04^7} \right) = 12500 \times \frac{1}{1.04^2} \left(1 - \frac{1}{1.04^5} \right)$$

$$= 12500 \times \frac{1}{1.04^2} \times \frac{1.04^5 - 1}{1.04^5}$$

$$= \frac{12500 \times 21665}{131593} = \frac{26.532}{4} x$$

$$\therefore x = \frac{12500 \times 21665 \times 4000}{131593 \times 26532} = \text{etc.}$$

REMARK.—For the convenience of such readers as have no text-book treating of annuities, etc., we here quote several useful formulas.

Let a = a single payment of the annuity; t = the number of payments; r = rate per unit for one period; A = amount of the annuity at the time of reckoning; and V = present value of the annuity. Then it can be shown by algebra that

$$I. A = \frac{a}{r} [(1+r)^t - 1]; \quad II. V = \frac{a}{r} \left(1 - \frac{1}{(1+r)^t} \right)$$

or, in another form,

$$V = \frac{a}{r} \cdot \frac{(1+r)^t - 1}{(1+r)^t}.$$

If the annuity begins at the end of t years and then continues for s years, as in No. 64, then

$$III. V = \frac{a}{r} \left(\frac{1}{(1+r)^t} - \frac{1}{(1+r)^{t+s}} \right).$$

If the annuity lasts forever, $t = \infty$ in formula II., and we get IV., $V = \frac{a}{r}$

If the annuity begins after s years, and then lasts forever, we have from formula III., where $s+t = \infty$, formula V.

Present value = $\frac{a}{r(1+r)^s}$. These results cover all ordinary cases, and can be understood by anyone who knows simple equations, provided the note above (see No. 64) be kept in mind.

N.B.—For calculation, formula III. is more convenient in the form $V = \frac{a}{r} \cdot \frac{(1+r)^s - 1}{(1+r)^{s+t}}$.

Those who have Hamblin Smith's Arithmetic, Canadian edition (Gage & Co., Toronto), will find valuable information on page 338, *et seq.* The appendix of the High School Algebra, Part

II., also covers the ground very completely. William Briggs, Toronto.

No. 65. Number of cubic feet in 5' is $20\frac{1}{2} \times 12\frac{1}{2} \times (5280 \times 2\frac{1}{2}) \div 12$
and number of gallons = $\frac{4\frac{1}{2}}{1} \times \frac{3\frac{1}{2}}{3} \times \frac{5}{2} \times \frac{5280}{12} \times \frac{12\frac{1}{2}}{1}$
= $\frac{1517 \times 11000}{16 \times 6} = 1,738,229.16$ gallons.

N.B.—For ordinary calculations, 1 gallon of water weighs 10 lbs., and $62\frac{1}{2}$ lbs. occupy 1 cub. ft. of space. The H.S.A. has omitted this piece of necessary information, and the book answer does not agree with this. Under the Dominion statute one gallon = 277.118 cubic inches, and a cubic foot of water weighs 62.356 lb., viz., at 62° F. and barometer at 30 in. The imperial gallon, formerly used, contains 277.274 cubic inches. These facts ought to have been stated in the text-book. See P.S.A., p. 34, where we find the accurate statement, "A cubic foot of water contains 25 quarts." This gives the same result as the one found above.

No. 66. The areas of circles are proportional to the squares of their diameters

$$\therefore \text{central space : grindstone} = 5^2 : 65^2; \text{ i.e., } = 1 : 169.$$

Thus, there remains $\frac{168}{169}$ of the whole stone to be equally divided amongst the six partners. Beginning at the middle, we require to divide the whole into the following parts: $\frac{1}{169}, \frac{2}{169}, \frac{57}{169}, \frac{85}{169}, \frac{113}{169}, \frac{141}{169}, \frac{168}{169}$. Taking the first man's share off, call the diameter of the remainder $65-x$. Then $65^2 : (65-x)^2 = 169 : 141$;

$$\therefore (65-x)^2 = 141 \times 65^2 \div 169 = 25 \times 141$$

$$\therefore 65-x = 5 \times \sqrt{141} = 5 \times 11.8743421;$$

$$= 59.3717105 \text{ inches.}$$

Similarly, after the second man's share is ground off, we shall have $65^2 : (65-y)^2 = 113 : 169$, etc.

Nos. 67 and 68. $x = \sqrt{\frac{3}{2}}$; $\therefore x = \frac{1}{2}\sqrt{6}$; $1+x = \frac{1}{2}(2 + \sqrt{6}) = \frac{\sqrt{6} + \sqrt{3}}{\sqrt{2}}$

$\therefore \sqrt{(1+x)}$ cannot be reduced to a simpler surd form. Neither can the given fractions be simplified; for when rationalized the denominators are $-x$ and $+x$, but the numerators do not simplify. Direct substitution of the quantity $\frac{1}{2}\sqrt{6}$ seems to be the only feasible plan.

NOTE.—An accidental reference to the High School Algebra, Part I., shows that our correspondent probably intended to quote Nos. 7 and 8 on page 208, and that

he has given $x = \sqrt{\frac{3}{2}}$ instead of $x = \frac{\sqrt{3}}{2}$,

which materially simplifies the problem. The answers in the book have, however, been transposed. The answer to No. 67 is 1, and to No. 68 $\frac{5}{8}\sqrt{3} - 2$. They present no difficulty as given in the text-book, for

$$x = \frac{1}{2}\sqrt{3}, \therefore 1+x = 1 + \frac{1}{2}\sqrt{3} = \frac{1}{2}(2 + \sqrt{3});$$

$$\therefore \sqrt{(1+x)} = \frac{1}{2}(1 + \sqrt{3}); \text{ and } \sqrt{(1-x)} = \frac{1}{2}(1 - \sqrt{3}).$$

Substitute these values and rationalize. This correspondent gave no reference, as he was bound to do. See *special notice at the head of this column*.

No. 69. By W. VAN DUSEN. A. and B. travelled the same times before meeting, x hours, suppose, \therefore A's rate : B's rate = $x : 25$. Also A's rate : B's rate = $16 : x$. Hence, $16 : x = x : 25$; or, $x^2 = 16 \times 25$, and $x = 20$. Therefore A's full time = $20 + 16 = 36$ hours, and B's total time = 45 hours. N.B.—For a similar question see "Clarkson's Problems in Arithmetic," p. 57, K. No. 8.

No. 70. The words, "a straight line drawn from the top of the large one is $35\sqrt{3}$ inches in length" admit of no definite interpretation in a diagram of the bicycle. The sender should make up his mind what he means, and write again.

No. 71. I. $x^2 + y^2 + z^2 + 2xyz = 1$. Add y^2z^2 to both sides, and

$$x^2 + 2xyz + y^2z^2 = (1 - y^2)(1 - z^2) = (x + yz)^2;$$

$$\therefore x^2 + xyz = x \sqrt{(1 - y^2)(1 - z^2)} \frac{1}{2}, \text{ And, by symmetry,}$$

$$y^2 + xyz = y \sqrt{(1 - y^2)(1 - z^2)} \frac{1}{2};$$

$$z^2 + xyz = z \sqrt{(1 - y^2)(1 - z^2)} \frac{1}{2}.$$

Adding and substituting, we have

$$1 + xyz = x \sqrt{(1 - y^2)(1 - z^2)} \frac{1}{2} + \text{etc. Q.E.D.}$$

No. 72. Divide $x^2 + mx + n$ into $x^3 + px^2 + qx + r$. The quotient is $x + (p - m)$. The remainder *must* = 0. Hence, $x(q - n) = x(p - m)$, or $q - n = p - m$; i.e., $n = m - p + q$ A.

So, also, $r = n(p - m)$, i.e., $r = (m - p + q)(p - m)$, from A.

Again, divide the quotient $x + (p - m)$ into $mx^2 + qx + r$.

The second quotient is $x + (m - p + q)$, and the remainder is $r + (m - p + q)(m - p)$. Hence, the condition that the first quotient is a factor of $mx^2 + qx + r$ is this, $r = (m - p + q)(p - m)$. But we see from A that this is true when $x^2 + mx + n$ is a factor of $x^3 + px^2 + eq$.

No. 73. Given (A) = $x^3 + ax^2 + o.x + b$, and
(B) = $x^3 + o.x^2 + px + q$.

Their difference is $ax^2 - px + (b - q)$, i.e., striking out a ,

$$(C) x^2 - \frac{p}{a}x + \frac{b - q}{a}, \text{ which must be the common factor. Hence, assume}$$

$A = C(x + m)$, and $B = C(x + n)$. Multiply out, and equate the coefficients of like powers, since the quantities must be identical, and we have

$$(1) a = m - \frac{p}{a}; \quad (2) b - q - mp; \quad (3) m(b - q) = ab;$$

$$(4) n = \frac{p}{a}; \quad (5) b - q = p(a + n); \text{ and } (6) n(b - q) = aq.$$

Then from (6), $b - q = \frac{aq}{n} = mp$, from (2); or

$$aq = mnp$$

$$= \frac{mnp^2}{a} \text{ from (4); } \therefore a^2q = mp^2. \text{ Hence from}$$

$$(3) a^3bq = m^2p^2(b - q) = (b - q)^3 \text{ from (2). Q.E.D.}$$

No. 74. $A = ax^3 + bx^2 + o + c$
 $B = cx + o + bx + a$. Strike out a and c , and

$$A_1 = x^3 + \frac{b}{a}x^2 + o + \frac{c}{a}$$

$$B_1 = x^3 + o + \frac{b}{c}x + \frac{a}{c}. \text{ Then } A_1 - B_1 \text{ gives}$$

$$C_1 = x^2 - \frac{a}{c}x + \frac{c^2 - a^2}{ac} = \square = (x + m)^2, \text{ suppose.}$$

Hence (1) $2m = -\frac{a}{c}$; (2) $m^2 = \frac{c^2 - a^2}{bc}$.

Square (1) and substitute in (2), and the required relation duly appears.

No. 75. The quantity $ax^2 + bx + c$ is a perfect square when the roots of the equation $ax^2 + bx + c = 0$ are equal, that is, when $b^2 - 4ac = 0$. Hence the given quantity is a perfect square when

$$(n^4 + n^2)^2 + 4(n^2 + n + 1)(n^2 - n + 1) = 0; \text{ or when}$$

$$(n^4 + n^2)^2 + 4(n^4 + n^2) + 4 = 0; \text{ i.e., when}$$

$$n^4 + n^2 + 2 = 0$$

This may be expressed

$$(A) n^4 + n^2 = -2; \text{ or}$$

$$(B) n^4 + n^2 + 1 = -1 = (n^2 + n + 1)(n^2 - n + 1) = Km, \text{ suppose}$$

$$\therefore Km = -1 \text{ and } K = -\frac{1}{m}. \text{ Now, under this}$$

condition the given quantity assumes the form

$$Kx^2 - 2x - m, \text{ and when this is a perfect square } Kx^2 - 2x - m = 0 \text{ has equal roots. Substitute for}$$

$$K, \text{ and } -\frac{x^2}{m} - 2x - m = 0, \text{ or } x^2 + 2mx + m^2 = 0 = (x + m)^2.$$

Hence under the given conditions

$$x = -m = -(n^2 - n + 1).$$

N.B.—The answer given in the text-book is only another form of this result, for

$$\frac{n^2 - n + 2}{n^2 + n} = \frac{m + 1}{K - 1} = -m, \text{ when we substitute } -\frac{1}{m} \text{ for } K.$$

Solution II. Write K for $n^2 + n + 1$, and m for $n^2 - n + 1$, and hence $Km - 1$ for $n^4 + n^2$, and the given quantity becomes $Kx^2 + (Km - 1)x - m$ which equals $(Kx - 1)(x + m)$. Now, when this product is a perfect square $Kx - 1 = x + m$, whence

$$x = \frac{m + 1}{K - 1} = \text{as above.}$$

No. 76. Let the given fraction = K for all values of z. Clear of fractions. Then, since the expression is true for every value of z, it is an identity, hence the coefficients of z and z^2 are identical. Thus $3K = 2$, or $K = \frac{2}{3}$; $x - a = (y - b)K$, or $3x - 2y = 3a - 2b$; $2bx - 4bc = (3ay - 9ac)K$, or $2bx - 2ay = -6ac + 4bc$. From these two equations we easily get $x = a + 2c$, $y = b + 3c$.

No. 77. By W. E. COBBAN. From the horizontal line RMY draw verticals PR, SM, and XY to represent the statures, in order, of A., B., and C. Draw XQ and SD perp. to PR.

Then XY is A.'s height $5' 3\frac{1}{2}"$
SM is B.'s " $5' 9"$
PR is C.'s " $6' 1\frac{1}{2}"$

∴ SO is $5\frac{1}{2}"$ and PD is $4\frac{1}{2}"$
PDS and SOX are similar Δ 's

∴ PD : SO :: DS : OX
i.e., $4\frac{1}{2} : 5\frac{1}{2} :: DS : 10'$

$$\therefore DS = \frac{4\frac{1}{2} \times 10}{5\frac{1}{2}} = 8\frac{1}{2}'. \text{ Ans.}$$

No. 78. By W. E. COBBAN. The field can be divided into 3 equal squares whose total area is 10 acres, or 1,600 square rods,

∴ area of one square is $\frac{1600}{3}$ square rods

$$\therefore \text{side of one square, i.e., side of field} = \frac{40}{\sqrt{3}} \text{ rds.}$$

But perimeter of field is 8 times width,

$$\therefore \text{perimeter is } \frac{40}{\sqrt{3}} \times 8 = \frac{320}{\sqrt{3}} \text{ rds.} = \frac{1760}{\sqrt{3}} \text{ yds.}$$

$$\therefore \text{for 5 wires high } \frac{8800}{\sqrt{3}} \text{ yds.} = 5080.68 \text{ yds.}$$

Primary Department.

READING.

RHODA LEE.

LESSON V.—LETTER "H."

Introductory story.—A little boy who was very fond of baked potatoes was so hungry one day that he could not wait for them to cool, and so burnt his mouth. He said: "h—h—h" to cool it.

New words.—Hat, ham, has. (The sound of s here is not, strictly speaking, that already taught, but is so close as to make recognition quite easy.)

Sentences for sight reading.—Sam has a hat. Sam's pa has a hat. Sam has a map. Sam's mama has a stamp.

LESSON VI.—LETTER "C."

Introductory story.—A little girl got her feet wet going to school one morning, and when night came she had a very sore throat. Her mother showed her how to gargle her throat. She made a sound like this. (Teacher makes the sound of c; children imitate.)

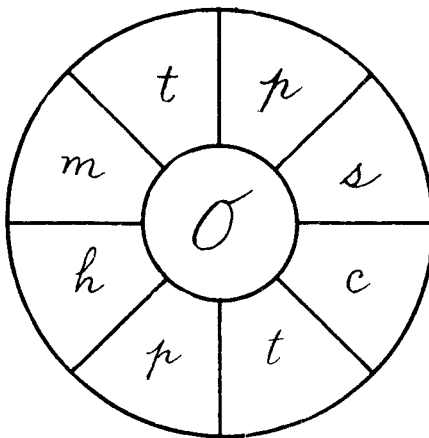
New words.—Cat, cap, camp, scamp, cast, scat, tack, sack, pack, stack, smack. (Letters in italics are silent.)

Teach the word "the" in this lesson.

Sentences.—Sam has a cat. The cat has a mat. The cat has a ham. Scamp has a cap.

SCRIPT AND PRINT.

If the printed form were what is used commonly in writing, we would certainly train the child from the outset to print. As it is not, we teach him to write the



script that he is going to use constantly, and train his eye to recognize the forms found in printed matter. We hear occasionally of a "transition from script to print." There should not be any such step. If the reading be taught properly there is a gradual acquaintance made with both the written and printed forms of the letter, and at the end of the regular phonic teaching the children are able to take up their books and read without any trouble.

As we wish to avoid any possibility of confusing the little ones, we do not give them printed matter until they have had about six weeks of phonic teaching. We then give them the First Reader. Towards the end of the lesson at the board slates are exchanged for books. As a first exercise we lead the children to see how "a" is made in print. After impressing the form, and giving a little exercise with it, ask the pupils to find all the words they can which contain "a," and, if possible, write them (in script) on their slates. The searching for words is very interesting "busy-work." As every new letter and its sound is taught, we turn to the book and give some such exercise as the above to fix the printed form. Hunting for words, the children begin to read for themselves, and I have been surprised sometimes on taking up the regular book lessons to find how perfectly some of them knew the lessons without any direct teaching.

UNPHONETIC WORDS.

There are a few words that can only be taught by the word method. Some of these we require very soon for the formation of short sentences, or, as we call them, "stories." Such are the, was, you, some, one, two, to, do, does, there, and would. These should be taught one at a time, and placed on an unused part of the blackboard or on the reading chart, to be convenient for the frequent drill which they require.

LESSON VII.—LETTER "O."

Introductory story.—This is a little girl's letter. She had a very bad habit. Whenever she was asked to do anything she did not wish to, she would screw up her face as though she was going to cry, and say, "O—O—O."

New words.—Tom, top, hot, hop, stop,

spot, pot, cot, cost, scot, sock, stock, toss, moss, mock.

Sentences.—Stop Tom. Tom has a top. Tom has Sam's top. Tom's cat has a sock. Tom has a cot. Sam mock's Tom's cat.

Seat work.—(a) Make words with m, a, t, s, p, h, c, and o.

(b) Write as many words as possible containing "o."

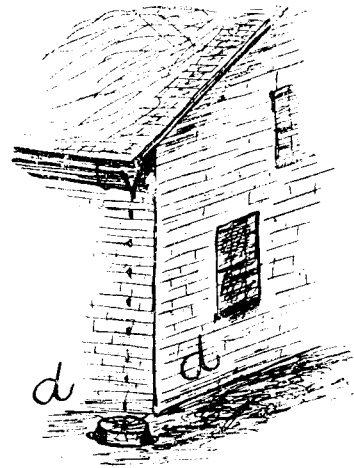
(c) Make words with the letters in the wheel.

LESSON VIII.—LETTER "D."

In introducing this letter compare the sound to the dropping of water from a broken eaves-trough into a tin pan below. Teach the use of "I."

New words.—Mad, pad, sad, had, damp, pod, hod, sod, cod, dock.

Sentences.—Tom had a hod. I had ten pods. Sam had a mad cat.



LESSON IX.—LETTER "N."

Develop the new sound in the following way:

Teacher—Write pat.

" pan.

(Children write pa and then stop; cannot write the letter that gives the last sound.)

Teacher—Let me hear the sound.

Children—p—a—n.

Teacher—I will write them as you give them, again. Slowly, p—a—n. What does the last one say?

Children—n (giving sound of letter).

Teacher—Who can make a letter on the board that is something like this one (a pupil writes m). Now our new letter is just like this, only we need but two walking-sticks instead of three, and instead of keeping our lips closed as we did when we said what m says we show our teeth in this way.

New words.—Man, pan, tan, can, Nan, Ann, nap, not, nod, scan, stand, span, hand, sand.

Sentences.—The man can not stand. Ann has a hot pan. Tom has Nan's hand. The man had a nap. I had a nap.

LESSON X.—LETTER "E."

Develop the sound as in Lesson IX.

New words.—Men, ten, pen, hen, net, pet, tent, sent, spent, nest, test, met, den, dent, send, spend, mend, deck, speck, step, Ned.

Sentences.—Ned can mend a net. Ned has ten hens. I had a pet hen. The hen has a nest. I met ten men. The men had a tent. Set the hen on the nest. Ned has a pet hen.

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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

QUESTIONS.

W.G.W.—(1) Is the holder of a Second-Class certificate, obtained in 1889, eligible to write on Part I. of the Fourth Form, new Regulations?

K.A.W.—(2) Please state what Drawing books and what copybooks are required for Entrance and Public School Leaving Examinations for 1897. Is any memorizing required for Public School Leaving?

E.I.S.—(3) Can you inform me whether or not Botany has been substituted for Euclid on the Public Leaving Examinations for 1897?

L.R.E.—(4) In the East Victoria Promotion Examinations, in your last number, I notice one question in Geography relating to Asia, and one to the West Indies. I understand that the limit of work in Geography for Third Class is North America, Dominion of Canada, Ontario, and Europe. Am I correct?

M. Mc.—(5) What kind of sentences are, (a) "I shall (will?) go to Montreal to-morrow, unless something prevents me"; (b) We must be diligent, else we shall not learn"?

ANSWERS.

(1) Yes.

(2) Same as for 1896, viz., Authorized Copybook No. 6; Authorized Drawing Book, No. 5, for Entrance; Authorized Drawing Book No. 6, for Public School Leaving. The work for either may be done in any blank books, providing it covers the prescribed course. No discrimination will be made in favor of the authorized books. No selections have been prescribed for memorization.

(3) It has not. No change of requirements is made for 1897. See editorial article on third page of THE JOURNAL.

(4) The limit of work for Promotion Examinations is not fixed by the Department, but by the local authorities, presumably the Inspector. It may, therefore, vary in different inspectorates.

(5) Both are complex, conditional. Unless is evidently equivalent to: if (something does not) prevent, etc.; else to: If (we are) not diligent, etc.

EDUCATIONAL GLOBES.

Two educational globes, which are on exhibition in the window of Fred. G. Steinberger & Co.'s school supply house, at 37 Richmond street west, are attracting considerable attention, especially among those interested in education. They were manufactured especially for the World's Fair, and received the highest award, both medal and diploma. They are designed for the practical study of geography and the celestial sphere. The instruments are mechanically arranged, and founded on the mechanism attached to the German Fraunhofer mounted equatorial, which is now considered the only correct resolvent of all problems which can arise in the study of the two sections of knowledge.

Literary Notes.

Madame Calvé and Madame Melba will both appear in the next issue of *The Ladies' Journal* with articles on the voice. Madame Melba has written before and is, in fact, no novice with the pen, but this is Madame Calvé's first attempt at authorship. She wrote the article in French, and after an English translation had been made of it she had the original manuscript bound between morocco covers as a souvenir of her *début* as a writer.

The Arena closes its sixteenth volume with the November number, which is one of the most notable issues of that progressive magazine. It contains striking papers on the money question by Prof. Frank Parsons, of the Boston University School of Law; Justice Walter Clark, LL.D., of the Supreme Bench of North Carolina; Hon. William H. Standish, and B. O. Flower, the editor. Among the other articles is a paper by Mrs. Mary M. Harrison, who has for years made a study of child life, on "Children's Sense of Fear," which will be of especial interest to those engaged in training the young.

Pupils of the Canada Business College, Chatham, seem to meet with wonderful successes in securing choice positions. It will be noticed in the advertisement which appears this week that one of the pupils, John Pierce, has secured a good position as stenographer with the Richelieu & Ontario Navigation Co., in Montreal, and another pupil, Arch. McPherson, has secured the position of assistant bookkeeper with the Goid Bicycle Co., Brantford. Last week we noticed the placing of three others, Aggie Turner as stenographer with D. M. Ferry & Co., Detroit, Mich.; Mattie Sechrist as bookkeeper with Corrington & Long, Trent, Mich.; and Olive Lindley as stenographer in the G.R. & I. Railway Office, Grand Rapids. Every one of these is a choice appointment, and it must be gratifying to the proprietors of this popular school to have their pupils meet with such favor with the business public.

I hear men speak continually of going to a "better world," rather than of its coming to them; but in that prayer which they have straight from the lips of the Light of the World, there is not anything about going to another world; only of another government coming into this, which will constitute it a world indeed—new heavens and a new earth: "Thy kingdom come; Thy will be done on earth as it is in heaven."—*John Ruskin.*

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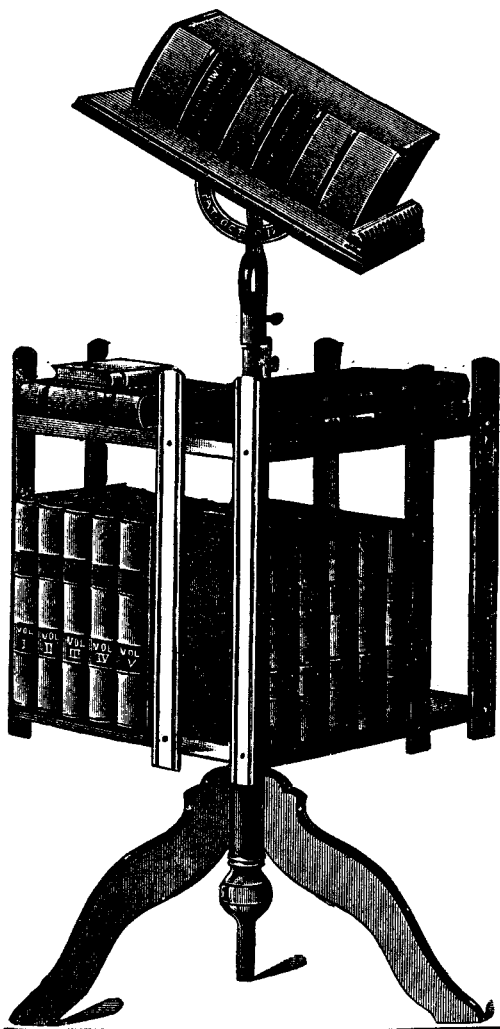
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