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—OF THE—

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EXAMINATIONS 1893.

September :

1. County Model Schools open.

15. Last day for receiving appeals against the High School Primary, and Leaving Examinations.

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

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

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

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

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

(1) The subjects of the Fifth Form may be taught in any school, irrespective of the number of teachers on the staff or the grade of certificate which they may hold. Pupils may

write at the Leaving Examination without having passed the Entrance Examination.

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

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

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

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

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

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

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

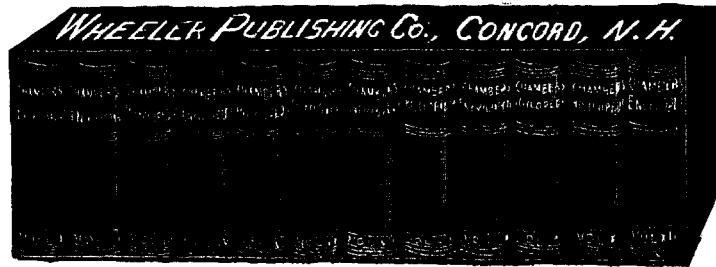
(2) The amount of school work prescribed for the Commercial course has been reduced and the details of the course modified, especially in Drawing. The examination of all candidates will be conducted by the Principal of the High School and the High School teachers in charge of such subjects, but a written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

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

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

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Editorial Notes.

COL. F. W. PARKER is nothing if not emphatic. Speaking at the World's Fair Congress of the relation of Geography to History, he said: "The so-called Geography taught in the schools, is a conglomerated mass and mess of disconnected and doubtful facts, with little unity and of little practical use." This is over-doing the denunciation. There are yet many schools, no doubt, in both the United States and Canada in which much time is worse than wasted in abortive attempts to teach Geography by the old rote methods. But there are, we believe, many other schools in both countries in which Geography, in its relation not only to History, but to other subjects of human interest, is taught intelligently and successfully.

OWING, we presume, to the pressure of vacation engagements, the copy for one or two of the departments of the JOURNAL has not reached us in time for this number. The paper will, nevertheless, be found full of matter useful to teachers. The commencement of the school year, like that of the natural year, is an appropriate time for good resolutions, and we, in common no doubt with many of our readers, have formed many such in connection with the JOURNAL. Our aim and ambition are to make it still more helpful to teachers of every grade. To this end we hope and intend not only to keep it in every respect up to the old mark, but to introduce some new and useful practical features. We have not left ourselves space to particu-

larize. Suffice it for the present to say that we mean to keep the EDUCATIONAL JOURNAL in the very front rank of educational periodicals—a position which we may, we trust without presumption, assume that it already occupies.

WE republish elsewhere a paper read a few weeks since before the Hamilton Teachers' Institute by Mr. J. B. Turner, B. A. The subject, "Science in Public Schools," is one of present interest, as many are realizing the necessity of giving the children in our public schools the benefit of more of this kind of training. Mr. Turner rightly holds, we think, that the best educational can be combined with the best practical results, and that Botany is the subject best adapted on the whole to effect both classes of results. His objections to Zoology as a school study are well taken, though we may, perhaps, suggest that a good deal of training and instruction might be derived from observation of the structure and habits of insects, birds, etc., in connection with the gathering of botanical specimens, and without the manipulations to which Mr. Turner very properly objects. The study of living creatures of all kinds, in the enjoyment of their native freedom, when the habit is once formed, becomes an ever-present source of pleasure and profit in all the after life.

WE were unable to attend the Educational Congress which was held in July in connection with the World's Fair, though we were honored with an invitation to prepare a paper on "Present Ideals in Educational Journalism," from a Canadian point of view. Through the kindness of a friend who was present at the Congress we have before us the voluminous reports which were given from day to day in the *Chicago Herald*, but, alas! they serve only to cause us to feel a kind of difficulty in our journalistic business from which we have never suffered in financial affairs. They create, in short, an embarrassment of riches. There is an utter want of proportion between the space which we could make available for an account of the proceedings, and the material supplied in the fifteen or twenty closely printed newspaper columns. We are therefore obliged to forego attempting a synopsis of proceedings and must content ourselves with reproducing from time to time some of the

most sententious sayings of the wise educators from all parts of the world who came together at Chicago to compare notes of progress. We are not sure that in this way we may not, as space and opportunity permit, be able to give our readers what may be more useful than any dry chronicle of proceedings.

MR. I. M. LEVAN, B. A., Principal of the Owen Sound Collegiate Institute, has been appointed to the Vice-Principalship of the School of Pedagogy. Mr. Levan, as we understand, well qualified for this important position. During his University course he obtained honors in both Classics and Moderns, and he holds Departmental Specialist's Certificates in Classics, English, and French and German. As a teacher he has been markedly successful, many of his pupils having obtained University honors in Classics and Moderns. That he is an able organizer and manager his successful administration of the St. Marys and Owen Sound Collegiate Institutes is ample proof, and his personal popularity has been shown by his selection for important educational positions by his fellow teachers. The new Vice-Principal brings to the discharge of his duties youth, energy and ability; and the profession generally will, no doubt, regard his appointment as an eminently fit and proper one.

THE settlement of the Behring Sea difficulty by arbitration is likely to take its place in history as an event of considerable importance. As effecting a peaceful settlement of a question which was becoming dangerous and might have led to serious consequences, the decision is important. As another instance of the triumph of the principle of international arbitration, and an object lesson for all nations, it is, we are disposed to think, of still greater value. It is difficult to believe that these two great Anglo-Saxon and Christian nations, after having repeatedly settled burning disputes by this peaceful method, can ever resort to the savagery of "horrid war." The event is one which may well form the subject of a talk with pupils. The cause of the dispute is so simple and the results and regulations reached so easily understood, that they may easily be brought within the comprehension of all but the youngest children. The habits and uses of the seal itself also afford an interesting theme for conversation or composition writing,

Special Papers.

SCIENCE IN PUBLIC SCHOOLS.

BY J. B. TURNER, B.A., VICE-PRINCIPAL AND SCIENCE MASTER OF HAMILTON COLLEGIATE INSTITUTE.*

It is a significant and hopeful fact that matters pertaining to education have never received more attention than they are receiving at the present time. In every country where a system of education has been established we find this earnest discussion of educational topics prevailing, not only among those immediately engaged in this work, but also among all those who desire to see improvement both as to the subjects to be included in a course of study and the methods employed by those entrusted with the education of the rising generation.

In this case as in every case where free and intelligent discussion is carried on, improvement is seen. The old idea as to the three R's being a sufficient course of study for the average child is gradually dying out, and with it also is dying the idea that unless a child is being crammed full of facts, he is not receiving an education. These ideas arose from a totally erroneous notion of what the object of an education is, but this false notion has the stamp of centuries, I had almost said of ages upon it, and consequently is deep-seated and tenacious of life. Although an improvement in this respect is gradually being effected, yet it is a plant of slow growth and requires all the fostering care we can bestow upon it, especially when as at present the measure of the teacher's work is, in too many cases, the result of a test examination at the end of a prescribed course of study.

The improvement referred to is the result of a new conception of what constitutes an education. The education which does not seek as its first object the training of all the faculties of the child is scarcely worthy the name. The training of the mind should be the first aim in the education of the child. Subordinate everything to this. The acquisition of knowledge is a necessary concomitant of this training and need not be lost sight of. Indeed I am satisfied that if a prescribed course of study be dealt with as a medium for the training of the mind better results even in the acquiring and retaining of facts will be obtained than in any other way. This of course runs counter to the idea of the man who thinks that the whole aim and object of our schools is to have the children perform such marvellous but utterly useless feats of memory as to name the railway stations between Hamilton and Windsor, or perform some other equally wonderful but nonsensical task.

I shall not stop to discuss the reasons for considering the object of an education to be such as I have stated. I take it for granted that you, from the experience you have had, and the professional training you have received, will allow this to be the correct idea of an education.

You grant me this; then how does our present course of instruction meet the requirements? There is plenty of scope in it for the exercise of the memory, plenty of scope for the exercise of the reasoning faculties, but is that enough? All knowledge comes to us primarily through one of the senses, principally through the sight, and what are we doing to train our pupils in the accurate use of the organ of this sense. If we omit the subject of drawing, quite recently added to the course of study, we are doing absolutely nothing, and even drawing calls the eye into use in only a general way.

I have only to point out to you that the successful men of the world of all time and in every calling were close observers, to show the necessity of cultivating from the first this important faculty. Besides it is nature's method of teaching, a method which should ever be followed as closely as circumstances will permit.

What are we to do to supply this deficiency in our present system of education? Already all our time is occupied in teaching the subjects prescribed and if more be added our life will become a burden too great to be borne.

You admit that this important faculty of observation is receiving practically no attention. Some means must then be devised by which it can receive the attention its importance demands. My present purpose is only to suggest the means for its cultivation by pointing out the subjects specially suited to attain the object in view and asking you to seriously con-

sider whether a change cannot be made in the direction I indicate.

The subject, without doubt, best suited to this purpose is the study of natural objects treated in a practical way. The study of natural objects includes the subjects chemistry, physics, zoology and botany with almost unlimited subdivisions of each. It will be our duty then to consider each of these divisions and see which one under all the circumstances best meets the requirements, and, having made a selection, point out when and how the subject should be introduced into our schools.

The first two, chemistry and physics, are so closely allied that the same remarks will apply to both. The proper teaching of these subjects, as of any science subject, requires that the pupil be brought into actual contact with the material of study. This in the case of chemistry and physics will require a considerable expenditure of money in the purchase of apparatus, materials and appliances; besides the danger attendant on the performance of many of the experiments makes them altogether unsuitable for small children. These objections are not insurmountable, but if we find a subject with all the advantages of these, with none of their disadvantages, this is the subject for us to adopt. I unhesitatingly say that botany is that subject. No apparatus is required although some simple pieces such as a pair of mounted needles and a magnifying glass are advantageous.

But what about zoology, you will say? The subject I admit is an interesting one and there is work in it that can well be done, but the manipulation of zoological specimens is as a rule much more difficult than that of botanical specimens and no training except perhaps manual training, some degree, can be obtained from it that cannot be obtained from botany.

Having selected botany, then, as the subject for science study, the next question that arises is, at what period in the school life of the child should it be introduced? In answering this question it is all-important that we have a clear idea of the object of introducing such a subject. As I have already said, the object of introducing a science subject into the programme of studies is not so much that the children become acquainted with the facts of the science, as it is to properly train certain faculties which at the present time are almost wholly neglected. The faculty of observation will receive a training by correct methods of science study that it is impossible to obtain by the methods of any other subject. If, then, the object of introducing a science subject be to cultivate the observation, the question as to where to introduce such a subject is easily settled.

I believe it is a good educational maxim to follow the teaching of nature as closely as possible. Following this guide in the matter of observation, we shall be compelled to say that the proper time to introduce the study of botany, the science subject we have selected, is at the earliest possible moment of the school life of the child. I consider it quite unnecessary to stop here to give reasons for saying that this is according to nature's method. Any one who has paid any attention to the process of acquiring knowledge on the part of the child from infancy will see the force of this argument.

Following then the teaching of nature in this matter, we should commence the study of botany in the kindergarten class, and continue it as a matter of course in all the succeeding grades.

The natural method is claimed to be employed in the kindergarten to a greater extent than in the more advanced classes. The child is being trained by dealing with pleasing and entertaining objects. The eye and the hand are being educated by working with materials of different kinds. The child is trained by the use of the needle, cardboard, blocks, clay, straws and numerous other objects to appreciate form, number, color, and so on. If these inanimate objects can be successfully employed for this purpose why could not the infinitely more beautiful and attractive animate objects, flowers, and different parts of plants be made use of for the same purpose. The kindergarten teacher, who more than any other must be a born teacher in order to be successful, will readily devise means of adapting the methods of the kindergarten to such objects.

Assuming then that we have shown the advisability, indeed the necessity of placing science in the curriculum of our public schools, in order to complete the course of training that should be given in such schools, and assuming

that botany is the most suitable one of the sciences in view of all the conditions and requirements, also that the proper time for introducing it is in the kindergarten, the question naturally presents itself how in the succeeding grades shall we continue the subject. Here I shall point out some of the errors that are committed in the teaching of science subjects, which all will do well to seriously consider, and do their utmost to avoid. Some years ago there appeared a series of Science Primers published by McMillan & Co. and prepared by such celebrated scientists as Hooker, Huxley, Balfour Stewart, Foster and Geikie, which were intended to serve an excellent purpose, and in a way did serve a good purpose in directing attention to the importance of science study, but their weakness consisted in that they aimed rather at giving a knowledge of the subjects than training the mind of the learner.

Take for example the primer in botany to illustrate what I mean. This primer of botany, instead of taking a few typical specimens and dealing with them so as to acquaint the learner with the best method of investigating for himself, proceeds with a general description of the different parts of a plant dealing with them so fully that by an exercise of the memory the learner may acquire a limited knowledge of the subject without once having examined a specimen. Compare the method of this book with that of Prof. Oliver's Elementary Text-Book of Botany, or our own High School Botany, by Mr. Spotton, and the superiority of the last two will be readily seen.

Again do not enter into a long, tedious, dry and uninteresting description—for I am aware that it is possible to make even an interesting plant the subject of a very uninteresting dissertation—of the plant you are studying nothing can more certainly defeat the object of true science teaching than for a teacher to take the object of study in the hand, hold it up before the class, and talk for half an hour about it. Very soon such teaching will create a dislike for the subject on the part of both the teacher and the pupils and absolute failure is sure to result.

Do not map out too pretentious a course. You will pardon me I hope if I refer to a science sequence which I have in my possession which I believe is being followed to some extent, at least, in the schools of the city. After going over it carefully and thinking out the subject fully, I must say I consider it a mistake. I wish you to remember the point of view from which I am considering it, in weighing what I say with regard to it, I am now considering solely its educational value. Physics and chemistry both have a place on it, and I say unhesitatingly, you can do nothing with these subjects without some appliances at least. These I do not think you have in our schools. Those subjects then had better be struck off, until such time as you have proper equipment for teaching them. The study of animal forms occupies a considerable place in it also, but I fear that too often the zoological specimen, whatever it may be, becomes the subject of an object lesson and for which purpose a brick will do as well.

Having pointed out some things to be avoided, I shall now attempt to place before you, as briefly as possible, how the teaching of botany should be conducted. There are three stages in the study of botany as of any scientific subject. First the stage devoted to the acquiring of facts; second, the period devoted to the classifying and arranging of these facts or the period of comparative work, and third, the period of generalization. To some extent these periods will necessarily overlap each other, but generally speaking they follow each other in the order in which I have given them, and, on the accuracy and extensiveness of the work done in the first, the value of the last two will depend. By far the most important of these from the point of view of our public schools is the first, while the second may be undertaken to some extent in all the classes, but especially in the higher ones, the third should as far as possible be reserved for students of riper years.

Let us briefly direct our attention to the first of these divisions and see how it may be used to the greatest advantage as an educational factor.

As all successful work in science requires that each pupil be brought in personal contact with the subject of study, it is absolutely necessary that each student should be provided with a specimen of the part of the plant to be studied. Of course having planned your lesson before hand, you will see that your pupils are supplied

*A paper read before the Hamilton Teachers' Association.

with the specimens best suited to the requirements of your lesson. Once having mapped out your lesson and having supplied the most suitable specimens, the more the teacher remains in the background the better. The object now is to have the pupil use his own hands and eyes, and thus acquaint himself with as many facts as possible in connection with his specimen. The work of the teacher consists in suggesting by carefully framed questions the direction that it is desirable the lesson should take. This is no easy task, only constant watchfulness and thorough preparation will prevent the teacher from falling into the habit of telling the pupils what to observe when they do not readily observe for themselves. It is so much easier to tell a pupil what to look for than to wait until he has made the observation for himself. The temptation to do so is great, but if you wish your teaching to be the most effective possible, the temptation must be resisted.

These are some of the general principles which apply to the first stage in the teaching of Botany; the application of these principles in any particular case must to a large extent be determined by the circumstances of the case. No one is in so good a position to determine what will best suit the class as the teacher who is in charge of it. Nevertheless I might suggest that with the youngest pupils large objects be taken for observation. The different parts of a plant, the root, stem and leaves might be used to better advantage even than the flower, as its parts are small and more difficult to deal with, and the root, stem and leaves, their variety of form and structure are no less interesting than the parts of a flower.

It will be necessary for you to continually test the accuracy and completeness of the observations made. Two methods of doing this suggest themselves. First have the observer describe in his own words what he sees. With young pupils the application of this method will necessarily be very restricted as their command of words is limited, and then there is the difficulty we all experience of conveying in words our exact meaning even with a greater command of language.

The second method of testing the accuracy and completeness of observations, is by having the observer make a sketch, however, rough of the object. This method is valuable not only as a test of the observations, but as a means of co-ordinating the hand and eye to a very considerable degree, and is the beginning of a manual training which is obtained in a course of science study which is by no means to be despised. The drawings made by the pupils must be carefully supervised and anything which shows that the observations are either inaccurate or incomplete should be marked and the pupil required to make the drawing again after having a second time carefully examined the specimen.

My experience teaches me that the greatest care possible must be exercised at this point, as, unless you are most watchful, the pupil will draw an ideal specimen and not the actual one before him at all. Here as at every step in the teacher's course, constant watchfulness only will ensure success, but persevere and you will eventually overcome the difficulty, and the result is worth the effort.

I have dwelt somewhat fully on the first stage of science study, because I think that for the purposes of the public school it is by far the most important, but when I say this I do not wish to convey the impression that the second stage or period of comparison is to be wholly neglected.

Indeed it is so closely interwoven with the first that it will be impossible for you to neglect it. Very soon the young learner will begin to compare the root of one plant with that of another, for instance, and if you are prompt to take advantage of his comparisons you will soon find him arranging all roots in a few classes. A judicious question or suggestion on the teacher's part will soon lead him to the point where he has the roots correctly arranged as to form, or by using the comparisons of the pupils you may direct them to distinguishing between the root and the stem. I give these merely as examples of how the comparative stage in the study of botany may be made use of in the training of the mind. The importance of this phase of science methods is recognized by students of every department of knowledge, for even the student of the ancient classics of Greece and Rome, however much they may deplore the aggressiveness of science, still do her the compliment of imitating her in that they have adopted

to the full the comparative method of research, a creation of the study of science.

The third period in the science course is the formulating of laws, but as these are in every case obtained as an induction from a great number of cases it need scarcely be touched in the science work of a public school. But if in your estimation the necessity for a law arises test the law by a great number of particular cases. Especially in biology do laws require to be submitted to the test of an almost infinitude of special cases. The fact that Darwin spent years in collecting facts before he stated his theory, known as evolution, sufficiently attests the importance of having a great number of facts to work from. Enough has been said on this point to show that any work in this direction may be deferred until a later stage, but let it never be forgotten that the ultimate object, apart from its educational value, of all science work is to ascertain the relationships existing among the objects on material being studied.

Before I close I may say a few words with regard to scientific terms and their use in science work. How to overcome the difficulty presented by the long and apparently very often meaningless terms of science is one of the first questions which presents itself to the teacher of the subject. The difficulty however is more apparent than real and with care and good judgment it gradually melts away until you wonder how you ever thought there was such a thing as difficulty to be overcome.

A safe principal by which to be guided in the introduction of new technical terms is first to create the necessity for a name by reference to the object under study, and after having done so the name must as a matter of course be given to the pupil. As an illustration of what I mean, take the stamen of a flower. It is different from any other part of the flower and thus will naturally suggest to the observer the necessity for a name for this new object. Closer examination reveals the fact that a stamen is made up of a little rounded body situated at the extremity of a fine thread, and one of the first questions the teacher is likely to be asked is what is this little round body or what is this long slender part. The necessity for the name has arisen, and there is no reason as far as I can see why the name should not be given. Either it or some roundabout expression for it will have to be given, and in my opinion the botanical term is the better.

To sum up then what I have said: The object of an education worthy of the name is to train all the faculties of the child so as to produce a mind well developed in all its parts; not to cram the child with facts regardless of whether his faculties are being properly trained or not. Our present course of study is deficient in that it neglects some of the most important faculties, little or no attention being given to the cultivation of the faculty of observation, and nothing, or at best very little being done to educate together the hand and the eye. The study of a science subject will largely supply these deficiencies, the science subject best suited to the requirements of the case is botany. This subject can be most effectively studied by supplying the pupils with suitable specimens for purposes of observation. Test the accuracy of their observations by descriptions and drawings of the parts. See that the observations are full and accurate. From observations made introduce comparisons between different forms of the same part and between the different parts of the same plant. Generalizations based upon observation and comparisons are only to be introduced at a late stage. Introduce technical terms only after having created the necessity for such terms.

CHRIST has come into the world to add to the social and industrial life, and wherever He goes He stimulates industry, thrift, temperance, economy, and consequently increases wealth. A successful mission in a poverty-stricken region revolutionizes the region and so revolutionizes itself. As it does its work they that before were poverty-stricken begin to accumulate; they begin to learn industry and thrift; they begin to put on better clothes and live in better houses, and either the mission transforms the region and becomes an independent church, or the people move out of the region and new people to be fed and served by it come in.—*Christian Union.*

Hints and Helps.

HOW TO USE "SHALL" AND "WILL."

THERE is probably no more confusing part of the English language than that which regulates the proper use of "shall" and "will." The reply of James Russell Lowell to the woman who wrote, "I would be very much obliged for your autograph," has been in print and has undoubtedly been clipped for scrap and pocket-book reference by many persons.

The poet essayist granted her request in the following fashion:—

"Pray do not say hereafter 'I would be obliged.' If you would be obliged, be obliged and be done with it. Say 'I should be obliged,' and oblige, yours truly,

JAMES RUSSELL LOWELL."

An additional hint to go with this "cut me out" is that of the old verse:

"In the first person simply "shall" fortells;
In "will" a threat or else a promise dwells;
"Shall" in the second or the third doth threat;
"Will" simply then fortells the future feat.

Or "shall" in the first and "will" in the second and third persons are to be regarded as simply declarations, and both in all other cases convey a promise or threat.—*Business Education.*

A WRITER in the Contributors' Club, in the July *Atlantic*, describes the old-fashioned New England little red schoolhouse, and also its proposed substitute:

Of course the schoolhouse is not red; in thriving towns it is often painted a staring white; in remote villages it is usually unpainted, except by the hand of Nature, whose brush is dipped in that exquisite inimitable gray which is the despair of artists and of architects. Sometimes the little red schoolhouse is made of brick; sometimes it is flanked by sheds or rough stables, where the scholars "put up" the horses that have brought them to school from distant farms. Sometimes the building is on top of a "sightly" hill; and then, again, I remember more than one beautiful spot in the woods, where the schoolhouse stands hard by a rude bridge, beneath which musically tumbles a limpid trout stream. As you drive past it on a hot summer's day, the doors and all the windows are open, and you have a vision of children's heads bobbing up with curiosity, and of the schoolma'am, rather pale, sitting at her desk with a bunch of flowers in a tumbler before her. Perchance, also, there reaches you the drawling voice of some urchin, whose perfunctory tones indicate that his heart is outside with the bees and birds, and especially with that long-sought-for pound trout which is waiting for him in a deep pool beneath an overhanging bank.

Why is it that the little red schoolhouse is to be abandoned? The scheme (they call it the "reform") is to close all the outlying schools and bring the children in by wagon and sleigh to the centre of the town, where they are all taught together in one big schoolhouse, fitted with a patent ventilating apparatus which does not work, and with a system of steamfitting. In one large town, not very far from Boston, which I used to visit a few years ago, I was struck by the fact that all the young men, even those of the purest New England blood, spoke with a strong Celtic accent. The explanation was that at school they had associated with the Irish children of the town, and both nationalities had profited by the companionship: the children of Irish birth had cast off a little brogue, and gained a slight nasal twang; whereas, as I have indicated, the children of American birth had picked up just about as much brogue as their Celtic companions had dropped, and so nothing was lost. What is true of school children's speech is true also of their manners, morals, and ideas. When all the scholars in a town are brought together in one huge building and playground, there is a fine opportunity to grind them into homogeneity, as with a mortar and pestle, to smooth down anything peculiar or original in their characters, to elevate the bad children a little, and to debase the good children a little more—in short, to carry out the great American idea of turning every man into the average man.

The Educational Journal

PUBLISHED SEMI-MONTHLY.

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

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

Terms: One dollar and fifty cents per annum, payable strictly in advance. Clubs of three, \$4.25; clubs of five, \$6.75. Larger clubs, in associations, sent through association officials, \$1.25.

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PUBLISHED BY

The Grip Printing & Publishing Co.

T. G. WILSON,
MANAGER.

GEO. A. HOWELL,
BUSINESS MANAGER.

Offices: 201 and 203 Yonge Street, Tor. nto.

Editorials.

TORONTO, SEPTEMBER 1, 1893.

CHILDRENS' ETHICAL STANDARDS.

IN another column, in the department of "Teachers' Miscellany," will be found an article from the *Housekeeper* which contains much food for thought. We are not of the number of those who believe that the moral faculty is the product either of evolution or of education; but the incident, which we suppose to be truthfully recorded, sets in a very striking light the extent to which the moral standards of children are the product of the influences by which they are surrounded during the first few years of their lives. An astute Roman Catholic prelate has said, "Give me the child for the first eight years of his life and I care little who has him afterwards." The story from the New York Tombs goes far to confirm this view. One would suppose that if any inborn feeling or principle is universal and ineradicable, the natural affection between brothers and sisters constantly associated from infancy, and the sense of horror and guilt connected with the taking of a human life, would be among the number. And yet here we have boys from nine to twelve years of age coolly planning and perpetrating the murder of a companion, while the nine-year-old brother of the victim listens to the plot and looks on while the murder is being perpetrated, apparently without a spark of sorrow or pity or compunction; or if there is any feeble rising of any of

these sentiments, which we are accustomed to think of as distinctively human, it is quickly crushed by the will under the sway of the notion which seems to have constituted his code of honor, that it was "none of his business."

The story is thrillingly suggestive. It has many lessons for all who are interested, as who is not, in the proper training of the young. It especially carries with it, as the *Housekeeper* intimates, the strongest argument which we have seen for the Kindergarten, whose grandest work is evidently to be done among those classes of children whose moral education would be otherwise utterly neglected, and whose infant lives are lived in an atmosphere reeking with vice and crime. One has but to compare the influences to which such children are subjected during their earliest years with those which are brought to bear upon those whose parentage and home and street associations may be no better, who have the inestimable blessing of a few years of training in such an institution as the primary department of the school described in another article in this number, to get a very vivid conception of what may be done and ought to be done, if only in self-defence, by every Christian community, for the physical and moral salvation of these children of the slums. For children, at least, there is certainly profound wisdom in the English law which makes compulsory education begin at the age of five years. We are not sure that three or four would not be still better.

These remarks are, however, by the way. The particular point upon which we meant to comment is the code of child honor implied in it is "none of my business." The heartless brother was not, be it observed, wholly destitute of moral principle. He acted under a dim sense of right and wrong. Evidently the sum of all villianies, according to the ethics of the slum in which he had received his education, was "peaching."

What was this but carrying to its logical, if extreme conclusion, the principle which prevails to a greater or less extent in every school in the land." There is no law on the unwritten statute book of the school grounds which has a stronger hold on the boyish mind, or is enforced more rigorously by those sanctions and penalties which school boys know so well how to apply and of which they stand so much in dread, than the commandment, "Thou shalt not tell of the wrong-doings of thy neighbor." There is no insult which he resents more keenly than to be called a "tattler;" no disgrace which sinks deeper or lasts longer than that which attaches to a reputation for "peaching."

To the prevalence of this code of honor more than to any other cause, it is due that it is often found impossible to discover the perpetrator of even the worst of those petty crimes which now and again are committed at school or college; or the ringleader in those less vicious escapades which often threaten its discipline and reputation. And the most embarrassing feature of the case is that the teacher generally feels himself bound to respect the scruple of the pupil to a certain extent. Nor does the influence of this unwritten code cease with the close of the school life. Can we doubt that it is largely owing to the perpetuation of this same boyish notion of honor that most persons are found so unwilling to testify against the violators of law in the civil community? Few, it is true, will carry this to the extent of allowing the culprit to escape in the case of a great crime, such as murder or arson; but how many there are who feel that it is "none of their business" when some lesser bit of rascality is perpetrated before their eyes. Much of the immunity of evil-doers is the result of this unwillingness of the average citizen to become a prosecutor or witness against those whom he may, inadvertently or otherwise, have detected in the commission of crimes against society or the state.

The importance of right training of children in this respect with a view to the formation of their characters, not only as individuals but as future members of society and as citizens, is obvious. But what is the teacher to do? It would be worse than useless, evidently, to attempt to compel school children to violate their sense of honor by "telling on" their comrades. A child's conscience should be held as sacred as that of a man. It is probably better to respect his scruples until he can be convinced that they are wrong. But no pains should be spared to convince him that the principle on which he and his comrades are acting is disloyal to the school and would be destructive to the State. This can generally be done by patient argument and illustration. Usually the more effective way is by some means to get him to put himself in the place of the teacher or the Government. This is one of the advantages of the system which is used with so much effect in some of the best schools, by which the children are giving a share in the government, or made in as large a degree as practicable actually self-governing. It helps them to see the other side of the question, cultivates their perceptions of right and wrong and so fits them for citizenship.

Above all the children should be led to

see, as they probably will with a little judicious help, that the real meanness in connection with the witness-bearing is usually in the secrecy which accompanies it. The wise and high-minded teacher will always discourage the secret informer. It is in the concealment that the cowardice, which is in the last analysis the thing which the manly boy despises, really lurks. The spy is everywhere held in deserved contempt. The true ideal to be held up before the school-boy is that of the boy, who is not afraid to let it be known by all concerned that he will never be a silent partner in anything which he believes to be wrong or underhanded. A young lady student was once pointed out to us by the Lady Principal of a Seminary for Girls, with the remark that she was a model in this respect. She was one of the cleverest girls in the school and a recognized leader amongst her fellow-pupils, but it was distinctly understood that she would neither countenance nor assist in concealing anything which she believed to be wrong or a violation of the spirit of the school laws. Her courage and straightforwardness in this respect won for her the confidence and admiration of all her fellow-students whose good opinions were worth having, and her influence for good was felt throughout the institution. It should not be difficult to convince the average school boy that such a character is braver and truer and in every way nobler than that of any boy who is afraid to speak out in condemnation of that which he knows to be wrong.

This question of the best mode of counteracting the false notions of honor which prevail in schools and colleges is one in which every Principal must be interested. It is well worth discussing and we should be glad to hear from teachers of experience in regard to their modes of dealing with it.

THE CHILD PROBLEM.

DURING recent years great advances have been made in the methods adopted for the disposal of the neglected or dependent children who have to be cared for and educated at the expense of the community. Formerly there was only one method in general use; and that was to put the child in an institution and keep it there until it was too old to be detained longer. The results from this system never were, as they never can be, wholly satisfactory. In the first place the cost for grounds, premises, officials and maintenance, is often excessive, while the course of training is not always calculated to fully equip the child for the duties and responsibilities of citizenship. The tendency of the institution is to isolate the child from family

life and this makes him (or her) realize his homeless condition; to give him theoretical rather than practical views; sometimes almost unavoidably to train him for a trade or calling for which he has no aptitude or inclination, and which he therefore abandons on the first opportunity; to deprive him of all the friendships and pleasures of the family home; and to submit him to moral dangers made possible by the large number of good and bad so closely associated. These facts once thoroughly realized by leaders of thought in social science, a halt was called, and the conclusion arrived at that the only successful institution in which to place a child was the God-appointed institution, namely, a family home. This method was introduced in Scotland over thirty years ago, and it has been followed in Victoria, Australia, for twenty years past, with grand results. All the orphanages were emptied, and the little ones boarded out in foster homes, the only institution needed being a receiving depot in which to study the history and character of the child, preparatory to placing it out.

Under the Children's Charter of Ontario, drawn up by Hon. J. M. Gibson, and adopted at the last session of the Legislature, this system will be inaugurated here, and once properly appreciated by the philanthropic public, no friend of the little ones will think for a moment of herding them up in an institution, unless in a case where viciousness of character makes it dangerous for them to be at large. Mr. J. J. Kelso, who has been appointed to supervise the workings of the new law, requests us to state that he will be located in the Parliament Buildings, and will be glad to communicate with all who desire to participate in the noble work of rescuing homeless or abandoned children from evil environment and placing them in foster homes amid happy and salutary surroundings.

"I beg of you not to run into the grave Herbart, or Froebel, or Pestalozzi, or so run them into the ground that you can't recognize them. I fear this kindergarten business is carried to such an alarming extent that really the child is lost by it. Exercise common sense in education and then you will see that we are all right." These wise words of Prof. J. H. Kappis, an educator of fifty years' standing in Europe and America, are as timely as they are weighty. There is no sphere in which a rigid common sense is more constantly needed than in the work of educational reform. The kindergarten and the "new education" generally have a constant tendency to overleap the bounds of sober common sense.

It was stated at the Educational Congress in connection with the World's Fair that there are 60,000 children in Chicago who cannot find seats in the public schools of the city. The explanation, true enough no doubt, is that the people from every part of the world have been crowding in so fast that they have overtaxed the ability of the city to provide for their educational needs. The evil will be grappled with and eventually overcome, but in the meantime it is appalling to think of sixty-thousand children—no doubt the very children for whom school training is most needed—running wild in a single city. How many such on the continent?

WE are glad to be able to give our readers in this number a full, carefully prepared and reliable account of the changes which have recently been made in the regulations issued by the Education Department. These are of interest and importance to all teachers, and though it is to be presumed that all have received the Departmental circulars, we are sure that the convenience of having them set forth in order, in a reliable summary, is one that will be appreciated. We draw the attention of our readers to this article, and venture to suggest to those who may not be in the habit of filing the JOURNAL that it will repay them to preserve this copy for future reference. In the article will be found answers to some questions which we have already received, and to many others which will, no doubt, be sent us from time to time throughout the school year.

AT THE closing meeting of the Educational Congress at Chicago, Bishop Keane, discussing the methods and ends of education, said:

"There are three great books that education must teach mankind to read—the book of nature, the book of humanity and the book of divinity. You cannot separate these three. Humanity demands them all, and the end of education is to teach humanity to read them all. Human life, to stand solidly, must not be one-sided or lop-sided."

Very true. Very good. But it by no means follows that it is the teacher's business to teach dogmatic truths in regard to either of these subjects. Teach humanity, that is young human minds, to read them all, each one for himself. That is the ideal of education. It is when the teacher begins to say in effect, "This mind is too untrained or too feeble to read either book for itself. I must tell him what is in each. I must impress upon him what are the fundamental truths in sociology, in science, or in religion," that he mistakes his vocation, becomes a dogmatist and ceases to be a true teacher.

Mathematics.

PROBLEMS AND SOLUTIONS.

- No. 67.—Pub. Sch. Arith. p. 112, No. 40 ; W. H. E., Binbrook.
- No. 68.—Pub. Sch. Arith. p. 146, No. 26.
- No. 69.—Pub. Sch. Arith. p. 146, No. 27 ; Xanthia, Hepworth Sta.
- No. 70.—Pub. Sch. Arith. p. 169, No. 20 ; D. C. W., Port Ryerse.
- No. 71.—High Sch. Arith. p. 203, No. 104 ; E. O. P., Blessington.
- No. 72.—High Sch. Arith. p. 208, No. 166.
- No. 73.— “ “ No. 167.
- No. 74.— “ p. 230, No. 13.
- No. 75.— “ p. 186, No. 25.

Will some of our workers with their usual courtesy supply solutions to the above? The help will probably be grateful to many others who have not written to us.

No. 76.—By G. B. S., Grand Bank, Nfld.—“Two passengers have together 5 cwt. of luggage and are charged for the excess above the weight allowed 5s. 2d. and 9s. 10d. respectively ; if the luggage had all belonged to one of them he would have been charged 19s. 2d. Find how much luggage each passenger is allowed without charge.”

No. 77.—By G. B. S., Grand Bank, Nfld.—“The Globe newspaper of Monday, 18th June, 1877, bears the number 8505. Supposing the paper to have been published every week day without intermission and numbered consecutively, give the day of the week, month and year when No. 1 was published.”

No. 78.—Define difference between *area* and *surface*.

No. 79.—By a Subscriber (address not given). Show that

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

No. 80.—Simplify

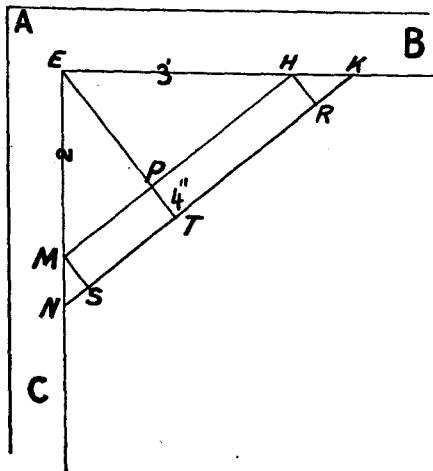
$$\frac{2^n \times (2^{n-1})^n}{2^{n+1} \times 2^{-n}}$$

No. 81.—If $\frac{a}{b} = \frac{c}{d}$ prove that $\frac{ax + b}{cx + d}$ has always the same value, whatever be the value of x .

No. 82.—Solve $\sqrt{x+3} + \sqrt{x+8} = 5\sqrt{x}$

No. 83.—Given $\sqrt{3} = 1.7320508$; find the value of $1 \div (2 + \sqrt{3})$.

No. 52.—SOLUTION by W. McLaren, St. Davids.



EH = 3'
EM = 2'
PT = 4" or $\frac{1}{3}$ ft.

Find MN and HK.
Draw ET and MS at right angles to NK.

$MH^2 = 2^2 + 3^2 = 13$
 $MH = \sqrt{13}$

Let $MP = X$

Then $PH = \sqrt{13} - X$
Now $MP^2 + PE^2 = ME^2$
and $PH^2 + PE^2 = EH^2$

$X^2 + PE^2 = 4$ (1)
 $(\sqrt{13} - X)^2 + PE^2 = 9$ (2)

Subtracting (1) from (2), X or $MP = \frac{4}{\sqrt{13}}$

Now $EP^2 + PM^2 = EM^2 \therefore EP^2 + \frac{16}{13} = 2^2$

$EP^2 = \frac{36}{13}$

$EP = \frac{6}{\sqrt{13}}$

Now EPM and MSN are similar triangles

$\therefore EM : MN :: EP : MS$ or $2 : MN :: \frac{6}{\sqrt{13}} : 3$

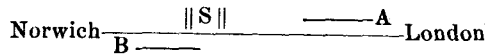
$\therefore MN = \frac{2}{3} \times \frac{\sqrt{13}}{6} = \frac{\sqrt{13}}{9}$

Reducing to inches $MN = 4.807 +$ inches

Similarly HK may be found.

Thus $EH : HK :: EP : HR$

No. 59.—SOLUTION by D. Hicks, B.A., Vienna.



(1) B's time = A's time from each place to the stations.

(2) $\frac{\text{A's dist.}}{\text{A's time}} = \text{A's rate per hour} =$

$\frac{\text{B's distance}}{1 \text{ hour}}$

(3) $\frac{\text{B's dist.}}{\text{A's or B's time}} = \text{B's rate} = \frac{\text{A's dist.}}{4 \text{ hours}}$

(4) $\text{B's distance} = \frac{\text{A's time} \times \text{A's distance}}{4 \text{ hours}}$

(5) But $\frac{\text{B's dist.}}{1 \text{ hour}}$ or B's distance = $\frac{\text{A's dist.}}{\text{A's time}}$

$= \frac{\text{A's dist.} \times \text{A's time}}{4}$; dividing each side by

A's distance.

(6) $\frac{1}{\text{A's time}} = \frac{\text{A's time}}{4} \therefore (\text{A's time})^2 = 4$

$\therefore \text{A's time} = 2$
 $\text{A's time} = 2 + 1 = 3$
 $\text{B's time} = 2 + 4 = 6$ } Ans.

(7) Since the distance is constant and A does it in half the time it took B, his rate is double that of B's.

No. 60.—SOLUTION by R. C. Wilmott, Cobourg.

It is evident that interest will accrue on A's for 5 years, on B's for 3 years and on C's for 1 year, hence the amounts of the respective legacies, when all are of age are :—

A's $\frac{130}{100}$, B's $\frac{118}{100}$ and C's $\frac{106}{100}$
or $\frac{130}{100}$ of A's = $\frac{118}{100}$ of B's = $\frac{106}{100}$ of C's

Stating all in terms of C's, we have

C's = C's
B's = $\frac{59}{50}$ of C's
and A's = $\frac{110}{100}$ of C's

All = $\frac{20814}{7670}$ of C's = \$15,000

\therefore C's = $\frac{7670}{20814}$ of \$15,000 = \$5527. $\frac{5511}{10407}$

and B's = $\frac{59}{50}$ of C's = \$4965. $\frac{4245}{10407}$

and A's = $\frac{110}{100}$ of C's = \$4507. $\frac{8517}{10407}$

No. 84.—By Subscriber, Cromarty.—“Three horses are trotting in the same direction round a course 1760 yds. The first trots at rate of 440 yds per min., the second at rate of 352 yds. and third at rate of 264 yds. How long will it be between their once coming all together and their coming all together again at the same place?”

See general solution of this problem by T. P. Hall, B.A., Woodstock College, p. 72 Clark-son's *Problems in Arithmetic*.

EUCLID'S TWELFTH AXIOM.

The following extract is from an article in the *Fortnightly Review* entitled “Is the Universe infinite?” The author is Sir Robert Ball, Astronomer Royal, one of the greatest living authorities on practical astronomy, and

his remarks will prove interesting even to non-mathematical readers who have almost forgotten the exact words of the text-book.

“I must here be permitted to refer to a point in connection with the elements of Euclid. The beginner who studies this work commences, of course, by learning the axioms, and reads without any feeling of discontent or querulousness such venerable truths as that “the whole is greater than its part.” But after a number of propositions of this eminently unquestionable but somewhat puerile kind, he is suddenly brought up by the famous twelfth axiom in which Euclid lays down the theory of parallel lines. Here is a statement of a radically different kind from such assertions as that “if equals be added to equals the wholes are equal.” In fact Euclid's notion of parallel lines is so far from being an axiom of the same character as these other propositions that it is quite possible to doubt its truth without doing any violence to our consciousness. The principle assumed in the twelfth axiom cannot be proved, and it has been well remarked that it indicates the supreme genius of Euclid to have expressed this particular axiom in such language as challenges at once the attention and the caution of the student. It may, however, be said that nearly all our difficulties in connection with the conceptions of space take their origin in the ambiguities which arise from the assumption which the twelfth axiom implies. Some modern mathematicians have gone so far as to deny the existence of this axiom altogether as a truth of nature, and it is most important to notice that when free from the embarrassment which the assumption of Euclid involves, a geometry emerges which removes our difficulties. It seems to show that space is finite rather than infinite, so far as we can assign definite meaning to the words, but it would lead me into matters somewhat inconvenient for these pages if I were to pursue the matter with any further detail. I may, however, say that it can be demonstrated that all known facts about space are reconcilable with the supposition that if we follow a straight line through space, using for the word straight the definition which science has shown properly to belong to it, that then, after a journey which is not infinite in its length, we shall find ourselves back at the point from which we started. If anyone should think this a difficulty I would recommend him to affix a legitimate definition to the word straight. He will find that the strictly definable attributes of straightness are quite compatible with the fact that a particle moving along a straight line will ultimately be restored to the point from which it departed.

It is quite true that this seems to be a paradox, but it will not be so considered by the geometer. The truth it implies is indeed quite a familiar doctrine in modern geometry. But what is not so familiar to mathematicians is that the restoration of the travelling particle to the point from which it originally started need not involve a journey of infinite length. If we assume Euclid's twelfth axiom to be true, then no doubt the traveller can only get back to the point from which he started, as the result of a journey of infinite length which will have occupied an infinite time. But now suppose that Euclid's twelfth axiom be not true, or suppose that, what comes to the same thing, the three angles of a triangle are not indeed equal to two right angles, then the journey may require neither an infinite lapse of time nor an infinitely great speed before the traveller regains his original position, even though he is moving in a straight line all the time. Space is thus clearly finite; for a particle travelling in a straight line with uniform speed in the same direction is never able to get beyond a certain limited distance from the original position, to which it will every now and then return. Those who remember their Euclid may be horror-struck at the heresy which suggests any doubt as to the sanctions by

which they believe in the equality of the three angles of a triangle to two right angles. Let them know now that this proposition has never been proved and never can be proved, except by the somewhat illogical process of first assuming what is equivalent to the same thing, as Euclid does in assuming the twelfth axiom. Let it be granted that this proposition is to some very minute extent an untrue one; there is nothing we know of which shows that such a supposition is unwarrantable; no measurements that we can make with our instruments; no observation that we can make with our telescopes; no reasonings that we can make with our intellect, can ever demonstrate that the three angles of a triangle may not as a matter of fact actually differ from the right angles by some such amount as, let us say, the millionth part of a second. This does no violence to our consciousness while it provides the needed loophole for escape from the illogicalities and the contradictions into which our attempted conceptions of space otherwise land us.

THE PUBLIC SCHOOL ARITHMETIC.

SO MANY criticisms have come to us from such a variety of writers, one independently of another, that we are compelled to conclude that there must be considerable ground for such complaints about this book. One fact is very significant; a large number of teachers have entirely ceased to use it for any purpose. They state that they have found from experience that it is a hindrance and not a help to their work, and consequently they get along without the assistance which a really good text-book can afford in the class-room. In highly graded schools the time spent in dictating to the class or in writing down on the blackboard the exercises required by the pupils is not seriously felt, but in rural schools with five or six different classes in the same room it is a serious matter. Bearing on the same question is the fact that a very large bundle of letters came last year to this department of the JOURNAL asking for explanations of obscure statements in this arithmetic, for solutions of questions deemed difficult, etc. It was noteworthy how often the same queries recurred sent by correspondents hundreds of miles apart, the same points apparently perplexing teachers and pupils throughout the book. Taken together these facts seem to indicate that a revision of the authorized text-book is a growing necessity. It is plain to hundreds of teachers that a radical change is needed in view of the proposed increase in the work to be done in the upper classes for which the High School Arithmetic is not suitable, as it assumes a knowledge of Algebra and Geometry that public school pupils cannot be expected to have before the close of their course.

Our own view of the matter is that two books are now needed. The conditions of the Public School Leaving and Primary Examinations are such that a satisfactory book to cover all the ground would be too large and expensive to be put into the hands of young children. It should be divided into two parts, Part I. being printed in large type and containing abundance of finely graded easy exercises sufficient for the first two or three years' work up to the end of the junior or senior third class. It would be a decided advantage to have this part divided into sections exactly fitted to each grade of the programme, and not necessarily following the traditional order of presentation, but keeping strictly to the order of difficulty so that the easier parts of the subject would certainly come before the more difficult. In England and in the United States there are numerous examples of arithmetics graded in the manner here indicated. Part II. should be written more in the scientific and usual order, but it should contain at intervals copious sets of review questions going over all the previous ground in the form of short examinations. This volume might be in medium type and ought to supply the training in business arithmetic and mensuration

suitable for that great majority of pupils who will not pursue the subject farther, and suitable also for those who will take a higher course with a more difficult text-book in the high school.

Whether this is the best possible plan or not it is entirely practical and has the advantage of having been tried on a much larger scale with fair success. Whatever the teachers decide to recommend, their decision should be definite and practically unanimous. The Minister has acted upon the decisions of the teaching profession when they have been pronounced without ambiguity, and he would probably do so again, and the teachers themselves are partly responsible for any imperfections in the tools they have to use in their daily work. A well considered proposal advocated with calmness and good temper will receive the assistance of the JOURNAL, which aims to lighten and brighten the task of every teacher within its constituency.

School-Room Methods.

A LESSON ON TOBACCO.

SECOND PRIZE PAPER.

BY MARY AGNES WATT.

Plan of lesson:

1. Show plant, or leaf.
2. Where and when first discovered and its nature.
3. Symptoms on beginning its use.
4. Cause of unpleasant symptoms.
5. Reasons, deduced from symptoms, for not using it.
6. Reasons, drawn from results, for not using it.
7. Reasons, pecuniary, for not using it.
8. Summary.

"Boys, can you tell me what this plant is?"

The teacher held in his hand a soft, light-green plant, with long, downy-looking leaves. The boys, after close inspection, decided that it was a tobacco plant.

"Can you tell me where its native home is?" was Mr. Arnold's next question, and the answer was given that it inhabited warm, moist countries; so the West Indies and the Southern States generally, were its natal ground, though it was grown in Canada by fanciers for home use. The story of its introduction by Sir Walter Raleigh was told by John Rolston, and James Boyd related the anecdote of Sir Walter's servant pouring water over his master to put out the internal fires which he fancied were consuming him. King James' "Counterblast" was alluded to, and the class then passed to a discussion of the nature of the plant.

"First of all, what is the tobacco plant?" inquired the teacher.

"It is a weed," one pupil ventured, and another said, "It is a poisonous plant," and James Boyd opened a book on botany and read the class name and wrote it on the board.

"Tom said it was a poisonous weed," said Mr. Arnold. "Now, how do you know that, Tom?"

"I know it must be poisonous, Mr. Arnold, for it makes a person very sick when he first uses it."

"Did you ever see anyone who began to use it, after his first smoke, Jack?"

"Yes, sir, I saw one fellow, and my! he was sick, he felt as if he'd die!" and Jack's face twisted itself in sympathy.

"I remember," said Mr. Arnold, "when I first began to teach, a case of a boy fainting in school. I was very much alarmed, but as I carried him to the door I got an odor of tobacco, which explained the cause of his fainting. He was deathly pale and dampsly cold, and his limbs were limp and powerless. It was some time before he revived. He persevered in learning that habit. I knew it in several ways, especially by his poor work in school, and by his pale, flabby face and hollow chest as he grew up to manhood."

Mr. Arnold's eye marked a surprised and conscious look in the faces of sundry youths in his class, but he continued as if unaware of it.

"Can you explain why tobacco has such an effect on the human system?" he asked.

"Isn't it the nicotine that does it?" asked one boy.

"Yes, principally, though in smoking free carbon is given off which injures the throat and bronchial tubes. What is the effect of nicotine,

Robert?" "They say one drop of the oil put on the nose of a dog will kill it," Robert answered, and Joseph Brown said that his sister had had a ring-worm on her arm and his father gathered the ashes of his pipe and put them on to kill the ring-worm. "But it nearly killed my sister," said Joe, "for she turned cold and white, and shuddered and shook and vomited so, I had to run for the doctor as fast as I could go. He said it was the nicotine in the ashes that poisoned her."

"We had some maple-sugar sent us in a cigar box," so Sammy Jones' story ran, "and it smelled so of tobacco that we couldn't eat it. Our hired man eats tobacco and he laughed at us, and said to give it to him, it would be a treat to him, and he began by taking a big bite. He went out in a few minutes, and father sent me for some fresh water, and when I turned the corner of the house there was the hired man, very sick, leaning against a tree. I tell you he looked pretty grey."

"These stories show that the essence of tobacco is very powerful in its effects on the human system, soaking even through the skin into the blood, as in the case of Joe's sister, and in most cases exerting a very bad influence on the health of the person using it. What is it, Harry?"

"Mr. Arnold, don't you think it is poor tobacco that is harmful? My uncle grows it himself and cures it by the best methods, and it never hurts him." Harry had made a point. Some boys looked relieved and triumphant. "I cannot judge of the harm your uncle has suffered. In all probability he does not know himself, Harry, but in a general sense, you are right in regard to its preparation being very injurious. It is soaked in liquor, different kinds giving the different brands, and it is flavored and bleached and adulterated, and this is done by the lowest classes and often in the filthiest manner possible. A boy in my class told me once that he had given up chewing tobacco. He said he was biting off a piece one time and his teeth met on some tough substance, which he found on examination to be the dried body of a mouse! 'I don't seem to want to chew any more tobacco,' he said. But Harry is not right in assuming that the leaf itself is not injurious, for the nicotine is not found in any of the materials used in preparing it. The doctors tell us it affects the heart, lungs, stomach, brain, and mucous membrane of the throat. Cancer of the tongue and lips is quite a common complaint among smokers especially. Why should we consider that tobacco was not intended for human use, Frank?"

"I don't think, Mr. Arnold, that it was intended for man's use, or it would not make him so sick on beginning to use it."

"But, Mr. Arnold, people soon get used to it, and it doesn't seem to hurt them then."

"What do you say to that, Willie?"

"I think people who use it do not realize that it injures them. My father used it for years and when he had dyspepsia, the doctor said it was aggravated by smoking, and he would not believe him."

"Did he give it up?"

"Yes, but not until he got worse, and then he thought he would try doing without it. He felt pretty lonely for it, but he says now that he knows it made him stupid and dull and his heart used to flutter; though he used not to blame the tobacco for it, he does now. He promised me a watch if I don't use it before I am twenty-one."

"You will likely never care to use it if you do not start before then, Willie. I wish all fathers would do something like that. I was just thinking that there is no food that is so hard to learn to use, that is so generally unpleasant, and, therefore, I judge that the taste must be perverted before a person can bear it. It is intended for medicinal use, only, as other poisons. "Are there any other reasons why we should not use it, Robert?"

"You said, Mr. Arnold, that the boy who fainted did bad work in school, so I think an ambitious boy should avoid tobacco."

"Very true, Robert, and is there any other reason, Tom?"

"You said his chest was sunken and his face pale, so a boy who wishes to be healthy should not use it, Mr. Arnold."

"Yes, boys, and if you ever read of the training of men for prize-fighting, rowing, or any athletic sports, you will notice that tobacco is generally ordered to be avoided."

"It is so disagreeable to ladies, Mr. Arnold,"

said Frank. "Some get sick even to smell it, and then it is a dirty habit."

"Yes, you will notice that separate cars are provided for tobacco users, which is a striking commentary on the nastiness of the habit, Frank. It is a very expensive habit, too. First make a calculation of five cents a day for the first year, and ten cents for the second and fifteen for the third, and see how much money a boy would have spent, if he commenced to smoke at eighteen, by the time he was twenty-one."

"One hundred and nine dollars and fifty cents, Mr. Arnold."

"With interest, if he had saved it, he would have a nice amount to invest. It would make a good payment on a property for him. Better than to have a weakened constitution and no money; eh, boys?"

The blackboard was then brought into requisition and soon presented this appearance:

TOBACCO.

Why Should I use It.	Why Should I Not use It.
1. Because some men I know use it, and I want to do as they do. (Then imitate their good points, not their weak ones)	Because it:— 1. Is unpleasant to learn its use. 2. Is unpleasant to others after the habit is formed. 3. Causes sickness (a poison.) 4. Causes stupidity (affects brain.) 5. Causes a desire to drink (owing to preparation.) 6. Is unnecessary. 7. Is expensive. 8. Retards growth of mind and body.

"With," as Mr. Arnold remarked, "still an increasing majority on the opposition side, and several counties to hear from."

Mr. Arnold knew that knowledge of its evils would not deter some from forming the habit, yet hoped that some might be influenced by the talk on this Friday afternoon, and, also, had a comforting sense of duty performed as his boys filed out of the class, looking thoughtful.

RAPID RECKONING.

BY BESSIE L. PUTNAM.

IN practical work, either in school or in actual business life, there is probably no exercise in arithmetic more frequently performed than that of addition. To be able to add rapidly and at the same time accurately is of prime importance. While some are naturally endowed with ability in that direction, there are few things in which practice shows more marked results of improvement than daily exercises in "rapid reckoning."

When all are ready with slate and pencil, the teacher writes the sum upon the blackboard, naming each figure as she writes it. The children follow her work with their pencils. If any one fails to catch a certain figure as it is given, he asks for its repetition *at the time*, that he may be ready to add when the word is given and thus stand an equal chance with the rest. An example six or seven figures square will be large enough to begin with, and the size increased as they gain speed by the exercise. When the last figure is named the teacher gives the word "add," and all begin at the same moment.

Interest and enthusiasm are increased if the teacher has a watch in hand ready to record the time taken by each one for the addition. The names may be permanently written at one end of the board; then as each finishes he raises his hand or speaks his name and the teacher indicates the number of seconds opposite. Each pupil should turn his slate over as soon as he gets a result, that no temptation be offered the quicker ones to revise their work while the others are finishing. When all are through, each in turn reads his result the teacher placing it upon the blackboard opposite his name. The problem is then added by all the pupils together, the teacher pointing to and naming the figures as they stand upon the blackboard. The result is compared with those given by the pupils individually and the time noted of the first correct answer.

It will not be long before there will be an

appreciable diminution in the time; then a longer example may be given. The whole can be managed, and should be, in such a way that all will regard it a pastime; when it becomes laborious the best results are lost. With a little care not to overdo the matter, pupils will be as eager for it as for a game of ball, while the friendly rivalry will quicken their thoughts and devise numerous methods of abbreviating. Almost unconsciously they will fall into the habit of combining into some groups certain of the figures at the same time that they are adding others; or some of the older ones may be able to add two columns at the same time. The various combinations will be thoroughly learned and used promptly by the pupils; and best of all, the practice is one which gives benefits that are life long.—*American Teacher*.

Public and High Schools

A SYNOPSIS OF THE RECENT CHANGES IN THE DEPARTMENTAL REGULATIONS.

HIGH SCHOOL ENTRANCE.

Copy Book No. 6, and Drawing Book No. 5 are prescribed, but no discrimination will be made in favor of work contained in the authorized drawing book or copy book if the prescribed course is followed.

Questions will be set in Canadian History alone, but the oral teaching of English History is prescribed, and the Public School Inspector is required to report to the Board of Trustees any violation of this requirement. Physiology and Temperance are obligatory subjects of examinations, and include digestion, respiration, the nervous system, and the circulation of the blood, the effects of alcohol and narcotics, exercise, cleanliness. The new text-book in Physiology and Temperance will not be ready till about October 1st; but this fact will be taken into account by the examiners next July. No paper will be set in Agriculture; but the trustees of any rural school may, by resolution; passed at a regular meeting of the Board, require the authorized text-book in Agriculture to be used in the fourth and fifth forms of the school; and in such cases the Inspector shall report to the trustees at least annually, the standing of the pupils in this subject. The extent of the course in each form shall be determined by the teacher subject to the approval of the Inspector.

The regulations in regard to the provisional admission and recommendation of pupils who have failed slightly at the examination are more definite and stringent. Pupils provisionally admitted are not to be required to pass the examination in Literature or to submit drawing or copy books at the Entrance Examination.

PUBLIC SCHOOL LEAVING EXAMINATION.

The following are the general regulations affecting this examination:

There shall be a uniform Public School Leaving Examination to be held at the same time and places and by the same Board of Examiners as the High School Entrance Examination.

Candidates who propose writing at the Leaving Examination shall notify the Inspector at the same time as when notices are sent with respect to the Entrance Examination.

The provisions of the regulations and the High School Act, 1891, respecting the High School Entrance Examinations shall apply to the Public School Leaving Examination, *mutatis mutandis*.

The Public School Leaving Examination shall be based on the subjects prescribed for the Fifth Form of the Public Schools, which are as follows:

Reading.—A general knowledge of the principles of orthoepy and of elocution; reading, spelling, and syllabication.

Grammar and Composition.—Etymology and syntax; exercises chiefly on passages from prose authors not prescribed; themes on familiar subjects; familiar and business letters.

English Poetical Literature.—Intelligent comprehension of and familiarity with the prescribed selections; memorization of the finest passages; oral reading of the selections.

History and Geography.—The leading events of British History—the nineteenth century more particularly. Commercial and physical geography. Geography of Canada and the British Empire more particularly.

Arithmetic and Elementary Mensuration.—Arithmetic in theory and practice; special attention to commercial problems; insurance, simple and compound interest; averaging accounts; discount, stock, bonds and partnership; area of rectilinear figures.

Algebra.—Elementary rules; fractions; simple equations of one unknown quantity; simple problems.

Euclid.—Book I, propositions 1-26; easy deductions.

Commercial Course.—Writing; book-keeping, single entry; commercial forms; general business transactions.

Drawing.—Drawing Book No. 6.

Physiology and Temperance.—The course in the Fourth Form continued and including also the other subjects in the text-book.

A small text-book covering the work prescribed in Euclid and Algebra will be ready about October 1st.

Each candidate shall submit for examination his school work in book-keeping and commercial transactions, to the extent of one set at least of ten foolscap pages or the equivalent thereof, comprising the necessary books of original entry with cash book, journal, ledger and bill-book. The set shall be specially suitable for farmers and artisans, or for retail merchants and general traders. Three accounts shall be made from the set in proper form and submitted to the examiners. The candidates shall also submit at least two examples of each kind of commercial forms and correspondence pertaining to the set. A descriptive index shall accompany the set, and the transactions in the set worked out in a school shall be different from year to year.

It is recommended that candidates for the Public School Leaving Examination who intend to enter a High School shall, before doing so, pass also the High School Primary Examination in reading, drawing, and the commercial course.

In drawing, candidates will submit Book No. 6 of the drawing course prescribed for Form V., which book may be substituted for one of the drawing books, prescribed for the High School Primary Examination in drawing, reading, etc., in the case of candidates prepared at Public Schools for both this examination and the Public School Leaving Examination. Such book and the work submitted in book-keeping shall be certified by the candidate's teacher or teachers as being the work of the candidate.

At the examination in composition candidates will be required to write an essay or a letter about sixty lines in length.

The paper on literature will be based partly on "Sight work," and partly on one or more passages from prescribed selections.

In reading the papers the Examiners shall be guided by the following schedule of marks and instructions:—

Arithmetic and Mensuration.....	200
Euclid and Algebra.....	150
English Grammar.....	150
English Poetical Literature.....	150
English Composition (Essay or Letter).....	100
History.....	100
Geography.....	100
Book-keeping and Penmanship.....	100
Physiology and Temperance.....	75
Drawing.....	50
Reading.....	50

Of the marks for book-keeping and drawing one-half will be assigned to the paper on the subject and the other half may be awarded by the examiners as the result of the inspection of the candidate's work submitted in book-keeping and drawing.

The following are the regulations affecting the certificates:

Any candidate who obtains one-third of the marks in each subject, and one-half of the aggregate shall be reported by the Board of Examiners as having passed the Examination for a Public School Leaving Certificate. Only those who fail to reach the standard prescribed in some subject, but who have made considerably more than the aggregate marks required should be recommended to the favorable consideration of the Minister of Education.

Candidates who pass the Public School Leaving Examination shall be entitled to admission into the classes in Form II. of a High School, in the subjects of the Public School Leaving Examination.

Candidates who fail at the Public School Leaving Examination but who obtain 25 per cent. of the maximum of marks for each subject thereat may, on the recommendation of the Board of

Examiners, be awarded a High School Entrance certificate.

The provisions for appeals is the same as that for the High School Entrance Examination.

The literature selections for 1894 are as follows, from the High School Reader: XXXI, To a Highland Girl; XXXV, The Isles of Greece; LI, Horatius; LII, The Raven; LVI, To the Evening Wind; LXVII, The Hanging of the Crane; LXXIX, The Lord of Burleigh; LXXXI, "The Revenge"; LXXXII, Herve Riel; CII, A Ballad to Queen Elizabeth; CV, The Return of the Swallows; CVIII, To Winter.

The following additional regulations apply to the Fifth form:

The course for the High School Primary Examination with the Science option may be taken up in any Public School, with the consent of the board of trustees and the Public School Inspector.

Agriculture and Physics and Botany are optional subjects, and are defined thus:

Agriculture.—The course to be determined by the teacher, subject to the approval of the Inspector.

Physics and Botany.—The courses in these subjects may be determined by the teacher subject to the approval of the Inspector. They should be mainly experimental and practical, and without the use of a text-book.

The following important notice is given in regard to the Entrance Examination into the High Schools:

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

HIGH SCHOOLS.

Euclid, Book I, with easy directions, is now prescribed for Forms I and II; that is, for the Primary Examinations.

A new Drawing course will be ready about October 1st. Any two books in this course will be accepted for the Primary, and any one book is to be required in the case of pupils who are not candidates for the Primary. For 1894, in lieu of the foregoing, any four of the present High School Drawing Books will be accepted for the Primary; and any two in the case of other pupils.

The number of pages in each of the four book-keeping sets required from Primary candidates is reduced to ten, and other High School pupils will be required to work out only any two of the prescribed sets. The mode of arrangement of the sets in the blank-books is defined; but, for 1894, work done in the blank-books hitherto used will be accepted. The High, Public, and Separate School Inspectors must certify that the prescribed amount of time has been given in the competing schools under their charge, to reading and writing.

The examination in Oral Reading, Drawing, and the Commercial Course will be held each year on the day before the High School Entrance Examination. The High School Principal and the High School teachers of drawing and the Commercial Course are the examiners of the drawing and book-keeping books of their own pupils, and of those of all other candidates at this examination. Public School and other teachers are required to forward the books of their pupils to the Principal of the nearest High School in time for the examination. An examination paper will be set in Drawing and in the Commercial Course, and the candidates, answer papers read, by Departmental examiners. On these papers candidates who are not High School pupils may write at any centre where a High School Entrance Examination is held. Candidates who write at a High School will be examined in Oral Reading by the High School staff, and candidates at other centres by the presiding examiners.

The contents of the circular in regard to the minimum amount of time to be given to writing, reading, and physical education has been embodied in the regulations dealing with the subject. As Regulation 19 now stands the intentions of the Department cannot be misunderstood.

THE SCHOOL OF PEDAGOGY.

The session of the School of Pedagogy will begin hereafter on the 1st of October, and end on the 31st of May. Applications for admission shall be made to the Minister of Education on or before the 1st of September.

The following is now the course in Physical

Education, and on it the next examination will be based:

Infantry Drill as revised by Her Majesty's command (ed. 1892)—for male teachers, Parts I. and II., and, for female teachers, Part I., pp. 1-31; for male and female teachers, Houghton's Physical culture (omitting Squad Drill); and, for male teachers, MacLaren's Physical Education, Part II., Sections II. and III.

A change has been made in the list of subjects obligatory on candidates with University qualifications. The regulation is as follows:

At the close of the session a written examination shall be conducted by examiners appointed by the Minister of Education. At this examination all candidates shall be required to write on Psychology, Science of Education, History of Education, School Organization and Management, Methods in Mathematics, and Methods in English. Candidates who have University qualifications shall take in addition, Methods in Latin and in Science (subjects covered by non-professional certificate) and Methods either in Greek or in French and German. Holders of Senior Leaving certificates, obtained on departmental examinations, shall take Methods in Science, (subjects covered by non-professional certificate) or Classics, or French and German, in addition to the compulsory subjects above mentioned. Candidates for a Commercial Specialist's certificate shall also be examined in Methods in the Commercial subjects at the time they take the non-professional examination.

Besides the examination in May at the close of the session of the School of Pedagogy, there will be a special one in December of each year for candidates who do not need to attend the school.

The regulations regarding admission are now as follows:

(1) A candidate for admission to the School of Pedagogy must show that he is (a) the holder of a Senior Leaving Certificate, or that he is an undergraduate of the standing of the fourth year, or that he is the holder of a Degree in Arts, obtained after a regular course, from a University in the British Dominions; and (b) that he will be twenty-one years of age before the close of the session.

(2) (a) The following classes of persons, being twenty-one years of age, shall be eligible, without attendance at the School of Pedagogy, for admission to the final examination of the School or to a special examination for such persons in December of each year:—Holders of second-class certificates who hold the non-professional qualification prescribed in (1) above, and who have taught successfully for two years in a Public School; and holders of first-class certificates or High School Assistants' certificates.

(b) A candidate at the non-professional examination for specialists is any year, who holds a High School Assistant's Certificate and has taught a department in a High School, may, on the recommendation of the High School Inspectors, write upon the professional papers in such department at the final examination of the School of Pedagogy in the same year.

The following are the regulations governing the final and special examinations:

(a) In order to obtain a certificate, every teacher-in-training shall make at least one-third of the marks in each subject at the sessional (oral and written) and the final examinations taken together, and one-half of the aggregate of these examinations. For Specialists' certificates, the standard shall be two-thirds of the marks in the candidate's special department.

(b) Candidates who are exempt from attendance shall take the final written examination, and an examination in Reading and, for male teachers, in Drill, Gymnastics and Calisthenics, and, for female teachers, in Drill and Calisthenics. In Reading, and in Drill, Gymnastics, and Calisthenics, the standard shall be 50 per cent. on each subject; and in the other subjects and in the total, the standard shall be the same as for teachers in-training.

(c) Any candidate who obtains fifty per cent. in each subject and seventy per cent. of the aggregate, shall be entitled to a certificate with honors. The examiners shall have power to reject any candidate who may show himself deficient in scholarship.

(d) The schedule of marks for determining the standing of candidates at the sessional and final examination shall be as follows:—Psychology, 200; Science of Education, 200; History of Education, 150; School Organization and Management, 150; Methods in English and Mathematics, 150 each; Methods in Science, Classics, and

French and German, 100 each; and Reading, and Drill, Gymnastics and Calisthenics, 100 each.

FIRST-CLASS AND HIGH SCHOOL CERTIFICATES.

The following important regulations now deal with the highest grades of certificates for High and Public School purposes:

PUBLIC SCHOOLS.

The following certificates for Public School purposes may be awarded to candidates who pass the prescribed examinations of the School of Pedagogy:

(a) Inspectors' certificates to teachers with first-class certificates, who have passed the written examination in Methods prescribed for specialists, and have the non-professional qualifications required for specialists in any except the commercial department, or a degree in Arts from the University of Toronto with first-class graduation honors in any one of the recognized departments in said University, or an equivalent standing in any other University of Ontario; and who have had at least five years' successful experience in teaching, at least three of which shall have been in a Public School.

(b) First-class certificates to those who have had at least two years' successful experience in a Public School, as certified by the Public School Inspector or Inspectors under whom they have taught.

(c) Second-class certificates to those who have not had the experience required in (b) above.

(d) The holders of second-class certificates obtained as in (c) above, may be awarded first-class certificates after at least two years' successful experience in a Public School, as certified by the Public School Inspector or Inspectors under whom they have taught.

HIGH SCHOOLS.

The following certificates for High School purposes may be awarded to candidates who pass the prescribed examinations of the School of Pedagogy:

(a) Interim Specialists' certificates.

(b) Interim Assistants' certificates.

(c) The holder of an Interim certificate may be awarded a full certificate of the same grade after at least two years' successful experience, subsequent to the date of his certificate, and as certified by the High School Inspector or Inspectors under whom he has taught.

(d) High School Principals' certificates may be awarded to University graduates in Arts who have had at least three years' successful experience, at least two of which shall have been in a High School, as certified by the Inspector or Inspectors under whom they have taught.

GENERAL.

The holders of first-class certificates or of Public School Inspectors' certificates, granted under the regulations requiring Specialists' certificates, may receive, on application to the Minister, Interim High School Assistants' or Specialists' certificates, as the case may be.

Mr. F. H. SYKES is again editing Lessons in Literature for Entrance Examinations, 1894. He has called in to his aid some seven or eight English teachers throughout the province, and a very helpful and useful book should be the result. It is to be published by the Copp, Clark Co., Ltd.

CLEANLINESS, order, politeness, and an idea of how to live, are taught to children incidentally far better than in any other way. Some teachers by their own example unconsciously teach children to be careless, while others, and we think the great majority, teach them to be neat, thrifty and enterprising. It is just as much the duty of the teacher to make good citizens as it is to make good scholars.—*American Educator*.

The Copp, Clark Co., Ltd., have in press and will issue shortly a little book edited by T. G. Marquis, B.A., of Stratford, entitled "Canadian Historical Stories." It will contain a number of sketches, some of them being based upon "Stories of New France," and written so as to give scholars a full description of some of the most interesting incidents of Canadian history. Now that students will be giving special attention to Canadian history this little book should prove of value.

Correspondence.

THE SUMMER SCHOOL OF AGRICULTURE.

HAVING had an exceptionally good opportunity of seeing in actual operation the summer school started this year in the Provincial Agricultural College, I would like to give the teachers of the Province, through the columns of the JOURNAL, some idea of the manner in which it was conducted and the measure of success which resulted from the experiment. Your readers will hardly need to be reminded that the school was established at the instance of the Hon. Mr. Dryden, Minister of Agriculture, who acted on his long-entertained and persistently cherished belief (1) that agriculture is a good educational subject, and (2) that teachers would gladly teach it if they only knew it. The plan adopted was to invite those teachers who desired to take a short course in agriculture to spend a few weeks at the College, the expense of doing so being reduced to a minimum, and the surroundings being made as pleasant as possible. Accommodation was provided for fifty students, but only about thirty availed themselves of the privilege. These, however, were in all respects a fair representation of the profession. The sexes were about on a par in respect to numbers, and the students came from many different localities between Carleton and Essex Counties. Five, all ladies, were from the adjoining City of Guelph, but with this exception the immediate vicinity of the College was not unduly represented.

It would be difficult to imagine more favorable conditions for such an experiment. The fine farm and beautiful grounds were at their best during July, and life at such a place had all the appearance and much of the reality of a sojourn at a pleasant summer resort. The accommodation in the College building is admirable. The gymnasium on the campus, with its excellent equipment, was given up to the students and was heartily enjoyed by them. Social amusements were freely provided, and everything that thoughtful kindness could devise was done by Principal Mills and his family to make the time pass agreeably as well as profitably.

The programme included (1) a course of lectures by Prof. Panton on Geology in relation to soils, on Botany in relation to plants desirable and obnoxious, and on Entomology in relation to insects, useful and injurious; (2) a course of lectures by Prof. Shuttleworth on Chemistry in relation to soils, manures, and vegetation; (3) a course of practical dairy experiments in butter-making, cheese-making, and milk-testing, conducted by Prof. Dean, and (4) a course of lectures on various phases of practical farm operations by Prof. Shaw. It goes without saying that the work was superficially done; it was impossible to do it any other way. To have attempted thoroughness in any department of the work would have made the experiment a failure instead of the brilliant success which it was. I was fortunate enough to see for several days the concluding part of the work of each of the teachers except Prof. Shaw, and so far as my own pedagogical experience enables me to judge, I am firmly convinced that every course was admirably planned and well carried out for the purposes in view. I am glad to be able to say for each of the Professors whom I heard and saw that he is a real teacher of his subject as well as a master of it, and I believe that this testimony will be heartily endorsed by all the members of the class, with many of whom I had conversations on this aspect of the class-work.

Two reasons are urged in justification of giving Agriculture a place among the obligatory subjects on the programme of rural public schools. The first is that an agricultural training may be useful in enabling the pupils to make a better living than they would make without it; the second that agriculture lends itself quite as well as any other physical-science subject to a kind of treatment that is thoroughly educative and that makes for culture. On the former of these reasons I need say little. To take such a position is to admit or imply that school education may properly be made industrial, an implication which commands my hearty assent. "Teach a boy," said Aristotle, "that which he will have to practice when he becomes a man;" and why not, if you can at the same time thereby, and *pro tanto*, make him a thoughtful and cultured man?

It is frequently assumed and asserted that the only effective means of liberal culture is the

study of literature, and I am free to confess that in my opinion it is and must ever remain the best means when the best use is made of it. But every teacher knows that there is as much "cramming" in the study of literature in schools as there is in the study of any other subject, and that when it is so treated it has no more educational value than any other "crammed" subject has. While, therefore, I do not wish to disparage the study of literature, I have no doubt that culture of a very valuable kind may be secured by the practice of original research into the nature of our own environment, both physical and sociological. For our High School programme this is admitted, and provision is made for the study of physical science, but very little has been done in this direction in our public schools. It may be that for rural schools the study of agriculture will yet serve the same purpose, *mutatis mutandis*, that general physical science does for our high schools.

Original research implies (1) a subject matter exhibiting phenomena and affording ample opportunity for observation of facts; (2) analysis, comparison, and classification of phenomena; and (3) the generalization and formulation of laws or principles. This is the so-called "inductive" process, and it is the most important means of adding to the sum of one's knowledge of any subject-matter. What we learn by rote from others is soon forgotten; what we find out for ourselves becomes more really our own and remains longer with us. More important still, if we forget it we can recover it because we can re-discover it. The ability to do this is the most valuable kind of culture which the study of the physical sciences can impart. The training which such a study gives is obtained, not from memorizing either particular facts or general truths, but from observing the facts and reaching the truths by independent generalization.

For a pupil in a rural school what better opportunity for original research can be imagined than is afforded by farm work? Everything the farmer does is a practical application of some scientific principle. The pupil is familiar with the application but of the principle he knows little or nothing. To tell him the latter would be to prevent and make impossible the educative use of agricultural phenomena. To fix his attention on the phenomena, to arouse his curiosity about them, to set him inquiring for explanations of process and results, and to impart sparingly and helpfully such information as he must get from others, are the functions of the teacher. Why are some soils better adapted than others for raising certain kinds of crops? Why are some soils treated with one kind of fertilizer, while other soils are differently treated? Why is rotation of crops resorted to? Why are some kinds of weeds more difficult to get rid of than other kinds? Whence does the plant obtain the substances by the assimilation of which it grows? What is the nature of the changes produced in milk when butter or cheese is made from it, and how are certain chemical and mechanical agencies able to effect these changes? Why are fruit trees sprayed with Paris Green, or currant bushes powdered with hellebore? What changes take place in the form of an insect during its life history? How are injurious insects to be distinguished from those that are helpful to the farmer or the gardener? These and hundreds of other questions may be raised by the expert teacher with a view to giving the pupils a chance to find the answers for themselves. Pupils so trained are likely to grow up with an inclination for agriculture and a robust independence in the practice of it, which are unfortunately very rare among rural children at the present time.

The highest praise I can give the members of the Agricultural College staff is to say that they did their work in the Summer School in the spirit I have described. They taught Agriculture in this way to the students, and they persistently warned them against the dangers of mere dogmatism. Their teaching was of high pedagogical value, apart altogether from the kind or amount of agricultural knowledge they imparted. Their aim was to induce habits of observation and investigation, and to get the students to see that they must deal with their pupils in a similar spirit and by similar methods. No pupil can ever learn much about agriculture in a public school, but thousands of pupils might easily be converted to their own and their country's lasting advantage, into thoughtful men and women in the prosecution of a calling that is absolutely essential to the well-being of the whole commun-

ity. It is only just to the students to say that they appeared to have a thorough grasp of the aspect of the matter. They had no examination impending over them and they were free to work as enthusiastic amateurs. If they might enjoy the same sense of freedom as teachers, it would be a fortunate thing for their pupils. Nothing could so effectually stifle all interest in agriculture for both teachers and pupils as to prescribe a rigid course with a view to a stated written examination.

What the future of Mr. Dryden's experiment will be, time alone can tell. All that is permitted to us at present is to say that it has begun well, and that there is no apparent reason why it should not go on equally well or even better. It is not unreasonable to expect a larger attendance next July than there was at the late session. It is fair to assume that teachers will come here after better prepared to take full advantage of the course. They can accomplish this by giving the subject some attention during the coming school year, not only in the admirable text-book that has been prepared and authorized, but also as part of their school work. They can raise now the questions above referred to, and if they cannot always find satisfactory answers to them they may have this consolation, that the very best agricultural authorities are hardly less at fault. Fortunately for agriculture in schools there is nothing final about it. Were it otherwise it would be less valuable than it is as a culture subject.

WM. HOUSTON.

For Friday Afternoon

BY AND BY AND NEVER.

A Spanish proverb says that "By the road of 'by and by' one arrives at the house of 'Never.'"

THERE'S a dangerous little Afrite who accosts you day by day,

Upsetting every purpose in a soft, enticing way,
Saying, "Rest from this, I pray you, for to-morrow you can try—"

If hard work is to be done, you can do it by and by."

Though he tell you not to do it,
Mind him not or you will rue it,
For his words so smooth and clever
Take you to the house of Never.

His voice is like a siren's and he always aims to please;

He's as idle as a zephyr and he bids you take your ease;

If your spirits seem to falter, at your elbow he is nigh,

Saying, "Wait a little brother, you can do it by and by."

Though he tell you not to do it,
Mind him not or you will rue it,
For his words so smooth and clever
Take you to the house of Never.

He commands an endless future, and has youth upon his side,

So he makes your little horoscope magnificently wide.

Quite disturbed by earnest plodders, he appeals with witching eye:

"What's your hurry?—Wait a little—You can do it by and by."

Though he tell you not to do it,
Mind him not or you will rue it,
For his words so smooth and clever
Take you to the house of Never.

He's a tricky little prompter and he always lingers near,

Knowing just the proper moment when to whisper in your ear;

He can span you pretty rainbows and make fanciful your sky,

With his magical proviso of the golden by and by.

Though he tell you not to do it,
Mind him not or you will rue it,
For his words so smooth and clever
Take you to the house of Never.

On your eyes he presses poppies, on your will he puts a brake—

Just to keep you soothed and idle, any trouble he will take.

When he trains you to his harness—O so mischievous and sly!

Then you'll doze away the present in a dream of by and by.

Though he tell you not to do it,
Mind him not or you will rue it,
For his words so smooth and clever
Take you to the house of Never.

—Harper's Young People

MAKE SOMEBODY GLAD.

1.

On life's rugged road
As we journey each day,
Far, far more of sunshine
Would brighten the way,
If, forgetful of self
And our troubles, we had
The will and would try
To make other hearts glad.

2.

Though of the world's wealth
We have little in store,
And labor to keep
Grim want from the door,
With a hand that is kind
And a heart that is true,
To make others glad
There is much we may do.

3.

A word kindly spoken,
A smile or a tear,
Though seeming but trifles,
Full often may cheer;
Each day to our lives
Some treasure would add
To be conscious that we
Had made somebody glad.

—Selected.

Teachers' Miscellany.

A LONDON BOARD SCHOOL.

LIZZIE ALLDRIDGE, in the *Christian World*, gives the following account of one phase of the work being done by the London School Board in some of the poorest districts of London. The building referred to occupies most suggestively the site of what was formerly a convent of nuns, and centuries later the gloomy House of Detention, made notorious some years ago by the fatal explosion intended to rescue the Fenian prisoners who had been lodged there. The prison has now followed the convent. In their stead has arisen the Hugh Myddleton School, the most magnificent building the London Board has yet erected. It is a truly noble palace of instruction; solid, boldly proportioned, full of light and fresh air, which must be of itself a powerful factor in the education of the children. Down below in its foundations may still be found vestiges of the nuns' crypt and the prisoner's cells.

The writer has been visiting an exhibition of some of the children's work, which was to her "simply a delightful and astounding revelation." She proceeds:

"Well, it appears to me, now I have got over my first amazement, they do it something like this: Wee human beings of three come to the school, and the teachers, by deeds more than by words, say to them, 'Come, let us see the wonderful works of God's hands. Let us do as our Saviour told us, and begin by considering the lilies and the other wonderful and beautiful things He has made.' Then the teacher gets, say, an acorn, and plants it in a bottle of water; takes acorn cups with a hole in them and gives them to the youngest children to thread; gives an oak leaf to an elder child to put flat on paper and draw, gathers all sorts of teaching for hands and eyes and eager little minds, and groups it round the acorn, that is all the while growing in the bottle. The tender shoots grow downwards and upwards, and children who can write measure them and keep a calendar of their growth. There are many such calendars on view. It would take you an hour to go carefully over the Kindergarten exhibits of occupations in illustration of natural objects.

"In one school the children have saved their pence, and bought and stocked an aquarium. They are instructed how to look after it themselves, even the knotting of which the net is made is their work. The teachers encourage them to take an interest in real things and in things near at hand. The observation of form, color, and use begins with the very first lessons, and never ceases while the children are in the school, until, by hardly perceptible degrees, they reach in the higher standards artistic results that are certainly astonishing. There is, for example, a life-size bust in wax that no one with any love of art could pass unnoticed; its arm but delicate modelling, its 'finger and

thumb work' is so very well felt. The modelling in clay, which begins with the Kindergarten babies, is largely represented. 'Don't the children take an interest in it?' I asked one of the instructors.

"Don't they" was the answer.

"A gentleman who has inspected the Board Schools from the first, tells me that the development of the artistic feeling among the children has of late been very rapid. 'I was in a school the other day,' he said, 'where I saw framed, glazed, and hanging on the walls, a prize drawing of a very few years ago. Nowadays we should not have accepted it at all—the standard has risen so high.'

"In the whole of this exhibition of work, much of which is done in the poorest parts of London, there was nothing that struck one as the least vulgar. As for the general tone of color, it was beautiful. This was especially noticeable in the cardboard modelling, by means of which solid geometry is taught in a very fascinating manner, boys making not only solid geometrical figures, but engines, bureaus, candlesticks, and even a lovely Japanese tea-house. Paper-folding, again, which begins so simply in the Kindergarten, devolves into intricate mosaic patterns for linoleum, etc. The girls' laundry work is especially delightful. 'Here,' said one of the lady inspectors, pointing to a long counter of specimens, 'you have the poetry of washing.' Here is what girls of from ten to fourteen can do. Such highly glazed collars and cuffs, such delicately got-up lace—quite common though, and the children's own—crettonnes and crewels, whose color has not run at all, flannels that are not hardened and shrunk, silks almost as good as new! The housekeeper, who has suffered much from laundresses, revels in the getting up of these school-girls' exhibits. Seeing is believing, or I would not have believed it. No wonder the girls are proud when they take home their fathers' collars starched and ironed like these. The ladies say they do it all themselves. They are taught to rely on themselves, and told the reason why of everything. The needlework is as beautiful as the laundry, and can be traced from the babies' stitch-cards up to the dress-making of the x7th. The taste for well-made underclothing is greatly on the increase among the children and their relatives. In fact, as the lady who had charge of the needlework assured me, 'the subtle and healthy influence for good of these schools was inconceivable.'

"Mending is treated as a fine art. There is a charming doll who is supposed to mend her own clothes. The knees of her stockings have been beautifully darned, and what shall I say to the 'running' of her heels? She has put an ideal patch under the arm and on the elbow of her dress, but you have to look for them, they are so cunningly done. There is cookery, too, but you must taste the cakes to know how good they are. And so it is all through the school; everywhere you see that hand and eye and brain have been steadily educated together.

"Everybody was wishing that all the rate-payers would come and study this exhibition, 'for,' they said, 'if they could see for themselves what the children are doing, we believe they would never oppose us again. After all, is it not better and cheaper to have a school than a prison?'"

A PRODUCT OF CIVILIZATION.

THE July records of the Tombs' police court in New York City contain the record of a crime that in its significance may send a shudder through the civilized world. Three little news-boys, the oldest twelve years old, were arraigned on the charge of drowning a ten-year-old comrade, brother of one of the three. The story of the crime, told largely in the language of the perpetrators, is as follows:

"The boy who was drowned disappeared on Friday and nothing was known of the cause of his disappearance until Sunday. The parents had hunted in vain. On Sunday morning a boy called 'Cunny' met the mother and said:

'Hello, Mrs. Maloney, do you know where Tommy is?'

'No; I wish I did.'

'I do. I know where he is. He's drowned.'

With this alarming clue Mrs. Maloney went to her nine-year-old son Johnny, who when hitherto asked if he knew of Tommy's where-

abouts, had always answered simply, 'Nope.' Johnny this time, on the frenzied appeal of his mother, admitted that Tommy was drowned and laid the blame on the older boy Lago. The case was then given to the police. Nine-year-old Patsy Radican, the third arrest, was finally brought to confess the following:

'Me an' Lago wanted to swipe Tommy's money, and Lago said: 'Let's drown him,' and we went and Lago did it.'

'It was las' Friday. We met Tommy an' his brother. John says to us, 'Tommy's got a quarter on him' an' Tommy ses, 'No, I got t'ree dimes.' Lago ses to me, 'Let's dump him in de river an' swipe his close.' John heard him, but he didn't say nothing'; so when we got to de dock we took our close off and went in swimmin'. Tommy couldn't swim, so when he got in de water he sat on a big fish crate floatin' near de dock. Lago swam up an' pushed him off, and den he jumped on his shoulders an' held him down. Tommy didn't come up, an' we all got out an' dressed and run away. Lago took Tommy's close.'

John Maloney, brother of the drowned boy, appeared to be pleased at the idea of being a prisoner, after he had recovered from the first fright, and said to the officers:

'I heard Patsy Radican and Lago talk about swipin' Tommy's money, it wasn't none o' my business. Lago said, 'We'll go whackers, 'an' I didn't say nothin'. Lago pulled me brudder off de fish crate an' jumped on him an' kep' him under de water.'

Lago at first fiercely denied having drowned Tommy, but finely admitted pushing Tommy off the crate, but in mitigation of his crime said that Patsy Radican took the money. Johnny's peculiar excuse for not telling his mother was that he was 'scared,' and that it was 'none of his business.' The code of street-Arab ethics did not allow him to 'peach,' even to prosecute the murderers of his own brother."

It is a simple fact, known to philanthropists and reformers, that thousands of children in the slums of our great cities are growing to manhood and womanhood, and the rights of citizenship, totally ignorant of moral law. The criminal life is to them the normal one; in fact, they know no other! It is not until the hand of the law seizes them that they learn that all the habits of their thought and life are wrong; that there are principles of purity, and truth, with honest dealing, governing a harmonious world. Our slum workers testify that many, through shrewdness evading arrest, grow to mature age in this condition of absolute ignorance of right doing.

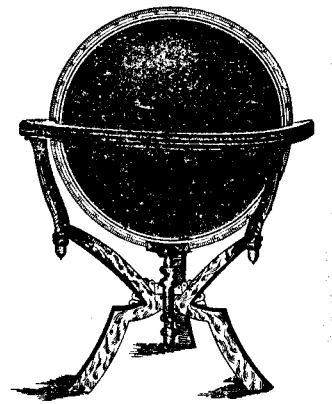
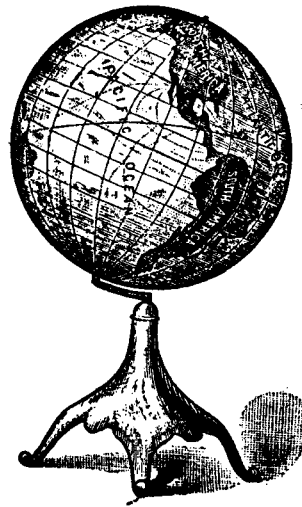
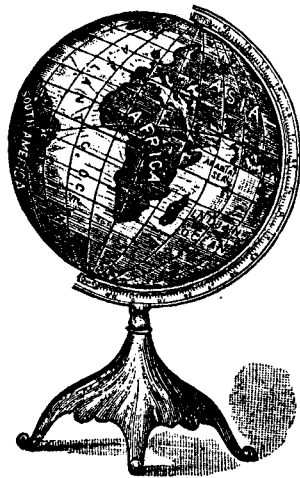
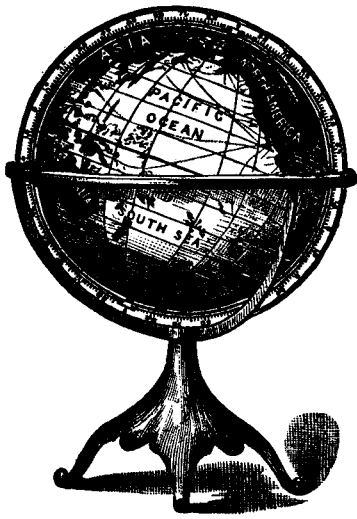
'Remember there are thousands of children, so environed, that are growing into a mob that is a menace to life and property and the well-being of the nation. It is the belief of most slum workers that a child of seven or eight is so thoroughly awakened to a consciousness of evil that reform is difficult, and they are already recognizing the kindergarten as one of the most potent means to prevent the development of the juvenile criminal, because it reaches the child before its faculties are fully awakened, and relates the budding consciousness to right principle.

In every human being there is the dual nature relating the individual to evil and to good. Surroundings nourish the tendency similar to their own potency. If a child's first consciousness is of evil it will call into activity all the inherent tendencies that are evil. If, on the other hand, the early consciousness relates to truth and beauty it will awaken the dormant sensibilities to an active relation with the good.

It is vitally important, not only from a humanitarian standpoint, but also in the interest of good government and the permanency of our republican institutions, that the children of the slums meet with intelligent care before they are out of babyhood. We need kindergartens in every district, and a free support for them from every generous heart and purse in the land.

—The Housekeeper.

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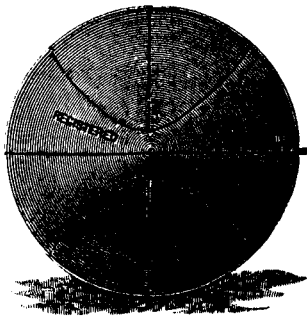
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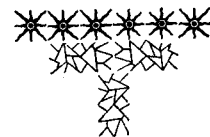
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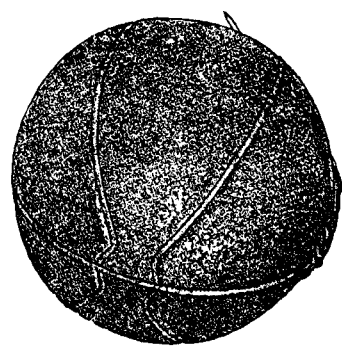
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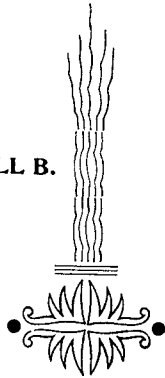
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