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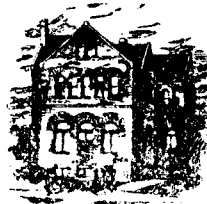
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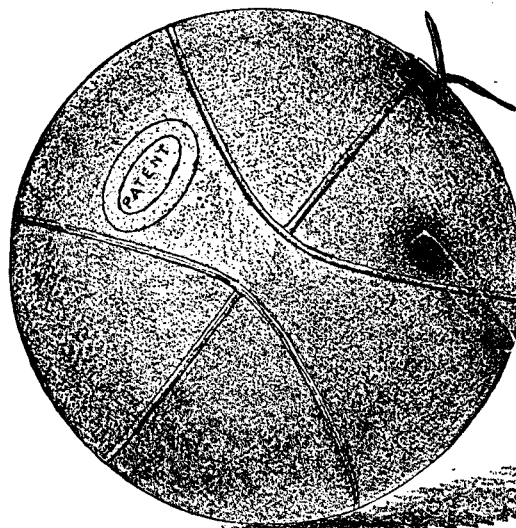
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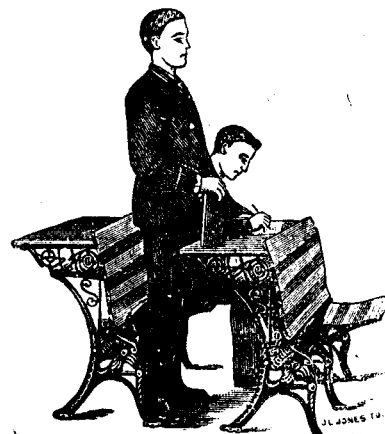
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No. 9.

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* Editorial Notes. *

WE have received, just as we are going to press and too late for this issue, several inquiries for Question Drawer, with special requests for answers in this number. This frequently happens, our friends failing to make allowance for the time necessary to make up, print, fold and bind the paper. Please note that in order to insure answers in next number all communications should be in our hands at least one week before the date of the paper.

IT is to be hoped that in every school in the Province, arrangements will be made for some kind of celebration of the Columbus Centennial, on the 12th of October, as requested by the Minister of Education. The occasion is a valuable one, and may be turned to good account, in the way of interesting the pupils in the history of the discovery, settlement and civilization of the Province. We will do our part, and provide a supply of material, including an historical and biographical sketch, and selections for recitation, in next number, which will be in the hands of teachers nearly two weeks before the date named. Meanwhile teachers can be refreshing their own memories and preparing themselves to make the most of the opportunity.

THE system of free text-books is now fairly inaugurated in Toronto. If we are not in error, this is the first trial of the system which has been made in Canada. In many places in the United States, free text-books have been the rule for years. We

have not heard of any case in which the plan has been discarded after trial. To our thinking, free books and other school implements, are the logical completion of the free school system. It would be difficult, we think, to quote any valid argument for the latter, which does not apply with equal force in favor of the former. There is, too, the important consideration of the great saving of time (and temper) to both teacher and pupil, which will result from always having the book or other educational implement, ready for use as soon as wanted.

WHAT constitutes an educated man or woman? President Gilman, of the Johns Hopkins University, says that "five intellectual powers should be the property of every liberally-educated man." These he enumerates as follows: the power of concentration; the power of distribution, by which he seems to mean the ability to arrange and classify the knowledge gained on any subject; the power of retention; the power of expression; and the power of judging. In addition to these developed powers, the liberally-educated man must also have certain possessions in the shape of acquired knowledge, as a capital stock upon which his powers may work, and which may be of service to him for the promotion of his enjoyment and usefulness. We do not suppose that this classification is meant to be exhaustive, and we are not sure that it is the best possible, so far as it goes, but it is eminently suggestive and will serve well as a test, or rather a series of tests, by which any reader who is so disposed, may try his own mental state and acquirements, and perhaps be helped to some clearer ideas in regard to his own deficiencies, and the best way of setting himself at work to overcome them.

THE death of the poet Whittier, at the age of eighty-four, removes another of the old literary landmarks. Though scarcely entitled to a place in the very first rank, Whittier deserved, and will no doubt inherit undying fame as a sweet and gentle bard, whose harp was always attuned to the loftiest and purest sentiments. It is to his lasting praise, that, having lived long and written much, he has left behind him no word, "which, dying, he would wish to blot." His fame will be enhanced by the fact that he was one of the noble few who bravely

and nobly espoused and stood for the cause of freedom, in the dark days when it required no ordinary courage to plead for the down-trodden slave, when to be known as an abolitionist, was to incur the almost mortal enmity of the slave-holding oligarchy and to be denounced as a fanatic by the timid Northerner. Whittier was almost the last survivor of a little band of emancipationists who deserve immortal honors, for their moral heroism in a time of cowardly compromise, as well as for their splendid talents devoted to the good cause. No doubt all our readers are more or less familiar with Whittier's writings. A study of his life and a few of his choice poems, would form an appropriate exercise for a Friday afternoon, or a literary evening.

TOUCHING the matter of good English, it is astonishing how much slipshod writing finds its way into the educational papers and magazines, which ought, one might say to be especially careful in this respect. We dare not hope that the JOURNAL escapes without its share. Certainly a good many of our American exchanges are lamentably careless in regard to the articles they admit into their columns. Nor are the solecisms confined to what may be called the second-rate contributions. Not unfrequently excellent articles are marred by carelessness in style and expression such as the writers would, we are sure, criticise sharply in their pupils. In a valuable paper which we recently republished from one of the best of our exchanges, were to be found such slips as, for example, "both in knowledge and state of mind." "To-day we will only consider one, etc." Of course the *in*, in the first sentence, should either have been repeated before "state" or placed before "both," while in the second, the writer affirms that he will do nothing that day but "consider," etc., whereas he evidently means that he will that day consider only that one point, leaving others for a future occasion. Careful attention to these little matters is one of the elements of precision in speech or writing, and without precision there cannot be absolute clearness. Then we notice that some of our own teachers, and many of the American, talk about "starting" or "starting out," when they mean beginning and setting out. These are instances which occur to us on the spur of the moment. Others may be noted hereafter.

* Special Papers. *

THE CHARACTERISTICS OF AN IDEAL LESSON.

E. P. HUGHES, in *The Journal of Pedagogy*.

THE process of education is something much more than the giving of lessons. A teacher may be capable of producing excellent lessons, and yet be by no means an excellent educator. Still, lesson-giving is a large part of the work of the day-school teacher, and it is universally accepted as one of the chief means of education. It is, therefore, worth our while to concentrate our attention on it.

One of the most hopeful signs in English secondary education at the present time is the ever-swelling discontent among teachers as to the level of teaching skill at present reached by us. We are not at all satisfied with our performances as lesson-givers, and we want to grow more skilful. Many of us are somewhat vague as to how that end is to be attained, and those who have fairly clear ideas on that subject disagree among themselves as to the best means to be employed; but, at any rate many of us have taken the first step—glorious discontent. In the days fast passing away there were two rough-and-ready methods largely used to gain teaching skill: the first was to go to a class and teach as best you could, until you could teach it in the right way—an extravagant method, extravagant in time and energy and failure, for both teacher and pupil. Another method, not so commonly used, was to go and hear good teachers teach. To this there are two obvious difficulties—(1) many schools are still organized so that a teacher is never free during lesson time, and (2) there are still teachers who refuse to allow others to hear them teach. What other means are left to us? Many, I think, but to-day we will only consider one—the calm consideration of the abstract question, outside our class-rooms, in such a manner that the result of our thinking may affect our teaching.

There is an obvious advantage in discussing the question in as general a manner as possible. (1) Knowledge so expressed, *i. e.*, general knowledge, is much more emphatic, likely to arrest our attention, and to remain in our memory, and, therefore, more likely to affect our action. (2) It is a great safeguard to express knowledge in as general a form as possible, because we often detect errors in so doing. (3) General knowledge is the most convenient form in which to carry knowledge, because it is the most concise. On the other hand, the more abstract the consideration, unless one has plenty of examples to illustrate it, the less likely one is to apply it to practical life. I will consider the question of lesson-giving in as general a manner as possible, and ignore differences of subject, differences of pupils, and differences of conditions. After all, there are certain elements which are always present in every lesson. There is always a teacher, always pupils, and we must have a subject.

I will enumerate twenty characteristics which appear to me to be essential to an ideal lesson:—

1. The teacher must know what result he wants to gain from the lesson—*i. e.*, the ideal lesson has a definite end. This really seems obvious. I feel inclined to apologize for bringing it forward, but I do so because I constantly ask teachers what is the result they are trying to gain, and they do not know. Educating is a very hard task. To do it well we must expend an enormous amount of time and energy, and so must our pupils. Surely it is not rational to expend this without considering the end which we wish to attain. I do not sympathize much with a teacher who frankly confessed to me the other day—"My object is to get my boys through certain examinations. Their parents have sent them to me for that purpose, and that is my end." I do not sympathize with him, but I know the chances are that he will gain his end, because he knows what he wants to gain; and his career is rational, if it is not noble.

2. An ideal lesson must have a threefold result on the pupil—(1) an increase of right motive power; (2) an increase of intellectual power; (3) an increase of organized knowledge. I have put the third last, because I consider it the least important.

It is more important for the schoolboy to want to learn, and to know how to learn, than to gain learning in school days. Obviously, however, the three parts of the result are by no means contra-

dictory; in fact they are immediately connected, *if you begin at the right end*. Alas! one can begin at the wrong end, and then there is no necessary connection. We can give knowledge to a boy in such a way that we have decreased rather than increased, his desire for knowledge. We can also give knowledge so badly (*e. g.*, using an inaccurate form of reasoning) that we deaden rather than develop a boy's powers. To speak frankly, this is no doubt done, otherwise we should not have to mourn, as we do at present, over the absence of much real love for learning in our secondary schools. A small boy said to me the other day, "I hate lessons, but I love school, because there are the games, and the fun of being with a lot of boys, and the fun of trying to dodge the masters. We put up with the lessons for the sake of the rest." I feel sure he had not been receiving ideal lessons. If we begin at the right end, all good things follow. If we, first of all, aim at teaching them in such a way as to exercise all their powers, the third result—accurate, well organized knowledge—will inevitably follow. Mere instruction is passing out of fashion. We talk a great deal now about the development of all the faculties; but this is not enough. We do not want a good mental machine, capable of excellent work, but we want steam to drive it. I do not think we teachers expend sufficient thought and energy on developing strong and right motive power. Whatever may be the subject of a lesson, and whatever the conditions, the ideal lesson will obtain the threefold result.

3. An ideal lesson must be complete in itself. We must have a beginning, a middle and an end. I know this is regarded as a fad of Training College officials, but I feel sure it is a means of quick progress. Some lessons are obviously more isolated than others, but each series of lessons, however intimately connected, is a string of *wholes*. How many teachers go on with their lessons till the bell rings? and if it had rung five minutes earlier, or five minutes later, it would not have affected the artistic unity of the lesson, because it had none. I feel sure that the teacher is refreshed and rested by getting through what she meant to do, and the class is stimulated also by seeing that the lesson is complete and finished. When the divisions are not obviously suggested by the subject, it is desirable to use devices to isolate the different parts. I believe it is an innate quality of the normal person to find it easiest to take food in definite spoonfuls, be it physical or mental food. So much for the subject-matter of each lesson, which I suggest should have a certain amount of completeness in itself.

But when I plead for the artistic completeness of a lesson, I mean more than this. I mean that it should have a beginning and an end, as well as a clearly-defined middle part. There are very few of us who can plunge at once, with all possible vigor, into a subject that someone else chooses we shall study; sometimes we find it hard to do this even when we choose the subject ourselves. It is, of course, far more difficult for children to make a good and rapid beginning than for adults. Many a good lesson has been spoiled because it began too soon—*i. e.*, before the children had been properly prepared to begin, prepared both in knowledge and state of mind. I remember a volunteer officer telling me once that he always spent the first few minutes of drill in speaking to his men. He did this because they had been employed in different kinds of work during the day, and it was necessary that their minds should be brought round to the subject in hand. Also, they had not been working together during the day, and now he wanted them to work together as one man. In other words, he believed in having an introduction to the lesson, and so do I. An ideal lesson does not really begin until all the members of the class are ready to work together as one man, and until their minds are concentrated on what they are going to learn.

The ideal lesson must also have a proper and complete ending. Assuming that our pupils have gained in motive power, faculty, and knowledge, our campaign is over: let us count up the gains. For the sake of the teacher, let us see what the pupils have accomplished; and also, for the sake of the class, let us increase their desire to learn by making them notice what they have obtained in knowledge and power during the lesson.

4. The ideal lesson must be vitally connected with a series of lessons. The quickest way to ascend a steep mountain is to take a number of

small steps, *as long as every step tells*. The ideal teacher advances slowly, but advances constantly. The pupil of a famous teacher once said: "We seem to do so little in each part of a lesson, and yet at the end of a lesson we see how far we have travelled, and at the end of the term one is astonished to find how much knowledge we have gained, and yet we seem to have advanced so slowly." There are many teachers who begin a term's work and have no complete idea of what they mean to teach in the term. Surely, the ideal theory is to draw out a rough syllabus of the term's work, probably of the year's work. A detailed syllabus would perhaps be undesirable and hampering, it might prevent us from being sufficiently guided by the powers of the class, or by one's new reading and thinking. A rough syllabus makes our teaching far more orderly and systematic. It is a convenient guide for our own reading and thinking, and it frequently prevents us from giving a wrong amount of time to a particular part of our subject.

5. The ideal lesson must be preceded and followed by private work. I would lay great stress on this. Our pupils must have the opportunity of private and solitary work, and I do not mean mere memory or mechanical work. Occasionally the following kind of lesson is given. The children can do it without having done any work themselves. A kind of lecture is given to them, a mass of condensed and simplified knowledge is ladled out in paragraphs. The children write notes during the lesson, and occasionally there is a question or two. After the lesson the pupils sometimes write out the notes fully, and anyhow learn them. This may be, and perhaps is, the most expeditious way of preparing for an examination not of a very severe nature, but it is a poor preparation for the days when we hope our pupils will work for themselves without help from teacher or lecturer. Are we doing all we can to prove to our pupils that it is ever so much pleasanter and better to get knowledge for ourselves rather than to have it given to us? Are we not rather turning them into intellectual paupers, dependent on others for knowledge? Are we not producing a class of students who find it difficult to study anything unless they have the stimulation of a course of lectures? I never heard of any one getting a thorough knowledge of any subject merely by lectures. It is true an able teacher can give us help of a very special kind, but this value is great because he can do for us what books fail to do, and what we cannot do for ourselves. Let us teach our pupils from the first: "Always try yourself to gain knowledge before you go to others for help;" "Never go to a class or lecture without doing all *you* can before you go; you will then be in a fit state to learn, you will not be pauperized but stimulated by the help you obtain, and you will be inevitably spurred on to work for yourself afterwards." It is a good rule always to give a class some work to do before a lesson or lecture, either to get material which otherwise would have to be given them, or to revise old knowledge which will be required, or to lead their thoughts to the central idea of the lesson. A great deal of variety is, of course, possible in this preparatory work; *e. g.*, an historical novel is often a good introduction to a history course. It is desirable that the pupils should regard a lesson as a jewel which requires a setting of private work. As we all know, it is private work that really counts most in intellectual progress, knowledge and mental power. The real success of a lesson can often be largely tested by the private work of the pupil after it. The older the pupil, obviously the greater freedom and choice is possible in the private work, and greater demand can be made for original thought. We hear many complaints now-a-days about home-work, and it is sometimes suggested that we should have no home-work. If it should be given up, obviously part of the time in school will have to be spent in private work, and we must have longer hours. We cannot educate pupils without this factor of private work.

6. The ideal lesson must be connected with the *life* of the child. The children in our day schools are with us for a few hours only each day. Outside that time, they have other interests, other needs, other conditions. I think the only perfect life is a kind of double life—one strong and absorbing interest, and outside that, many other interests. For instance, a business man who is only a business man is a miserable sort of a man. The medical man who is only a doctor, and nothing else, *may*

be a good doctor, but he is not a satisfactory man. The woman who is the head of a household, and has no interest outside her home, is a poor kind of human being. The school-girl who is only a school-girl, is not in a satisfactory state. I take it that the school of the child takes the same place in its life as the business of the business man. It is its definite work, which must be done; it is, and ought to be, the central interest of its young life. But we teachers must do all we can to enable children to lead double lives, to have many interests outside school. One sure way of effecting this is to lead this double life ourselves. Our work is, and ought to be, the central interest of our life, and on it must be expended much thinking and much energy; but we must have many keen interests outside. Again, we must be careful that we do not give the children so much home-work that they have no time and no energy to be interested in other things. We must, also, in every possible way connect the school-life of the child with its life out of school. It has been suggested that we teachers ought to absorb all, or very nearly all, the interest of the children during term time, and then parents may have their interest during the holidays for home interests. Nothing can be a worse preparation for the future life of a child, when we hope he will have, at the same time, one absorbing interest, his business or profession, and the many interests of home, society, private studies, citizen duties, etc., etc. The able teacher will discover innumerable links between the school-life and the out-of-school life of the child. There are two chief reasons why this connection should take place: (1) We can use the child's life out of school to throw light on its school work. Literature is, perhaps, the best subject to take to illustrate this point. An intelligent schoolboy has had to learn a great deal about human nature before he has a single literature lesson. He has had to study the human beings with whom he lives; his experiences have been many and varied, and if we know much of child-nature, and have sympathy and tact, we can use his experience frequently to throw light on some of the thoughts to be found in literature. I sometimes hear lessons given which seem to assume that the children have never had a single experience outside of the class-room, or, indeed, before the lesson began. (2) If we connect the ideal lesson with the life of the child, we make it easier for the child to use its school knowledge and school power out of school. We do not want the child to lead two lives, one in school and one at home, but rather one life with two sides, and those sides closely linked. It is prepared in school for life, and the sooner and more completely it uses what it gains in school in its outer life, the more rapidly and the more satisfactorily will its education progress.

(Concluded in next number.)

MORAL TRAINING IN SCHOOLS.

DR. E. E. WHITE, CINCINNATI, OHIO.

ETHICAL training is the central function of education, and character the supreme test of the school. It would seem to follow from this fact that moral training should not be crowded into a corner and given the odds and ends only of school time. The one essential condition of vital ethical training is character in the teacher,—the one element that surely works for righteousness in a school is righteousness in the teacher's life. It is thus seen that in ethical training character stands before culture or learning. What is this but a recognition of the great fact that the most uplifting force that has yet touched the human race is the inspiring life of the Great Teacher. The supreme ethical need of the school is an inspiring life back of lessons; a soul-inspired manhood back of words.

We have at last learned that it is not words on the lips, but truth dwelling regally in the life that touches children's hearts with transforming power. The unwritten law of the school is "No man or woman shall enter here as a teacher whose character and life are not fit models for the young to copy."

The specific leading purpose of moral training is the training of the will,—the training of the will to act habitually from high and worthy motives. The practical outcome of moral training is right conduct and right conduct is right motive carried out by an act of will into a deed. It is

thus seen that will training is, in its essential nature, the effective use of right motives, and here we touch the ethical weakness of thousands of schools. They seek to secure school results by an appeal to motives that are low and selfish; they thrust artificial incentive between the pupils and duty, and thus rob them of the joy and help of virtuous action. The two enemies of intellectual and ethical training in the schools are respectively mechanism and artificialism.

I do not believe that it would be possible for an angel from heaven to develop manly, true, and self-centred character in pupils by the use of the artificial incentives that have so long been used in many English and American schools,—incentives that increasingly bring the will under bondage to the low and selfish. Think of urging a band of pilgrims on the way to Paradise, every step of the way attended with its own satisfying reward, by a swarm of hornets in the rear for the laggards, and alluring imps in advance waving prizes, class honors, honor seats, etc., and at stated intervals promotion tickets bearing the image of those gods of the modern school, 90 per cent. to 100 per cent. If his Satanic majesty had taken the job of alluring these pilgrims to that other place, I could understand, in part, the philosophy of his tactics less!

The time has come for a radical and thorough discussion of the whole question of motive as a determining element of ethical training.

Another important factor in ethical training is effective moral instruction, and what is now specially needed is the basing of such instruction on sound pedagogical principles. The ends to be reached by such moral instruction are the awakening of right feelings, the quickening of the conscience, and the development of clear moral ideas—the training of the moral judgment—and in the elementary school the material for such instruction must be concrete examples—not didactic lectures, not the science of ethics—and fortunately, this material is abundant in literature and in life. Here, as in intellectual training, we must begin with sense and end with reason—must begin with experience and end with principle and law.

Ethical training must give the pupil increasingly a clear perception of the right in conduct, and it must increase the imperativeness of the sense of duty, and to these ends, ethical motives should be enforced by religious sanctions, and here, again, example will be found more effective than creed or dogma. The great law of right conduct is love to God and man. In the final exodus of the race the Christian teacher will be our Moses.—*Journal of Education.*

SUGGESTIONS.

Do not always present the same subject in the same way, nor have the same plan for removing difficulties. Avoid ruts.

Be more anxious to prevent wrong-doing than to punish the offender.

Protect your health and that of the pupils.

Carefully select the essential truths of a subject, and, in teaching them, hasten slowly.

Make clear to pupils what they are to learn, then, teach them how to learn it.

Let every lesson have a point to it.

In order to have a pupil understand you, when teaching, put yourself in his place.—*Ec.*

GENIUS is an infinite capacity for work growing out of an infinite power of love. Take courage each and all who have any feeling. Powers spring from love. When you find that you have something dear to you, which is dull and dry to others, but which you clasp close to yourself with joy and yearning; when you have a love of some seeming insignificant thing of creation and mind, and feel that life may be worth devoting to it, know there is within you the beginning of power. An acorn is planted in your breast. When your heart as a child has any vivid feeling of joy or sorrow, longing or disappointment, do not crush it; master it, but do not crush it; master it, study it, endeavour to quicken it into more life, always mastering the emotions produced by keen and impressive perceptions; cherish the impressible and keen capacity of feeling; it is an acorn planted in you; it is the beginning of power.—*Thring.*

Teachers' Miscellany.

AN HOUR'S JOURNEY.

HAVE you ever thought of the distance you travel while you are out on an hour's stroll? Possibly you walk three miles within the hour, but that does not by any means represent the distance you travel. The earth turns upon its axis every twenty-four hours. In round figures we will call the earth's circumference 24,000 miles, so you must have traveled during your hour's stroll 1,000 miles in the axial turn of the earth.

But that is not all. The earth makes a journey around the sun every year, and a long but rapid trip it is. The distance of our planet from the sun we will put at 90,000,000 miles, the radius of the earth's orbit—half the diameter of the circle, as we will call it. The whole diameter is therefore 184,000,000 miles, and the circumference being the diameter multiplied by 3.1416, is about 578,000,000.

This amazing distance the earth travels in its yearly journey, and dividing it by 365 we find the daily speed about 1,586,000. Then, to get the distance you rode around the sun during your hour's walk, divide again by 24, and the result is about 66,000 miles. But even this is not the end of your hour's trip. The sun, with his entire brood of planets, is moving in space at the rate of 160,000,000 miles in a year. That is a little more than 438,000 miles a day, or 18,250 miles an hour.

So, adding your three miles of leg travel to the hour's axial movement of the earth, this to the earth's orbital journey and that again to the earth's excursion with the sun, you find you have traveled 85,253 miles.—*School Review.*

GREAT SHIPS.

THE fastest and biggest ships in the world present a wonderful study. At no time has such general interest been directed to the subject of marine superlatives in this country as in the past year. The greatest ocean highway in existence is that across the Atlantic, between Great Britain and the city of New York, and the records in which the world are most interested are made along that highway.

The fastest passage between New York and Queenstown, both eastward and westward, was made in the latter part of 1891, by the steamship *Teutonic* of the White Star line. The fastest passage from Queenstown to New York was made in August, being five days, sixteen hours and thirty-one minutes. The fastest time from New York to Queenstown was made in October, being five days, twenty-one hours and three minutes.

The first steam vessel to cross the Atlantic ocean was the *Savannah*, which crossed from Savannah, Ga., to Liverpool, in 1819. The first vessels to reach New York from Great Britain were the *Sirius* and the *Great Western*. The *Sirius*, a ship of 700 tons, sailed from Cork, April 4, 1838, and the *Great Western*, 1,340 tons, left Bristol three days later. They arrived on April 23, the *Sirius* in the morning and the *Great Western* in the afternoon.

The greatest steam vessel ever built, in size, was the *Great Eastern*, which was 692 feet in length, and 83 feet in breadth. The *Teutonic* is 582 feet in length.

The largest turret ship in the world, perhaps the largest battle ship in existence, is the British battle ship *Hood*, which was launched at Chatham, on July 30, 1891. The *Hood* has a displacement of 14,150 tons. The largest American war ship is the harbor defence vessel *Miantonomoh*. The finest war ship in the French navy is the *Brennus*, which was launched early in October, 1891. Her displacement is 11,000 tons.—*Goldthwaite's Geography Magazine.*

SATISFACTORY results in language cannot be secured by the formal teaching of language as a separate branch of study. It is only when the teacher regards every recitation, every reading lesson and its interpretation, each step of instruction in arithmetic, geography and history, a language lesson, that the ultimate purpose of language teaching may be accomplished with certainty.—*I. Freeman Hall.*

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* TO * TEACHERS!****\$100 to \$150 in PRIZES.**

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VI.—TEMPERANCE. Form II. or III.

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 4. All competitors must be teachers actually engaged at the time of competing as principal or teacher in some Public School in the Dominion of Canada. (The term "Public School" as here used does not include Grammar or High Schools.)
 5. Any such teacher may compete in any number of subjects, but in no case shall more than two prizes be awarded to one competitor.
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J. E. WELLS, M.A.

Editor.

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LIBERAL EDUCATION FOR ALL.

AN American exchange urges the teacher to use his influence to induce as many of the pupils as possible to take a collegiate course. This is well. The teacher may by such use of his influence often render an inestimable service, not only to the individual youth, but to the community or nation, possibly to the world. Many a man who owed his first thoughts and impulses college-ward to the actual suggestions or the unspoken influence of some teacher of his early days, has lived to turn his education to excellent account in the service of humanity.

But great as is the benefit which may be wrought by the judicious use of the teacher's influence in the way indicated, there is, it seems to us, a still more excellent way in which it may be made a blessing to society. We rejoice in the multiplication of colleges and universities, and are not greatly troubled with the fear that causes so much anxiety in some quarters, lest some of these may become "one-horse affairs," or fail to do the very highest and most

thorough kind of educational work. We should like to see every institution of the kind raised to the highest possible standard of efficiency, but we have no sympathy with the view or feeling which seems to be that of many, that if a college or university, so-called, cannot attain to the very first rank at a bound, it had better not exist at all. The more colleges, the more students, and it must be a very inferior institution, indeed, which any young man or woman of average ability can attend for three or four years without deriving great and lasting benefit, or without receiving influences and impulses which will change the whole life for the better. But at the very best the number of those who can give several years of their lives to a university course will continue to be but a small fraction of the whole number of those who are growing up to manhood and womanhood in the Public and High schools. The best possible service, in our estimation, which the enthusiastic teacher can render both to the scholars and to the world, is to inspire, as far as possible, every boy and girl with the true student spirit. In these days of cheap books, evening schools, university extensions and abounding educational opportunities and appliances of every kind, there is no reason why almost every boy and girl, who possesses moderate ability and has the advantage of the start which may be had in any good Public school, may not become a well-educated man or woman, even though he or she may never see the inside of a college or university. Nay, even at the risk of being accounted heretical, we will go farther. There is no good reason why any such young person may not attain, before emerging from the twenties, the full equivalent in almost every important respect of a full collegiate course. There is, we are persuaded, a great deal of loss of time and waste of energy in the best of our higher institutions of learning. All true culture is self-culture, but the kind of training that results from complete self-reliance is often more valuable for both disciplinary and practical purposes, than that which is gained through the instrumentality of schools and teachers. This is especially true of the will-power, which is the prime factor in all high achievement.

The results which we have in view may be best attained by setting every student at work and giving him an impulse along the line of reading and investigation which is most congenial to his peculiar tastes and abilities. The English language and literature are, as a matter of course, the media through which the effect is to be wrought. One supreme aim, we know nothing else a all comparable, should be to create in every

young mind a taste for good reading. This point gained, the rest is comparatively easy. There is scarcely a branch of learning or research which may not be followed up with success, and at the same time with delight, derived through the gratification of this taste. Who of us does not know of one or more young men who, by dint of self-improvement in the way indicated, has raised himself to a position in which, in point of brain-power, literary taste, and general information, he is the peer of nine out of ten of those who have passed regularly through college to the B.A. degree? What these have done thousands can do, if only once set on the right track. Is it not in this way that the era of universal education, which has long been the dream of poet and philanthropist, may be ushered in?

ONTARIO TEACHERS AND THE QUEEN'S ENGLISH

FOLLOWING appropriately the English Department, will be found a noteworthy article which appeared in *The Week* of the 2nd inst. We make room for it because it seems to us that every teacher ought to read it. In so saying we do not mean to signify that we are ready to accept the facts which Mr. Turnock adduces, as a fair exhibition of what an average sixty of Ontario's second-class, first-class, and college-trained teachers are able to accomplish in the way of preparing applications for a vacant position. We are unable to assign any special reason why the advertisement in question should have failed to draw forth applications from an average class of teachers of the grades indicated, but our acquaintance with the written productions of Ontario teachers of these grades suffices to make us sure that there must have been some reason. Our own observations would lead us to expect, under circumstances similar to those described, a considerable number, far too large a number, of documents marred by glaring faults of the various kinds described, but it would lead us also to expect confidently a large percentage—nearer fifty than ten—of applications unobjectionable in form and style, and a few bearing internal evidence of superior culture and ability.

Nevertheless, we commend Mr Turnock's well-written letter to the attention of our readers. It abounds with hints which even the most careful and precise may find useful. All will agree with us that no one should receive even a third-class license who is capable of such mistakes, solecisms, and violations of good taste as those described. The article will serve an excellent purpose if it directs attention to the impor-

ance of certain matters, which may possibly appear to some of our readers too trifling or conventional to be worthy of serious regard. Too many of our trustees are, unfortunately, in the least degree likely to be critical in regard to such matters, but those of them who possess literary culture will almost certainly refuse to look a second time at an application which bears on its face evidence that the writer either does not know how to express himself in correct form and style, or has too little respect for himself and those whom he is addressing to take the trouble to do so. This is, however, appealing to too sordid a motive. The fact is that the teacher should be, and the public have a right to expect him or her to be, a man or woman of at least so much education and culture that neatness and good taste, as well as correct forms of expression and a certain easy style in writing, have become habitual.

Turning for a moment to some of the particular faults specified, we find bad writing, *i.e.*, penmanship, among the first. The large, clumsy characters and the prim, copy-book hand are easily explained in the case of the public school teachers. They are the result, of course, of the necessity for using a large, legible hand in the teaching of this art. This does not account for the flourishes, which are an abomination, wherever found. From the prevalence of stiffness in the writing of teachers we suspect that they do not use the pen out of school half so much as they should. Nothing but much practice can give the characteristics for which Mr. Turnock was evidently looking. But, as we had occasion to say in last number, the pen is the most valuable implement in self-culture. Every young teacher should make it a matter of conscience to use the pen for a half-hour or hour every day, in putting on paper some of his or her own thoughts, fancies, or observations.

Spelling is the *bête noire* of the student of English. But, none the less, bad spelling is unpardonable in any one making pretensions to education, and above all in the teacher. The exercise just mentioned, if conscientiously followed up, will be found the very best means of correcting any weakness in this direction. But it must not be forgotten that there are fashions in spelling English and that these fashions are gradually but constantly changing. We note, for example, that our critic adduces *medalist* as an instance of misspelling which was evidently shocking to him. Yet so excellent an authority as the Concise Imperial Dictionary gives this as an alternative form, and certainly it would puzzle any one to

give a good reason—and reason is happily coming to have a little to do with modern modifications of English spelling—for doubling the *l* in that word. Seeing that the applicant was not necessarily wrong in this case, one is disposed to wonder whether other of the cases referred to but not specified may not belong to the same category. Certainly we shall not undertake to defend *Reginna*.

"Time is up," or rather space is exhausted. The subject is a fruitful and profitable one, and we may, perhaps, return to it and note some other points indicated, in a future number. Meanwhile it is but just to observe that the teachers concerned in this case, whatever their merits or defects, are the products of the past rather than the present schools. *The Week*, commenting in a subsequent number on Mr. Turnock's communication, says truly, and it might have put the fact still more strongly:

"Notwithstanding these facts, we are glad to believe that a marked improvement is taking place in the quality of teachers and teaching in Ontario. In one respect, at least, the standard of preparation and qualification has been very materially advanced within the last few years. The reading of English literature has been given a much more prominent place than hitherto. This is a change which cannot fail to have a most salutary effect, not only upon the students in training, but upon the teachers who have to oversee this reading. But there is room for still further improvement in this direction. The goal should be a state of things in which the pupil, from the day he enters the primary department until the very end of his school career, be that in high school or college, shall be brought into acquaintance with good literature so continuously and under such conditions in respect to its intelligent study, that he or she can hardly fail to become possessed of some genuine taste for it, even before the third-class-teacher stage is reached. Need we doubt that this is quite possible of attainment, under right conditions and influences?"

HAVE you a teacher friend who does not take the EDUCATIONAL JOURNAL? Kindly give us his or her address, that we may mail a sample copy. The model lesson on the Infinitive, in this number, is worth to the young teacher of Grammar, much more than the price of a year's subscription.

WE reprint in this number, the first part of an admirable article on, "The Ideal Lesson," by an American writer. It contains many good points and will repay careful reading.

School-Room Methods.

A PRACTICAL SPELLING LESSON.

LAY aside for a day the spelling-book, and try an exercise like the following :

Let the pupils take their slates and write their own names in full.

Write the teacher's surname.

Write the name of the county in which they live, the Province, their post-office address.

Tell how the Scotchmen came from.

Tell how old a boy is who was born in 1879.

Write the names of four winter amusements ; of four summer amusements.

Write how many days in this month.

Write what we plant to get potatoes.

Write a definition of druggist.

Write the names of six pieces of furniture.

Write the names of six kinds of tools.

Write the names of the seven days.

Write the name of the year, month and day of the month.

Write a verse of poetry and a verse of Scripture from memory.—*American Journal of Education.*

ONE WAY OF TEACHING GRAMMAR.

MISS IDA M. GARDNER.

Topic: Object of thought.

Definition: An object of thought is anything of which we may think.

Method: Think of the clock, the door, the window. Mention other things of which we may think. Write their names on the board. Mention some actions of which we may think ; as running, speaking, etc. Write their names on the board, think of love, hate, goodness, wisdom. What do we call the houses, lands, etc., belonging to a man.

Answer: His property.

We also call a man's goodness, justice, etc., his property or attributes. Mention some other attributes of a person. Write their names upon the board. Anything of which we may think is an object of thought.

Define. Preserve the lists you have written for the next topic.

Topic: Noun.

Definition: A noun is the name of an object of thought.

Method: Read what you have just written on the board. What are all these words?

Answer: The names of objects of thought.

The name of an object of thought is a noun. Define.

EXERCISE I.

Tell whether each of the following is a noun or an object of thought. Why?

The cat. The word "cat." The dog. The word "dog." The boy. The word "boy," etc.

The object of this exercise is to give the child a distinct idea of the difference between a noun and an object of thought. A noun is always a word. An object of thought is never a word, except when it is a word of which we are thinking. For example: Think of the word "John." Now what becomes the object of our thought?

Answer.—A word.

EXERCISE II.

Write ten sentences each containing at least two nouns.

Underline the nouns. Exchange slates and correct.

EXERCISE III.

Select the nouns in the following extract from the writings of Edward Everett:

"It was a mild, serene, midsummer's night ; the sky was without a cloud ; the winds were quiet ; the Pleiades, just above the horizon, shed their sweet influence in the east. At length the timid approach of twilight became more perceptible ; the intense blue of the sky began to soften ; the smaller stars, like little children, went first to rest. Hands of angels, hidden from mortal eyes, shifted the scenery of the heavens ; the glories of night dissolved into the glories of dawn."—*Sunrise.*

QUESTIONS ON EXERCISE III.

When is midsummer? What are the Pleiades? How many are there? Can you find them in the

heavens on a starry night? (If not, tell the children in what part of the heavens to look for them, and at what time.) Why should Tennyson, speaking of the Pleiades, say they

"Glitter like a swarm of fireflies
Tangled in a silver braid."

What is the horizon? What do we mean by twilight? Does it occur at night or in the morning? What does "perceptible" mean? Why does the author say the smaller stars went "to rest"? How many of the children go to rest before the older members of the family? Why should children retire early? The meaning of "mortal eyes?" "dissolved?" "dawn?" Is the author living? If not, where did he live? For what is he noted? How many would like to read something else by the same author? Look in your Readers, and perhaps you will find other selections from Everett's writings.

(This clue followed out may lead to a life-long interest in such writings.)

EXERCISE IV.

Select all the nouns in your reading-lesson for the day. Count them, and observe that a large part of the words on a page are nouns.

Topic: Pronoun.

Definition: A pronoun is a word used in place of a noun.

Method: First illustrate the need of such words.

Whose hat is this?

Ans.—John's

Whose hand is this?

Ans.—Yours.

Who teaches John?

Ans.—You do.

Then whose teacher am I?

Ans.—John's teacher.

Whose head is this?

Ans.—John's head.

What has John's teacher done with John's hat?

Ans.—She has put it on John's head.

I will write on the board what John's teacher has done. Thus: John's teacher took John's hat in John's teacher's hand and put John's hat on John's head.

Would you tell me what I have done, in the same way? No? Then you may cross out any word you would change, and write another in its place. Now read.

Answer.—John's teacher took John's hat in her hand, and put it on his head.

What kind of words are all these crossed out?

Answer.—Nouns.

Then the new words are used in place of what words?

Answer.—A word used in place of a noun is a pronoun. Define.

EXERCISE I.

Select the pronouns in the following sentences:—

1. I was once a barefoot boy.

2. Be thou a hero.

3. These are my jewels.

4. How dismal you look!

5. Every sin brings its punishment with it.

6. Leaves have their time to fall.

7. I am afraid to do a mean thing.

8. Our influence has no nights and keeps no Sabbath.

9. Nothing is impossible to him who wills.

10. Blessed is the man who has found his work.

11. If you bring a smiling visage to the glass, you meet a smile.

12. We do not seek God; God seeks us.

13. He giveth His beloved sleep.

14. Drive thy business; let not thy business drive thee.

15. What no one with me shares seems scarce my own.

16. Earth, with her thousand voices, praises God.

17. They ne'er pardon who have done the wrong.

18. For his gayer hours she has a voice of gladness.

EXERCISE II.

Select pronouns from the reading-lesson.

EXERCISE III.

Count all the nouns and all the pronouns on one page of your Readers. Count the remaining words.—*New England Journal of Education.*

SCIENCE IN PRIMARY GRADES.

BY ABBIE L. SHEPARD.

NOTE.—The teacher will find some good book on science a great help in giving these lessons. Read from it, then explain and ask questions. The children should write their answers upon the board. They can copy these lessons on paper and so have a little science book of their own.

THE EARTH.

JACK'S ball lay on the ground. A fly was on the ball. Here, Jack, called Uncle Harry, I want you to see yourself. "What do you mean?" laughed Jack. Do you see the fly on the ball? "Yes, sir." Well, tell me how much of the ball the fly can see? "Just a little part of it, sir?"

If the fly should start and walk around that ball in a straight line, where would he be when he came back again? "He would stop just where he is now, I think."

You are right. Now, I will tell you how the fly is like yourself. You live on a ball, which is much larger than this. It is so large that you can see only a little, a very little part of it at one time. If you were to start from here and travel in a straight line for many, many days and nights, you would come back to this place again. Do you know the name of this large ball on which we live? "It is called the earth."

Can you tell me anything more about this ball? "It is very beautiful in many places. The grass, flowers, trees and water make it so. Many people live on the earth. They are not all alike. We read the other day of the Seven Little Sisters. One of the sisters was brown, one was white, one was yellow and another black."

You remember nicely, Jack, tell me, if you know, whether all parts of the earth are alike. "O, no indeed, the part where the Esquimaux live is very cold. It is so cold that scarcely anything grows there. The sun does not shine there for nearly six months, and when it does shine it is daylight for six months. Where we are, there is winter, spring, summer and fall; while where the brown baby lives it is summer all the time, and so warm that she does not wear anything but a necklace."

Now, Jack, it is my turn to talk. Let me take your ball, please. I am going to put a pin in the place where the fly was. We will play that this ball is our earth and that the pin is Jack. You may light this piece of candle and hold it so. The candle is the sun. I am going to turn the ball slowly. See the sun is shining on you now, and you are saying it is daylight.

Now tell me if the sun is shining upon you? "No, sir, you have turned the ball around so that the pin is away from the light." Remember the pin stands for you, and the light for the sun. Can you see the sun now? "No, sir, it is quite dark. Must I go to bed?" laughed Jack.

And now you see as I keep turning the ball that you come into the light again. This is what the earth really does, Jack. It keeps turning around very slowly all the time,—so slowly that we do not know it. "And is that what makes the day and the night, Uncle Harry? I thought the sun was always moving."

No, my boy, the old sun does not move around us but we move around the sun. This makes our winter and summer, our spring and fall. When you are older you will learn more about it.—*Ex.*

TALKS WITH TEACHERS

SHALL teachers sit while teaching? There is some difference of opinions about this. Some teachers make it a boast that they never sit down in school hours, and some trustees evince decided objection to any want of activity on the part of their teachers. It is by no means certain that the nervous, ever bustling teacher does the most effective work; on the contrary there is danger of a want of concentration of thought and steady attention on the part of the pupils. The teacher who can command the attention and directs the energies of the pupils from the table has infinite advantage over one who finds it necessary to continually hover around them. A judicious admixture of standing and sitting, according to the nature of the work being done, is perhaps the best plan, but the low voiced, direct teacher, in her seat, is preferable to the loud voiced nervous teacher, towering over her pupils.—*Educational Review.*

✻ Hints and Helps. ✻

HINTS FOR TEACHING GEOGRAPHY.

In the study of some of the rivers, history will prove an important help. It is not enough to know where a river rises and that it flows in a southerly and then southeasterly direction, continues in a southwesterly course and so on until it empties into such and such a body of water. In studying about the Mississippi river, for instance, much would be gained by the scholar's learning of the fearful suffering caused by the river's overflowing its banks. Explain the cause of the delta and the meaning of the word. Let the class learn something of the battles that have taken place on or near the banks of the river. If the important cities along the river have already been studied, review them and fix them in the pupil's mind in connection with the river. We have, in America, a great field for this work. Very many of our rivers have interesting facts connected with them, as the coming of the early settlers, or the founding of the towns, or the battles fought in their vicinity, or other interesting historical facts.—*Wisconsin Journal of Education.*

BUSY WORK IN NUMBER.

THIS from the Primary School for the primary teacher :

1. How many pupils in the school room? If there were ten more how many would there be? If there were eight less?
2. How many panes of glass in one window? How many in all the windows?
3. Write the name of the month. How many says in the month? How many in next month?
4. How many hours in a day? In two days?
5. Draw five lines across the slate, and draw five more lines across them. How many blocks on your date?
6. How many children in the row you sit in? How many feet have you all? How many fingers? How many noses?
7. There are seven bones in each of your fingers, and two in your thumb. How many bones have you in one hand? In both hands?
8. Draw a clock on your slates. How many numbers on its face? In how many ways can you write the numbers? Make the hands say four o'clock. Make them say noon. Midnight. Six o'clock.
9. How many meals do you eat in one day? How many in three days? How many in a week?
10. How many Sundays in this month? How many days, not counting the Sundays? How many school days?
11. How old are you? How old will you be in 1899? In 1893?
12. How many eggs in a dozen? In three dozen? What is the difference between two dozen and a half-dozen?—*The Southern Educator.*

THAT MISCHIEVOUS BOY.

BY WM. H. HUSE.

THERE he sits, one or two seats from the front, just far enough to get out of sight behind the boy in front of him. He would have been given a front seat, but there were not enough to go around, and his bright face didn't look so suggestive of evil as did those placed in front. After the term began you found that he was the plague of your predecessor's life, and he bids fair to bring your tresses in sorrow to — the end of the term. Don't be too stern and overbearing with him at once, and do not try to make an angel of him in ten weeks. The laws of evolution work more slowly than that.

Don't get discouraged. Get acquainted with him at once. Show him that you enjoy anything worth laughing at. Make his lesson as attractive as you can. Rouse his ambition. When he works commend him for his results. Visit him in his home. Take along some games that boys enjoy, and play with him. If he has a collection of birds' eggs, bugs, stamps, or Indian relics, look them over attentively and tell him all you know about them. He will enjoy it. If you know nothing about them get him to tell you what he knows. He will enjoy that more. Do everything you can to inter-

est him in yourself and any subject in which boys take delight, and you have won him. The chances are that at the end of the term he will be near the head of his class, and one of the workers, and, wital, a little mischievous.—*The American Teacher.*

SOME QUESTIONS FOR EACH TEACHER TO THINK ABOUT.

BY E. P. BROWNSON.

1. Is your school-yard as neat and well kept as it can be?
2. What have you done to make your school-room neat and attractive?
3. Have you a clock in your school-room placed where all the pupils can see it?
4. Does this clock keep accurate time?
5. Are your pupils taught that their school-room clock is to be relied upon, neither too fast nor too slow?
6. Have you a programme written neatly and plainly, where each child can read it?
7. Do you try to hear your classes according to the programme, and do your pupils use it as a guide when learning their lessons?
8. Have you a waste-paper basket?
9. Do you require each pupil to keep all bits of paper picked up around his desk?
10. What method do you use to encourage pupils to keep their desks in perfect order?
11. Do you keep your own desk neat and in order?
12. Are there door mats in front of each door and do your pupils use them?
13. What is the condition of your blackboards? Are they well cleaned every day, and nothing but regular work allowed upon them?
14. What have you done to encourage your pupils to have clean hands, clean faces, well-brushed teeth and smooth hair?
15. Are your pupils supplied with a basin, a clean towel, soap, a comb and a mirror?
16. Have you a low-toned call-bell for your classes?
17. What are your pupils reading?
18. What are you doing to help to cultivate in them a love for good books?—*Teachers' World.*

GOT.

It is amusing to see how some writers will jump at conclusions. The following quotation is clipped from a newspaper in which the writer illustrates the danger into which so many fall who comprehend a whole truth only partly. The writer says : "That word of three letters, 'got,' has been most appropriately called the 'conventional drudge' of the English language, and in many instances its services could readily be dispensed with. 'Have you got' is a most inelegant and inharmonious form of expression. 'Have you' answers every purpose equally as well."

There is truth in the quotation, but not the whole truth. Got is a very greatly abused and a much misused word, but it cannot always be omitted.

The statement, "have you," may take its place only where possession is meant to be implied. Thus the correct form is "Have you a knife?" That is, do you possess one? Have you got a knife? meaning possession, is of course incorrect.

Where "get" is used in the present tense have got or have gotten may be used in the present perfect with strict propriety. Thus, have you got (or gotten) your lesson; Have you got (or gotten) the doll for me; Have you got (or gotten) the book you expected to buy?

These and many similar sentences serve to show the use of got in the sense of acquire. Gotten in the sentences given may to many ears seem preferable on the ground of euphony, but it has no advantage over got in correctness. The proper place then where "have got" may be used, is in the sense of have acquired. Where possession alone is to be implied, the word got should be omitted, as in the sentences, Have you a dollar? Have you an umbrella? Have you a home?

The following sentences from reputable authors illustrate the proper use of the word :

"Didst thou never hear
That things ill got had ever bad success?"
Shakespeare—Henry VI.

"Isocrates was in the right to insinuate, in his elegant Greek expression, that what is got over the devil's back is spent, etc."—*LeSage.*

Possibly we could do without the use of got in the English language, but a more desirable thing is to know how to use the word correctly.—*A. N. R. in Educational News.*

RECITATIONS.

THE most important consideration at the beginning of a recitation is to get the good will and attention of the class.

Require the pupils to go to and from the recitation seat quietly.

Announce questions first and call on the pupils second.

Do not have a stereotyped form of asking questions or hearing the class, but present the work in the greatest possible variety of forms.

Devote a portion of the allotted time for each recitation to reviewing the last lesson.

Require pupils to stand while reciting.

Require pupils to repeat the question in the answer.

Correct disorderly conduct by dismissing from the class (for the one recitation).

Do not tolerate whispering or any other communication in class.

Require answers in clear grammatical language and allow criticism and friendly discussion. In your explanations use only the simplest language and be sure that you are understood before leaving the subject. Allow pupils to ask questions and give opinions.—*Normal Instructor.*

For Friday Afternoon.

"LONG AGO."

GRANDMA told me all about it ;
Told me so I couldn't doubt it,
How she danced—my grandma danced—
Long ago.

How she held her pretty head,
How her dainty skirt she spread,
How she turned her little toes
Smiling little human rose !
Long ago.

Grandma's hair was bright and sunny,
Dimpled cheek, too—ah, how funny !
Really, quite a pretty girl,
Long ago.

Bless her ! Why, she wears a cap,
Grandma does, and takes a nap
Every single day ; and yet
Grandma danced a minuet,
Long ago.

How she sits there rocking, rocking,
How ways knitting grandpa's stocking
(Every girl was taught to knit
Long ago) ;

Yet her figure is so neat,
I can almost see her now
Bending to her partner's bow
Long ago.

Grandma says our modern jumping,
Hopping, rushing, whirling, bumping,
Would have shocked the gentlefolk
Long ago.

No—they moved with stately grace,
Everything in proper place ;
Gliding slowly forward, then
Slowly curtesying back again,
Long ago.

Modern ways are quite alarming,
Grandma says ; but boys were charming—
Girls and boys, I mean, of course—
Long ago.

Bravely modest, grandly shy—
What if all of us should try
Just to feel like those who met
In their graceful minuet,
Long ago ?

SOME, by admiring other men's virtues, become enemies to their own vices.—*Bias, B.C. 600.*

* English. *

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A LESSON IN GRAMMAR.

THE INFINITIVE.

(i.) THE Present Infinitive Active. (ii.) THE Perfect Infinitive Active. (iii.) THE Present Infinitive Passive. (iv.) THE Perfect Infinitive Passive.

1. The teacher (T.) has placed on the blackboard the following sentences, underlining the italicized words:

- a. (1.) I *study* the lesson.
- (2.) Thou *studiest* the lesson.
- (3.) He *studies* the lesson.
- (4.) We *study* the lesson.

He asks the pupils to compare the forms of the verb with those in the following arrangement:

- (a) I *studies* the lesson.
- (b) Thou *study* the lesson.
- (c) He *study* the lesson.
- (d) We *studiest* the lesson.

He then calls upon some one or other of the pupils (P.) to pronounce upon the correctness of (1) or (a); (2) or (b); (3) or (c); (4) or (d), etc. The class finally decide that people do not say "I studies," "we studies." T. Then we cannot use the forms "study," "studies," "studiest," etc., as we like with "I," "thou," etc. P. No. If we make a statement beginning "I," we must say, "I study the lesson." If it begins "he," we say, "He studies," etc. T. Then if I change the pronoun, the verb must change also? P. Certainly. The form of the verb is decided by the pronoun we use. T. So that we might say the form of the verb is limited, might we? P. Yes. T. In what way is it limited? P. By the subject of the sentence, whether it is first person (I), second person (thou), third person (he). T. Don't you see another limitation? [P. hesitates. T. writes on the board:]

The man studies.
The men study.

P. It changes, if the subject is one or more than one. T. That is, it changes for— P. For singular and plural. T. Or, in short for— P. For number. T. Then in what ways is the verb in these sentences limited. P. It is limited by the person and number of the subject.

2. T. The Latins had a word *finis*, that meant a limit or boundary. Do you know of the word in English? P. I have seen "finis" at the end of a book. T. Very good. What did it mean there? P. It indicated that the book was ended. It marked the limit of the book. T. Do you know the word in any derivatives? P. In "infinite." T. What does "infinite" mean in "infinite space?" P. A space without end or limit—unbounded space. T. What would you call a space that had limits? P. A finite space. T. "Finite" means then? P. Having limits. T. "Infinite?" P. Not having limits—unlimited.

3. T. Now to go back to our verb. You said that the verbs in the sentences before us are limited as to their form by the number and person of the subject. Could you call them therefore, "infinite" verbs? P. No, they are finite verbs, for they are bound to have certain forms. T. Very good. I wish you to remember that in grammar we use this term FINITE VERB [T. writes the word in large letters on the blackboard], exactly as you have used it.

4. Prove now to the class that the verbs in the following sentences are finite:

- (1) I am the man.
- (2) Thou art the man.
- (3) He is the man.
- (4) We are the men.

[When this is done, T. continues.] Please tell what a finite verb is. P. A finite verb is a verb limited as to its form, by the person and number of the subject.

5. [T. turns to the following sentences which he has written in another column:]

- (1) I am to study the lesson.
- (2) Thou art to study the lesson.
- (3) He is to study the lesson.

(4) We are to study the lesson.
T. What do you notice about the form of "study," in these sentences. P. It always has the form "study." T. Show that it does not change with the person of the subject.

P. We say I am {
Thou art { to study.

T. Is it affected by the number of the subject? P.

No, for we say I am {
We are { to study.

T. Is "study" in these sentences limited or unlimited? P. It is unlimited. T. What do you say about "am," "art," etc.? P. They are limited—finite—verbs.

6. T. Pick out of the following underlined words those that are finite and those that are unlimited. [T. writes on the board, underlining the italicized words:]

- (1) John *walks* to town.
- (2) He *wishes* to walk to town.
- (3) He *goes* away.
- (4) I *will* not go.
- (5) John *cannot* go.
- (6) I *wish* him to go.
- (7) *To read* is to learn.
- (8) *To read* and *to study* are to learn.
- (9) He *lives* to learn.
- (10) They *learn* to live.

7. T. We spoke of the verb when limited as—? P. A finite verb. T. And the opposite of "finite," is—? P. "infinite." T. What might we call the unlimited form then? P. The Infinite Verb. T. Quite true. But in grammar we say, not the infinite verb, but the Infinitive Verb, or for short, *The Infinitive*. [T. writes the word in large letters on the blackboard.] T. What is the Infinitive? P. The verb not limited by person or number.

8. T. Are you sure the Infinitive is a verb? How did we define the verb in our earlier lessons? P. A verb is a word that asserts. P. Then when we say

"He tries to learn,"

do we assert that he learns? P. We assert that he tries, but we do not say he learns. T. Then why do you call "learn" a verb? P. [after long hesitation and several ineffectual attempts to answer] I don't think it is a verb. It looks like a noun—we could say, "He tries learning." T. Well you can tell me more of that by-and-by. Don't you see some connection with the true verb? P. It is the form we start out from—from learn—we get the finite forms—learns, learnest. T. Very good—for the present. Do you see any other relationship? [writes].

John learns.
John tries to learn.

P. They both mean the same, but "to learn" merely expresses the action, and "learns" expresses and asserts it of John. T. Very good. Then if we speak of the Infinitive of the verb, we mean—? P. The simplest form of the verb, not limited by the person and number of the subject, and expressing the bare verbal idea.

9. T. You said a moment ago that "to learn" looked like a noun because we could say

He tries to learn,
or, He tries learning.

Do you still hold to that. P. Yes. He tries something, and the name of that something must be a noun. T. That is true logically. But isn't there a difference in the use of the infinitive? Can we say—My learn? His to learn? as we say—my learning, his learning, or their books? P. No, we cannot use the infinitive as we use ordinary nouns. Still it has the force of a noun. T. Very good. Now, sum up the characteristics of the infinitive. P. (i) It is a limited word, not changing because of the person or number of the subject. (ii) It is the simplest form of the verb, expressing the verbal idea. (iii) It does not assert. (iv) It is a noun in force but not in construction.

10. T. We found the Infinitive does not change for person or number. Let us see if it changes from any other cause. Please compare.

To learn that is easy.
To have learn that is praiseworthy.

Is "to have learnt" an infinitive? [P. hesitates. T. places on the board:]

I ought to learn. I ought to have learnt.
Thou oughtst to learn. Thou oughtst to have learnt.

He ought to learn. He ought to have learnt.

P. "To have learnt" is an infinitive, for it has exactly the function of "to learn." T. Very good. When we dealt with the tenses of the verb, what difference did we see between

I learn
and, I have learnt?

P. "I learnt" is the present tense and "I have learnt" is the perfect tense of "learnt." T. And why "perfect"? P. Because the learning is over and completed in "I have learnt." Then in "to learn that" and "to have learnt that," is there a similar difference? P. Yes. T. How shall we distinguish these infinitives by name? P. Call "to learn" the PRESENT INFINITIVE, and "to have learnt" the PERFECT INFINITIVE. [T. writes these names in large letters on the board.] T. Then the Infinitive may change. P. Yes, for tense.

11. T. What is "have" in "to have learnt"? [P. hesitates. T. writes:]

I have to go.	I am to have it.
Thou hast to go.	Thou art to have it.
He has to go.	He is to have it.

P. It is the present infinitive of the verb "have."

T. What is "learnt"? P. [remembers the analysis of "I learn" and "I have learnt" in earlier lessons]. It is the past participle. T. Then the perfect infinitive of learn is made up by—? P. By adding the past participle to the present infinitive of "have." T. Does that hold with other verbs? [Tries "sing," "write," "go," etc.]. P. Yes, it holds with all verbs.

12. T. Arrange the verbs of the following sentences in three columns, headed

Finite Verbs.	Infinitives.	Present Infinitives.	Perfect Infinitives.
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John wanted much to go to read, but as Mary had gone to bed, there was no one to help him. He was not discouraged however, but took his book and sat down in a warm corner by the fire. It was hard to see the words in the flickering light. Little by little, the warmth of the fire stole over him and made him feel very sleepy. He could not have read five pages before the book slipped from his hands and fell to the ground. A few minutes after, his mother came into the kitchen to find him, and there he was, sound asleep, and the book that he wanted to read at his feet. "Johnnie," said his mother, "you must wake up and go to bed. You ought to have gone when Mary did. You will be late for school to-morrow, if you don't go to bed in good time."

13. T. I want you now to compare:

{ I like to see.
{ I like to be seen.
{ I cannot see.
{ I cannot be seen.

May we call "(to) be seen" an infinitive? P. Yes, for it has the same construction as "see," and "to have learnt" and "learn." T. Quite right. It is an infinitive. But what difference is there between "to see" and "to be seen." [P. Hesitates.] T. Is it the same as in "to see" and "to have seen"? P. No. [T. writes on the board.]

I see John	I saw John
I am seen by John	I was seen by John.]

P. [remembering a lesson on the passive voice.] It is the difference between the active and the passive voice. T. Then "to learn" may be changed for the sake of voice. P. Yes, "to see" is the active voice and "to be seen" is passive voice. T. Then we have one Infinitive—? P. Active and another infinitive passive. [T. writes in large letters. ACTIVE INFINITIVE and PASSIVE INFINITIVE.]

14. T. Distinguish the active from the passive infinitives in the following:

- (1) I have to do that.
- (2) That must be done.
- (3) He cannot have seen us.
- (4) He cannot see us.
- (5) He cannot be seen.
- (6) John cannot have spoken
- (7) John cannot be spoken to.
- (8) They will not see us, for they wish to see you, etc.

15. How is the Passive Infinitive made up in "to see," and "to be seen?" P. It is made up of the simple infinitive "be" and the past participle. Does that hold of all passive infinitives [*tries "to strike," "to sing," etc.*] P. Yes.

16. T. Now I have one more comparison for you to make. Look at these sentences:

- { John ought to be seen.
- { John ought to have been seen.
- { They cannot be seen.
- { They cannot have been seen.

Is "(to) have been seen" an infinitive? P. It has the same construction as "to be seen," which we call an infinitive. T. You are right. It is an infinitive. T. Is it an active or passive infinitive. P. It is passive. T. What difference in meaning is there between "to be seen" and "to have been seen." P. The latter denotes the completed action. T. And therefore should be called—? P. The Perfect Infinitive. T. As distinct from—? P. The Present Infinitive. T. Then we have what passive infinitives? [*Writes on the board as P. answers.*] P. (i.) THE PRESENT INFINITIVE PASSIVE, and (ii.) THE PERFECT INFINITIVE PASSIVE. T. In the Active Voice we had—? P. The Present Infinitive Active and the Perfect Infinitive Active. T. So that making a table, and using the verb "see" as an example, we have—? [*Writes on the board.*] P.

THE PRESENT INFINITIVE ACTIVE: (to) see.

THE PERFECT INFINITIVE ACTIVE: (to) have seen.

THE PRESENT INFINITIVE PASSIVE: (to) be seen.

THE PERFECT INFINITIVE PASSIVE: (to) have been seen.

17. Now pick out the infinitives in the following sentences. Arrange them correctly in four columns headed:

Active Infinitives.		Passive Infinitives.	
Present.	Perfect.	Present	Perfect.

- (1) We have nothing to do with him.
- (2) He has perhaps not to do that.
- (3) You cannot be sure he has done it.
- (4) I do not know how it is to be done.
- (5) What we read to remember is helpful to us.
- (6) He goes to school to learn what is to be learnt there.
- (7) It is better to love than to hate.
- (8) I was to have seen him before you had arrived.
- (9) There is little that can be done, but what is to be done let us do.
- (10) It is quite true to say that it has become an honor not to be crowned.
- (11) My friend cannot be seen. Help me to find him.

(12) "Noble King of England, we now part, never to meet again. That your league is dissolved, no more to be reunited, and that your native forces are far too few to enable you to prosecute your enterprise, is as well known to me as to yourself. I may not yield you up that Jerusalem which you so much desire to hold. It is to us as to you, a Holy city. But whatever other terms Richard demands of Saladin, shall be as willingly yielded as yonder fountain yields its waters. Ay, and the same should be as frankly afforded by Saladin, if Richard stood in the desert with but two archers in his train."

[Further development of the Lesson will be given subsequently].

MEN resemble the gods in nothing so much as in doing good to their fellow creatures.—Cicero.

PRESIDENT Daniel C. Gilman of the Johns Hopkins University, contributed an article to the *Educational Review* for February, in defense of "liberal" education as against the intensely "practical." He names five intellectual powers which the liberally-educated man should possess: 1. Concentration, ability to hold the mind exclusively and persistently to the subject under attention. 2. Distribution, or power to arrange and classify the knowledge acquired. 3. Retention. 4. Expression. 5. The power of judging, or of making "sharp discrimination between that which is true and that which is false, that which is good and that which is bad; that which is temporary and that which is perpetual, that which is essential and that which is accidental."

Examination Papers.

EDUCATION DEPARTMENT, ONTARIO—
ANNUAL EXAMINATIONS, 1892.

THE HIGH SCHOOL JUNIOR LEAVING AND UNIVERSITY PASS MATRICULATION.

CHEMISTRY.

Examiners: { G. CHAMBERS, B.A., M.B.
J. J. MACKENZIE, B.A.
A. C. MCKAY, B.A.

1. (a) When 80 c.c. of Hydrogen and 20 c.c. of Oxygen are exploded in an eudiometer, what are the volume and the composition of the resulting gas? If Carbon Monoxide were substituted for Hydrogen, what would be the volume and the composition of the resulting gas?

(b) Give reasons from the foregoing experiments for considering the molecule of Oxygen as consisting of more than one atom.

2. (a) Give the equation representing the reaction which occurs in the preparation of Chlorine from Manganese Dioxide and Hydrochloric Acid.

(b) What weight of Chlorine can be prepared from 43.5 grammes of Manganese Dioxide (Mn = 55). What would be the volume of the Chlorine at 6°C and 720mm. Bar.?

(c) Write equations explaining the reactions when Chlorine is passed into

- (i) dry Ammonia,
- (ii) solution of Potassium Iodide,
- (iii) solution of Hydrogen Sulphide,
- (iv) hot solution of Potassium Hydrate.

3. State all the facts represented by the formula HNO_3 . In what respects does the properties of Hydric Nitrate differ from Potassium Nitrate and Potassium Hydrate?

(b) Explain what occurs when Nitric Acid is neutralized by Ammonium Hydrate, evaporated to dryness, and the residue heated.

(c) How many grammes of Nitric Acid containing 72 per cent. of HNO_3 will neutralize 56 grammes of Ammonium Hydrate containing 25 per cent. of NH_3 ?

4. (a) Describe the successive changes which occur when Sulphur is heated in a test tube.

(b) State the effect of Carbon Bisulphide upon each of the forms of Sulphur?

(c) What is the action of Hydrogen Sulphide upon Sulphur Dioxide?

5. How would you prove the presence of

- (a) Hydrogen and Sulphur in Hydrogen Sulphide,
- (b) Carbon in Carbon Dioxide,
- (c) Nitrogen in Ammonia.

6. Give one illustration in each case showing the relations of Electricity, Heat, and Light, as a cause, and an effect of chemical action.

7. Describe, giving equations, what occurs in each of the following experiments:

(a) Phosphorus is burnt in a cylinder of Oxygen and the product shaken up with water.

(b) Copper wire and strong Sulphuric Acid are heated together in a flask and the gaseous product passed into a solution of Iodine.

(c) Hydrochloric Acid is added to pulverized Barium Dioxide and the resulting mixture boiled?

8. Each of five bottles contains one of the following gases:

Hydrochloric Acid gas, Hydrochloric Acid gas, Carbon Monoxide, Nitric Oxide, Carbon Dioxide.

Describe how you would most easily determine the gas in each bottle.

HISTORY AND GEOGRAPHY.

Examiners: { W. J. ALEXANDER, PH.D.
J. E. BRYANT, M.A.
F. H. SYKES, M.A.

NOTE.—Candidates for the Junior Leaving Examination will take section A, any three questions from section B, one question from section C, and one question from section D; that is six questions in all.

Candidates for Matriculation will omit section A, and take any six questions from the remainder of the paper.

A.

1. (a) Describe carefully the provisions of (1) the Treaty of Paris (1763), (2) the Treaty of Versailles (1783), so far as British power in North America was concerned.

(b) Describe carefully the causes which led to the passage of (1) the Quebec Act (1774), (2) the Constitutional Act (1791), and state concisely the principal provisions of these Acts.

B.

2. (a) Describe concisely the principal provisions of the Bill of Rights (1689), and show why it was necessary to put these provisions in the form of a Statute.

(b) Describe concisely the means taken during the reign of William III. to secure

(1) the meeting of Parliament at least once every year;

(2) the control of Parliament over the Army;

(3) the keeping of Parliament in accord with the opinions of the people;

(4) the freedom of the press;

(5) the independence of the judiciary;

(6) the maintenance of the coinage of the realm at its proper standard of weight and purity.

3. (a) Write accounts concisely describing

(1) the origin in England of the system of government by party cabinets;

(2) the foundation of the Bank of England;

(3) the beginning of the present National Debt of England. Describe also how it is that the National Debt has come to be in some respects a great national convenience and a safeguard to the nation in favor of stability of government.

(b) Give some account of the literary activity that characterized the opening years of the eighteenth century.

4. (a) Sketch the character and the political and military career of Marlborough. What do you think are the lessons to be deduced from a study of his life?

(b) Discuss the relative merits of the respective titles of George I. and the son of James II. to the throne of England.

(c) Describe the influence which the accession and reign of George II. had upon parliamentary government in England.

5. (a) Sketch the beginnings of English rule in India. Describe its condition and extent at the conclusion of the Peace of Aix-la-Chapelle (1748).

(b) Sketch the history of India as a British possession from 1748 to 1773, making special reference to the career of Robert Lord Clive.

(c) Describe the conduct of Warren Hastings as Governor-General of India with special reference to what he did for the extension and permanent establishment of British authority there. Describe briefly the causes, incidents and results of the trial of Hastings.

6. (a) Give as full an account as possible of the industrial improvement and commercial progress which were made in England in the eighteenth century, and describe carefully the influences, political or otherwise, which contributed towards producing this improvement and progress.

(b) Give a brief account of the moral and social reforms which characterized this century, and refer these, as far as possible, to the persons who were instrumental in effecting them.

7. (a) Describe as fully as you can the causes which led the people of the thirteen American Colonies to declare their independence of England, July 4th, 1776.

(b) Describe succinctly the domestic troubles of England during the progress of the American War of Revolution (1776-1783).

(To be concluded in next issue.)

MEN's tongues are voluble,

And endless are the modes of speech, and far
Extends from side to side, the field of words.
Such as thou utterest, it will be thy lot
To hear from others.

—Homer, B.C. 900.

THE chief elements of the power of discipline are: ability to win the love of pupils; skill in appealing to good motives, and force of character to exercise moral constraint and restraint over those who cannot be reached by the first two.—Dr. Thomas M. Balliet.

Primary Department

SEPTEMBER OPPORTUNITIES.

RHODA LEE.

AMONG the many visitors this summer to a quaint little resort on the coast of Maine were two boys about twelve years of age. It was their first experience of the sea-side. The little fellows were alike in many respects. Indeed, in appearance, they might have been taken for twin-brothers. Their characters were, however, extraordinarily dissimilar. I could not help observing the different ways in which they were affected by the wonders and beauties of the sea. One, all alert, eager, questioning, exploring here, there and everywhere; returning from every expedition with bulging pockets and full hands, happy in the possession of some new species of rock or sea life. The other just as much the reverse as was possible for a boy to be; mildly enthusiastic, but not in the least observant or curious. The former was to a few of his elders somewhat of a nuisance, but to most of us he was interesting. He was truly an animated question mark.

Such differences are held by some people to be due entirely to peculiarities in the nature and temperament of the child. I do not think so. We may make some allowance for these, but a vast deal more depends upon the training received. The enquiring spirit is a part of every child nature. Whether it is fostered, directed aright and turned to good account, or discouraged and in other ways crushed out of his life, depends on the home and school atmosphere in which he lives.

Now September, more than any other month of the school year, seems to me to be rich in opportunities for the development of the perceptive faculties. Let us consider briefly the means.

First of all, we might mention the subject of botany. More accurately we might call these lessons "flower talks," being botany simplified and adapted to the capacity of the children. Some of the late garden plants are still in bloom, and the wild aster, in good variety, is plentiful in the woods.

The material for object lessons is almost without limitation. Flower-seeds, grains, fruits, acorns, chestnuts and a score of other things will suggest themselves as the days go by. September is truly a harvest time for school. And if you could gather together a few small bottles you might begin a collection of seeds, grains, etc., studied during the term.

Collections of leaves may also be made. These should be pressed and affixed to pasteboard. A little light varnish brushed over, will bring out the colors well and preserve the leaves. As they are not intended for ornament alone, they may be utilized in the drawing lessons and also as subjects for botany talks.

What interesting language lessons we can have this month! Descriptions of holiday excursions, pic-nics, visits to the country or town. Why, the children just bubble over with excitement when we begin to talk about such things. Every child has something to tell of the past two months. If

possible, there should be a written account also, but in any case the "holidays" will prove an interesting topic for excellent language lessons. Another feature of the month is the never-failing provincial or district exhibition, of which most children get a glimpse. There, if anywhere, is food for language. "A day at the Fair" may be a theme for a fortnight at least.

Many other opportunities for development along these lines may present themselves before the autumn months are over. Whatever they are, let us make the most of them. Time thus spent is well spent, even though it may not increase your promotion list. The inquiring, observant and appreciative spirit, is one that can be cultivated and is worth cultivation.

AN ARITHMETIC LESSON.

GIVEN BY MISS MAY PALMER,

Training Department, Normal College.

Teacher.—Children, let us each start out with a certain sum of money. What I draw on the board you may draw on your slates.

(Draws.)

\$1. What does the first oblong stand for?

\$1. What does the second oblong stand for?

\$1. What does the third oblong stand for?

Teacher.—How many cents would you give me for \$1? How many cents would you give me for \$3? Could you give me anything else?

Children.—We could give four quarters. Or two fifties. Or ten dimes.

Teacher.—Would it be fair to give me ten dimes for one dollar?

Children.—Yes, Miss Palmer.

Teacher.—Put over here on the board these—

(Draws next to the dollars two cents.)

\$1. \$1. \$1. O O

Teacher.—How much have we now?

Children.—Three dollars and two cents.

Teacher.—Who can write that sum for me?

Children.—(Writes 2, and then hesitates.)

Teacher.—How many dimes have we?

Children.—None.

Teacher.—Write it so. How many cents?

Children.—Two cents. (Child writes 302.)

Teacher.—How many cents have we altogether?

Children.—302.

Teacher.—How much have you, Genevieve? You, Mary? Someone comes to us with flowers to sell, and we will each buy a flower for May day. The boy has no change. Each flower will cost twenty-six cents. Can we pay 26c. exactly if we have \$3.02?

Children.—No, Miss Palmer.

Teacher.—What must we do?

Children.—We must have change.

Teacher.—How shall we get change?

Children.—We could go to our bank.

Teacher.—Shall we take all the \$3? No? What then?

Children.—Only \$1.

Teacher.—How much may I take from the bank for \$1.

Children.—100 cents.

Teacher.—What smaller could I take?

Children.—You could take 10 dimes.

Teacher.—How much must I put into the bank?

Children.—\$1.

Teacher.—(Erases one of the dollars, drawing ten dimes in its stead.)

O O O O O O O O O O
\$1. \$1. O O

Teacher.—May, where did I get those ten dimes?

Child.—From the bank.

Teacher.—Have we as much money now as we had at first?

Children.—No, Miss Palmer.

Teacher.—Jenny, have we?

Child.—Yes, just the same.

Teacher.—But we have only \$2 now. Where is the other?

Children.—You rubbed it off, but you put ten dimes for it.

Teacher.—Are they worth \$1? Then I have as much? How much was I to pay for the plant?

Children.—26c.

Teacher.—How many of the 10c. pieces shall I need?

Children.—Two.

Teacher.—But can I pay the 6c. with only 2c.?

Children.—No, you must change one of the 10c. pieces.

Teacher.—(Erase a 10c. piece, adding 10 cents.) Children follow on slates.

\$1. \$1. O O O O O O O O O O
O O O O O O O O O O

Teacher.—Now I can pay the 6c. How many cents have I?

Children.—Twelve.

Teacher.—Where did I get the 10c.?

Children.—You changed a dime.

Teacher.—May, come and pay the 6c. Now the two dimes.

(Child marks off the cents and dimes. They are presently erased.)

Teacher.—Now we will rub them out. Count how many of each kind left. Put the numbers under them. How many \$'s? How many dimes? How many c.'s? Now write them close together. How much left, Lina?

Child.—2 dollars, 7 dimes, and 6 cents, or, 276.

Teacher.—Draw a line under your work on your slates. How much money did we have at first, Jenny?

Child.—302c.

Teacher.—How much did we spend?

Children.—26c.

Teacher.—Could I pay 6c. with only 2c.? What did I do?

Children.—Took one of the dollars.

Teacher.—How many dollars had I left?

Children.—\$2.

Teacher.—That didn't help me with my c.'s.

Children.—You took one dime and made 10c.

Teacher.—Then how many dimes left?

Children.—You had 9 dimes left and 12 cents.

Teacher.—How can I take 6c. from 12c.? How can I take 2 dimes from 9 dimes? How can I take \$0 from \$2?

Teacher.—Now put away your slates. From 304c. take 126c. Belle, can you pay 126c. with 304 cents? Work the example.

9
\$2-10-14
304
126
—
178

Children.—6c. from 4c. you cannot pay, so you take 1 ten.

Teacher.—Will that help here?

Children.—No, you must take \$1. (*Doing so.*) That gives 10 dimes; then you take one dime and change to 10c.; that leaves 9 dimes.

Teacher.—Where did you get the 14c.?

Children.—From the dime and the 4c. that was there.

Teacher.—Now subtract. How much left? Are you sure? How can you be sure?

Children.—By adding.

Teacher.—Do so. Be careful which numbers you add. Is the example right?

Children.—Yes, Miss Palmer.—*Popular Educator.*

* Science. *

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

PREPARATORY WORK FOR STUDENTS IN BIOLOGY.

TEACHERS and students intending to pursue the science option for first-class certificates or honor matriculation can make many of their leisure hours profitable in preparing and mounting specimens which they can afterwards study in detail with the assistance of a teacher. It is almost impossible to obtain a clear comprehension of the various types of the animal and vegetable worlds without practical examination. In entering on the study of zoology the common frog is an accessible and suitable form. The skeleton is of great importance to beginners. It may easily be prepared as follows:—Kill the frog by chloroforming, so as not to injure any part. Remove the entrails, skin, and greater muscles carefully. Dip, for a moment only, in boiling water, then carefully remove the remainder of the flesh. Fasten the mouth open with a small stick, and mount on a piece of paste-board in the natural sitting posture of the animal.

The skull of a cat, dog or rabbit should also be prepared. This is perhaps best done by removing the skin and superficial flesh and burying in an ant-hill, leaving for a few weeks.

The complete skeleton of a six or seven weeks' old chick should also be in the collection. Drown the chick by holding its head under water. Dip for a moment in boiling water; remove the feathers, then open at the abdomen and remove as much of the entrails as possible. Immerse in boiling water for not more than three minutes (two will generally suffice), and remove the flesh by forceps. If care is exercised none of the bones will be separated. Dry carefully, and mount in the erect attitude.

In Botany, a good key should accompany you in all your walks. Make yourself thoroughly familiar with phanerogamic work. The study of the tissues and of cryptogamic forms is best conducted in the laboratory, unless a microscope is accessible. In that case, make thin sections with a good sharp razor, mount in water and draw.

It is surprising how much assistance a course of preparation will be in future reading.

JUNIOR LEAVING CHEMISTRY.

HINTS AND ANSWERS TO THE QUESTIONS OF 1892.

1. (a) Since two volumes of H unite with one volume of O to form two volumes of water vapor, the 20 cc of O will use up 40 cc of H. If the resulting water vapor is condensed to water it will then occupy almost no volume, and may be neglected. There will then be left 40 cc of H. Two volumes of CO unite with 1 vol. of O to form two vols. of CO₂.

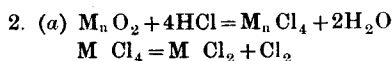
Hence there will be formed 40 c.c. of CO₂ and there will be left 40 c.c. of CO.

(b) Two vols. of H unite with 1 vol. of O to form 2 vols. of water vapor.

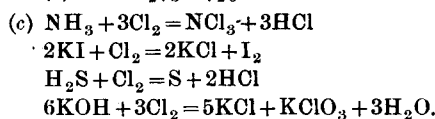
Now equal vols. of all gases under same conditions of temperature and pressure contain equal numbers of molecules. Then suppose in each vol. there are 10 molecules, then the above statement will read:—

20 mols. of H unite with 10 mols. of O to form 20 mols. of water vapor.

In each mol. of water vapor there must be at least one atom of O, then in 20 mols. there must be at least 20 atoms; but these 20 atoms came from 10 molecules, ∴ the molecule of O contains at least two atoms.



(b) (1) 35.5 grammes
(2) $11.2 \times \frac{2}{3} \times \frac{4}{3}$ litres.



3. (a) The substance is a chemical compound, composed of hydrogen, nitrogen and oxygen in the proportions of 1. 1. 3 by volume and 1. 14. 48 by weight.

Hydric nitrate is acid

Potassium nitrate is neutral

Potassium hydrate is a base.

(b) Ammonium nitrate (a salt) and water are formed, the latter is driven off in evaporating, and the former when heated is decomposed into nitrous oxide and water.

(c) 72.17 grammes.

4. Consult any standard text-book.

5. (a) The July number of THE JOURNAL answers this.

(b) See Knight's Chemistry under the head of Decomposition of CO₂.

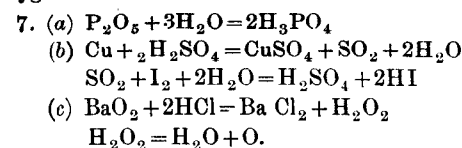
(c) Pass electric sparks, add O and pass spark again. Proceed carefully and remainder is nitrogen.

6. Electricity: Take decomposition of water apparatus, pass current of electricity. The gases formed can, by reversing, be made to produce a current of electricity. This is the secret of the storage battery.

Heat: Heat KClO₃, result is a chemical change. Bring KClO₃ and H₂SO₄ together; result is a chemical change and heat is produced.

Light causing chemical action: Expose a paper dipped in silver nitrate to the light.

As a result: Burn sulphur or phosphorous in oxygen.



8. A knowledge of the leading properties of each compound is all that is required for this question.

HOW TO ASCERTAIN THE HEIGHT OF TREES.

THE height of a tree can be readily determined by the following plan:—Measure the height you can easily reach from the ground in feet and inches. Step to the trunk of the tree you wish to measure and, reaching to this height, pin a piece of white paper on the tree. Step back a distance equal to three or four times the height of the tree;

hold a lead-pencil upright between the thumb and forefinger at arm's length. Fix it so that the end of the pencil shall be in line with the paper. Move the thumb down the pencil till it is in line with the ground at the base of the tree; move the arm and pencil upward till the thumb is in line with the paper, and note where the end of the pencil comes on the tree. Again move and continue till the top of the tree is reached. Multiply the number of measures by the first height. APGAR.

WINTER WORK IN BOTANY.

It is the practice of many science teachers to devote the winter months almost exclusively to physics, and to leave Botany, as a subject which can easily be "got up," until the opening of spring. Then the process of cramming begins, with the result that a large mass of undigested matter is absorbed by the student, whom the examination leaves in a collapsed condition. It is hardly necessary to speak of the injurious effects of such a course upon both the student and the subject. It is neither necessary nor educative.

By a very small amount of exertion the teacher can induce his pupils to gather and preserve twenty or thirty selected leaves. These can be dried and preserved either in a scrap-book or in other suitable method. When the winter sets in each student has his own material for independent practical work. These leaves can be drawn and described both orally and in writing. In this way a host of botanical terms will be easily acquired, and the lessons become interesting and valuable. Besides this form of work, cultures of seeds of various kinds in pots may be resorted to, and all the phenomena of germination observed and studied. The sooner the pernicious habit of specializing for months at a time on one subject, to the entire exclusion of others, is abandoned, the sooner will the relative value of each science be recognized.

ANSWERS TO CORRESPONDENTS.

W.M.—You will find the answer to your question in another column, under the heading of Junior Leaving Chemistry.

J.W.P.—It is not at all probable that the explanation you have heard is the correct one. It is one of those popular superstitions which the intelligence of the nineteenth century has not yet wholly dispelled. A warm summer rain, such as you mention, is especially suitable to the development of the young larvæ. Hence their appearance in such numbers.

Book Notices, etc.

Any book here reviewed sent post-paid on receipt of price. Address The Grip Printing & Publishing Co., Toronto.

Trees of the Northern United States. American Book Co. Price, \$1.00.

The above is the title of a little guide-book prepared by Mr. A. C. Apgar, of the New Jersey State Normal School. It is specially prepared for the use of those who, lacking a systematic scientific training in Botany, still desire to become practically acquainted with Nature in one of its most attractive forms. The preliminary chapters are devoted to explanations of the more commonly occurring terms employed in classification. The chief value of the key lies in its basis upon characters which can be observed during the whole summer months; while it gives accurate results rapidly.

You are disappointed. Do you remember, if you lose heart about your work, that none of it is lost; that the good of every good deed remains, and breeds, and works on forever; and all that fails and is lost is the outside shell of the thing; which, perhaps, might have been better done, but, better or worse, has nothing to do with the real spiritual good which you have done to men's hearts, for which God will surely repay you in His own way and time.—*Charles Kingsley.*

Literary Notes.

THE September *Century* is particularly interesting for its fiction. A new writer (from the South) comes upon the scene, John Fox, Jr., who publishes the first instalment of a two-part story entitled "A Mountain Europa," with illustrations by Kemble. Mr. Fox evidently understands well the mountain people of whom he writes, and the girl who is the heroine of the story is one of the most striking characters in recent fiction. Another new writer of fiction, Grace Wilbur Conant, appears in this number of the *Century* with a humorous story, "Phyllida's Mourning." That delightful humorist, Richard Malcolm Johnston, author of "Dukesborough Tales," has a short story in this number entitled "A Bachelor's Counselings," with pictures by Kemble. Still another short story is by George Warton Edwards, the artist, entitled "Strange to Say," in his quaint illustrated series of "Thumb-Nail Sketches." Mrs. Mary Hallock Foote's "The Chosen Valley," with pictures by the author, and Henry B. Fuller's "Chatelaine of La Trinite," are continued.

BESIDES the serials, which are now coming close to the grand transformation scene in the fifth act, *St. Nicholas* has a large number of valuable papers to offer in the September number. The number opens with a careful study of "A King without a throne," by Tudor Jenks. The life of the son of the great Napoleon is here retold from the point of view of a child's interest, and Ogden's excellent pictures make the account a very vivid and pathetic story. Maurice Thompson has a poetical tribute to the great field naturalist, Alexander Wilson, and there is an interesting story of the sea by D. B. Waggener, a clever, practical article upon how to keep a community of ants for purposes of study, and a record by L. E. Stofiel of the curious custom of allowing a boy to ride upon the walking-beam of the Mississippi steamboats, in order to draw custom for the boats. We may also mention as worth reading, "A Kitten by Post," "Nan's Collecting," and especially the bright article by Elbridge S. Brooks, "The Last Conquistador," with Ogden's illustrations. No one will overlook Meredith Nugent's "Troublesome Model," Laura E. Richard's verses "Mr. Somebody," nor John Richard's funny "Mazepa."

Education for September has the following contents:—"The Province of the Normal School," Hon. John W. Dickinson; "Notes on Principles of Education, III.," M. MacVicar, LL.D.; "Education for Citizenship," Prof. Walter S. Harley, A.M.; "A Study of Browning's Poetry," May Mackintosh, Pd.M.; "Preparatory Department in Connection with Colleges," Prof. Charles W. Super; "The Woman's Educational Movement in Germany," A. Witte; "Exogenous and Endogenous Education," Charlotte A. Powell; "Thought Children" (Poem), Julia H. May, etc.; also Editorials, Professional and Review Department.

RABBI SOLOMON SCHINDLER'S Analysis of Nationalism in the September *New England Magazine*, is perhaps the best exposition of the subject which has appeared in periodical literature. Edwin D. Mead discusses the recent Homestead disturbances with fearless vigor and candor. E. P. Powell puts forward the thousand and one arguments, commercial, ethical and artistic, that can be made in favor of good highways. W. L. Sheldon makes a strong plea for "The German element in America." Nicholas Paine Gilman gives a brief resume of the results of the experiments in profit sharing that have been made in the United States.

Walter Blackburn Harte contributes a strong indictment of "society," under the caption of "The Author and Society." "On the Shores of Buzzard's Bay," by Edwin Fiske Kimball, is a bright, well illustrated article, and will interest a large number of readers.

Question Drawer.

In the "Question Drawer" of last number we replied to an inquirer that we did not know the price of Dr. MacCabe's "Hints for Language Lessons," but were informed that it would be about a dollar. The guess was that of a leading bookseller. Dr. MacCabe informs us that the price will not be more than forty cents. Thirty cents is the price in Boston. We regret the mis-judgment.

A SUBSCRIBER asks us to publish a *precis* of the Life of Sir John A. Macdonald. This would lead us out of our course. Moreover, no satisfactory sketch could be given in the space at our disposal. We are, therefore, compelled to refer our friends to the published biographies, two or three of which are in the market, and accessible wherever there is a public library, or through the booksellers.

A CORRESPONDENT asks us to publish a list of Canada's imports and where obtained, Canada's exports and to what countries; also the exports of Ontario to the other Provinces of Canada, and her imports from the other Provinces. This would be rather out of our line, and would require more space than we could afford for such a purpose. The information, so far as procurable, will be found in the Statistical Year-Book of Canada, recently issued for 1891, by the Department of Agriculture, Ottawa. We presume that a copy could be had on application to that Department, or it may probably be seen in any newspaper office.

E. W.—We will try to give some reproduction stories from time to time. See Editorial Note in reference to the celebration of the 12th of October. For the list of subjects for the Second-Class Non-Professional Examination you had better write to the Department. Thanks for the strong words of appreciation. E. W. makes the following request:—"Will some of the readers of the paper explain some methods of making Part I. reading class interesting without the use of tablets or blackboard?"

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ADDENDA TO TEXT BOOK LIST.

The following additional Text Books were authorized by the Department of Education on August 24, 1892, subject to the provisions of Section 175 of the Public Schools Act, 1891.

COLLEGIATE INSTITUTES AND HIGH SCHOOLS.

- Classics: First Latin Book, by J. Henderson, B.A., and J. Fletcher, B.A., price \$1.00 (The Copp-Clark Co.)

PUBLIC SCHOOLS.

- English: Public School History of England and Canada (new) by W. J. Robertson, B.A., price 30c (The Copp-Clark Co.)

NOTE—CHANGE IN PRICE:

- Public School Writing Course, each number (to July, 1894) 30c (After July, 1894, Five Cents.)

The Department of Education has also ordered that the Public School History of England and Canada, by G. Mercer Adam and W. J. Robertson, B.A., authorized in 1886 and in use at present date in the Public Schools of Ontario, shall cease to be authorized on and after July 1, 1894.

High School Entrance Examinations.

SELECTIONS FOR LITERATURE. 1893.

- Lesson V. Pictures of Memory. Lesson X. The Barefoot Boy. Lesson XIX. The Death of the Flowers. Lesson XXIV. The Face Against the Pane. Lesson XXVI. From the Deserted Village. Lesson XXXV. Resignation. Lesson XL. Ring Out, Wild Bells. Lesson XLII. Lady Clare. Lesson LII. Jacques Cartier. Lesson XCI. Robert Burns. Lesson XCII. Edinburgh after F. J. den. Lesson XCVIII. National Morality. Lesson C. Shakespeare. Lesson CII. The Merchant of Venice—First Reading. Lesson CIV. The Merchant of Venice—Second Reading.

SELECTIONS FOR MEMORIZATION. Fourth Reader

- 1. The Bells of Shandon, pp. 51-52. 2. To Mary in Heaven, pp. 97-98. 3. Ring Out, Wild Bells, pp. 121-122. 4. Lady Clare, pp. 128-130. 5. Lead, Kindly Light, p. 145. 6. Before Sedan, p. 199. 7. The Three Fishers, p. 220. 8. The Forsaken Mermaid, pp. 298-302. 9. To a Skylark, pp. 317-320. 10. Elegy, written in a country churchyard, pp. 331-335.

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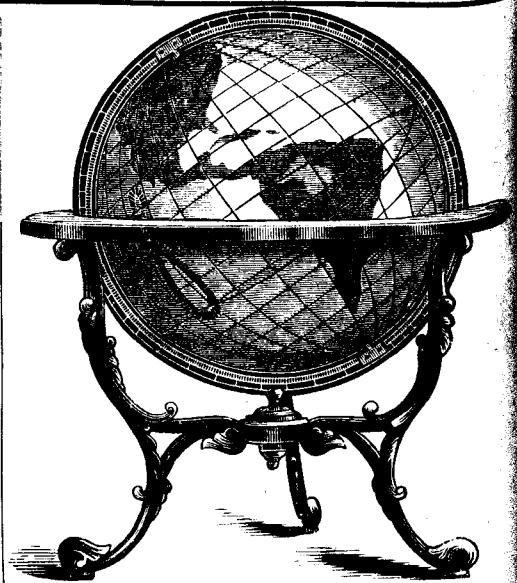
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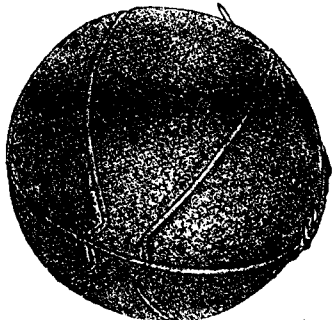
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