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THE EDUCATOR.

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WHAT IS TEACHING?

BY PROF. JOHN S. HART, LL. D.,

In the first place, teaching is not simply telling. A class may be told a thing twenty times over, and yet not know it. Talking to a class is not necessarily teaching. I have known many teachers who were brimful of information, and were good talkers, and who discoursed to their classes with ready utterance a large part of the time allotted to

instruction; yet an examination of their classes showed little advancement in knowledge.

There are several time-honored metaphors on this subject, which need to be received with some grains of allowance, if we would get at an exact idea of what teaching is. Chiselling the rude marble into the finished statue; giving the impression of the seal upon the soft wax, pouring water into an empty vessel, all these comparisons lack one essential element of likeness. The mind is, indeed, in one sense, empty, and needs to be filled. It is yielding and needs to be impressed. It is rude, and needs polishing. But it is not, like the marble, the wax, or the vessel, a passive recipient of external influences. It is itself a living power. It is acted upon only by stirring up its own activities. The operative upon mind, unlike the operative upon matter, must have the active, voluntary co-operation of that upon which he works. The teacher is doing his work, only so far as he gets work from the scholar. The very essence and root of the work are in the scholar, not in the teacher. No one, in fact, in an important sense, is taught at all, except so far as he is self-taught. The teacher may be useful, as an auxiliary, in causing this action on the part of the scholar. But the one, indispensable, vital thing in all learning, is in the scholar himself. The old Romans, in their word education (*educere*, to draw out) seem to have come nearer to the true idea than any other people have done. The teacher is to draw out the resources of the pupil. Yet even this word comes short of the exact truth. The teacher must put in, as well as draw out. No process of mere pumping will draw out from a child's mind knowledge which is not there. All the power of the Socratic method, could it be applied by Socrates himself, would be unavailing to draw from a child's mind, by mere questioning, a knowledge, for instance, of chemical affinity, of the solar system, of the temperature of the Gulf Stream, of the doctrine of the resurrection.

What, then, is teaching?
Teaching is causing any one to know. Now no one can be made to know a thing but by the act of his own powers. His own senses, his own memory, his own powers of reason, perception, and judgment, must be exercised. The function of the teacher is to bring about this exercise of the pupil's faculties. The means to do this are infinite in variety. They should be varied according to the wants and the character of the individual to be taught. One needs to be told a thing, he learns most readily by the ear. Another needs to use his eyes, he must see a thing, either in the book, or in nature. But neither eye nor ear, nor any other sense or faculty, will avail to the acquisition of knowledge, unless the power of attention is cultivated. Attention, then, is the first act, or power of the mind that must be roused. It is the very foundation of all progress in knowledge, and the means of awakening it constitute the first step in the educational art.

When by any means, positive knowledge, facts, are once in possession of the mind, something must next be done to prevent their slipping away. You may tell a class the history of a certain event; or you may give them a description of a certain place or person, or you may let them read it, and you may secure such a degree of attention, that, at the time of the reading or the description, they shall have a fair, intelligible comprehension of what has been described or read. The facts are for the time actually in the possession of the mind. Now, if the mind was, according to the old notion, merely a vessel to be filled, the process would be complete. But mind is not an empty vessel. It is a living essence, with powers and processes of its own. And experience shows us, that in the case of a class of undisciplined pupils, facts, even when fairly placed in the possession of the mind, often remain there about as long as the shadow of a passing cloud remains upon the landscape, and make about as much impression.
The teacher must seek, then, not only to

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get knowledge into the mind, but to fix it there. In other words, the power of the memory must be strengthened. Teaching, then, most truly, and in every stage of it, is a strictly cooperative process. You cannot cause any one to know, by merely pouring out stores of knowledge in his hearing, any more than you can make his body grow by spreading the contents of your market-basket at his feet. You must rouse his power of attention, that he may lay hold of, and receive, and make his own, the knowledge you offer him. You must awaken and strengthen the power of memory within him, that he may retain what he receives, and thus grow in knowledge, as the body by a like process grows in strength and muscle. In other words, learning, so far as the mind of the learner is concerned, is doing whatever is necessary to cause that growth.

Let us proceed a step farther in this matter.

One of the ancients observes that a lamp loses none of its own light by allowing another lamp to be lit from it. He uses the illustration to enforce the duty of liberality in imparting our knowledge to others. Knowledge he says, unlike other treasures, is not diminished by giving.

The illustration fails to express the whole truth. This imparting of knowledge to others, not only does not impoverish the owner, but it actually increases his riches. *Docendo discimus.* By teaching we learn. A man grows in knowledge by the very act of communicating it. The reason for this is obvious. In order to communicate to the mind of another a thought which is in our own mind, we must give to the thought definite shape and form. We must handle it, and pack it up for safe conveyance. Thus the mere act of giving a thought expression in words, fixes it more deeply in our own minds. Not only so; we can in fact, very rarely be said to be in full possession of a thought ourselves, until by the tongue or the pen we have communicated it to somebody else. The expression of it in some form, seems necessary to give it, even in our own minds, a definite shape and a lasting impression. A man who devotes himself to solitary reading and study, but never tries in any way to communicate his acquisitions to the world, or to enforce his opinions upon others, rarely becomes a learned man. A great many confused, dreamy ideas, no doubt, float through the brain of such a man; but he has little exact and reliable knowledge. The truth is, there is a sort of indolent, listless absorption of intellectual food, that tends to idiocy. I knew a person once, a gentleman of wealth and leisure, who having no taste for social intercourse, and no material wants to be supplied, which might have required the active exercise of his powers, gave himself up entirely to solitary reading, as a sort of lux-

urious self-indulgence. He shut himself up in his room, all day long, day after day, devouring one book after another, until he became almost idiotic by the process, and he finally died of softening of the brain. Had he been compelled to use his mental acquisitions in ~~enriching his body~~, or had the love of Christ constrained him to use them in the instruction of the poor and the ignorant, he might have become not only a useful, but a learned man.

We see a beautiful illustration of this doctrine in the case of Sabbath school teachers, and one reason why persons so engaged usually love their work, is the benefit which they find in it for themselves. I speak here, not of the spiritual, but of the intellectual benefit. By the process of teaching others, they are all the while learning. This advantage in their case is all the greater, because it advances them in a kind of knowledge in which, more than in any other kind of knowledge, men are wont to become passive and stationary. In ordinary worldly knowledge, our necessities make us active. The intercourse of business, and of pleasure even, makes men keen. On these subjects we are all the while bandying thoughts to and fro; we are accustomed to give as well as take; and so we keep our intellectual armor bright, and our thoughts well defined. But in regard to growth in religious knowledge, we have a tendency to be mere passive recipients, like the young man just referred to. Sabbath after Sabbath we hear good, instructive, orthodox discourses, but there is no active putting forth of our own powers in giving out what we thus take in, and so we never make it effectually our own. The absorbing process goes on, and yet we make no growth. The quiescent audience is a sort of exhausted receiver, into which the stream from the pulpit is perennially playing, but never making it full. Let a man go back and ask himself, What actual scriptural knowledge have I gained by the sermons of the last six months? What in fact do I retain in my mind, at this moment, of the sermons I heard only a month ago? So far as the hearing of sermons is concerned, the Sabbath school teacher may be no better off than other hearers. But in regard to general growth in religious knowledge, he advances more rapidly than his fellow worshippers, because the exigencies of his class compel him to a state of mind the very opposite of this passive reciprocity. He is obliged to be all the while, not only learning, but putting his acquisitions into definite shape for use, and the very act of using these acquisitions in teaching a class, fixes them in his own mind, and makes them more surely his own.

I have used this instance of the Sabbath school teacher because it enforces an important hint already given, as to the mode of

teaching. Some teachers, especially in Sabbath schools, seem to be ambitious to do a great deal of talking. The measure of their success, in their own eyes, is their ability to keep up a continued stream of talk for the greater part of the hour. This is of course better than the embarrassing silence sometimes seen, where neither the teacher nor scholar has anything to say. But at the best, it is only the pouring into the exhausted receiver enacted over again. We can never be reminded too often, that there is no teaching except so far as there is active cooperation on the part of the learner. The mind receiving must reproduce and give back what it gets. This is the indispensable condition of making any knowledge really our own. The very best teaching I have ever seen, has been where the teacher said comparatively little. The teacher was of course, brimful of the subject. He could give the needed information at exactly the right point, and in the right quantity. But for every word given by the teacher, there were many words of answering reproduction on the part of the scholars. Youthful minds under such tutelage grow apace.

It is indeed a high and difficult achievement in the educational art, to get young persons thus to bring forth their thoughts freely for examination and correction. A pleasant countenance and a gentle manner, inviting and inspiring confidence, have something to do with the matter. But, whatever the means for accomplishing this end, the end itself is indispensable. The scholar's tongue must be unloosed, as well as the teacher's. The scholar's thoughts must be broached, as well as the teacher's. Indeed, the statement needs very little qualification or abatement, that a scholar has learned nothing from us except what he has expressed to us again in words. The teacher who is accustomed to harangue his scholars with a continuous stream of words, no matter how full of weighty meaning his words may be, is yet deceiving himself, if he thinks that his scholars are materially benefited by his intellectual activity, unless it is so guided as to awaken and exercise theirs. If, after a suitable period, he will honestly examine his scholars on the subjects, on which he has himself been so productive, he will find that he has been only pouring water into a sieve. Teaching can never be this one-sided process. Of all the things we attempt, it is the one most essentially and necessarily a cooperative process. There must be the joint action of the teacher's mind and the scholar's mind. A teacher teaches at all, only so far as he causes this co-active energy of the pupil's mind.

Wicked men stumble over straws in the way to heaven, but climb over hills in the way to destruction.

Teachers' Peculiarities.

Between a mere occupation and a vocation there is an essential difference. In the former, a person is kept drudging for the sake of bread and butter. In the latter, he busies himself not only for a livelihood, but also for love of the work.

Primarily a man's tastes determine whether or not an employment is to him a vocation. And according as it is a vocation or only an occupation, so will be the peculiarities which the employment will stamp upon him. If the employment be a vocation, the observer will be sure to find in the worker an expression and demeanor indicative of largeness, benevolence, liberality, and the spirit of general as well as special inquiry. We know a grainer whose genius makes the graining of wood his vocation. He is led to inquire into various sciences, because the general principles of his art link it with all sciences; and from the standpoint of his own intuitions, learning, and experience in graining, he is ready to give his opinion of genius in music, painting, sculpture, poetry, and other arts. And all this we see in the light and modesty and good-will and force of his expression. Many of his brethren of the paint-brush, who fear, bear a very different expression.

The same holds with respect to all employments, teaching among the rest. One of the proofs to our mind that teaching is a science—though in general a science amazingly unstated—is that we find among teachers some whose talk is like the grainer's, and whose expression, like his, has in it light and modesty and good-will and force. Nine out of ten such are, like the grainer, working scientifically. The tenth is drudging with a dissatisfied look among his brother drudges, who are teaching solely for their bread and butter, and who do not rise in the profession above the level of a mere unscientific employment. Like the grainer's drudging brethren, these bear peculiarities which their drudgery stamps upon them. Schoolmaster-ish and schoolma'am-ish are epithets which readily explain them to the popular apprehension.

A teacher of this sort is easily recognized. His peculiarities are pronounced and aggressive. He has a look of bustling importance, a patronizing demeanor anything but agreeable to the victim, who perceives the vacancy of the patron. He is fully possessed with the belief that he is a personage of vast importance, because of a vague idea that on teachers as a class rests the responsibility of shaping the rising generation. He is wiser in his own eyes than seven men who can render a reason, and jealous of anyone who knows more than he does—a peculiarity, it is true, somewhat inconsistent with the foregoing. He has a disposition to order folks around as though they were unruly boys. He has a dry, harsh tone of voice; a lack of unction in reading, conversation, and set discourse; an appear-

ance and demeanor varying from the grotesque imitation of a boy to the grotesque imitation of a philosopher. But it is needless to pursue the analysis. These peculiarities are proverbial as teachers' peculiarities. But they mark the absence, rather, of the true teacher. They have come to characterize teachers as a class, because to so many who bear this name, teaching is only an occupation. The calling suffers in reputation from the preponderating influence of those to whom it is merely a make-shift, a stepping-stone to something else, a temporary employment which unfortunately too often becomes a permanent employment. The few to whom teaching is a vocation, and who are striving in an unorganized way to raise it to the rank of a profession, are outnumbered and overborne by those who, though they prate of the dignity of the work, do little else than degrade the workmen in the public estimation. —N. Y. Teacher.

READING.

Of all the branches you will be called to teach none will be more important than that of reading. It lies at the very foundation of all learning, and all must know something of this as a key to other branches. All who enter the school-room,—from the little ones, just beginning to lip the letters of the alphabet, up to those who are about to close their school days,—all will require training in this department. How small the number of those who can be properly called accomplished readers, and how large the number who read quite indifferently or very poorly! One who can read a piece with ease and right effect will always be listened to with interest and delight, while one who reads in a hesitating, lifeless, meaningless style, will have no power over his hearers, and may even become a subject of ridicule.

As a general thing, it must be admitted that reading has not been well taught in our schools. It has received formal attention and frequent inattention. This remark may be more properly true of schools as they were a score of years ago, than of those of the present day; and yet it is, to a certain extent, true of our schools as a whole, even now. We well recollect when it was customary for teachers to hear every member of their schools read four times a day,—twice in the forenoon, and twice in the afternoon. This was the established law, and seemingly as unalterably fixed as that of the Medes and Persians. In imagination we can see the school dame of our boyhood days, as she called her several pupils and classes. First came the little alphabetarians, one by one, to whom, in regular order, the whole twenty-six letters were administered at a dose,—just four times daily;—the teacher pointing at the letter and pronouncing it, and the pupil repeating it after her,—the only variation

consisting in an occasional snay upon the ear for inattention. For days, and weeks, and months,—perhaps for years,—was this operation continued before the letters were fairly understood. Then came the little boys and girls in b-a, ba, b e, be, b-i, bi, b o, bo, b-u, et., up through BAKER and CIDER, until the oldest had received their turn. If the performance was attended to just four times daily, the requirements of parents and committees were met, and all was considered right. But so far as real benefit was concerned, it would have been just as well if the pupils had been called upon to whistle just four times a day,—twice in the forenoon, and twice in the afternoon. Really it would have been better; for if they had, each time, whistled wrong, it would have done no harm. But to be required to go through the form of reading, as it was done, without any true regard to emphasis, inflection, punctuation, or sense, was only making a bad matter worse at every repetition that was made, as bad habits were only confirmed thereby. The prominent requirement seemed to be to read rapidly,—and this was essential, in order that the regular "round" might be accomplished. The whole exercise was a formal, unmeaning affair; and the result a monotonous, blundering, unmeaning style of reading. We were, it is true, commanded to "mind our stops," but it was only in an arbitrary way, which admitted of no modification on account of the sense. At a comma we were to stop long enough to count one; at a semicolon long enough to count two, etc. The following anecdote illustrates in an amusing manner the absurdity of the old rule for "minding the stops."

"A country schoolmaster, who found it rather difficult to make his pupils observe the difference in reading between a comma and a full-point, adopted a plan of his own, which, he flattered himself, would make them proficient in the art of punctuation; thus, in reading, when they came to a comma, they were to say tick, and read on to a semicolon, and say tick, tick, to a colon, and say tick, tick, tick, and when a full-point, tick, tick, tick, tick. Now, it so happened that the worthy Dominic received notice that the parish minister was to pay a visit of examination to his school; and, as he was desirous that his pupils should show to the best advantage, he gave them an extra drill the day before the examination. 'Now,' said he, addressing his pupils, 'when you read before the minister to-morrow, you may leave out the ticks, though you must think them as you go along, for the sake of elocution.' So far, so good. Next day came, and with it the minister, ushered into the school-room by the Dominic, who, with smiles and bows, hoped that the training of the scholars would meet his approval. Now it so happened, that the first boy called up by the minister had been absent the preceding day, and, in the hurry,

the master had forgotten to give him his instructions how to act. The minister asked the boy to read a chapter in the Old Testament which he pointed out. The boy complied, and in his best accent began to read: "And the Lord spake unto Moses, saying tick, tick, tick, and thus shalt thou say unto them, tick, tick, tick, tick." This unfortunate sally, in his own style, acted like a shower bath on the poor Dominic, whilst the minister and his friends almost died of laughter."

Correction of Errors in Composition.

It must be expected that beginners will make many mistakes in their early productions. If they could write without making errors, it would not be necessary for them to write as a school exercise. The very object for which they write in school is that they may learn how to correct their errors,—learn how to express their thoughts properly. It will be your duty to assist and encourage them. Very much will depend upon the manner in which you perform your part. At the outset, it may not be well to be over-critical: for, if beginners should have all their mistakes arrayed before them at once, they might feel discouraged. In a kindly way point out some of the more prominent ones first,—often uttering words of cheer, so far as you can do so consistently. Many of the first exercises may be written upon slates; but after sufficient practice, let paper be used, and always require a margin of an inch on the left for the designation of errors. It will be most profitable to require pupils to correct their own errors,—you merely indicating the lines in which they exist, and also their nature. A few simple characters may be used as expressive of the nature of the mistake. Perhaps the first four or five figures will answer the purpose. Let it be understood that (1) placed opposite a line denotes an error in spelling; (2) an error in use of capital, or neglect of same; (3) the omission of a word, or the repetition of a word; (4) false syntax; (5) a wrong word. If two or more errors are in the same line, use the figures that indicate all that exist. To illustrate our meaning more clearly, let us suppose the following to be a composition, with the errors designated according to the above method.

VACATION.

1 "It is very pleasant to have vacation
come, for we get tired of studying all the
2, 5 time. If we have studied studiously
during school time we will enjoy our vaca-
3 tion more than if we had idle. I love
1, 2 to go to the country in vacation as I always
3, 1 have a good time at picking berries and in
1 riding with my cousins. When vacation
4 is over we should return at school and
3 studying."

This will be sufficient to explain what we mean. You will readily see that the above will be at once simple and effective. It will prove very beneficial for pupils to search for, and correct, these errors. We would recommend that at first they correct the errors upon the paper which contains them, and that they then be required to rewrite the whole in the right form; and we would also advise that you make the chirography itself a subject for criticism. As an incitement to effort in this department, it is well to have a "paper," into which the best written articles shall be copied, and that, occasionally, extracts be read from this paper to parents and others who may come to listen. In some schools an hour is devoted to this semi-monthly.

As aids to the subject of composition, a few useful treatises have been prepared, and are now before the public. For beginners Brookfield's work, published by S. A. Rollo, New York, will be found an excellent work. For more advanced pupils, Parker's "Aids to Composition," published by R. S. Davis, Boston, and a work by Quackenboss, published by the Messrs. Appleton, New York, will prove very valuable. But we would have you feel that in yourself are the chief aid and moving power. If you are judicious in the selection of subjects and in the general management of the exercise, you will do your pupils great good without any of these aids, but if you have not the right feeling, or if you err in your instruction, all other aids cannot compensate therefor.

In a subsequent number we will perhaps give a list of appropriate subjects for exercise.

GUN COTTON—PYROXYLINE.

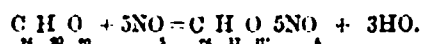
This substance, which is noted for its explosive property, is formed by the action of very strong nitric acid, or better, by a mixture of the most concentrated nitric and sulphuric acids, upon cotton, flax, paper or fine saw-dust.

To prepare it, make a mixture of equal parts (by volume) of the strongest nitric and sulphuric acids, and then press into it as much cotton as can be moistened with it; and, after standing five or ten minutes, press out as much of the acid as possible, and wash thoroughly with a large supply of pure water, and dry carefully without artificial heat. It will be found that two ounces of each of the mixed acids will be sufficient for 75 or 100 grains of cotton.

When thus prepared, the cotton appears much as before the process, but has a harsh feeling, and the fibres are less tenacious than in the original cotton. It also gains considerably in weight during the process, so that from 100 grains of cotton as much as 175 grains of gun-cotton will often be obtained. It takes fire very readily, often at a temperature even below 212°, especially if the heat is suddenly applied; and burns with an immense volume of flame. Placed on a plate of metal and very

gradually heated, it may sometimes be completely decomposed, without igniting, leaving behind a residue of carbon. When properly prepared, it explodes with great violence, and is entirely consumed. Its power to propel balls is much greater than that of the best gunpowder, which is still further increased by soaking it in a solution of chlorate of potash before drying.

The composition of pyroxyline is uncertain; but it is known that, by the action of the acids, oxygen and Hydrogen (in the form of water) are separated from the cotton, and, at the same time nitric acid combines with it. The most probable opinion is that two equivalents of cellulose combine with five equivalents of nitric acid, giving up at the time three equivalents of water. Thus,



Gun-cotton, though insoluble in water or alcohol, is usually found quite soluble in sulphuric ether containing a little alcohol. But this is not always the case; and it is believed there are at least two different compounds formed in the process, one of them being soluble in alcoholic ether, and the other insoluble. The insoluble variety appears also to explode with more violence than the other.

The gelatinous ethereal solution of gun-cotton is used in surgery, as a substitute for sticking plaster, or court plaster, under the names of *collodium* and *liquid cuticle*.

Nyloidine is an explosive compound similar to pyroxyline, produced by the action of strong nitric acid upon starch.

Necessary Rules of Sleep.

There is no fact more clearly established in the physiology of man, than this, that the brain expends its energies and itself during the hours of wakefulness, and that these are recuperated during sleep. If the recuperation does not equal the expenditure, the brain withers—this is insanity. Thus it is that, in early English history, persons who were condemned to death by being prevented from sleeping, always died raving maniacs; thus it is also, that those who are starved to death become insane. The brain is not nourished, and they cannot sleep. The practical inferences are three:—

1st. Those who think most, who do most brain-work, require most sleep.

2d. That time "saved" from necessary sleep is infallibly destructive to mind, body, and estate. Give yourself, your children, your servants—give all that are under you, the fullest amount of sleep they will take, by compelling them to go to bed at some regular hour, and to rise in the morning the moment they wake; and within a fortnight, nature, with almost the regularity of the rising sun, will unloose the bonds of sleep the moment enough repose has been secured, for the wants of the system. This is the only safe and sufficient rule. And as to the question, how much sleep any one requires? each must be a rule for himself. Great nature will never fail, to write it out to the observer under the regulations just given.

Written for the Educator.

MOONRISE ON THE HILLS.

See yonder blazing disc 'tis the moon,
As slowly rising o'er the vallant hills
It shines upon the forest's leafy tips
And through the dew besprinkled foliage drips
Its bright and sparkling rivulets of light,
And makes my very heart in love with night
I stand upon the hills when Heaven's blue arch
Was shivered with the moon's returning march,
And clouds beneath me, bathed in glimmering light,
Were hovering mid-way o'er the wooded height,
And in their awful nightly glory, shone
Like mighty hosts, in battle overthrown.
As many a spire, with over-changing glance,
Sent through the nightly pall, its shattered lance
And shaking on the rocky height, was left
The tall oak, withered, blasted, bare and cleft.
The cloud has disappeared, and far below,
The River faintly gleams with winding flow,
Here, darkened by the forests' outstretched shade,
There sparkling in the seaming white cascade.
I hear the distant thundering waters dash,
I see the turbulent waves in fury flash,
And thickly by the blue lake's silver strand,
The trees in silent, shady, grandeur stand.
Then softly o'er the vale with gentle swell,
The distant music of the village bell
Comes sweetly to my far off wooded hill,
And mingles with the voice of babbling rill.
Wouldst thou a soul refreshing lesson read?
Then go to Nature's outstretched grassy mead,
There lay thee down in evening's sacred hour,
And silent gaze on hill and dale and bower.


T. H. WALLACE,

Oxford, Oct. 1st 1869.

Practical Lessons in Spencerian Penmanship.

ACCORDING TO THE REVISED SYSTEM AS TAUGHT BY PROF. MANN, OF THE LONDON COMMERCIAL COLLEGE.

PRINCIPLES.



In the Standard Capital Letter M the Capital Stem and descending left curve are united, as in N. The left curve is joined in a short turn at base to an ascending left curve, which rises to the height of the letter, the upper portion being on the same slant as the first curve in the Capital Stem, and similar to it. It unites angularly at the top with the Contracted Capital O, which completes the letter.

The ovals right and left of the downward lines are of equal height, and the three spaces between the four curves at the middle height of the letter, are equal.

ANALYSIS.

Principles:—Eighth, Third, Third, Sixth.

PROBABLE FAULTS.



Same as in N; and further second left curve retracing first; spaces too narrow

or too wide between Capital Stem and Contracted Capital O; Last section of the letter too short, or on wrong slant.

SUGGESTION.

Practice upon the parts separately as represented in the analysis.



The Capital Letter T commences two spaces above the ruled line with a left curve, rising one space, and uniting by a turn with a slanting

straight line, which descends one-fourth the distance to the ruled line, then joins angularly to a compound curve, made horizontally. This curve unites with a Capital Stem, with the upper curve slightly increased. It crosses the compound curve, forming a small loop, then descending to the ruled line completes the letter. The short straight line, if continued to the ruled line, would pass through the middle of the oval in the Capital Stem.

ANALYSIS.

Principles:—Third, Second, Third, Eighth.

PROBABLE FAULTS.



The compound curve in the top too long; the faults of straightening the downward line in the Capital Stem, making it too nearly perpendicular

and contracting the oval, are especially liable to occur in this letter.

SUGGESTION.

Practice upon the parts of the letter separately, observing the proportionate length and position of lines.



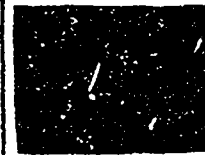
The Capital Letter F is the same as the T, with the addition of a left curve one-half space in length, made on a regular slant, on the right side of

the stem, opposite the termination of the oval.

ANALYSIS.

Principles.—Third, First, Third, Second, Eighth, Third.

PROBABLE FAULTS.



The same mistakes are liable to occur in forming this letter as in the T, and the finish is often made too

long, too far from the stem, and on the wrong slant.

SUGGESTIONS.

Same as in T. Aim to make the finish neat and well defined.

HONEY-COMB FROSTING.—One cup each of molasses, milk, chopped suet and seedless raisins; three cups of flour and one teaspoon of soda. Boil one hour.

ANSWERS TO CORRESPONDENTS.

H. E. MAIDER—Many thanks! Small amounts may be sent in Postage stamps. B. C. DIXON—Good problems are always thankfully received.

J. J. FERRIS of North Sydney, Cape Breton, aged 11 years, sends us several solutions this month. We would like to hear from more of our young folks.

THE MISSING PAPERS.

We have, during the month, received information from Wakefield and Upper Magalloway, N. B., and from Wilfrid and Norwich, Ont., stating that the subscribers at those offices have not received their papers regularly for some time back. These papers were all mailed at the proper time, and under our personal supervision. It is really shameful that they should be thus stolen or destroyed, to the annoyance of those to whom they belong. We have, in all these cases, sent the missing numbers again, and should these deprivations be continued, we shall see if there is any remedy provided for such cases in our postal laws. We trust that our friends will promptly inform us of the fact, should their papers not be forthcoming in the future.

NEW SUBSCRIBERS.

During the past month we have received a greater number of new subscriptions than in any month before; but there are still many Post Offices in the Dominion where we have as yet, no subscribers, though we have been sending, thus far, during the year, several copies to each for gratuitous distribution. We shall, however, discontinue these free copies at the end of the year, and, as we advertised last month, all who subscribe now, will be entitled to the paper free, until the 1st of Jan. so that their subscriptions will commence with that date. May we not, therefore, expect to receive a club from each of these offices during the present month? We trust that all interested in the good cause of education, will do what they can to bring about this result. We shall announce in the January number, who have obtained the prizes offered, and they will be immediately forwarded to the successful parties. The very best time for canvassing is now just upon us, and we hope the opportunity will not pass unimproved.

GERMAN LADIES.

I have noticed that in German families, family government is very strict, compare I with the theory and practice in America on this subject—I may say extremely rigid. The rules and regulations are few, but they are enforced on all circumstances. Unquestioning submission to paternal authority, lies at the foundation of this government. Children are taught to entertain the highest respect for superiors and for age. It is beautiful to see the respectful manner in which they deport themselves in the presence of their superiors and older persons. They are also invariably polite to

strangers. A few weeks ago a friend and myself made an excursion on foot into the country, and we were surprised at the genuine politeness of the poor peasants and their children. Every peasant and child we met saluted us in the kindest manner possible, and readily and pleasantly answered all our questions. Children are early taught to be industrious and self-reliant. They are not allowed to call servants to do for them things which they can easily do for themselves. Every boy is trained for some business or profession, and the girls are trained to make housekeepers and good wives. In the best of families servants very seldom wait on the table—not even when guests are invited.

I took tea not long since, at the house of a Baroness, with a party, and not a servant was seen. The Baroness made tea after we were seated at the table, with a convenient and elegant apparatus, prepared for the purpose, and two beautiful young ladies, a niece of the Baroness and a friend, passed around the table and served the guests.

On a certain occasion I called on a wealthy family, and was received by the lady of the house, who told me that her two daughters were in the kitchen cooking. They were both to be married soon, and a professional cook had been employed to come three times a week, to give lessons in the art of cooking, and initiate them fully into all its mysteries. In five minutes one of these young ladies came into the parlor to see me, neatly dressed, and conversed with me in beautiful English.

A thorough acquaintance with domestic economy is considered an indispensable qualification in a young lady for the married life. In addition to all this, mothers teach their daughters that one of the chief duties after marriage is to strive to make their husbands comfortable and happy. When a German husband comes to his home, at the close of a day of toil and anxiety, his wife receives him with a smile, arranges his arm chair, brings him his study gown and slippers, places before him refreshments, and while he eats, converses with him in the most entertaining manner about the events of the day. What will our lady friends say about this picture of domestic life in Germany?—[Selected.]

STUDENTS FOR THE COLLEGE.

New students from different parts of the Dominion are now fast entering the London Commercial College. We are happy to state that there seems to be a more general interest in the study of Practical Education, than there ever has been before. Young men! We welcome you to our Forest City, and to a place in our class rooms, and we feel assured, that if you are of the right stamp the result of your coming will be most gratifying to all concerned. There is, however, one thing which we would impress upon your minds, and to which we trust you will all take heed, and that is that your success with us, and through all future life, will depend more upon yourselves than upon any, or all other persons combined.

And we now say to you before you come, that we would far rather that you would not come at all, than that you should be the worse morally for having attended the College.

PEAN SPEECH TO

Professor Simpson, of Edinburgh, who has had a large and long experience in the medical treatment of mothers and children, gave a public address lately on matters of hygiene. He spoke most plainly to mothers who send their children to the grave, by exposing arms and legs, while other parts of the body were warmly dressed. Mothers, he continued, commit child murder and then wonder how God could be so unkind as to take away their darling. They not only murder their children, but in his opinion, commit suicide themselves by exposing their own necks to the cold air. It was a puzzle which he could not understand, that women should cut off the top of their dresses which should protect the heart and lungs, and other vital organs, and appear with bare bosoms, in refined society; while other parts of the dress are trailing in the mud.

Youth's Department.

School-day Memories.

Under this old oak tree's summer shade, to day, half dreaming, I rest; and my thoughts turn backward to the June days of childhood long ago, and far away. I see the dilapidated Old Log School House in Ohio, standing on the yellow knoll, at the cross roads, by farmer Thompson's orchard. The dark, zebraish walls so warped and weather-beaten, the low roof, cupped and curled by the rains and suns of tedious years,—the stone chimney crumbling to ruins,—the sloping sill, so often, pressed by little brown bare feet that have long since wandered a-cold down into the dark valley of shadows—all these, as pictures, I see again! I see the grassy hill slope in front of the school-house door, where, hand in hand, in happy circle, loved and loving all around, we children used to play and sing:

"Chickany, chickany crany-crow,
I went to the well to wash my toe,
And when I came back my ohloken was dead—
What time is it, old witch?"

Or,

"Come Eblander, let's be a marching!"

Or else,

"The needle's eye we must pass by—
The thread 'tis draws so true;
We have had many a smiling lass,
And now we have got you!"

O, those halcyon summer days so many years ago! How sweet their memory still! Through the dimness of the distant time, I still gaze, lingering, far down the forest valley that opened from the spring by the orchard fence beside the school-house. There in June of childhood, we climbed the plant-

saplings for acid oak-balls; there, following the gurgling water under the willows and around the ferny bank, we rambled for pearly pebbles, or strolled upward along the slopes for berries of "wintergreen;" there, in sultry August, we found the coolest and quietest shades. And there, in now long gone September, at the oak tree roots and on the level mosses of the rocks, we played the merchant, gathering the frost fabrics for fanciful goods—the glossy, crimson gum leaves for silks, the brown hickory leaves for broadcloths and the faded lily-blades for ribbons rare,—all nicely arranged on shelves of bark behind counters of fallen timber. These were our treasures then, and that wealth gave us exquisite pleasure. Never did salesman in city trade more earnestly recommend his merchandise, than we our "best assorted" and "latest styles" when we played "keeping store."

And our customers! I see them now—the little ladies tripping from their make-believe houses beneath a score of neighboring wild vine arbors,—the miniature men astride of sticks for horses, galloping to our very store doors, and there dismounting to examine our stock of soap-stone plows, our poke-berry paints, our harness of plaited glass, our dock leaf leather, our hazel-wood iron, our nails of broken twigs from hawthorn bushes! And the money, roady pay, (for, much as we loved, we never trusted in a financial sense; but in every other, always)—our money, our current and never counterfeited, was neither silver nor gold, but the pretty round acorn shells, or the tiny white pebbles gathered from the brook that bubbled down the valley!

But here, this sultry afternoon, as I write beneath the tree, the scenes of the past are blended, not only as a picture of summers gone forever, but of many merry winters between; and the sports of the youngsters were none the less enjoyable for cold, or because of the teacher's eye. Summers and winters all were filled with royal delights!

Many were the lessons learned within and without those sombre walls of logs and clay—the old school house on the green! Many were the joys freely bounding from life to life as we children sported on the broad playground beneath the great oaks, or sauntered in groups of discovery far down the wooded valley. The tender recollections of school-days, even in that humble house and along its hallowed paths around, are cherished for their pictures of peace, and shall be more beautiful with the added years.

Yes, when this earth-life is ended, the glorified student from heaven shall look downward and backward along the shining pathway that led him to the immortal heights. He will remember the school where were such gentle friendships—the first outside of home—such floods of light, such trails of love, such soul-sustaining and soul-saving believings of truth, as the brightest place between mother and God!

ALEXANDER CLARK.

TOBACCO.

"A custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and, in the black stinking fume thereof, nearest resembling the horrible stygian smoke of the pit that is bottomless." (King James.)

Boys! Don't touch it! Next to Strong Drink, it is probably the greatest curse of our land. It is a constant drain upon the pocket, but this is one of the least of the evil consequences attending its use. It will make your company almost unbearable to many of the dearest friends that you have on earth; for to the most respectable and refined portion of community there is probably no smell more offensive and loathsome than that stench which proceeds from the breath and person of one who has become a slave to this disgusting and filthy weed. Young men who have been well brought up, and who would otherwise have been models of neatness and politeness, have, through smoking and chowing, been transformed into the vilest Boors, who, for the sake of a base gratification of their depraved and vitiated appetite will, without a blush, outrage the most common rules of decency, and force those who are so unfortunate as to be cursed with their society, for the time being, to become partakers of the nauseating accompaniments of their detestable habits. But its evil effects do not stop even here, for it is a well established fact that tobacco acts upon the system as a most insidious and destructive poison. The leading scientific men and teachers of the present age, unite in the opinion, that its use is most pernicious to the nervous system of students and all other devotees of this filthy god; and that investigation has proved that it is a most fruitful source of insanity, general paralysis, paraplegia, &c. It was but yesterday, that we passed, in the street, a poor victim of this species of intemperance. He is a professional Tobaccoist of our city, and by being constantly among the vile stuff, and, without doubt, using it in its different forms himself, his whole frame has become palsied and devitalised, so that he stagger through our streets, a mere wreck of humanity, just ready to pass into the presence of his Maker, to render an account for those noble faculties of body and mind, which have been thus needlessly, and we feel warranted in adding, wickedly destroyed. Poor man! When we saw him in going a few yards from the door of his shop, instead of walking uprightly and firmly as one of the noblest works of God, obliged to clutch with his palsied hands, the sides of the buildings and other objects within his reach, in order to sustain himself, and steady his faltering footsteps, we felt sincerely to pity him, and mentally resolved to lift our warning voice through the "Educator," and do all that we could to counteract and overthrow this fell curse of the human race.

Is any boy foolish enough to think that to

chew or smoke this nasty poisonous stuff will make him appear like a man? Why! you might as well conceive that to dress yourself in the skin of a hog, and wallow in the mud and filth of the gutter would make you appear like an angel of light. If you wish to become manly in the true sense of the term and procure the respect and esteem of all right-thinking persons, HAVE NOTHING TO DO WITH IT OR ITS KINDRED VICES, and discountenance to the utmost extent of your influence its use, culture and manufacture by others.

ORDER.

No matter what business a man enters into, order is indispensable. Any great undertaking no matter what it is, must be attended with order and punctuality to secure its success. How often do we see a workman after using a tool throw it aside, and forgetting where he had left it, have to secure another one.

Punctuality has almost the same meaning as Order. We often hear little boys called lazy, sleepyheaded fellows, because they do not make their appearance at school at the right time. So with grown-up people. They often suffer severe losses in business from want of punctuality. Then let it be the desire of everybody, old and young, to practice order, neatness and punctuality in all things.

R. K. KERNIGAN.

The Golden Rule.

When I was quite a young man I lived far away from here, in a mountainous country, and very near where I lived there is what is called a mountain gorge, which was some ten feet wide. Now, to get on the opposite side, one must travel some four or five miles; so the neighbors concluded to have a bridge built, and each one that crossed pay toll, and in that way to pay for the bridge and keep it in repair. As I lived nearer the bridge than any one else, they voted that I should be toll-gatherer. This was not a very arduous task, as there was not a great deal of travel in that region, and very seldom any one wished to cross the bridge after ten o'clock at night. O, I must not forget to tell you that there was a gate at one end of the bridge which was kept locked at night, and no one could cross unless they came and roused me up; but I always kept a light in the window to guide the traveler to the house.

One day we had a heavy pouring rain all day; and as night came on, instead of abating it seemed to increase in violence. The wind commenced to blow, and I thought to myself, this is indeed a fearful night; but it isn't probable that there will be any travelers to night. However, I put my light in the window, and went to bed about ten o'clock. I can not say how long I had slept, when I was aroused by a heavy knocking at the door. I got up and opened it as soon as possible.

There stood a man who seemed to be completely drenched with rain. I asked him to come in; but he said, "Young man I am sorry to trouble you, but I am very anxious to cross the bridge to night, and would like to have you open the gate for me." I tried to persuade him to come in and stop till morning, but he said he could not think of it, as he had a child on the other side who was very sick, and he felt that he must go. So I took my lantern and the key, and went out to let him go across, but when we got to where the bridge had been, we found it was swept away. Then the stranger gazed in consternation, and exclaimed, "What shall I do? what shall I do? I fear my child will die before I can get to it."

Then I said, "Stranger, there is a place a few rods above here, where I have often waded across in pleasant weather. If you will get upon my back, and trust yourself with me, I think I can get you across safely." He said, "Willingly, willingly, young man, if you are disposed to undertake it." So I took him upon my back; but as the water was quite deep I had to use a great deal of caution and care; but at last I got him safely upon the opposite bank. When I put him down, he offered me a well-filled purse. I thanked him and said I wished for nothing but the regular fee. As I spoke I looked towards him, and a halo of light seemed to surround his head, as he repeated these words: "Inasmuch as ye have done it unto another, ye have done it unto me," and he was gone.

How I got back and into bed again I have no recollection. In the morning when I got up, my light was burning in the window as usual. The rain had ceased, and I looked out to view the devastation caused by the late storm, when, lo and behold! there stood the bridge, apparently as strong and defiant as ever. "Then I knew my labor of love had been 'all a dream.'" But, boys, it left an indelible impression upon my mind, and after that I was more inclined than ever to do good as I had opportunity.

I hope you will profit by the secret I have told you. Try to do as you would be done by; it is a very easy rule to follow. If you are inclined to do wrong, just stop and think, "Would I like to have another do so by me?" That will decide it, and then you must do the right thing.

Children, I am an old man now; but let me tell you that I never found anything that would pay better than the practice of the 'Golden Rule.'—[Uncle Joseph.

The Querist.

PUZZLE.

My second climbed a tree to get my whole but fell into my first and was drowned.

R. M. B.

ANAGRAM.

Fiel st thu a pyrellisp petac,
 Tas thiw belaruto rakid ndn pede;
 Nac ouy usttr em Culy edra,
 Kawl, dieabe mo hitwuo rfac.
 Amy I rayc fl ilwl,
 Lal royu ne'srub pu lile lill.
 Neth hae erdwaanc thiw a geullh,
 On' thu ouy yma ycar lllfa.

P. S. SATBHNUEA.

The following exercise for correction in Orthography, was recently given to candidates for the position of Principal in the Chicago schools. How many of our readers can correct it properly without referring to a dictionary?

"Preferring the kornelion hues, and sepperateing the innuendos, I will simply state that a peddlers poney ato a potatoe out of a waggin whilist its owner anounst that ho was a traveller, and havi for sale Jewellery, stashionary and every conseavible article of dry goods, and confest considerable embarasment, as ho was not only nearly phrenzied but was almost sick with an eggzaggerated attack of tizzic, besides his ordinary afflixion of kronik diarceer."

ENIGMA.

I am composed of eleven letters.
 My 2, 4, 8 and 5, is part of the human body.
 My 0, 3, 8, 7, 2, 4 and 11, is one who instructs.
 My 2, 8 and 9, is part of a man's wearing apparel.
 My 7, 8, 6, 1 is a domestic animal.
 My 5, 10, 7, 1, 10, 11, is a title.
 My 5, 10, 11, and 8 is a lady's name.
 My 5, 8, 8, 11, 9, 2 is want.
 My whole is a monthly visitor.

JENNIE.

J. S. White sends us the following question from an old work for insertion.

One evening I chanced with a tinker to sit,
 Whose tongue ran a gress: deal too fast for his wit.
 He talked of his art with abundance of mettle,
 So I asked him to make me a flat-bottomed kettle.
 Let the top and the bottom diameter be,
 In just such proportion as five is to three.
 Twice inches the depth I proposed, and no more;
 Of Wine gallons to hold seven-tenths of a score.
 He promised to do it, and straight to work went,
 Got right the proportions, but wrong the content
 He alter'd it then, and the quantity found
 He alter'd it then, and the quantity found
 Correct, but the top measured far too much round;
 Till, making it either too big, or too little,
 The tinker at last, had quite spoil'd his fine kettle.
 But he vows he will bring his said promise to pass,
 Or else he will waste every ounce of his brass.
 So to save him from ruin, kind friend, find him out
 The diameter's length, for he'll ne'er do it, I doubt.

ALGEBRAIC PROBLEM.

From a cask containing 256 gallons of wine, a certain quantity is drawn, and then it is filled with water, and then the same quantity of the mixture is drawn, and so on for four times, filling up with water at every draught, when 81 gallons of pure wine is in the cask. How much wine is drawn each time?

H. N. CHUTE, Aylmer, Ont.

MATHEMATICAL PROBLEM.

This problem was inserted in last number, but on account of a typographical error which was overlooked at the time, it did not admit of solution.

The circumference of an inscribed circle is 20. The hypotenuse by 22, what must the sides of the triangle be.

JOHN CAMERON,

Chatsworth.

Answers, Solutions, &c. for last No.

ANAGRAM.

Nor pass the curious tentie last,
 Who o'er the lugie hangs his head.
 And begs of neighbors books to read
 For hence arise,
 Thy Country's sons, who far are spread
 Both bold and wise

THOMSON.

Correct answers from H. A. Thomas, John J. Forbes, John Cameron, J. B. Milne, Sam'l. Ranton, and H. Dickenson.

MATHEMATICAL PUZZLE.

The eagle is a gold coin of the U. S. worth \$10; consequently the answer is \$20.

Correct answers from J. C. Bennett, Allen Moyer, John Cameron, A. Murray, H. A. Thomas, John B. Milne, Sam'l. Ranton, H. Dickenson, P. S. Stenabaugh, Wm. Teskey, and Henry Baynes.

ENIGMA—ANSWER LATITUDINARIANISM.

Correct answers from J. L. Hepburn, Allen Moyer, John J. Forbes, John Cameron, M. Simpson, H. A. Thomas, John B. Milne, Sam'l. Ranton, H. Dickenson, W. J. McDonald, Wm. Teskey, P. S. Stenabaugh, Henry Baynes and R. K. Kernighan.

ARITHMETICAL PROBLEM, Ans. 36.

We have received solutions of this problem by Algebra and Position, but have received no satisfactory solution by Analysis. Cannot some of our readers send us such a solution during the coming month?

Correct answers from Allen Moyer, John Cameron, M. Simpson, H. A. Thomas, John B. Milne, Sam'l. Ranton, H. Dickenson, W. J. McDonald, P. S. Stenabaugh, Wm. Teskey and A. Murray.

ALGEBRAIC PROBLEM.

SOLUTION.

$12x^2 - 55x^2 - 18x + 6x^{-1} = 1$ (I) multiplying by $12x^2$ transposing and adding 16 to each side, we get $144x^4 - 216x^3 - 15x^2 + 72x + 16 = 676$ (II), extracting the square root, we get $12x^2 - 9x - 4 = 26$ or $12x^2 - 9x - 30$ (III) Now completing the square, and extracting the sq. root, we got $24x = 9 \pm 39 = 48$ or -30 , wherefore $x = 2$ or $-1\frac{1}{2}$ Ans.

JOHN CAMERON,

Chatsworth, Ont.

Correct answers from Obed Smith, W. J. McDonald, and A. Murray.

In proof of S. B. Ganton's solution of Mathematical Problem in September No., it was made to read "Join CP, then CP = CE." It should read then CP = PE, &c.

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 Smith's Book
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