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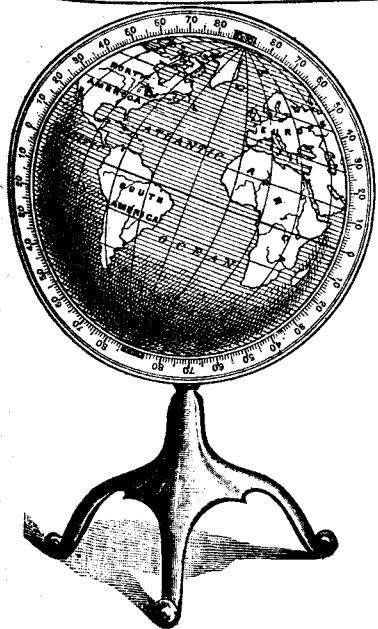
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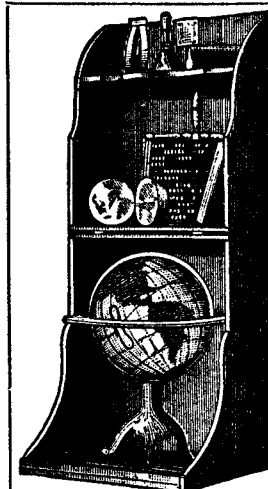
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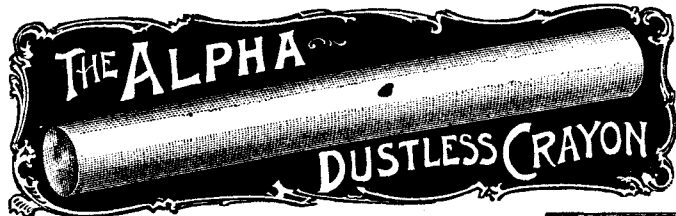
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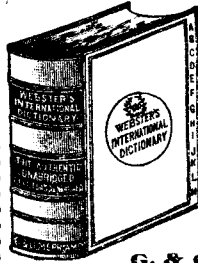
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Editorial Notes.

TO OUR READERS.

WE were a few months ago asked by one of our agents, prior to the annual meeting of the Teachers' Institute in his district, whether we had any new inducements to offer to new and renewing subscribers. We replied that we had not. But his question set us thinking. We have always preferred to make it our aim that the value of THE JOURNAL itself to subscribers should be such as to render auxiliary inducements unnecessary. Hence we have sought no extraneous aids to circulation. But why not, we have been asking ourselves, give our patrons the benefit of every outside advantage available? The teaching profession is probably more poorly paid than any other, while books—the teachers' tools—are among the most expensive. Moreover, in this profession more than most others new tools are constantly needed. If, then, in virtue of the special character of his periodical, the publisher of a paper like THE JOURNAL is able to obtain from time to time exceptionally favorable terms from publishers of works of special value, why should he hesitate to give his subscribers the advantage? It may involve the expenditure of time and work, but neither publishers nor editors can afford

to take their places in the ranks of the indolent and the easy-going.

Thinking along these lines, we have managed to turn over a new leaf. What we could not well attempt of ourselves, we may hope to accomplish by the aid of others who are willing to share the expense and the responsibility. In a word, we are to-day happy to announce that we have made arrangements by which we shall be able, from this time forth, to make to our subscribers, and those who may hereafter become such, a series of the most liberal offers, in the shape of valuable and useful books, either absolutely free or at a remarkably low price, which have ever been made by any Canadian periodical. For samples of these we have but to refer you to those announced in the present number. About the first and greatest want of every teacher and every student is a first-class English dictionary. It is simply indispensable if one is to do good work. When a dictionary is made, by means of appendices, also a cyclopædia of geography, of biography, of mythology, and of general information, it constitutes half a reference library in itself. When beside this is placed a full and comprehensive cyclopædia of quotations, such as that offered in Franchise No. 1, the student of English literature finds himself furnished with no inconsiderable instalment of the other half of such library. Of course such works as these, the first-named of which cost a round million of dollars to produce—being the most costly literary enterprise ever undertaken in America, having been prepared by an editorial staff of distinguished scholars, representing over one hundred of the leading universities and scientific societies of the world, and being already in use in the Smithsonian Institution, the Departments of the Canadian Government, scientific societies, the leading educational institutions, and the public schools of the United States and Canada—cannot be given away. But the one is now offered in connection with THE JOURNAL at a minimum price and on so easy terms of payment, and the other so nearly free, that there is really no reason

why almost every teacher in the land should not place both within reach of his study table.

A CORRESPONDENT writes us from Hollen as follows: "Two teachers applied for a school in the northern part of Perth county at salaries of \$100 and \$99"! Comment is needless.

THE Public Schools of Northumberland have suffered a serious loss in the death of Inspector Scarlett, who died on the 19th ult., at Cobourg, at the ripe age of seventy-five years. We do not know how long Mr. Scarlett had occupied his honorable office, but he was clearly one of the veterans.

THE report of the "Committee of Ten" on Secondary Education, and that of the "Committee of Fifteen" on Elementary Education, prepared under the auspices of the American Educational Association, have proved to be very valuable documents. A "Committee of Twelve" has now, we learn, been organized to report upon the rural school problem. This report should be no less valuable than either of its predecessors.

A MISTAKE to be carefully guarded against by every one who aspires to be a true teacher is what Rev. W. Hales has recently called the didactic disease—*i.e.*, telling instead of teaching. A cardinal principle in the philosophy of teaching is never to tell a pupil that which he is capable of finding out, or thinking out for himself. The first work of the educator is to create, or stimulate, a healthful desire to know; the second, to direct the learner in the way to get the knowledge. To these a third may be added, though it is, perhaps, included in the second—to test, and teach the student to test, the genuineness of the knowledge, and make sure that it has become in reality the property of the learner, by being thoroughly digested and made a part of his own thought.

English.

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

THE STUDY OF TENNYSON WITH A VIEW TO TEACHING "RING OUT, WILD BELLS."

BY LAURA A. M'RAE.

To insure a profitable and successful lesson, it is of the utmost importance that the teacher have thorough preparation, not being content with the bare outline of facts. It is impossible to interpret, much less to appreciate, a poet's writings without knowing something of his life. How true this is in the case of Tennyson's verse!

Nothing is more difficult than to trace, with any degree of accuracy, the qualities of a man to their origin in inherited qualities, youthful environment, and the circumstances, influences, and opportunities of the years of active life. That their innate characteristics and early training had much to do with the mature minds of the Tennysons is shown to some extent by likenesses observable in Frederick, Charles, and Alfred; as boys they were all filled with literary ambition, and as men they all achieved distinction as poets, though the youngest alone was marked by what we call genius. At college he was known for his gift of poesy and the reluctance with which his sensitive nature allowed his work to be submitted to criticism. The charmed circle of his early years was to be rudely broken by the shock of a profound grief. The blow which fell on Tennyson was secret. The death of Arthur Henry Hallam, in 1833, caused no great revulsion in English politics, brought no visible disaster to church or state, sent only the lightest and most transient ripple of sorrow across the surface of society; but to the heart of *one* man it was the shock of an inward earthquake, upheaving the foundations of life, and making the very arch of heaven tremble. Bound to Hallam by one of those rare friendships, passing the love of women, Tennyson felt his loss in the inmost fibres of his being. The world was changed, darkened, filled with secret conflicts. The importunate questions of human life and destiny thronged upon his soul. The ideal peace, the sweet, art-satisfied seclusion, the dreams of undisturbed repose, were no longer possible for him. He must fight, not for a party cause, but for spiritual freedom and immortal hope; not against incorporate and embattled enemies, but against unseen foes, thrones, principalities, and powers of darkness. We have some record of this strife in poems like "The Two Voices" and "The Vision of Sin," but there is a more profound and successful treatment in his later poem, "In Memoriam."

What better summary of this beautiful poem can we desire than the following verses:

"The record of a faith sublime,
And hope, through clouds, far-off discerned,
The incense of a love that burned
Through pain and mist, defying time;

"The story of a soul at strife
That learned at last to kiss the rod,
And passed through sorrow, up to God,
From *living* to a higher life;

"A light, that gleams across the wave
Of darkness, down the rolling years,
Piercing the heavy mist of tears—
A rainbow, shining o'er the grave."

But it is of a particular part of this sublime whole we wish to speak. Altogether the poem consists of 131 lyrics, each in itself a perfect gem in a noble setting. One of these—the *cvi.*—is the poem all Fourth-Book pupils are familiar with, beginning with the well-known lines:

"Ring out, wild bells, to the wild sky,
The flying cloud, the frosty light;
The year is dying in the night;
Ring out, wild bells, and let him die."

What impressed beauty and significance it gains from being studied in connection with the whole! Therefore, though well-nigh an impossibility, in this age of "cramming," to lead a class through the intricate mazes of the preceding lyrics, it would

at least be well to give them the story of "In Memoriam," showing them thus more clearly the relation of the lesson to the complete poem. Twice before in "In Memoriam" the poet has referred to the ringing of the church bells. In the 28th lyric he is represented as listening to the rise and fall of the sound of the church bells of four neighboring villages. It is the first Christmas Eve after Hallam's death, and the familiar sound mingles his former happiness with his present sorrow.

In lyric *civ.* the poet spends the eve of the third Christmas after his bereavement in his new home. There is but *one* bell, instead of the four he was used to. Everything seemed strange, new, and unhallowed. But (in lyric *cvi.*) the bells of New Year's Eve stir the poet to manly hope and faith; he would gladly see the evil of the world and the morbidity of his own heart give place to light, and power, and an ideal state. This lyric is also a song of triumph, triumph over his former doubts, questionings and morbid sorrow.

With the advent of the New Year he hopes to have a deeper insight into the perplexing mystery of life, and be able to touch *all* the chords of the human heart. Tennyson was not a poet to shut himself off from all communion with the outside world. In his early youth the murmurings of the nation at the oppressive Corn Laws, the riots consequent on a scarcity of food, and the Chartist agitation, would all interest and rouse him. He sings of the greatness of his beloved England, celebrating the extension of her territory to New Zealand, Australia, and India. How in sympathy he must have been with her soldiers to immortalize their deeds in such stirring verse as "The Charge of the Light Brigade," "The Defence of Lucknow," and "The Revenge." His own great grief enabled him to sympathize more deeply with our Sovereign in her irreparable loss—the death of the Prince Consort in 1861.

The odes written on the occasions of the great exhibitions, the International and, later, the Colonial, give us a glimpse of the poet's patriotism. From these and sundry references in "Locksley Hall," sixty years after, we see his great longing for the unity of, at least, the English speaking nations of the world. This seemed in a fair way to realization before Tennyson died.

After studying Tennyson's life and the history of his time, surely one can far more truly appreciate the full meaning of the lines:

"Ring out the feud of rich and poor,
Ring in redress to all mankind.

"Ring out a slowly dying cause,
And ancient forms of party strife;
Ring in the nobler modes of life,
With sweeter manners, purer laws.

"Ring out the want, the care, the sin,
The faithless coldness of the times:
Ring out, ring out, my mournful rhymes,
But ring the *fuller* minstrel in."

In Canada, happily, we have no such class distinctions as exist in England. However, with a little explanation, or illustrations, the class will readily grasp the thought contained in the lines:

"Ring out false pride, in place and blood,
The civic slander and the spite;
Ring in the love of truth and right;
Ring in the common love of good."

In the lines,
"Ring out the darkness of the land,
Ring in the Christ that is to be,"

we have a summary of the whole lyric; Christ, "The Light of the World," is contrasted with "Darkness." In the last clause Tennyson expresses his belief in the ultimate triumph of good, *i.e.*, Christ's kingdom on the earth.

In taking up the lesson critically the teacher should draw the attention of the pupils to the clearness of thought, simplicity of language, and, above all, to the high moral tone of Tennyson's poetry. If an interest in the work of this, one of our greatest poets, has been aroused by this glimpse of his great grief and his triumph over it, surely the teacher has accomplished much.

There is no one from whose writings better lessons can be drawn for the conduct of life, for morals in their higher ranges, than can be drawn from Tennyson. The more one reads Tennyson the more one finds that, below all conduct, as its foundation impulse, lies in this poet's work *the love of the Infinite Love, the passion of unending effort*

for it and the conviction of an eternity of life in which to pursue after it. This eternal continuance in us of the *conscious life of love*, in other words, of *incessant action toward the greater nearness to the illimitable love* which is God, is the position of Christ, and it is the position of one who believes in a personal immortality. From his poetry endless examples might be quoted to prove this was Tennyson's position.

Looking at the study of this poet from an educational standpoint, one readily recognizes the immense advantages gained by an intimate knowledge of his ennobling writings; from a selfish point of view, one can understand that, besides the great pleasure of reading such poetry, there underlies it all such a true strain of sympathetic concord, that, perhaps unconsciously, our sympathies are broadened; our views of human life and destiny made better, and brighter, and clearer.

Meaford, October 22nd, A.D. 1895.

PRACTICAL EXERCISE IN ENGLISH.

MISPLACED ADJECTIVES AND ADVERBS.

A word, a phrase, or a clause, used as an adjective or adverb, should come next to the word, or words, which it modifies.

The word *only* requires special care. Observe how the position of *only* affects the meaning in the following sentences: "Only he lost his hat"; "He only lost his hat"; "He lost only his hat," or "He lost his hat only"; "He lost his only hat."

EXERCISE LXXIX.

Correct the errors of position in the following sentences:

1. Metal reflectors are only used now for cheap search-lights.
2. I will only mention some of the best.
3. I only had time to read "King Lear."
4. He only spoke to me, not to you.
5. Coons are only killed with the help of dogs. The coon only comes out in the night-time.
6. Lost, a Scotch terrier, by a gentleman, with his ears cut close.
7. Canteens were issued to the soldiers with short necks.
8. We all went to the sea-shore for a little fresh air from the city.
9. At one time Franklin was seen bringing some paper to his printing-office from the place where he had purchased it in a wheel-barrow.
10. He went to Germany to patronize the people in the little German villages from which he came with his great wealth.
11. The three young men set out and finally arrived at the college dressed in girls' clothes.
12. The maskers were nearly dressed alike.
13. Erected to the memory of John Smith accidentally shot as a mark of affection by his brother.
14. Lost, an umbrella by a gentleman with an ivory head.
15. A piano for sale by a lady about to cross the channel in an oak case with carved legs.
16. He blew out his brains after bidding his wife good-bye with a gun.
17. The Moor, seizing a bolster, full of rage and jealousy, smothered Desdemona.
18. Wanted, a handsome Shetland pony suitable for a child with a long mane and tail.
19. Wolsey left many buildings which he had begun at his death in an unfinished state.
20. My cousin caught a crab and took it home in a pail of water which we had for our tea.
21. I scarcely ever remember to have had a rougher walk.

ADVERBS BETWEEN "TO" AND THE INFINITIVE.

"A careful writer will do well to avoid the construction which places the adverb between *to* and the infinitive. It is true that the construction is a common one; but it is also true that those who are most addicted to the practice are not those who count most as authorities on questions of good usage."

EXERCISE LXXX.

Improve the arrangement in the following sentences:

1. Hermes caused the milk pitcher of the old couple to never be empty.
2. His political enemies tried to in this way impeach the courage of the President.

3. He promises to earnestly try to do better.
4. To really know the man we must read his books.
5. Another project is to in some way modify the power of the House of Lords.
6. She dwelt upon what was comforting, though conscious that there was little to veritably console.
7. He proposed to either largely decrease the appropriation or to wholly do away with it.—From *Buchler's Practical Exercises in English*.

ANSWERS TO CORRESPONDENTS.

I.L.M.—(a) *The Children's Hour* (Second Reader).
 1. "They climb up into my turret." In the use of the word "up" the poet is merely following out the idea of a castle, which is being stormed. He, the occupant, takes refuge in the turret (his arm chair), but in vain. The storming party climb up after him. 2. The reference in "Bishop of Bingen," etc., is to an old legend. Bingen is a town on the Rhine, not far from Mainz. Not far from the town is a rock in the middle of the river, on which stands the famous tower of Bishop Hatto. In this tower, according to the legend, the bishop was devoured by rats in the year 969. In fact, the tower was not built until the thirteenth century.
 3. In "scaled the wall" the figure is slightly changed, though the idea of the storming of a castle or fort is still kept up, but the stormers or raiders are now represented as "banditti"—a band of brigands or outlaws.

(b) The "May Queen" sets before us three pictures which, taken together, may be regarded as an allegorical representation of three phases of human life. First, we have a maiden in the first flush of womanhood, beautiful, gay, thoughtless, overflowing with gladness in expectation of the great delights which are in store for her on the morrow, when she is to be crowned Queen of the May. Again, we have the same maiden seven months later, on New Year's Eve. In the meantime she has been smitten with fatal disease, and, as she looks forward to the morrow, it is with the full belief that it will be the last New Year she will spend on earth. The tone of her conversation is now unutterably sad. Sorrow for the past, and melancholy in view of the approaching end, are the key-notes of her discourse. She accepts her fate with mournful resignation. We see her for a third time in the glad springtime, when all nature is bursting into leaf and song. She expected to die before the snowdrop made its appearance, but has lived on till the time of the violet. In the meantime another great change has come over her spirit. She has learned to trust in the mercy and goodness of God, and is now longing for the great change she so much dreaded. She looks forward to unending bliss in a "blessed home," where she shall await the coming of her loved ones. It is usual for poets to represent the bloom and the decay of life, with all its joys and hopes and disappointments, by the spring and the autumn respectively. Tennyson's conception is happier. The earthly bloom and gayety come in the spring, the gloom in midwinter; but the end, full of joy and hope, comes also in the early spring. These suggestions may help you to find the fuller interpretation of this beautifully emblematic poem.

E.W.D.—"A middle-aged widow, when nobody else was near, thrust her head a little way into the recess, and vowed that the young fellow looked charming in his sleep." Grammatical subject, *widow*; grammatical predicates, *thrust, vowed*; grammatical object, *head*. Modifier of subject, *middle-aged*; modifier of first predicate (clauses) when nobody else, etc., her head, a little way, into the recess. Modifier of second predicate (vowed), the subordinate sentence introduced by the conjunction *that*. Of course the subordinate clauses and sentences may themselves be analyzed.

"The longer they looked, the more did this elderly couple feel interested." Parse the italicized words. "Longer" is an adverb modifying "looked." "More interested" is an adjective in the comparative degree, predicative with "feel." It is difficult to explain the construction of the sentence without supplying the ellipses in some such form as "By how much the longer . . . by so much the more," etc.

Hints and Helps.

THE TEACHER'S PERSONALITY.

By E.M.H.

The teacher with a winning, pleasing personality possesses a strong ally in her school work. Pupils are quick to perceive and appreciate a teacher's personal attractions. Refractory pupils succumb to the power of personal influence when compulsion fails.

A teacher's personality is a subtle combination of manner, speech, appearance—her individuality. I visited a school where a lady teacher of rare ability presided. Her power over her school was like witchery. Her boys adored her. She was a loving companion with the girls. The little children trusted her like a mother.

I made this teacher a study. I tried to find her great power. She was not pretty, but her countenance was lighted by a sweet, animated expression. She was not finely dressed, but her clothing was the perfection of neatness and taste. Her hair was always becomingly and prettily arranged; her manner was frank and friendly; her voice sympathetic. She was a living inspiration to her school. I heard a boy, one of her pupils, say, "I would rather have any other teacher whip me than to have a word of reproof from Miss S—."

During the noon hour she remained at her school, as did most of her scholars, and she took this occasion to learn the inner lives of her pupils by mingling with them in friendly intercourse; by eating her dinner in company with them in the shade of a tree. By her hearty kindness she made all feel that she had a special regard for the welfare of each of them.

The teacher who does not value the importance of her personality sufficiently to be neat in dress can hardly hope to secure her pupils' respect. Whenever teachers appear in the schoolroom with elbows out, with soiled dress fronts, buttons missing from shoes, hair slovenly, etc., so that pupils make the teacher's untidiness a subject of common remark—then more than a hint should be given them.

With no one does an attractive manner and neat external appearance have greater power than with the teacher, for the children are much influenced by these things.—*School Education*.

USES OF OBJECT LESSONS.

The first and most important is to teach the children to observe, compare, and contrast; the second is to impart information; and the third is to re-enforce the other two by making the results of them the basis for instruction in language, drawing, number, modelling, and other handiwork. There are, however, other important uses of good object teaching. It makes the lives of children more happy and interesting by opening up an easily accessible and attractive field for the exercise of the brain, hand, and eye; it gives the children an opportunity of learning the simplest natural facts; and directs their attention to external objects, making them less bookish. It further develops a love of nature and an interest in living things, and corrects the tendency which exists in many children to destructiveness and thoughtless unkindness to animals, and shows the ignorance and cruelty of such conduct. The value of the services which many animals render to man should be dwelt upon, and the importance of kindly treating them should be pointed out. By these means, and in other ways, good object-teaching may lay the foundation for the right direction of the activity and intelligence of the children throughout the whole school.—*Educational Review*.

TWO SCENES.

1. A school in good condition; a new teacher with prepossessing appearance, superior education and ten years' experience. In a few days, idleness and noise; in two weeks, serious disorder; in a month, open rebellion. Exit teacher.

2. Enter successor, young and girlish, with little experience. In two days the room has become quiet; in a week the children are orderly and studious; in a month all are her loyal supporters.

Why this difference in the state of affairs?—*Exchange*.

"THAT IS SO, ISN'T IT?"

The Abbot of Shalott decided to make a pilgrimage to the Camelot Summer School. First of all he dropped into the oratory of Camelot Abbey where a friar who had studied under Alcuin himself was teaching methods. And this is what he heard:

"The object of teaching is to arouse self-activity in the child, is it not?" "Yes," unanimously.

"Then, a pupil should not be told what he can reasonably be expected to discover for himself, should he?"

The air was fairly blue and sizzling with the tremendous generation of thought on the part of the class, which culminated in a self-directed shake of the head.

"It kills enthusiasm in a class to have everything told by the teacher, does it not?" Heads move in the perpendicular plane.

"Hence the teacher should never deprive the pupil of the right to do his own thinking, should he?"

Vigorous motion of heads in the horizontal plane.

The Abbot drew a deep sigh, thinking perhaps of the infidel Saxon's attack on his liege lord.

Next he heard a lesson in botany by a professor from Queen Guinevere's own Normal School.

"This is the corolla of the flower, is it not?"

Mysterious are the workings of the human mind. Sixty immortal souls in that room got the same grand thought in the same moment and expressed it eloquently with "Yes."

The Abbot had seen and heard enough of botany. Such a double-back-action, and self-cocking sixty-shooter of thought he had never seen before.

Next he passed to regale his faint spirit on historic lore under the learned professor of history from the Royal University.

The professor had notes. He had nothing but notes. He read the notes. He did nothing but read his notes. This is what he read:

"Bloody Mary was the daughter of Katharine of Arragon, wasn't she?"

The class thought so emphatically.

"And Queen Elizabeth was the daughter of Anne Boleyn, wasn't she?"

The class hadn't a doubt as to the historical correctness of the statement.

"Hence Mary was older than Elizabeth?"

One or two of the class who were not reading novels, preparing the next recitation, looking out of the window, whispering, or sleeping, expressed with a nod that they had no doubt of the substantial correctness of the professor's view.

The Abbot passed with bowed head from the room, fairly overwhelmed by the spectacle of so much independent thinking by pupils. Tears trickled down his venerable beard as he crossed himself and murmured a *pater noster*, ending it with "*O Sancte Herbarie, ora pro nobis! Ora pro nobis!*"

But all this happened long, long ago, in the middle ages, and cannot affect us.

"That is so, isn't it?"—*School Education*.

HISTORICAL RECREATIONS.

A very profitable period of from twenty minutes to half an hour may be spent occasionally in a history game, or a game of industries.

Certain pupils may be specified to bring some given number of questions each. A chairman can be appointed from among the students, or the teacher may conduct the exercises.

The questions should be dropped in a box upon the table by which the chairman *pro tem* is sitting.

The questions should be read, separately, and each disposed of in a satisfactory way, before taking up the next. Much valuable information may be obtained in this way, and the *thinking* and *memory* powers of the students at the same time receive development and strength.

These questions may relate to people or places. The exercise may be varied in many ways, and each new mode will suggest another.—*Educational Gazette*.

The advantage of study, I expect, is not in the number of things we learn by it, but simply that it teaches us the one thing worth knowing—not what, but how, to think. Nobody can learn that from other people.—*James Russell Lowell*.

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Editorials.

KEEP UP THE CIRCULATION.

WE have more than once pointed out that if agriculture is to be taught at all in the schools it is quite as essential that it be taught in the city as in the country schools. In spite of all that schools or parents can do, there will always be a tendency on the part of the ambitious youth of the country to seek fame and fortune in the great cities. Well, why not? We want no caste notions in this hemisphere. The old customs that bind down the children to follow in the footsteps of their parents, so far as their life occupations are concerned, are happily obsolete here. It is better so. We have no wish to revive them. Circulation is good. It prevents stagnation, restores equilibrium, and carries with it reviving and stimulating influences. If the farmers' sons all remained on the farms, if tradesmen's children adhered to their fathers' trades, if business and professional pursuits were kept as preserves for the families of those engaged in them, the wheels of progress would soon begin to drag heavily. Physical deterioration is rapid in the cities. The infusion of fresh blood is as necessary to maintain vigorous life in scientific, professional, and business circles, as the atmospheric movements which save the

congregated thousands from being poisoned by the foul gases they generate. The true philosophy is to keep the circulation active, the movement reciprocal. For every stalwart youth the country sends to the city, the city should send back, at least, two of its punier products to find life and health in the country. Let doctors and lawyers, men of science and men of business in the cities, educate their sons and daughters for rural pursuits. In numerous cases they are best fitted for this. Let the waifs of the streets be trained in industrial schools and fitted for lives of honest industry on country farms and in country workshops. Thus will the balance be preserved, the fitness of things be consulted, and the best results accomplished.

The foregoing was in type before the manuscript of Mr. Robson's article, which appears elsewhere, advocating essentially the same view, came to hand. The coincidence is therefore accidental.

THE SCIENCE OF NUMBER.*

"It is, perhaps, not too much to say that nine-tenths of those who dislike arithmetic, or who at least feel that they have no aptitude for mathematics, owe this misfortune to wrong teaching at first, to a method which, instead of working in harmony with the number instinct, and so making every stage of development a preparation for the next, actually thwarts the natural movement of the mind, and substitutes for its spontaneous and free activity a forced and mechanical action accompanied with no vital interest, and leading neither to acquired knowledge nor to developed power."

This is a bold indictment. If it be true, wrong teaching has much to answer for. How frequently does the teacher come in contact with minds which, while by no means slow to grasp general principles and follow them to sound and clear conclusions in other departments of study, persistently fail to master mathematical principles, or to find interest or profit in numerical operations! The common explanation, to the effect that these particular minds are deficient in what it is convenient to call the mathematical faculty, while well developed in every other respect, is, to say the least, unsatisfactory. It seems to assume that the mind, or at least its organ, the brain, is made up of a congeries of forces or faculties either quite independent of each other, or so slightly correlated that one may be markedly deficient in working power without affecting the vigor and efficiency

*The Psychology of Number and its Applications to Methods of Teaching Arithmetic, by James A. McLellan, M.A., LL.D., Principal of the Ontario School of Pedagogy, Toronto, and John Dewey, Ph.D., Head Professor of Philosophy in the University of Chicago. New York: D. Appleton & Co.

of the rest. It is needless to say that such a theory is quite out of harmony with all sound psychology. Practically, this way of thinking is certainly mischievous, tending, as it does, to excuse and confirm that habit of inertness and despair on the part of the pupil who "cannot understand mathematics," which is often so peculiarly exasperating to the teacher. Moreover, the cases, more or less frequent in the history of every teacher of experience, in which those who at one period seemed to belong hopelessly to the "can't" class have afterwards succeeded in arousing the dormant faculty and become fairly proficient, tell strongly against the despair theory.

But the authors of the new book on "The Psychology of Number," from whom the sentence with which we set out is quoted, are very far from contenting themselves with general statements or broad negations. The somewhat striking affirmation quoted occurs in the work only after a positive, and, so far as we are aware, an entirely new, theory of number in its psychological relations has been wrought out with admirable clearness and patience. The method of the work—which, by the way, has the high distinction of being one of the International Education Series, in course of publication under the editorial oversight of William T. Harris, A.M., LL.D., head of the National Bureau of Education at Washington, U.S.—is strictly, not to say severely, logical throughout. The authors set out from the pedagogically sound principle that school and college methods and exercises can be truly educative only as they are based upon, and kept in harmony with, sound psychological principles.

What, then, is number, psychologically considered? This question is best answered through a second: How do we come by the concept which we call number? Number, all will admit, involves the idea of unity. But is the concept of number built up from that of unity, that is, is it derived primarily through operations performed upon collections or aggregations of units? This is undoubtedly the common, perhaps hitherto the almost universal, assumption. When we wish to convey to the mind of the child its first glimmerings of the idea of number, we commence with the unit. Here is one thing, say one pea, or one splint, or one finger. A second is placed beside it, and the child is taught to say "two." Probably most thoughtful parents or teachers who have undertaken this task have been sometimes astonished, perhaps almost irritated, by the persistency with which even the brightest child will cling to the

idea of "another one," and yet "another one," and the difficulty with which he can be taught to say instead "two," "three," etc. Even after this difficulty has been seemingly overcome, the instructor may presently be made to moderate his pleasure in success by finding that the child now attaches the ideas of "two," "three," etc., not to the two or three objects taken together, but to the second and the third of them, respectively, in the order in which they were placed before him. To put the fact in the language of Mr. W. T. Harris, United States Commissioner of Education, in his introduction to Messrs. McLellan and Harris's book, the child's abstract idea of unity, so far as it is thus developed, "is not yet quantity nor an element of quantity, but simply the idea of individuality, a qualitative idea, and does not become quantitative until it is conceived as composite and made up of constituent units homogenous with itself." Or, as the authors put it: "When we reach two in counting, we must still keep in mind 'one'; if we do not we have not 'two,' but merely another one. Two things may be before us, and the word 'two' may be uttered, but the concept two is absent."

From this starting point the authors go on to establish—whether satisfactorily or not the careful reader must judge for himself—the theory of number, which is the fundamental conception of the whole book, in its practical applications as well as in its logical reasonings. We regret that space-limits forbid us even to attempt to follow the course of reasoning through which this ruling conception is reached. We must content ourselves with baldly stating the result. This we will do, as far as practicable, in the language of the authors themselves. Psychologically, "number does not arise from mere sense perception, but from certain rational processes in construing, in defining, and relating the material of sense perception." More definitely, "number arises in the process of the exact measurement of a given quantity with a view to instituting a balance, the need of this balance, or accurate adjustment of means to end, being some limitation." The reader is not, it must be borne in mind, asked to take these propositions as self-evident, or even as obvious, on a moment's reflection. They are given as the outcome of a close yet easily comprehended series of arguments and illustrations, for which the reader must be referred to the volume itself. Nor can we do more than hint at one or two of the various deductions, some of them of the very first importance pedagogically, which are based upon the psycholog-

ical propositions established, or believed to be established. For instance, "The unit is never to be taught as a *fixed thing* (e.g., as in the Grube method), but always as a unit of measurement. One is never one thing simply, but always that one thing used as a basis for counting off and thus measuring some whole or quantity. . . .

The assumption that some one object is the natural unit of quantity, which is then increased by bringing in other objects, is the very opposite of the truth. Number does not rise at all until we cease taking objects as objects, and regard them simply as parts which make up a whole, as units which measure a magnitude." Again, "The method which neglects to recognize number as measurement (or definition of the numerical value of a given magnitude), and considers it simply as a plurality of fixed units, necessarily leads to exhausting and meaningless mechanical drill. The psychological account shows that the natural beginning of number is a whole needing measurement; the Grube method (with many other methods in all but name identical with the Grube) says that some one thing is the natural beginning from which we proceed to two things, then to three things, and so on. Two, three, etc., being fixed, it becomes necessary to master each before going on to the next. Unless four is exhaustively mastered, five cannot be understood. The conclusion that six months or a year should be spent in studying numbers from one to five, or from one to ten, the learner exhausting all the combinations in each lower number before proceeding to the higher, follows quite logically from the premises. Yet no one can deny that, however much it is sought to add interest to this study (by the introduction of various objects, counting eyes, ears, etc.), the process is essentially one of mechanical drill. The interest afforded by the object remains, after all, external and adventitious to the numbers themselves. In the number, as number, there is no variety, but simply the ever-recurring monotony of ringing the changes on one, and two, and three, etc. Moreover, the appeal is constantly made to the memorizing power. These combinations are facts to be learned."

Proceeding to contrast this with what they regard as the true method, the authors point out that in the latter the emphasis is all the time upon the performance of a certain mental process; the product, the particular fact or item of information to be grasped, is simply the outcome of this process. The appeal is not to memory or memorizing, but is a training of the attention or judgment; a training which forms the *habit* of definite analysis and synthesis; and according to the measuring method, while the habit or general direction remains the same, it is constantly differentiated through application to new facts. In a word: "One method cramps the mind,

shutting out spontaneity, variety, and growth, and holding the mind down to the repetition of a few facts. The other expands the mind, demanding the repetition of *activities*, and taking advantage of dawning interest in every kind of value."

We have dealt wholly, and, we are aware, but very imperfectly, with the theoretical part of Drs. McLellan and Dewey's book, but the teacher must not get the idea that the work is simply a theoretical treatise. On the contrary, much the larger part of it is thoroughly practical, showing the application of the general truths which it has sought to establish to the actual teaching of arithmetical numbers and processes in the schoolroom. We pur-pose, in another number, to select one or two exercises from this part of the work for reproduction in our practical department, with a view to illustrating more fully the application of the views advanced, in the actual work of the schoolroom. Meanwhile, without committing ourselves to an unqualified agreement with its views at every point, we do not hesitate to express our opinion that the book is one of the most important, both psychologically and pedagogically, which have appeared in a long time. We should like to see a copy in the hands of every teacher. Though it is not, from the very nature of the subject with which it deals, an easy book to read, there is nothing in it which should be beyond the comprehension of any mind sufficiently mature to be qualified for the teaching of arithmetic. The reading of it will be in itself, too, an important bit of education. We have before, we think, commented on the admirable simplicity and perspicuity of its style. From this, as well as other indications, we can readily believe that its three hundred pages represent the product of some years of earnest thought and toil. We have no doubt that every teacher or other thinker who reads it carefully will find himself amply repaid, whether he is brought around wholly to the authors' way of thinking or not. Perhaps we cannot do better than close our observations with the following extract from a note we received a few days since from an educator of high standing and lengthened experience to whom we had handed a copy of the book. He is now a Professor of Education in a Canadian university. He writes:

"Dr. McLellan's book is certainly a sunlight piece of work from the first page to the last. It contains the clearest and most convincing psychology, and the most careful applications of the same to method, that I have ever read respecting number. The old symbol method, the Grube method, and the thing method, are conclusively shown, in my judgment, to be methods not in harmony with a sound psychology. The mystery is blown out of the subject thoroughly, the rational process is freed from the swaddling bands, and lucid illustrations are given of a more excellent way. The subject is thoroughly worked out in a most consistent way. It is, out and out, superior to any treatise of the sort I have ever seen."

Special Papers.

THE CITY-BORN FARMER.

BY THOMAS C. ROBSON, MINDEN, ONT.

Let me take up my parable where I put it down.* I did but speak of the "farm-born" farmer when the Editor kindly pointed out that the stout yeoman I had mentioned had a brother, the city-born farmer, a twin-brother indeed, both sons of one "Old Toil," with the old man's family likeness deeply engraved in their characters, a love of hard work, and a vigorous contempt for all forms of sham, make-shifts, and incapacity.

"Farmers are born, not made," is echoed, not only over field and river, but through every lane and alley of our crowded cities. We recognize the farming instinct in every tiny flower pot, or cracked teapot, with its scarlet runner or its marigold. It is not our "May Queens" and our "Miller's Daughters" alone that can lay claim to the box of mignonette.

Is it that we are not an agricultural people that farming is waning amongst us? Or is it that the same amount of anxiety and activity is not displayed in the discovery of a born farmer as in the manufacture of a commonplace doctor, lawyer, or minister? In an experience of twenty-two years of backwoods life I have very rarely met with an old country farmer. There are book-keepers, bankers' clerks, tailors, and men of every trade and profession save the professional tiller of the soil. Yet, these men have done well. They have laid down the quill and have taken up the hand-spike. They have traded off the tall desk and long-legged stool of the old world for the yoke of oxen and logging chain of the new. Leaving civilization behind them, they have cleared our forests, built our roads, founded our cities, drained our swamps, and made the wilderness to blossom as the rose.

Why is it that, while we see in England the skilled mechanic, the trusted salesman, and the confidential clerk laying aside all the advantages of city life and assuming, in this country, the position of farmers, we see in Ontario every young man from the country, long before he has mastered the first rudiments of education, aspiring to the dignity of a pusher of patents, a purveyor of apples trees, or a pedlar of books?

Is it that in England they look up to farming and in Ontario we look down to it? Is it that, in the one place, it is the aim of every successful merchant to be a country gentleman, and in the other it is the ambition of every farmer to have a house in town, even if "the town" has not more than five hundred inhabitants? The one finds his pleasure in labor, the other a labor in pleasure.

This looks very much like an essay on farming and the objection may be made that THE EDUCATIONAL JOURNAL has nothing to do with farming.

Herein lies the mistake. An educational journal has a great deal to do with farming. The educational machinery of the past has been too exclusively busy turning the sons of farmers into professional men. The contract is about out, and if we cannot have the machinery reversed, and have the sons of professional men turned into farmers, we may at least hope for an endless revolving chain running from country to city and from city to country, transferring the professionals of the country to the city and the city-born farmers to the land of their fathers.

Such a plan, if realized, would make us a nation of farmers, and Ontario a modern Antæus, perpetually renewing strength and youth by contact with mother earth.

How can this be done? We can and do collect from the streets of London and other cities destitute children. Could this not be done with the waifs of Toronto, Hamilton, Montreal? Why stop at waifs? Or, rather, why begin with them? Are there not hundreds of city children who would prefer a country life if it could be attained? There are in the city of Toronto vacant lots which might be rented by the school board. Suitable persons might be appointed to superintend them. Let this be done. Let the boys of the neighboring schools be invited to take up plots. Let this be a volunteer matter, but let the work be done in school hours, with permission to continue it after four o'clock.

Having thus discovered your city-born farmers, a line of studies could be planned so that the ordinary education of the lads might progress in line with their knowledge of agriculture. To carry out this idea to its fullest extent, it might be found necessary to enter into arrangements with market gardeners, fruit growers, and farmers in the neighborhood of High Schools to take the older lads on half time, so that when the latter reached manhood they would bring to the farm a fair knowledge of the science of agriculture, a perfect knowledge of the practice of farming and an education equal in all other respects to that of their fellows who go to the country house and the general store. We send our High School scholars to Guelph. Would it not be better to bring Guelph to every High School?

One word with regard to our girls. While I believe that the best use to which we can put the daughters of the land is to make them the wives of honest men, helpmeets and not rivals; while I believe that the chief aim of all young ladies should be to acquire a knowledge of those arts that would make home a paradise, and taverns and club rooms absolutely unnecessary; while I believe that woman's rights will be found in this line, and this line only, yet there are many ways in which a knowledge of agriculture would be useful to our young ladies over and beyond the darning of socks and the making of butter, the two "lost arts" of the nineteenth century.

It may be that we owe the salvation of the butter trade to the wives of the city-born farmers, for every teacher knows that the most undesirable scholar is the one who knows all about it.

I am, I hope, no Jeremiah, exalting the days of old and crying down the present. I view with feelings of gladness the farmers' advancement in matters of taste and society. Yet it were better if we did not bring our daughters to the pianos and organs of the city. Much better if we brought the piano and organ, the harp and the violin, to the lads and lasses of the farms.

THEN AND NOW.

CHAUNCEY M. DEFEW.

The world which our young man enters to-day is a very different one from that which his father or his grandfather or his ancestor of a hundred years ago knew anything about. Fifty years ago he would have graduated at a denominational college and fallen into the church of his fathers and of his family. Fifty years ago he would have dropped into the party to which his father belonged. He would have accepted his religious creed from the village pastor, and his political principles from the national platform of his father's party. But to-day he graduates at a college where the denominational line is loosely drawn, and finds that the members of his family have drifted into all churches and are professing all creeds, and he must select for himself the church in which he shall find his home and the doctrines upon which he shall base his faith. He discovers that the ties of party have been loosened by false leaders or incompetent ones, and by the failure of party organizations to meet the exigencies of the country and the demands of the tremendous development of the times. Those who should be his advisers say to him: "Son, judge for thyself and for thy country." Thus at the very threshold he requires an equipment which his father did not need for his duties as a citizen or for the foundation of his faith and principles. He starts out at the close of this marvellous nineteenth century to be told from the pulpit and the platform and by the press, and to see from his own observations, that there are revolutionary conditions in the political, the financial, and the industrial world which threaten the stability of the state, the position of the church, the foundations of society, and the safety of property. But while precept and prophecy are of disaster, he should not despair. Every young man should be an optimist. Every young man should believe that to-morrow will be better than to-day, and look forward with unflinching hope for the morrow, while doing his full duty for to-day.

That the problems are difficult and the situation acute we all admit. But it is the province of education to solve problems and remove acute conditions. Our period is the paradox of civilization. Heretofore our course has been a matter of easy interpretation and plain sailing by the navigation books of the past. But we stand five years from

the twentieth century facing conditions which are almost as novel as if a vast convulsion had hurled us through space, and we found ourselves sitting beside one of the canals of Mars.

Steam and electricity have made the centuries of the Christian era down to ours count for nothing. They have brought about a unity of production and markets which upset all the calculations and all the principles of action of the past. They have united the world in an instantaneous communication which has overthrown the limitations which formerly were controlled by time and distance, or could be fixed by legislation. The prices of cotton on the Ganges or the Amazon, of wheat on the plateaus of the Himalayas or in the delta of the Nile or in the Argentinian, of this morning, with all the factors of currency, of climate, and wages, which control the cost of their production, are instantly reflected at noon at Liverpool, at New Orleans, at Savannah, at Mobile, at Chicago, and at New York. They send a thrill or a chill through the plantations of the South and the farmhouses of the West. The farmers of Europe and America are justly complaining of their conditions. The rural populations are rushing to the cities and infinitely increasing the difficulties of municipal government. Capitalists are striving to form combinations which shall float with the tide or stem it, and labor organizations with limited success are endeavoring to create a situation which they believe will be best for themselves. The tremendous progress of the last fifty years, the revolutions which have been worked by steam, electricity, and invention, the correlation of forces working on one side of the globe and producing instantaneous effects upon the other, have so changed the relations of peoples and industries that the world has not yet adjusted itself to them. The reliance of the present and future must be upon education, so that supreme intelligence may bring order out of the chaos produced by this nineteenth century earthquake of opportunities and powers.—*Michigan Moderator.*

THE HIGHER PURPOSE OF THE SCHOOL.

There are still many teachers who do not understand the trend of the times and flatter themselves that they are carrying out the purposes for which they were appointed when they are filling the heads of their pupils with so-called practical knowledge. Said one of this deluded class recently to the writer: "I'll tell you frankly why I do not read your *Journal* any longer. You are constantly preaching that the school must seek, above all things, to make the children moral, and that reading, writing, arithmetic, geography, physiology, and United States history are all to be subordinated to that object. That may be all right for you to say, but if you should be teaching in a city school here, you would soon give it up as bosh and nonsense, as I have done long ago. The schools belong to the people, and we must give them what they want, never mind what you educational journalists think of it. My plan is to read the daily papers to keep informed as to what the people expect of me. Now, I have found that, barring a few cranks who somehow get their fool notions on school keeping into print now and then, everybody believes in teaching the children in the public schools the rudiments of knowledge, and leaving everything else to the parents and private enterprise." It is evident that what this teacher mistakes for expressions of popular opinion is nothing but the clamor of newspaper praters and those misguided people who either have no aims of life at all or else a very low one.

All thinking parents of children expect more of the schools than drill in the three R's and a smattering of geography, history, and physiology. Newspapers, as a rule, do not see this. Still, there are exceptions, and occasionally there appears an editorial article that voices the true opinion of a thoughtful public on the higher mission of the public school. Such an editorial recently appeared in the Minneapolis *Times* under the caption, "Morals in the Schools." It reads as follows:

"In all the controversies over the school question—out of which nothing comes, as a rule, but confusion and bad blood—nobody objects to moral education and training in the public schools. Education is no longer understood to consist in mastering the three R's, but is found in that moral culture which extends beyond the schoolroom, to the playground, and teaches that a meaner thing can be done than fail in a recitation or violate one of the

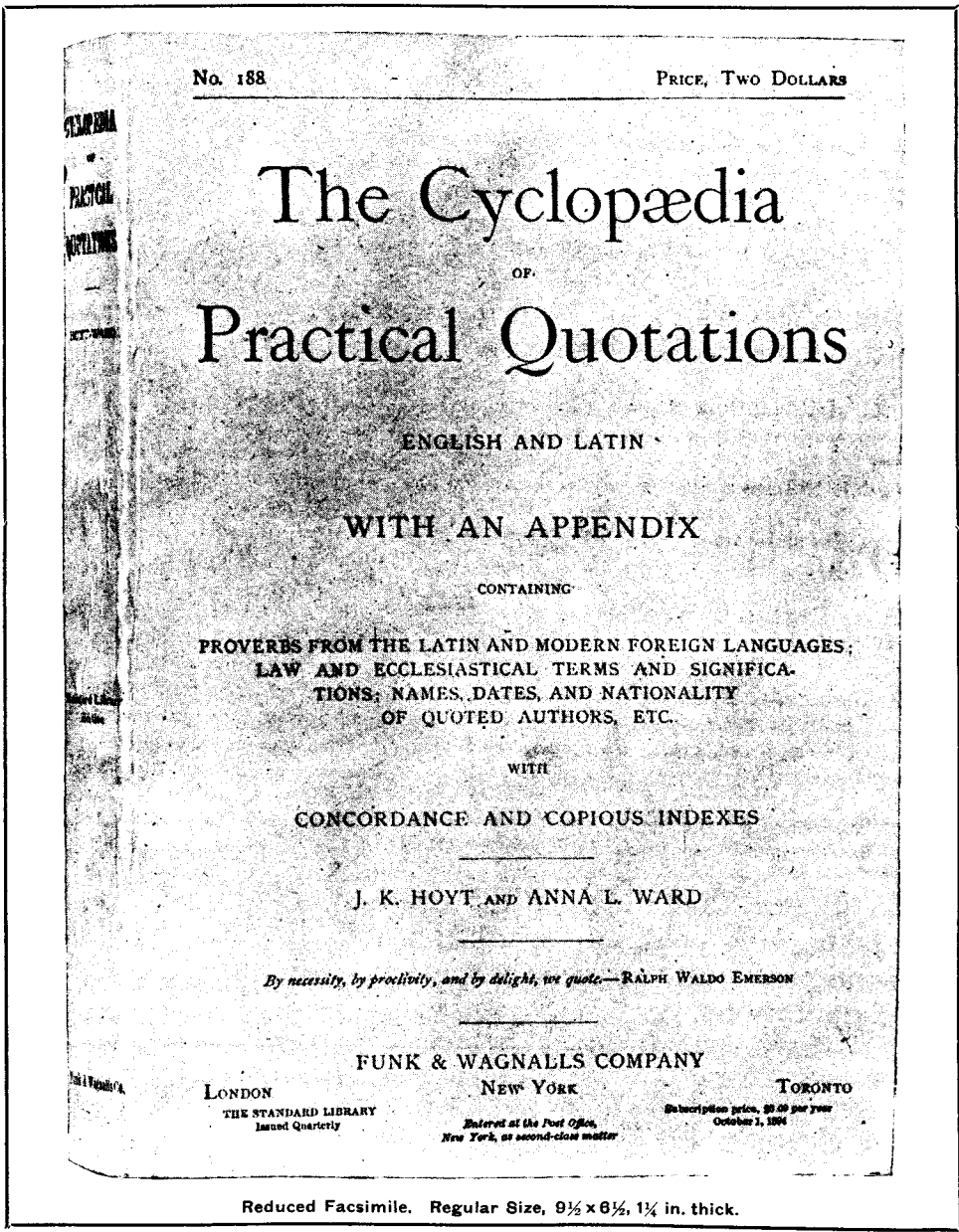
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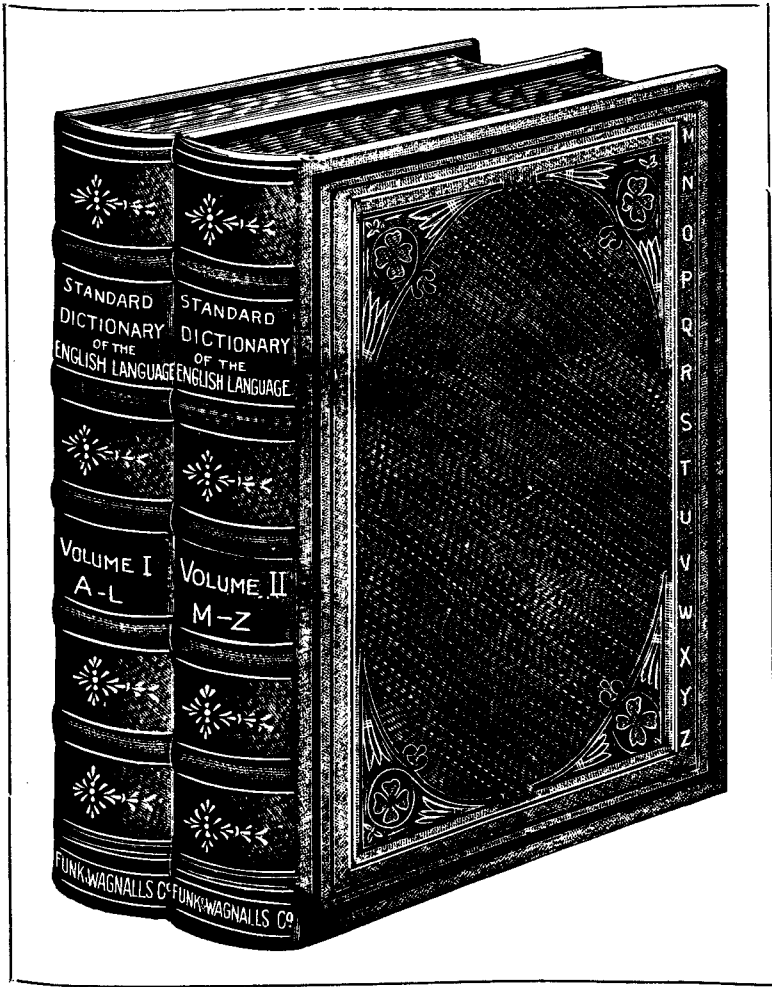
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"Let the spirit of manly sincerity and honor and of simple womanly goodness be made to enter the boys and girls of the crowded schools. Herein lies more hope for the future than we are justified in feeling now, and here we shall find the remedy for the prevailing low moral tone so bewailed by Diogenes and Cassandra and their train. Better the stiffest and sternest Puritanism of 150 years ago than the flabby sense of honor, the adjustable sense of truth of which we see so many evidences. Of course it is useless to expect in the Gradgrind sort of teacher the moral inspiration that could make him guide, with a little practical talk here and there, his boys to a higher life. But the teacher who goes to his (or her) work with a sense of its real importance, with a realization of his obligation to something higher than the board of education—such a teacher holds a tremendous power in heart and voice. In heart—for it is practical religion—which is the essence of morality—that moves to good living and good thinking, that is wanted—rather than the cut-and-dried morality of the third-rate dogmatist. A child may be given an upward trend with a single sentence, coming in a happy moment; but that sentence must be a thing of spirit, no matter for the form.

"No need of long moral discourses in the schools; but there should be, and no doubt is, in many schools, a constant current of quiet instruction in the things that go to make men and women true, honest, and highminded. Fifteen minutes, for instance, could well be spared from a day's lessons, if they were devoted to making a few boys feel keenly that cruelty, of which there is too much in the schools, was a sneaking and stupid thing. There are many large boys who are habitually brutal in their treatment of their smaller playmates, and not long ago a boy in one of our public schools received such savage treatment that for several days he was disabled by his injuries. What sort of education is it that does not teach children to feel themselves disgraced by brutality like this?

"It is plainly folly to leave all moral training to home and parents; the hours in which a child comes under those influences are more than balanced by the hours of school and play. Instruction in good living, given constantly, with simplicity, with heartfelt sincerity and kindness, is what children especially need to receive from their teachers. What shall it profit a boy if he leaves school skilled in figures but untaught in the manly honour that would make him an upright man of business? Or a girl, if with her grammar and rhetoric she has not learned to speak the words of truth, of unselfishness, and charity?"—*New York School Journal*.

Mathematics.

All communications intended for this department should be written on one side of the sheet only, and should be addressed to the Editor, C. Clarkson, B.A., Seaforth, Ont.

SOLUTIONS OF PROBLEMS.

No. 65. (See p. 380, May number.)

Prove $\tan^{-1}\left(\frac{1}{1+a}\right) + \tan^{-1}\left(\frac{1}{1-a}\right) + \tan^{-1}\left(\frac{2}{a^2}\right) = n\pi$.

Solution by J. A. PATTERSON, Sweaburg, Ont.
 $\tan(A+B+C) = \frac{\tan A + \tan B + \tan C - \tan A \tan B \tan C}{1 - \tan A \tan B - \tan B \tan C - \tan C \tan A}$;

see text-book.
 Hence $\tan(\text{sum of given angles}) = \frac{m+n+k-mnk}{1-mn-nk-km} = 0 = \tan n\pi$,

$\frac{m+n+k-mnk}{1-mn-nk-km} = 0 = \tan n\pi$,

when $m = \frac{1}{1+a}$; $n = \frac{1}{1-a}$; $k = \frac{2}{a^2}$, since numerator vanishes, while the denominator does not vanish.

No. 66. Prove $\tan^{-1}a + \cot^{-1}a = (2n+1)\frac{\pi}{2}$.

Solution by A. N. MYER, Dunnville.

The sum of two angles is required. Call these angles X and Y. Then $\tan X = a, \cot Y = a, \therefore \tan Y = \frac{1}{a}$.

But, $\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$; see text-book.

$\therefore \tan(X+Y) = \frac{a + \frac{1}{a}}{1 - \frac{1}{a \cdot a}} = \frac{a + \frac{1}{a}}{1 - \frac{1}{a^2}} = \infty$.

$= \tan\left(n\pi + \frac{\pi}{2}\right) = \tan\left(2n+1\right)\frac{\pi}{2}$.

No. 67. Solve

$\tan^{-1}a + \tan^{-1}B + \tan^{-1}r = \pi$.

Solution by J.A.P. $\tan \pi = 0, \therefore$ as in No. 65,

$\tan(A+B+C) = 0 = \frac{a+B+r-aBr}{1-aB-Br-ra}$;

$\therefore a+r = B(ar-1)$; or, $B = \frac{a+r}{ar-1}$.

No. 68. Solve

$\tan^{-1}\left(\frac{1}{x-1}\right) - \tan^{-1}\left(\frac{1}{x+1}\right) = \frac{\pi}{12}$.

Solution by A.N.M.

$\frac{\pi}{12} = 15^\circ, \tan 15^\circ = 2 - \sqrt{3}$.

Hence, as in preceding questions,

$\frac{\frac{1}{x-1} - \frac{1}{x+1}}{1 + \frac{1}{x-1} \cdot \frac{1}{x+1}} = 2 - \sqrt{3}$.

$\therefore \frac{2}{x^2} = 2 - \sqrt{3}$; $x^2 = 4 + 2\sqrt{3}$;

and, $x = 1 + \sqrt{3}$.

No. 69. Prove that

$\tan^{-1}\left(\frac{a - \sqrt{a^2-4}}{2\sqrt{a+1}}\right) + \tan^{-1}\left(\frac{1}{\sqrt{a+1}}\right) + \tan^{-1}\left(\frac{a + \sqrt{a^2-4}}{2(a+1)}\right) = n\pi + \frac{\pi}{2}$.

Solution by A. N. MYER, Dunnville.

As in No. 65, $\tan(\text{sum of three given angles}) = \frac{x+y+z-xyz}{1-xy-yz-zx}$;

where $x = \frac{a - \sqrt{a^2-4}}{2\sqrt{a+1}}$, $y = \text{etc.}$, $z = \text{etc.}$;

$\therefore \tan(\text{sum}) = \frac{x}{1-x}$, by substitution and reduction, $= \infty = \tan\left(n\pi + \frac{\pi}{2}\right)$.

The seven following are due to A.H.P., Owen Sound. See page 59, June issue, 1895, for the problems.

No. 97. ABC is a triangle whose sides are 30, 25, and 20 miles. The centre of circumcircle is the point equidistant from A, B, and C.

$R = \frac{abc}{4\Delta} = \frac{abc}{4\sqrt{s(s-a)(s-b)(s-c)}}; 4\sqrt{[s(s-a)(s-b)(s-c)]}$
 $= \frac{40}{\sqrt{7}}$ miles.

No. 98. 1007.375 in scale of 8 equals $1(8^3) + 7 + \frac{3}{8} + \frac{7}{8^2} + \frac{5}{8^3}$ in scale of 10 = etc.

No. 99. If a = head diameter, b being diameter and l length, vol. in imperial gals. = $(a^2 + 2b^2)l \cdot 0009\frac{1}{2}$.
 $a = 22, b = 27, l = 40,$

\therefore contents = 73,364 gals.
 The contents will vary with curvature.

No. 100. [The figure is easily drawn.]
 Let AB be one given line, and CD and EF the other two.

Let CD and EF cut at O
 Bisect $\angle COF$ by OG (I. 9), cutting AB at G.
 Draw GH and GK \perp EF and CD, then GH=GK (I. 26),
 \therefore G is equally distant from CD and EF.

The problem is impossible if the three lines are parallel and AB is not midway between the other two; if two lines are parallel and cut the third at right angles, etc., etc.

No. 101. ABCD is given square, E point in AB. Let AE < BE; cut off CF=AE. Join EC and AF, then AECF is a \square
 $\triangle EAF = \triangle ECF$, and $ADF = CBE$, hence EF bisects the square.

Join ED. Draw AG parallel to ED. $\triangle EGF = \text{quad. ADFE}$. Bisect GF at H. H must fall between D and F, since AE=GD \perp DF,
 $\therefore \triangle AEHD = \triangle EHF = \frac{1}{4}$ square.

Make FK parallel to EC, then $\triangle EKB = \triangle EFCB$. Bisect KB at L. Join EL. $\triangle ELB = \triangle ELCF = \frac{1}{4}$ square,
 \therefore lines EL, EF, EH divide square into 4 equal parts.

No. 102. [The construction is easily made.]
 Let ABCD be a rectangle, ABEF the square on AB described externally BCGH " " BC " internally.

Join FB and BG. Then $FBA = \frac{1}{2}$ rt. $\angle = ABG$,
 $\therefore FBG = \text{rt. } \angle$.

Complete rectangle FBGK. Join EA, cutting FB at L, KG at M, and CD produced at N. Since the diagonals of a square bisect perpendicularly, the rectangle $BGML = \frac{1}{2}$ rect. BGKF.

Since BG is parallel to EA, $ABGN = ABCD$;
 but $ABGN = BGML$,
 $\therefore BGML = ABCD$,
 $\therefore ABCD = \frac{1}{2}BGKF$.

Another method:

$FB = \sqrt{2} AB$
 $BG = \sqrt{2} BC$
 $\therefore FB \cdot BG = 2AB \cdot BC$.

No. 103.

Let CB be diameter, and A given point in CB, produced so that BA < BC.

Bisect AD at E, and draw EF \perp to EA and equal to it. Join AF. With A as centre and AF radius, describe circle to cut given circle at G. Produce AG to cut circle again at H.

$AD^2 = 4AE^2 = 2AF^2 = AG \cdot AH$.
 But $AF = AG$
 $\therefore 2AG = AH$,
 $\therefore AH$ is bisected at G.

No. 92a See p. 75, June number.

$\frac{1}{5} + \frac{1}{5^2} + \frac{1}{5^3} + \text{etc.} = \frac{1}{5^0}$.

Solution by the EDITOR.

Put $\frac{1}{5} = x$, and the series becomes $x + x^2 + x^3 + x^4 + x^5 + x^6 + x^7 + x^8 + x^9$, and this is manifestly

$= \frac{x - x^{10}}{1-x} = \frac{.2 - .2^{10}}{1-.2} = \text{etc.}$

No. 93a.

$\frac{1}{6} + \frac{1}{6^2} + \text{etc.} + \frac{1}{6^9}$. Put $\frac{1}{6} = x$, etc.

No. 94a.

$\frac{1}{9} - \frac{1}{9^2} + \frac{1}{9^3} - \frac{1}{9^4} + \frac{1}{9^5} - \frac{1}{9^6} + \frac{1}{9^7}$

Put $\frac{1}{9} = x$.
 Hence sum = $x - x^2 + x^3 - x^4 + x^5 - x^6 + x^7$
 $\therefore (\text{sum}) x = x^2 - x^3 + x^4 - x^5 + x^6 - x^7 + x^8$
 $\therefore \text{sum}(1+x) = x + x^8$

Sum = $\frac{x+x^8}{1+x} = \frac{\frac{1}{9} + \frac{1}{9^8}}{1 + \frac{1}{9}} = \frac{\frac{1}{9}\left(1 + \frac{1}{9^7}\right)}{\frac{10}{9}} = \frac{1}{10}\left(1 + \frac{1}{9^7}\right) = (9^7 + 1) \div (10 \times 9^7) = \text{etc.}$

No. 95a. (1) Show that the value of a bond of \$1,000 payable 10 years hence, and bearing interest at 4% annually, money being worth 5%, is

$$= \$40 \left\{ \frac{1}{1.05} + \frac{1}{1.05^2} + \frac{1}{1.05^3} + \text{etc.} + \frac{1}{1.05^{10}} \right\} + \frac{1000}{1.05^{10}}$$

Solution by the EDITOR. The interest at 4% is = \$40 per annum. The first payment of interest is due in 1 year, the second in 2 years, etc., the last in 10 years. The present worth of each payment is = payment ÷ (amount of \$1 for given time at given rate), ∴ P.W. of first payment = \$40 ÷ 1.05; P.W. of second = 40 ÷ 1.05², etc. Thus P.W. of all the interest payments

$$= \frac{40}{1.05} + \frac{40}{1.05^2} + \text{etc.} + \frac{40}{1.05^9} = 40 \left\{ \frac{1}{1.05} + \frac{1}{1.05^2} + \text{etc.} \right\}$$

Also, P.W. of the principal due in 10 years = \$1,000 ÷ 1.05¹⁰. Thus the given expression is the total present value of the bond.

(2) Compute the value to the nearest dollar.

$$= V. \$40 \left\{ \frac{1}{1.05} + \text{etc.} + \frac{1}{1.05^{10}} \right\} + \frac{1000}{1.05^{10}}$$

∴ V. (1.05¹⁰) = 40 { 1.05⁹ + 1.05⁸ + 1.05⁷ + etc. 1.05 + 1 } + 1000.

That is,

$$V. (1.62889) = 40 \left\{ \begin{array}{l} 1.55133 \\ 1.47746 \\ 1.40710 \\ 1.34010 \\ 1.27628 \\ 1.21551 \\ 1.15763 \\ 1.10250 \\ 1.05000 \\ 1.00000 \end{array} \right\} + 1000$$

i.e., V. [1.62889] = 12.57791 × 40 + 1000 = 503.1164 + 1000 = 1503.1164

∴ V. = 1503.1164 ÷ 1.62889 = 1503.1164 ÷ 162889 = 922.78. Ans. \$923.

No. 119. Divide a given straight line externally into two segments such that the rectangle contained by them may be equal to the square on another given straight line.

Solution by the EDITOR. The algebraic method is applicable to problems of this kind. Let *a* be the given straight line which we require to produce; let *b* be the side of the square which is equal to the required rectangle, and let *x* be the unknown distance to which *a* must be produced. Then (a+x)x = b²; or x² + ax - b² = 0

∴ x = ½ { -a ± √(a² + 4b²) }. We have here the general solution, and require the geometrical interpretations for the internal and the external section of the line. It is plain that √(a² + 4b²) > a, and, therefore, if we take the upper sign, *x* will come out positive, and give the external segment which we seek. Hence, take a line = a, and at one end place a line = 2b at right angles; draw the hypotenuse. This must = √(a² + 4b²) (Euc. I. 47). Call this hypotenuse *c*. From *c* cut off a part = a, bisect the remainder, and we have *x*.

No. 120. Solve x² + y = 7; y² + x = 11. Our correspondent gives the following:

Solution 1. From first, y = 7 - x². Substitute in second, and we get

x⁴ - 14x² + x + 38 = 0, of which x = 2 is one solution by inspection or by factoring. Hence, x³ + 2x² - 10x - 19 = 0. Using Horner's method of approximation we get three more values of *x*, viz., 3.13, -1.84, 3.28. And the corresponding values of *y* are -2.79, 3.61, and -3.75. This friend asks for other methods of solving these equations, and we will endeavor to oblige him by trying one or two plans of attack on this old Cambridge "nub."

Solution 2. x² + y = 7
11 = x + y². Multiply the equations together, and

(A) 11x² + 11y = 7x + 7y². But x = 2, y = 3 is one solution, by inspection, ∴ 44 + 11y = 14 + 7y²; 7y² - 11y - 30 = 0; ∴ y = 3, or -1.5. Similarly, substituting y = 3 in A we get 11x² - 7x - 30 = 0; ∴ x = 2, or -1.5. The latter values, however, do not appear to be simultaneous values of the original equations, but only

of their product. They are roots of the *conjunct* equation only. When we square an equation, or multiply two equations, we can only tell by substitution whether the roots afterward obtained belong to the *original* or to the *conjunct*. For example, 3 + x + √(x² + 9) = 2; transpose and square, and we get 1 + 2x + x² = x² + 9; ∴ x = 4. But when we substitute in the original we get 7 + √25 = 2, which is only true for the negative value of √25.

Solution 3. Add the equations and x² + (x + y) + y² = 18. Add 7 to both sides, ∴ x² + (x + y + 7) + y² = 25, a square number. This equation will be satisfied if we suppose x + y + 7 = 2xy, when we have x + y = 5, and, therefore, 5 + 7 = 2xy; or xy = 6, which agrees with x = 2, y = 3, and three other values obtained by substituting x = 6/y and solving a cubic equation. Similarly, by subtracting 2, 9, 14, or 17 from each side; or by adding 18, 31, etc., to each side, so as to produce a square number, we may obtain a number of values from the resulting cubic equations. We could not be sure in any case without actual substitution that the roots so obtained apply to the given equations, and our friend may rest content that he has found the best and most scientific solution, so far as we have been able to discover. If any reader can improve on these three methods we shall be very glad to hear from him.

PUBLIC SCHOOL LEAVING.

ALGEBRA AND EUCLID, 1895.

1. Find the value of x³ + y³ + z³ - 3xyz when x = a + 1, y = a - 1, and z = -2a.

2. Combine into a simple fraction

$$\frac{x}{x^2 + 5x + 6} + \frac{15}{x^2 + 9x + 14} - \frac{12}{x^2 + 10x + 21}$$

3. Show that the sum of the squares of two consecutive numbers is greater than twice their product by 1.

4. Solve the equation

$$\frac{x}{4} - \frac{x-4}{32} + \frac{13-2x}{40} = \frac{8-x}{2} - \frac{7}{8}$$

Prove your answer.

5. In paying two accounts, one of which exceeded the other by one-third the less, the change out of a \$5 bill was half the difference of the accounts; find the amount of each account.

6. A. can earn \$p a day and B \$q a day. If they work together, how long will it take them to earn \$m?

7. From a given point to draw a straight line equal to a given straight line.

Give the construction when the given point is in the given straight line.

8. Three equal straight lines, OA, OB, and OC, are equally inclined to each other; if their extremities, A, B, and C, be joined, prove that ABC is an equilateral triangle.

9. If two straight lines cut one another, the vertically opposite angles shall be equal.

If four straight lines meet at a point so that the opposite angles are equal, these straight lines are two and two in the same straight line.

10. Give the enunciation of the 26th proposition of the First Book of Euclid.

SOLUTIONS.

1. x³ + y³ + z³ - 3xyz = (x + y + z)(x² + y² + z² - xy - yz + 2x)

But x + y + z = a + 1 + a - 1 - 2a = 0
∴ given expression = 0(x² + y² + etc.) = 0

2. x² + 5x + 6 = (x + 3)(x + 2); x² + 9x + 14 = (x + 7)(x + 2);

x² + 10x + 21 = (x + 3)(x + 7); ∴ L.C.D. must be (x + 2)(x + 3)(x + 7). Therefore the sum of the N.'s is x(x + 7) + 15(x + 3) - 12(x + 2) = (x + 3)(x + 7).

Hence the sum is $\frac{1}{x+2}$.

3. We are to show that x² + (x + 1)² = 2x(x + 1) + 1. Self-evident.

4. Multiply both sides by 40 and we have 10x - 5(x - 4) + 13 - 2x = 20(8 - x) - 35

i.e., 10x - 5x + 20 + 13 - 2x = 160 - 20x - 35

or 28x - 5x = 107; 107x = 428; x = 4

Proof: $\frac{4}{4} - \frac{4-4}{32} + \frac{13-8}{40} = \frac{8-4}{2} - \frac{7}{8}$

1 - 0 + 1/8 = 2 - 7/8; 8/8 = 8/8.

5. Let 4x and 3x be the amounts due;

∴ 5 - 7x = x/2; x = 2/3; 4x = \$2 2/3; 3x = \$2.

6. p + q = wages of both for 1 day
∴ m ÷ (p + q) = number of days required.

7. Prop. II., Euclid, Book I.

When the point is in the given line, it may be (a) In the line produced, and the figure is like the one in the common text.

(b) At the extremity of the given line, and the figure becomes the same as that of Prop. III.

(c) Between the bounding points of the given line. In this case A—C—B represents the position, and the line AB is perhaps one solution. On CB describe the equilateral triangle DBC. From centre B and distance A describe a circle, and produce DB to meet this circle at E. Describe a second circle with centre D and distance E, and produce DC to meet this second circle at F, CF = AB.

N.B.—The equilateral triangle may also be described on AC, etc.

8. Call the length of the three equal lines x, and the equal angles y, and apply Prop. IV.

9. Prop. XV. Call the opposite angles a and b; then 2a + 2b = 360°, ∴ a + b = 180°, and the lines are co-linear by Prop. XIII.

CORRESPONDENCE.

A HIGH SCHOOL TEACHER asks: "Have *symmetry and ratios* been dropped from the Junior Leaving curriculum? I have tried to find out from the Education Department, but have always received in reply a copy of Circular No. 4. Are scales of notation part of the theory work in arithmetic required of Primary and Junior Leaving candidates?"

REPLY.—Looking at the prescribed text-books, the University curriculum, and past examination papers, we should judge that it would be unsafe to omit symmetry and ratios in the Junior Leaving algebra, and that it would be quite safe to omit scales of notation in the theory of arithmetic. The latter seems to belong properly to Senior Leaving algebra. However, it must always be assumed as an axiom that our examiners give the widest interpretation to the curriculum of studies, and often do not take the trouble to know precisely what is and what is not prescribed, so that this opinion can only be taken as an opinion of a third party.

A.N.M., Dunnville, sent solutions of the deductions given on the Senior Leaving Euclid paper, 1895. He has our hearty thanks for his generous help.

J.H.P., Owen Sound, also sent solutions of these questions in geometry. He has likewise solved the riders set on the Senior Leaving paper in trigonometry, and sent in solutions of Nos. 97, 98, 99, 100, 101, 102, 103, as given in the June issue of this column. He is one of the most valued correspondents we have, and we are sure that all our readers appreciate his work very highly. He gives a solution of No. 57 different from the one already published, with which he is not entirely satisfied.

No. 57. Let A be the given point, C the centre of circle.

Draw diameter BCAD.
Draw chord EAF ⊥ diameter. (I. 12.)

Divide EA externally in medial section at G which falls without the circle, so that AG² = GE.EA.

Make square on EA, EAKL.
Complete parallelogram AKMG.

Make square ANON = parallelogram AGMK.
Make AP = AN, and produce to cut circle in Q.
Then PQ is required chord.

AG : AE = 11^m AM : sq. EK. (VI. 1.)

= AN² : EA²

= AP² : EA²

= AP² : APAQ (III. 35.)

= AP : AQ.

NOTE.—We are sorry that we cannot well print the diagram, but a little care will enable any one to follow the construction.

Primary Department.

CHRISTMAS THOUGHTS.

RHODA LEE.

"This happy day, whose risen sun
Shall set not through eternity,
This holy day when Christ the Lord
Took on Him our humanity,
For little children everywhere,
A joyous season still we make;
We bring our precious gifts to them,
Even for the dear child Jesus' sake."

Christmas time, with all its brightness and good cheer, is here once more. We must pause a little in our regular work and let something of the glad season into the schoolroom.

There are many interesting myths and Christmas tales that will find ready acceptance with the children, but none which they will appreciate more than the old story of the Child of Bethlehem. It never grows old or loses its attractiveness for the little folks. The familiar hymn, "Once in Royal David's City," tells the story so well, we should not fail to memorize these words.

Among some children there is considerable selfishness about Christmas time. They are wholly absorbed in their gifts and what Santa Claus is to bring to them. Of course, it is only natural that they should be interested in this, but they should also learn how blessed it is to give and how much happiness comes from making others happy. Encourage the children to make little remembrances for their friends, and if you have opportunity for any combined class work to bring Christmas cheer to some less fortunate ones, by all means take advantage of it.

Some one has said "Each Christmas the windows of heaven open wider and more men and women hear the Christmas songs." Help the children also to hear the songs, and lead them to realize something of the deeper meaning of the season's joyousness.

There are many odd minutes throughout the day that may be utilized to bring in some thought of Christmas. The customs of other lands are interesting, the burning of the yule log, the Christmas waits, and the Christmas sheaf of Norway. In Norway and Sweden the day is called yule-peace, and at this time every one must be at peace with his neighbors. Great hospitality is shown to strangers and friends who may visit that day. In some parts a cake is placed out on the snow, and the fashion of presenting Christmas gifts is to make them up in as small a parcel as possible, and then throw them in the door or window.

The Christmas carols, songs, and stories must not be forgotten. Dickens' Christmas Story is an old friend we always bring out at this time.

"On earth peace, good-will toward men." Write these words on the black-board, take them as subject for a series of morning talks, and make their meaning clear to the children by means of simple illustrations. We do not wish the children to lose any of the fun and good time of the season, but we do want them to

realize its deeper meaning, and be kinder, better, and happier for the influence of Christmas.

THE BEST WAY.

If I make a face at Billy,
He will make a face at me,
That makes two ugly faces,
And a quarrel, don't you see?
And then I double up my fist
And hit him, and he'll pay
Me back by giving me a kick,
Unless I run away.

But if I smile at Billy,
'Tis sure to make him laugh;
You'd say, if you could see him,
'Twas jollier by half
Than kicks and ugly faces.
I tell you all the while,
It's pleasanter for any boy
(Or girl) to laugh and smile.

—*The Religious Herald.*

A LETTER TO SANTA CLAUS.

(Recitation for a little boy).

(Platform should have the representation of a fire-place upon it with stockings).

I've written a letter to Santa,
But how shall I send it—how?
I don't know what his address is,
'Cept it's up 'mongst the ice and the snow.

I want him to get it just awfully,
'Cause there's lots of things that I wrote
That I wanted, and I know he won't bring them,
Unless he should get my wee note.

I suppose that I might ask the postman
To take it to him when he went
To carry round papers and letters
That grown-up people have sent.

But then he won't get it till morning.
Oh, dear! it can never go so.
I'll pin it right on to my stocking,
Right here, on the end of my toe.

Now, when Santa Claus fills up my stocking,
He'll find the note there on the toe.
And he carries so many things with him,
I'll get all I wanted, I know.

—*Selected.*

JOLLY OLD ST. NICHOLAS.

Jolly old St. Nicholas, lean your ear this way,
Don't you tell a single soul what I am going to say.
Christmas eve is coming soon. Now, you dear
old man,

Whisper what you'll bring to me; tell me if you
can.

When the clock is striking twelve, when I'm fast
asleep,

Down the chimney, broad and black, with your
pack you creep;

All the stockings you will find hanging in a row;
Mine will be the shortest one—you'll be sure to
know.

Johnny wants a pair of skates, Susie wants a dolly,
Nellie wants a story-book—she thinks dolls are
folly;

As for me, my brain, I fear, isn't very bright;
Choose for me, dear Santa Claus, what you think
is right.

—*The Public School.*

SEEDS.

See my pretty seeds.
They are box elder seeds.
They came from a box elder tree.
We had some box elder leaves.
The box elder leaves were pretty.
The seeds have little wings.
The little wings are brown.
The little seeds can fly.
They fly with the brown wings.
They fall on the ground.

—*Bryant School: Rosse Storms.*

Thus closes another volume, containing over 200 problems and about the same number of solutions. We have received several hundred letters, from all the provinces in the Dominion, and have been ably and generously supported in the attempt to make this the best department of the kind in North America, and we have succeeded. No one alive can name a school journal in America that has a Mathematical Department at all comparable to our own in this Canadian paper. The Mathematical Editor would like to shake hands cordially with every one of the hundreds of noble teachers who have contributed to this most gratifying result, and wish them a very pleasant Christmas holiday! Let us take courage of the cheerful sort for the coming year, and combine in solid phalanx to make every issue of our professional organ a credit to our beloved Canada and a fit exponent of the educational progress of Ontario, which is to America what ancient Greece was to Europe. In every honorable and legitimate way let us endeavor to put THE JOURNAL into the hands of every Public or High School teacher in the Dominion. We have the courage born of energy and successful struggle; let us unite, heart and hand, to produce the best teacher's paper on this side of the world. There is very little doubt that we have the finest staff of teachers on the American continent; let us have also the most helpful paper. "Nothing succeeds like success": "Heaven helps those who help themselves." Let us rise on the shoulders of the past and make Education the most important interest, next to Religion.

C. C.

For Friday Afternoon.

LOST, THE SUMMER.

R. M. ALDEN.

Where has the summer gone?

She was just here a minute ago,

With roses and daisies

To whisper her praises—

And every one loved her so!

Has anyone seen her about?

She must have gone off in the night!

And she took the best flowers

And the happiest hours,

And asked no one's leave for her flight.

Have you noticed her steps in the grass?

The garden looks red where she went;

By the side of the hedge,

There's a goldenrod edge,

And the rose-vines are withered and bent.

Don't you fear she is sorry she went?

It seems but a minute since May!

I'm scarcely half through

What I wanted to do;

If she only had waited a day!

Do you think she will ever come back?

I shall watch every day at the gate

For the robins and clover,

Saying over and over:

"I know she will come, if I wait!"

—*Intelligence.*

LITTLE FOXES.

Among my tender vines I spy

A little fox named "By and By";

Then set upon him quick, I say,

The swift young hunter, "Right Away."

Around each tender vine I plant

I find a little fox, "I Can't!"

Then fast as ever hunter ran

Chase him with bold and brave, "I Can."

"No Use in Trying" lags and whines,

This fox among my tender vines;

Then drive him low and drive him high

With this good hunter, named "I'll Try."

Among the vines in my small lot

Creeps in the young fox, "I Forgot";

Then hunt him out and to his den

With "I Will Not Forget Again."

A little fox is hidden there

Among my vines named, "I Don't Care";

Then let "I'm Sorry," hunter true,

Chase him afar from vines and you.

—*Selected.*

Examination Papers.

EAST MIDDLESEX PROMOTION AND REVIEW EXAMINATION.

November, 1895.

GRAMMAR—3RD TO 4TH CLASS.

Time, 2 hrs. 30 min.

Limit of Work.—The sentence. Clause and phrase. Classification of parts of speech. Analysis and parsing. (The first twenty-six lessons of the authorized text-book.)
Insist on neat and legible writing. One mark off for every mistake in spelling. Pupils may have their text-books in Grammar.

- Fully analyse the following sentences :
 - A mile away on a little mound Napoleon stood on our storming day.
 - Out 'twixt the battery smoke there flew a rider.
 - We've got you Ratisbon.
 - The Marshal's in the market-place.
 - The chief's eye flashed.
 - His chief beside, smiling, the boy fell dead.
- What is the difference between a clause and a phrase ?
- Give the kind and relation of the following phrases :
 - At daybreak on a hill they stood.
 - They saw the bridge of wood a furlong from their door.
 - In the snow the mother spied the print of Lucy's feet.
- Give the kind and relation of the (subordinate) clauses in the following :
 - When I crossed the wild I chanced to see the solitary child.
 - Her feet dispersed the powdery snow that rises up like smoke.
 - At daybreak on a hill they stood that overlooked the moor.
 - They, turning homeward, cried, "In heaven we all shall meet."
- Parse according to the model at the foot of page 59 in the grammar :
Yet some maintain that to this day she is a living child.
- Correct the following sentences :
 - Him and I am going to the sugar bush.
 - I seen it laying on your desk.
 - We should of gone by the other road.
- Define a relative pronoun and show how your definition applies to the example in :
"The bird which built that nest has deserted it."
- Write sentences using the word *iron* as a verb, as an adjective, and as a noun respectively.
Count 100 marks a full paper : 33 minimum to pass.
Values—24, 4, 12, 16, 24, 9, 8, 9.

GEOGRAPHY—3RD TO 4TH CLASS.

Time, 2 hrs. 15 min.

Limit of Work.—Definitions continued: first accurate knowledge, then memorizing of the definition. The great countries, large cities, and most prominent features on the Map of the World, maps of the County, of the Province of Ontario, of Canada, and America. Map drawing. Motions of the earth, seasons, zones. (The first 50 pages of the P. S. Geography, and what can be taught from a map of the Dominion and a good wall map of the world.)

- What is the usual cause of "falls" in a river ?
 - Tell where there is an example in Canada.
 - What is the difference between "rapids" and "falls" ?
 - When a canal is made to get past a rapids or falls there has to be a lock in it. Describe a lock.
- Name four things raised in this township that the farmers produce much more of than they need for their own use.
 - Where is the surplus of these four products consumed ?
 - Name four things that the farmers use much more of than they produce.
 - From what parts of the world does each of these four things come ?
- British Columbia, Mexico, Brazil, Sweden, Turkey, and Hindostan. Concerning each of these tell :
 - Where it is situated.
 - One of its important cities.
 - What kind of a climate it has.

- A person living in London went by Hamilton and Toronto to Owen Sound, thence to Sarnia by boat, and home by rail. Trace the journey, telling the railways used and the chief towns and rivers, and larger bodies of water seen on the trip.
- Define dew, marsh, tunnel, eclipse, equator.
- Describe three different kinds of soil, and tell a kind of plant or tree suited to each.
- Draw an outline map of Middlesex ; mark and name the railways on it, except the G.T.R. and its branches.

Count 100 marks a full paper : 33 minimum to pass.

Values—3, 3, 3, 6, 4, 4, 4, 8, 18, 16, 15, 9, 12.

Teachers' Miscellany.

A SURE CURE FOR TRUANCY.

BY S. D. SINCLAIR.

It was a town of about four thousand inhabitants, and the truancy bacillus which at first had infected only a few of the worst spirits had spread until truancy had become an epidemic. A number of causes combined to aggravate the disease. It was an especially good season for fishing, rat-killing, and sundry other recreations dear to the truant's heart.

The usual remedies were applied. Every effort was made to increase the attractiveness of the school, and by interest to create involuntary attention superior to that for external things. But the magnets seemed devoid of power. There were half a dozen ringleaders, large boys, who were not school children at all but loafers whose parents did not send them to school, and had concluded that they were incorrigible. These ringleaders lay in wait for the schoolboys and by arguments, more forcible than philosophical, persuaded them that it was better to "come along and have some fun." They sat on dry goods boxes and wrote elaborate excuses and signed the parents' names to them for the delinquent to present the following morning. And so the disease increased with uniform acceleration. When mild treatment in homœopathic doses failed, the teachers resorted to corporal punishment, but this failed utterly ; in fact, it seemed largely to undo the few good results secured by the "attractive" treatment.

Matters continued to grow worse until a teachers' meeting was called to discuss the situation.

It was decided at the meeting to adopt an entirely different treatment and heroically to focus attention on the evil. Every teacher agreed to visit after school, during the next week, the home of every pupil who had been absent during the day. This decision was announced in all the classrooms the following morning, which was Friday. The reporters heard of it and the newspapers devoted a few interesting lines to it. The parents talked it over, and some of the boys are said to have given it more than a passing glance.

On the following Monday morning the teachers were agreeably disappointed to find that many boys had suddenly recovered, and that there were but few "vacant chairs." They called religiously upon the parents of all the absentees and found that the parents were quite anxious to have their children attend regularly and were willing to lend a helping hand. The results exceeded the most sanguine expectations of those who made the experiment.

It took time for the disease to die out and it was not an uncommon thing to see parents accompanying convalescent children to school in the morning, but a genuine and lasting cure was finally effected, and parents and teachers were brought closer together.—*The Educational Record.*

Never forget that the essential business of the school is not so much to teach and to communicate a variety and multiplicity of things, as it is to give prominence to the ever-living unity that is in all things.—*Froebel.*

MIND, it is our best work that He wants, not the dregs of our exhaustion.

—*George Macdonald.*

EDUCATIONAL NEWS NOTES.

THOSE who submitted manuscripts to the committee appointed to select the best history of Canada for use in the schools are no doubt somewhat nervously awaiting the announcement of the name of the winner. Five manuscripts have, it appears, been selected from the fifteen submitted, and these five will be considered carefully by the members of the committee at their own homes. A second meeting of the committee will no doubt be necessary before a final decision is reached.

THE following notice may be put on record as the experience of many of our schools this year, however the figures may differ. "P— school meeting voted \$200 for the library, \$50 for apparatus, and authorized the board to buy a new piano of the best make. Good for P—! The school starts out with a larger enrolment than ever before ; 54 non-resident pupils. The new teachers take hold as if they were used to it."—*The Educational Record (Que.)*.

THE Peterborough Teachers' Association meeting, held on 21st and 22nd ult., seems to have been an enthusiastic and successful one. The lectures and addresses given by Inspector Tilley, of which summaries were given in the *Examiner*, were of a high order, while thoroughly practical. The exercise on "Entrance Composition," by Mr. Keogh, of the separate school, also, was well received.

IN its report of the recent Teachers' Institute at Port Arthur, the *Algoma Herald* says, touching the reading of a brief but admirable paper on "Teaching Reading to Junior Classes," that "a somewhat amusing discussion followed, the president seeming disposed to throw down the 'gauntlet' in defence of the old alphabetical system, his chief arguments being the impossibility of giving distinct sounds to the consonants, and his insinuation that the average boy of ten years of age, under the old system, was as proficient a reader, other things being equal, as a similar boy now under the new. The Rev. S. C. Murray defended the 'look and say' method, and thought that a combination of that with the phonic produced the best results. The general opinion seemed to favor any system rather than the alphabetic."

WILLIAM MACK BROOKS, of Norway, Me., claims the honor of being the oldest schoolmaster of his state. He has taught 114 terms, and has used the rod on about the same number of pupils. He must have been a model of moderation, seeing that he began work in the days when a schoolmaster was famous according as he had lifted up rods upon the big boys.

A MEETING of the Board of Directors of the Ontario Educational Association was held a week or two since in the Normal School for the purpose of formulating a programme for the next annual meeting, which will be held April 7, 8, and 9. It was decided to hold a reception and conversation in the university on the evening of the first day of the meeting. A general programme was then discussed, at which the following will be asked to read papers : President Elliot, of Harvard University ; President Peterson, of McGill ; President Gilman, of Johns Hopkins ; Dr. Scovil, of Worcester, Mass. ; and Dr. Parkin, of Upper Canada College. At the conclusion of the afternoon session the board waited upon Hon. G. W. Ross and asked that the annual provincial grant to the association be increased from \$300 to \$700. Prof. Baker and Dr. MacCabe acted as spokesmen. Mr. Ross expressed his sympathy with their request, and stated that the matter would be duly considered by the council. During the evening the various managing committees arranged programmes for the several departments.

AT the meeting of the Lennox and Addington Teachers' Association, at Napanee, in October, a motion to the effect that, when the names of pupils successful at the Entrance Examinations are published, they should be accompanied with the names of the schools and of the teachers concerned was discussed and lost on division. Another suggestion that the names of the schools, without those of the teachers, be given to the public also failed to carry. Evidently the teachers of Lennox and Addington are of opinion that no additional incentive to teaching, with a view to this examination, is necessary or desirable.

Question Drawer.

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

A SUBSCRIBER.—If the books and papers are used for recreation only, and not in any sense as text-books, we cannot suppose that any objection would be made.

S.A.C.—Asks for some "good points" for a young teacher about to commence teaching in a home school, which has the reputation of having been very badly managed. Who will help her from personal experience or otherwise?

J.E.J.—(1) We do not think so, but you had better write to the Education Department.

(2) We shall try to have such a lesson at an early date. Have you the authorized text-book? Does not that supply your need?

COMMERCIAL.—We do not find that any text-book in bookkeeping is authorized for use in the public schools. Book-keeping blanks can no doubt be procured through any bookseller advertising in our columns, or through the JOURNAL.

W.B.S.—Write to the Education Department or to the principal of some Model School.

W.B.S.—Æsop was a Greek writer, supposed to have lived about 570 B.C. He is said to have been brought as a slave to Athens, where he was contemporary with Solon and Pisistratus. But the popular stories concerning him are unreliable, and it is pretty certain that the fables which are popularly ascribed to him are really of oriental origin.

A. M., Croton.—The large dictionaries and encyclopædias are the best published in Canada, but by writing to the different publishers and booksellers who advertise in our columns you can get information in regard to any of them. We do not like to make any discriminations. Look through our advertising columns for a few months past. You had better write to the Education Department for a copy of the catalogue of books recommended for supplementary reading. In it you will find a full list of the chief publishing houses in Great Britain, the United States, and Canada. Do not fail to read the special offers made in this number. For any specific book an order sent to us will be promptly attended to.

T.E.C.—Write to the Education Department for a circular giving the information you need.

T. D.—Following are the selections for memorization for Entrance Examination. Fourth Reader.—(1) The Bells of Shan-don, 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 Fish-ers, 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.

Literary Notes.

Foreign affairs naturally have more than usual prominence in the November *Review of Reviews*. In the "Progress of the World," the department of that periodical in which the editor rapidly reviews the events of the preceding month, the possibilities of war in the far East are pointedly set forth. Another theme suggested in the same connection is the progress of Christian missions in the Orient. The prospects of Japan and Russia as Eastern powers are tersely discussed. The editor also comments briefly on the relations of Russia and France, the Italian celebrations, the French victory in Madagascar, the Cuban situation, and British policy in Venezuela. Among home topics of the month, the coming elections, the condition of New York politics, the anti-prize-fight campaign in the Southwest, and the educational outlook are selected for treatment.

The December issues of Houghton, Mifflin & Co.'s famous Riverside Literature Series are No. 87, Defoe's "Robinson Crusoe," and No. 88, Stowe's "Uncle Tom's Cabin." These two books, among the most renowned of the world's literature, have been issued to carry out the plan of publishing in this series books of an attractive form and inexpensive price suitable for school libraries. Other classics of equal merit are promised for issue during the remainder of the school year. The "Robinson Crusoe" is printed from new plates prepared for this edition. The "Uncle Tom's Cabin" is printed from the plates of a recent edition. Both books are equipped with introductory matter of a valuable and interesting character, and are attractively bound in paper at 50 cents, and in linen at 60 cents.

One is not apt to think of finding Greek manuscripts among the Egyptian tombs and ruined monasteries, yet Prof. A. H. Sayce tells us, in the *Sunday School Times* of November 23rd, that in certain instances parts of the mummy-cases have been found to be composed of fragments of inscribed papyri, perhaps the contents of some waste-paper basket which some undertaker had bought. The dates on many of the papyri show that they are the earliest Greek manuscripts known to exist. Among them are portions of the "Phædo" of Plato, as well as part of the lost play of Euripides called the "Antiope." Certain satirical poems of Herondas found in the same way are lifelike sketches of Greek society of the second century B.C., and are very amusing, the modernness of their tone making them thoroughly interesting to the reader of today. John D. Wattles & Co., 1031 Walnut street, Philadelphia, Pa.

The publishers of *Littell's Living Age* announce a reduction in the price of that unique eclectic from eight dollars to six dollars a year; the change to take effect with the first of the new year. New subscribers, however, remitting before the first of January, will receive the intervening numbers of 1895 free. *The Living Age*, now nearing the close of its fifty-second year, has ever been the faithful mirror of the times, reflecting only that which was highest and best and most desirable in the whole field of literature. It has received the commendations of the highest literary authorities, the most distinguished statesmen, the brightest men and women of the country, and has proved a source of instruction and entertainment to many thousands. It commends itself especially to busy people of moderate means, for they will find in it what they cannot otherwise obtain except by a large expenditure of time and money,

yet which is so essential to every one who desires to be well informed concerning all the great questions of the day. Recent issues well maintain its reputation. We can only add what has been so often said, even at its old subscription price, that no intelligent reader can afford to do without *The Living Age*. Published by Littell & Co., Boston.

Conspicuous among the contents of the December *Atlantic* is another of John Fiske's historical studies. It has for a title "The Starving Time in Old Virginia," and is an important historical contribution as well as delightful reading. This issue also contains three short stories: "Witchcraft" by L. Dougall; "The End of the Terror," by Robert Wilson; and "Dorothy," by Harriet Lewis Bradley. Other articles of interest are "A New England Woodpile," an outdoor sketch, by Rowland E. Robinson; "The Defeat of the Spanish Armada," by W. F. Tilton; "An Idler on Missionary Ridge," a Tennessee sketch, by Bradford Torrey; "Being a Typewriter," a discussion of the relation of the machine to literature, by Lucy C. Bull; "Notes from a Travelling Diary," a study of the new Japan, by Lafcadio Hearn; and "To a Friend in Politics," an anonymous letter. The series, "New Figures in Literature and Art," which has been appearing in the *Atlantic*, has attracted wide attention. The subject of the third paper, appearing in this issue, is Hamlin Garland. Houghton, Mifflin & Co., Boston.

ST. NICHOLAS IN 1896.—For almost quarter of a century—for twenty-two years, to be exact—*St. Nicholas Magazine* has been bearing its welcome messages each month to the young people of the land. It began existence in 1873, consolidating with it in its early years all of the leading children's periodicals of that day, *The Little Corporal*, *Children's Hour*, *The School Day Magazine*, and *Our Young Folks* among them. The last children's magazine to be merged in *St. Nicholas* was *Wide Awake*, which was purchased and consolidated with it only a few years ago. It has been fortunate in securing contributions for its pages from the leading writers and artists of the language, while it has given to its readers many works that have become imperishable classics in juvenile literature. *St. Nicholas* has had for many years a large circulation in Europe, and it is said to be read by many royal children. When the children of the Prince of Wales' family were young the Prince took six copies for his household, and the present Crown Prince of Italy grew up a constant reader of *St. Nicholas*. The magazine is a help to those that have the care and upbringing of children, in that it is full of brightness and interest and tends to cultivate high aspirations, without being "preachy" and prosy and lugging in too apparent moralizing. Its readers are always loyal to it, and they will be glad to learn what has been provided for their delectation during the coming year. The leading feature will be a delightful series of letters written to young people from Samoa by Robert Louis Stevenson. These describe the picturesque life of the lamented romancer in his island home, and give interesting portraits of his native retainers. Rudyard Kipling, whose first *Jungle Stories* appeared in *St. Nicholas* will write for it in 1896, and James Whitcomb Riley, the Hoosier poet, will contribute a delightful poem, "The Dream March of the Children," to the Christmas number. The serial stories represent several favorite names. "The Sword-maker's Son" is a story of boy-life in Palestine at the time of the founding of Christianity. It is written by W. O. Stoddard, whose careful study of the history of the times and whose travels over the scenes of

the story have enabled him to present vividly the local coloring. "The Prize Cup" is one of J. T. Trowbridge's best stories. Albert Stearns, whose "Chris and the Wonderful Lamp" was one of the great successes of the past year, has written another story that promises much. In "Sindbad, Smith & Co." he has again gone to "The Arabian Nights" for inspiration. An American boy enters into partnership with the greatest of sea-faring adventurer, Sindbad, and the fun and the complications that this brings about can be imagined. These are but a few of the features. During the coming year \$1,000 will be given in prizes. Full particulars concerning it will be found in the November number.

It is a mistake into which young teachers in these days are in some danger of falling to suppose that children do not like hard work, and to try, therefore, to make everything very easy for them. Our experience is that there is nothing which a child of average brightness enjoys better than a vigorous mental effort, provided only that victory is within his reach. Watch the boys on the playground. It is not the easy game, the short run, the low jump, that gives the most pleasure. On the contrary the more difficult the physical feat, the more eager will be the competition. Just so it is in the class-room. There is a downright joy in mental effort, provided only that the thing seems worth doing, and fairly within the powers of those attempting to do it. To attempt to turn every lesson into a play, or to make it so easy that the child has no demand made upon the thinking powers, is to deprive it of all educational value, and to cheat the pupil out of the highest pleasure as well as profit in the lesson.

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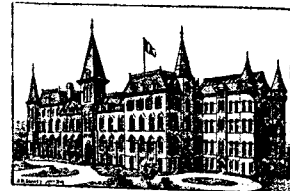
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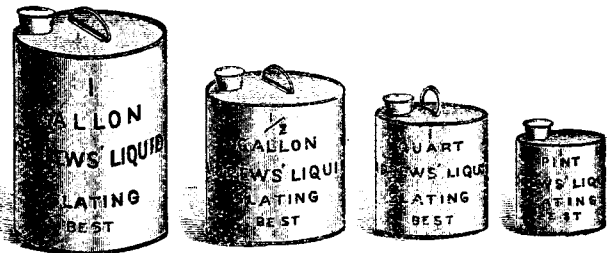
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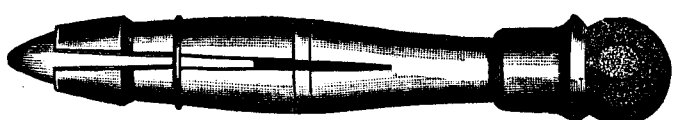
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OFFICIAL CALENDAR

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December:

- County Model Schools Examinations begin. (During the last week of the session.)
- Special Examinations for Candidates, who are exempt from attendance at Provincial School of Pedagogy.
Returning Officers named by resolution of Public School Board. [P. S. Act, sec. 102 (2).] (Before 2nd Wednesday in December.)
- Practical Examinations at Provincial Normal Schools begin. (Subject to appointment.)
- Last day for Public and Separate School Trustees to fix places for nomination of Trustees. [P. S. Act, sec. 102 (2); S. S. Act, sec. 31 (2).] (Before 2nd Wednesday in December.)
- County Treasurer to pay Township Treasurer rates collected in Township. [P. S. Act, sec. 118 (3).] (On or before 15th December.)
- Local assessment to be paid Separate School Trustees. [S. S. Act, sec. 55.] (Not later than 14th December.)
- Municipal Council to pay Secretary-Treasurer Public School Boards all sums levied and collected in township. [P. S. Act, sec. 118.] (On or before 15th December.)
- County Councils to pay Treasurer High Schools. [H. S. Act, sec. 30.] (On or before 15th December.)
- High School Treasurer to receive all moneys due and raised under High Schools Act. [H. S. Act, sec. 36 (1).] (On or before 15th December.)
- Written Examinations at Provincial Normal Schools begin. (Subject to appointment.)
- Last day for notice of formation of new school sections to be posted by Township Clerk. [P. S. Act, sec. 29.] (6 days before last Wednesday in December.)
- Provincial Normal Schools close (Second session.) (Subject to appointment.)
- High Schools first term, and Public and Separate Schools close. [H. S. Act, sec. 42; P. S. Act, sec. 173 (1) (2); S. S. Act, sec. 79 (1).] High and Public Schools end 22nd December; Roman Catholic Separate Schools end 23rd December.

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