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The Canada School Journal.

AND WEEKLY REVIEW.

VOL. X.

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The Canada School Journal and Weekly Review.

An Educational Journal devoted to the advancement of Literature, Science, and the teaching profession in Canada.

—o—TERMS—o—

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CANADA SCHOOL JOURNAL PUB. CO. (Limited)

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Holiday Topics.

We respectfully ask our subscribers to look at the address label on their JOURNAL, and if it shows that their subscriptions terminate at the end of the year, we request them to renew them at once.

The CANADA SCHOOL JOURNAL has had a prosperous year as a weekly publication and the proprietors are making every effort to have it still more so in the ensuing year. Our desire is that the JOURNAL shall be the Teachers'—especially the Public School Teachers'—aid and friend, in school and at home, and we invite the co-operation of every live teacher who is willing to further the cause of education.

To the readers of the CANADA SCHOOL JOURNAL, one and all, we wish a Happy Christmas! To the young, and the light-hearted of every age, may it be indeed a merry one! There is

a time to be merry, a time when innocent gaiety and jollity do good like a medicine. Let then those who can; those upon whom no cankering care, no oppressive grief, has yet laid hand; those for whom the past and passing years have brought pleasure and prosperity, make the day resonant with sounds of gladness. Let the

“Goddess fair and free,
In Heaven yeled Euphrosyne,
And by men heart-easing Mirth,”

be invoked to preside at the Yule festivities, and let her bring with her, if she may,

“Jest and youthful Jollity,
Quips and Cranks, and wanton Wiles,
Nods, and Becks, and wreathed Smiles,
Such as hang on Hebe's cheek,
And love to live in dimple sleek;
Sport, that wrinkled Care derides,
And Laughter holding both his sides.”

And what of the many others to whom such advice and wish would seem but heartless mockery; those to whom the day so fraught with joyous and sacred memories brings also its freight of sad and sorrowful recollections; those whose eyes, even as they gather around the festive board, turn instinctively to note the vacant place that was filled by some loved one a year ago; or those whose hearts may have been wrung with sorrow more poignant than even death can bring? To such mirth may indeed be forbidden, and voices of gaiety sound like hollow mockeries of the stern realities of life. By such all the more should the glad anniversary be hailed as a harbinger of joys to come. At the feet of such may it lay down its precious burden of consolation, of peace, and of hope. To all, whether in the exuberance of mirth-loving gladness, or in the quiet joy of chastened trustfulness, may the day return as in very deed the symbol and pledge of the golden age of the future, when

“Truth and Justice then,
Will down return to men,
Orbed like a rainbow; and, like glories wearing,
Mercy will sit between,
Throned in celestial sheen,
With radiant feet the tissued clouds down steering.
And heaven, as at some festival,
Will open wide the gate of her high palace hall.”

To one and all may the coming day prove a happy Christmas!

To our view it does not in the least matter that no one can now suppose that the day celebrated throughout Christendom, is the true anniversary of the birth of our Saviour. The real date of the nativity cannot now be ascertained, with any degree of certainty, but it seems almost certain that it could not have been the 25th of December, which is the height of the rainy season in Judaea, a time at which it would be in the last degree likely that shepherds would be watching their flocks by night on the plains. As a matter of fact there seems to have been no uniformity in regard to the day set apart for the celebration in the earliest times to which the observance

of Christmas can be traced. Some of the early churches held the Christmas festival in April or May, others in January. Several causes probably co-operated to cause the 25th of December to be finally fixed as the day of the Christmas celebration. The chief perhaps was that almost all the heathen nations regarded the period of the winter solstice as a central or turning point, so to speak, in the year. It symbolized to them the end of the old and the beginning of the new year. Then the powers of nature were supposed to put forth new activities, the world to awaken into new life. It was at this season that the Germans and other Northern nations were accustomed to hold their great Yule feast; as a part of their system of sun-worship. Many of the usages of both Germans and Romans were afterwards incorporated into the Christian observances. The Christian churches sought afterwards to root out or purify the heathen notions that came in with the customs, by the establishment of the liturgy, the so-called 'Manger-Songs,' and even by dramatic representations of the birth of Christ and the events of his early years.

The custom of gift-giving may have been one of those transplanted from paganism, or may have been adopted by the Church in celebration of the gifts brought by the wise men of the East for the infant Saviour. Ovid alludes to the practice among the Romans of giving small presents both of coins and of dates, dried figs, honey, &c., as well wishes and good omens at the commencement of the new year. The Christmas box, or money-gift is essentially an English custom. The custom for a long time was almost universal of giving a small piece of money to persons in an inferior position. This finally became so serious a draft, and so great a nuisance, that tradesmen used to put up notices in their shop windows that no Christmas boxes would be given, and the public authorities were even constrained to take action to put a stop to the practice. But happily we have no law to forbid the pleasant custom of giving presents to friends, and especially to children on Christmas Day. The Anglo-Saxon has no more delightful usage. The little myth of Santa Claus and his visits stands alone as a pretty and salutary exercise of the fancy amongst us. We are, as a people, too much inclined to be matter-of-fact, not to say sordid. Let us by all means keep up this little illusion which really can scarcely be said to deceive even the little children, and which constitutes the one recurring green spot in the lives of too many of them. In some families, what with months of anticipation, and weeks of planning, and the after stores of pleasant memories, Christmas is almost a perpetual pleasure. Who would deprive himself of so rare an opportunity to make some little hearts happier, if but once a year? Let not the children be disappointed on this Christmas day. The gift-giving with its innocent plottings and plannings, its happy surprises, and its delight in the joy of others, is an education in itself. Anything which leads either children or adults, in this selfish world, to give days or weeks, or even minutes, to earnest thought and device for conferring pleasure on others is in itself an excellent lesson in practical benevolence, and a brief fulfilment of the moral law.

The greatest literary event of the season in England is, no doubt, the appearance of a new volume of poetry by Tennyson. The well-won reputation of the Laureate has unfortunately been injured since the publication of those productions which have placed him in the very front rank of the world's great poets, by the appearance from time to time of ephemeral bits of rhyme, or jingle, quite unworthy of his pen. Some of them undoubtedly merited all the ridicule which was freely bestowed on them. One could but wonder how such effusions could possibly come from the same brain which gave to literature *In Memoriam*, *The Princess*, and *The Idyls*. In this last volume the poet, if we may judge from the specimens which have crossed the water, has grandly redeemed his reputation. We give in another column one of the shorter pieces, on "Early Spring." It is charming, almost perfect, in sentiment, style, and diction. The word-painting is exquisite in its simplicity. Almost every word is pure Anglo-Saxon. We suggest that from this point of view alone it is worthy of being made a study in the literature classes. It would be a profitable exercise for pupils to cull out all the words of Latin or Greek origin in the poem. The result can scarcely fail to give them such a conception of the beauty and power of pure English as will be to many a surprise and a revelation.

The series of war papers which have been appearing for months past in the American magazines have emphasized one phase in the intellectual activity of our neighbors. The popularity of these papers, due in part to the theme, and in part to the fact that the writers discoursed of events in which they themselves bore a leading part, has been almost beyond precedent. This is especially true of those written for the *Century*, which was the first to hit upon the happy idea, and which has profited immensely by it. The death of ex President Grant, the chief actor in the events described, has placed in a striking light a feature in the character of our republican neighbors which has always been a puzzle to us, viz., their immense capacity for hero-worship. They have enshrined the dead General amongst the demi-gods of the National Pantheon, and continue even yet to pay him almost more than mortal honors.

1885 bids fair to be famous amongst years for the number of unsettled political problems it will hand over to its successor. It has been a year of events, and will claim a large place in history. The nations are comparatively few which have enjoyed uninterrupted internal and external peace. There have been, it is true, no wars of great magnitude actually fought out by sea and land, but cloud after cloud has hung on the European horizon, and even now no one can feel sure that the next few months or weeks may not see the beginning of the long expected struggle, whose end no human prescience can foresee. Happy in her comparative isolation, the Great Republic south of us is perhaps the only really great nation which has no reason to fear embroilment in some great conflict.

In Germany the mighty, and in some respects baneful, influence of Bismarck has within the last few weeks been felt in

one of the most wholesale acts of tyranny ever perpetrated under a Government having a form of freedom—the expulsion of the Poles. The nation is now trembling with anxiety caused by the precarious health of the aged Emperor. In the course of nature he must soon pass off the stage, and with him will probably pass away the *regime* of the man of blood and iron, leaving the great German people free to enter upon a new career of political freedom and progress.

In the East Russia, Austria, and Turkey are all yet standing with hand on sword-hilt, watching the outcome of the little affray between Servia and Bulgaria. The prospects now seem to be that a settlement may be patched up, though the probabilities are that the powerful intriguers behind the scenes will not be long in inaugurating other moves in furtherance of their respective designs, but full of menace to the peace of Europe.

Spain, unhappy Spain, is on the frowning brink of another precipice. Whether the forces of order and conservatism may prove able to save her from the threatening danger, or some eager and ambitious hand cause her to topple over, remains to be seen. If the long regency during the minority of the child-Queen can be tided over and peace and order preserved, the event will be a marvel and the omen good for the future of the distracted and poverty-stricken peninsula.

France, too, has passed through the throes of what barely escaped being an internal revolution, though subsequent events seem to show that it was meant but as the protest of the people against the disastrous Tonquin policy, and the general tendency of the government to meddlesomeness in foreign affairs. The French Republic is being shaken together somewhat violently at times, but the result is on the whole hopeful for its future stability.

On our own continent the great Republic may be said to be again firmly consolidated in a union which bids fair to be abiding. Politically her prospects were never better. The firm hand of her model President has so upheld and strengthened the hands of the reformers that the old, vicious Civil Service system has probably received its death blow, and all the forces of political corruption are reeling under the shock. If the great heart of the people continues to beat true, and the quickened national conscience refuses to be again lulled to sleep by the siren allurements of the agents of corruption, this year will be marked in history as the beginning of a new era of honesty and purity in American politics.

Canada, too, is having its own sensation, and that of the most pronounced kind. The questions which are agitating the whole country, as it has seldom before been agitated, are unfortunately so interwoven with political partyism that they can scarcely be touched upon in a neutral journal. It seems in the opinion of many that the future of the Confederation is trembling in the balance. And yet we may be permitted to doubt whether the

agitation is so deep and dangerous as is generally supposed. Both parties are interested in magnifying it and are diligently fanning the flame, the one in the hope of gaining, the other in the dread of losing, office. The opening of the Dominion Parliament, which, it is said, will take place next month, will be looked for by many with curiosity, and by some with deep anxiety.

England has but narrowly escaped, and if the political prophets and wiseacres may be trusted, only for a little time escaped, being drawn into a conflict, with the great empire of Russia. The struggle, if it comes, or when it comes, will be little better than one of life and death for each. The year, too, has seen the Soudan fiasco, in which many brave men and millions of money have been sacrificed in an expedition which was not only fruitless, but which the Prime Minister, during whose regime it was undertaken, now admits was a mistake. The last few weeks have brought the large and valuable addition of Burmah to Britain's already great Indian empire, and thus while increasing largely her vast Indian territory and probably her commerce, has also added to the magnitude of the tremendous question, to which no statesman can as yet give even a probable answer, what is to be the future of India? At home too, Great Britain has been the scene of a political commotion which will be little less in effect than a revolution, however events may turn. Two-fifths of her people have just for the first time handled the freeman's great weapon, the franchise, and handled it in a manner which shows a spirit for which few gave agricultural laborers credit. The Government has henceforth to reckon with three great parties instead of two, the third being by no means insignificant in numbers and really powerful by reason of the solidarity which makes it a mere voting machine controlled by the single hand of Parnell. The general result is that among the great problems, which 1885 bequeaths to the future, and in case of most if not all, to the immediate future, are not only that of local self-government for Ireland, and possibly Scotland, but reform of procedure in Parliament, reform or extinction of the House of Lords, the great land question with its adjuncts of primogeniture and entail, Free Schools, and Church Disestablishment. It may safely be predicted that no period of England's eventful history is more deeply interesting or better worth the attention of the student than will be that of 1886 and the following years.

ADJUDICATION OF OUR ARITHMETICAL COMPETITION PRIZES.

Last spring, it will be remembered, we offered prizes for the best set of twenty-five questions in arithmetic, suitable for fourth class, twenty-five for third class, and also for school-room humorous anecdotes. We announced that they were to be sent in before a certain date, but when that period arrived we found the number of papers received was so meagre that we extended the time. The competition, ultimately, in arithmetic for fourth class was very fair, but not equal to what we might have expected from the teachers of the Dominion; in

arithmetic for third class it was so miserably small that we concluded we would not be just to ourselves to consider it; anecdotes were almost a blank. The deduction we drew from this state of the matter was that teachers loved arithmetic rather than jokes, and that it is no joke to teach school now-a-days. The days of the worthy schoolmaster of Auburn have passed away.

After several delays in our efforts to obtain the services of persons to act as judges of the merits of the fourth class papers, we were fortunate in securing two who, from their position and attainments, are eminently qualified for such a task. We refer to W. H. Ballard, Esq., M.A., City Inspector of Schools, Hamilton, and W. J. Robertson, Esq., B.A., LL.B., Mathematical master, St. Catharines Collegiate Institute, both of whom are gold medalists in mathematics. We knew that the opinion of these gentlemen in such a matter as that placed before them, could not be questioned by the competitors, and we have every confidence that full justice has been done.

There were forty papers of questions suited to fourth class sent in and submitted to the committee. The decision of the judges is:

- (1) That the first prize of \$75 be awarded to "Quarto," and
- (2) That as there were four papers of equal merit to warrant second place, the 2nd, 3rd, and 4th prizes, amounting to \$75, be equally distributed among the four who sent them.

We acknowledge that this judgment upset our original plan of distribution, but as we believe the committee would not advise this course without having very strong grounds, we consented, and hope it will cause no dissatisfaction among the competitors. The four were, "Try Again," "Pharaoh," "Snye," and "R. G. N." The prize-winners indicated by these soubriquets are:

"Quarto"—Mr. John Elliott, Caledonia.

"Try Again"—Mr. Richard Peever, Pembroke.

"Pharaoh"—Mr. John N. Lannin, Tilsonburg.

"Snye"—Mr. Thomas Kirkconnell, Vankleek Hill.

"R. G. N."—Mr. Robert G. Nesbitt, Woodville.

We congratulate the winners, and feel confident that the publication of their names in connection with the affair will be a testimonial to their ability in the eyes of their fellow-teachers and the public.

We are pleased to have these "glad tidings" to announce in this Christmas number of the CANADA SCHOOL JOURNAL.

Special.

ELEMENTARY CHEMISTRY.

CHAPTER III.—Continued.

By Fermentation.

Exp. 15.—Dissolve a little sugar in eight or ten times its weight of warm (not hot) water in a flask, the delivery-tube of which passes into lime-water. Add to the flask a little dried yeast, previously rubbed down with water; fermentation will begin in the course of an hour or so, and carbon dioxide will pass over into the bottle, and turn the lime-water milky.

Under the action of the yeast, cane sugar, $C_6H_{12}O_6$, becomes grape sugar, $C_6H_{12}O_6$, and the grape sugar is then changed into alcohol and carbon dioxide; thus:—



By Germination.

Exp. 16.—Moisten some seeds, put them under a tumbler containing common air, and set them in a moderately warm place; signs of vegetation will soon begin. After the seeds have sprouted, examine the air for carbon dioxide in the usual way. It will be found that a portion of the oxygen has disappeared, and a corresponding volume of carbon dioxide has been produced. The presence of oxygen is as favorable to germination as that of large quantities of carbon dioxide is unfavorable; hence the process is hastened by the introduction into the soil of slaked lime, in order to absorb the carbon dioxide as fast as it is produced by the sprouting seeds.

By Decay of Animal or Vegetable Substances.

Exp. 17.—Place some dead leaves in an air-tight bottle; the air will soon cease to have the power of supporting combustion, its oxygen having combined with the carbon of the leaves to form carbon dioxide.

SUMMARY AND ADDITIONAL FACTS.

History.—Carbon dioxide was known as early as the sixteenth century. It was examined by Black in 1757, and called by him fixed air, because it was fixed in the carbonates. In 1775, Lavoisier determined its exact nature, and named it carbonic acid.

Sources.—We have seen that carbon dioxide is a product of respiration in man and animals, that it is a product of combustion, and a product of fermentation. It is a small but constant constituent of the atmosphere; it is likewise invariably contained in the soil, being one of the chief products of decay of all organic substances. From the soil it is taken up by rain and spring water, and it is to this substance that spring water, to a great extent, owes its fresh and pleasant taste. It is evolved from the craters of active volcanoes, from fissures in the earth, and is contained in immense quantities in the carbonates.

Properties.—Carbon dioxide is a colorless gas, possessing a slightly pungent smell and acid taste. It supports neither combustion nor respiration. When pure, carbon dioxide cannot be breathed. When so far diluted as to admit of being received into the lungs, it acts as a narcotic poison, causing drowsiness and insensibility. It is not, however, poisonous in the strict sense of the term. On the contrary, it is always present in the blood in large quantities, and is constantly secreted from the lungs and from other parts of the body. If the atmosphere contains more than a small percentage of this gas, it arrests this secretion, and fatal results necessarily follow. No rule can be laid down as to the precise quantity of carbon dioxide that may be present in the air without injury to respiration. According to Dr. Parks, an eminent authority on this subject, air is unhealthy when the carbon dioxide in it exceeds .06 per cent., or 6 volumes in 10,000.

Carbon dioxide accumulates in old wells, cellars, etc., being either exhaled from the earth or produced by the decay of

organic matter. The ordinary test is to lower a lighted candle before the workman descends. Air containing 4 per cent. of carbon dioxide will extinguish a candle, but will not support respiration for any length of time. The carbon dioxide may be expelled by frequently letting down a bucket into it, and turning it upside down away from the well; or it may be converted into calcium carbonate by pouring in lime-water.

At ordinary pressure, one volume of water absorbs one volume of carbon dioxide; at two pressures, two volumes; at three pressures, three volumes, etc.; but on the removal of the extra pressure all the dissolved gas escapes except the original volume. "Soda water" is simply ordinary water with carbon dioxide in solution. The foaming of soda water, drawn from the fountain, is due to the escape of the carbon dioxide. The sparkling character of champagne, bottled ale, etc., is due to the liberation of carbon dioxide which has been produced by fermentation, and retained in the liquid under pressure.

Carbon dioxide can be liquefied by both cold and pressure. Under a pressure of 36 atmospheres at 0°C. it is converted into a colorless, mobile liquid. When this liquid is suddenly relieved from the pressure under which it alone can exist, part of it at once passes back into the state of gas, and heat is absorbed so rapidly that the remaining portion of the liquid solidifies. By mixing the solid with ether, and evaporating under the exhausted receiver of an air-pump, Faraday obtained a cold of -110°C. Above 32.5°C. carbon dioxide cannot be condensed to a liquid by any pressure. In the same way all other gases show a *critical point in temperature* at which they are no longer able to be condensed to liquids. That the so-called permanent gases, oxygen, hydrogen, etc., could not formerly be condensed was due to the fact that they were compressed at temperatures lying above their critical points.

Tests:

- (1) Extinguishes flame.
- (2) Lime-water throws down a white precipitate of calcium carbonate.
- (3) The gas is soluble in a solution of caustic potash.
- (4) With water it forms carbonic acid.

HIGH SCHOOL LITERATURE.

By J. E. WETHEREL A.

SIXTH PAPER.

THE ANCIENT MARINER.

{PART II.

1. "The sun now rose upon the right," etc.
Quote the antithetical stanza of Part I.
How may the contrast be indicated orally?
What characteristic of the ballad is reproduced in these repetitions?
2. "And the good south wind," etc.
Quote the corresponding stanza of Part I. With what expression should the altered lines be read?
3. "Sweet bird." Does "sweet" express the mariner's feelings at the time of the narration of his story, or at the time immediately subsequent to the death of the albatross?
4. Why are the 3rd and 4th stanzas of this part of equal length and of similar structure?
5. What tendency in human nature do these two stanzas illus-

trate? Quote from any English poet a passage embodying the same idea?

6. "Work 'em woo." What is the origin of 'em?
7. What part did *alliteration* play in early English poetry? What part does it now play? Is Coleridge fond of it?
8. "Averred." How does this differ from *said*?
9. "Like God's own head." Is this an explanatory or an ornamental simile?

Show by examples the difference between—

- (a) A mere instance and a simile.
- (b) An implied simile and a metaphor.

The phrase *copper sky* (v. 29) is an example of which?

10. In the order of chronological development which comes first, the *simile* or the *metaphor*? Is it true "The *metaphor* is a condensed *simile*"?

11. "'Twas right, said they, such birds to slay."

What is the poetic outcome of this justification of the Mariner's crime?

12. "The furrow followed free." Does this accurately describe the "wake" of a vessel? How did the poet modify the line in later editions?

13. "Burst." Explain.

14. "That silent sea." Can it be located? What does the "gloss" say?

15. "Down dropt the breeze, the sails dropt down." Notice the change in the position of "down" in the second clause. What figure? Is "down" pleonastic in both clauses? If not, justify its presence.

16. "Sad as sad could be." Is this a simile? What caused their spirits to droop so suddenly?

17. "We did speak only to break," etc.

Does *break* express the purpose of speaking? or does the poet mean that nothing broke in upon the terrible silence but the sad speech of the seamen?

18. "The bloody sun — moon." Account for the aspect and apparent size of the sun, which in Part III. has a "broad and burning face."

19. How is it that the sun and the moon have so prominent a place in the story?

20. "Day after day, day after day." What is the effect of the *epizeuxis*?

21. Show that the structure of v. 34 is imitative?

22. Show that "and" (v. 38) and "nor" (v. 40) are adversative.

23. Point out some of the poetic devices in this stanza (vv. 37-40).

24. "The very deep." The first edition had "deeps." What would that mean?

25. "That ever this should be." Bring this line into construction by filling the ellipsis.

26. "Crawl with legs." Why is this marvellous?

27. "Burnt green and blue and white." How does Coleridge rank with his contemporaries as a colorist?

28. "In dreams." Detail the part played by the *dream* and the *trance* in this story.

29. "The Spirit that plagued us so." What does the "gloss" tell us about this spirit? In what sense are we to interpret the reference to Josephus and Psellus?

30. "What evil looks had I." What is the force of *had*?

31. Instead of the cross," etc. What did the action of the ship-mates symbolize?

32. Quote the portions of the text thus referred to in the "gloss":—

- (a) "The ship enters the Pacific Ocean" (vv. 21-24).

(b) "The ship suddenly becalmed" (vv. 25-28).

(c) "The albatross begins to be avenged" (vv. 29-48).

SCHOOL GOVERNMENT.

MEANS OF SECURING GOOD ORDER.

[Extracted from Page's *Theory and Practice of Teaching*, New Edition by W. H. Payne. By kind permission of the Publishers, Messrs. A. S. Barnes & Co., New York.]

I. BE CAREFUL AS TO THE FIRST IMPRESSION YOU MAKE. It is an old proverb, that "what is well begun is half done." This holds true in school-keeping, and particularly in school-government. The young study character very speedily and very accurately. Perhaps no one pupil could express in words an exact estimate of a teacher's character after a week's acquaintance; but yet the whole school has received an impression which is not far from the truth. A teacher, then, is very unwise who attempts to *assume* to be any thing which he is not. He should ever be frank; and in commencing a school he should begin as he can hold out. Any assumption of an authoritative tone is especially ill judged. The pupils at once put themselves in an attitude of resistance, when this is perceived by them.

A teacher should ever remember that among children—however it may be among adults—*respect* always precedes *attachment*. If he would gain the love of the children, he must first be worthy of their respect. He should therefore act deliberately, and always conscientiously. He should be firm, but never petulant. It is very important at the outset that he should be truly courteous and affable. It is much wiser to request than to command, at least until the request has been disregarded. There are usually two ways of doing a thing,—a gentle and a rough way. "John, go and shut the door," in a gruff tone, is one way to have the door closed. John will undoubtedly go and shut the door—perhaps with a *slam*,—but he will not thank the teacher for the rough tones used in commanding it. Now it costs no more time or breath to say, "John, I'll thank you if you will shut that door." Most cheerfully will John comply with the request, and he is grateful that he has heard these tones of kindness. If he could but know the teacher's wishes afterward, he would gladly perform them unasked. I would by no means recommend the adoption of the fawning tone of the sycophant, by the teacher. He should be manly and dignified; but the language of that courtesy which springs from real kindness, and which ever becomes the gentleman, is always the most suitable as well as most expedient to him.

II. AVOID EXHIBITING OR ENTERTAINING A SUSPICIOUS SPIRIT. It is a maxim of law, that one charged with crime is always to be presumed innocent, until *proved* guilty. This should be a maxim with the teacher who would govern well. There is no more direct way of making a school vicious, than by showing them that you suspect they are so. A good reputation is dear to all; and even a bad boy will be restrained from wicked acts as long as he thinks you give him credit for good intentions. But if he finds that he has lost your good opinion, he feels that he has nothing further to lose by being as bad as you suspect him to be. A teacher is wise, therefore, if he tries to see something good even in a vicious pupil. It may be, as it often has been, the means of saving such a pupil. I have known a very depraved boy entirely reformed in school, by his teacher's letting him know that he had noticed some good traits in his character. He afterward told his teacher that "he had been so often suspected to be a villain, that he had almost come to the conclusion that he would be one; but that, when he found one man who could do him the justice to give him credit for a few good feelings—for he knew he had them—he at once determined to show that man that his confidence had not been misplaced; and that he would sooner die than knowingly offend the only person who ever had understood him."

It is wise sometimes, not only to withhold the expression of suspicion, but give some token of our confidence to the pupil who is troublesome. Intrust him with some errand involving responsibility, or assign to him some duty by way of assistance to yourself, and very likely you will gain his good-will over after. This is founded upon the well-known principle in human nature acted upon by Dr. Franklin, who, when he would gain his enemy, asked him to do him a favor.

III. AS SOON AS POSSIBLE, GIVE REGULAR AND FULL EMPLOYMENT. It is an old proverb that "idleness is the mother of mischief." The nursery hymn also contains a living truth—

"And Satan finds some mischief still
For idle hands to do."

It is the law of a child's nature to be active; and as the teacher is placed in the school to give direction to such minds, he can hardly complain of their going upon forbidden objects, unless he seasonably provides something better for them to do.

Very early, then, the teacher should endeavor to classify his school, and furnish constant and full employment—whether of study, recitation, or relaxation—for every hour in the day. The teacher should have a plan when he opens the school, and the sooner it is carried into full operation the better.* Besides, when a teacher has given employment, he has a right to insist upon the pupil's being engaged in study. No one will question this *right*; and it is far more profitable to require a positive duty than to enjoin a negative,—such as abstinence from whispering or from mischief in general.

IV. MAKE BUT FEW RULES. It is a very common thing for teachers to embarrass themselves by a long code of requirements and prohibitions. Some go so far as to write out a system of laws; and, annexing to each the penalty for its infringement, post them up in a conspicuous place in the school-room. Others content themselves with a verbal announcement of them, and rely upon the memories of the pupils to retain the details of them and to govern themselves accordingly. This, it seems to me, is a great mistake. The multiplicity of specific rules for the government of a school, will naturally lead to a multiplicity of offences. Children will be confused by the varying and sometimes conflicting demands of a formidable code of regulations, and in endeavoring to avoid Scylla will be likely to fall into Charybdis. It is believed by some honest statesmen that "the world has been governed too much"; and it is often alleged in support of this belief, that successful compliance with the laws requires far more wisdom than was displayed in making them; that is, the *science of obedience* is far more abstruse than the *science of legislation*! Whether this be true in the civil world or not, I shall not attempt to decide; I will only say that such has too often been the fact in the school-room.

It is, in my opinion, the part of wisdom, and I think also the teaching of experience, that it is best to make but few rules. The great rule of duty, quoted once before, "Do unto others as you would that they should do to you," comprises quite enough to begin with. The direction—Do RIGHT, is a very comprehensive one. There is in children an ability to distinguish between right and wrong, upon which the teacher may ever rely; and by insisting upon this as the standard, he daily brings into exercise the conscience of the child, who is called upon to decide, *is this right?* Besides, if a school is to be governed by a code of laws, the pupils will act upon the principle that *whatever is not prescribed is admissible*. Consequently, without inquiring whether an act is right, their only inquiry will be, *is it forbidden?* Now, no teacher was ever yet so wise as to make laws for every case; the consequence is, he is

* See Chap. xi. of this work.

daily perplexed with unforeseen troubles, or with some ingenious evasions of his inflexible code. In all this matter the worst feature is the fact, that the child judges his acts by the *law of the teacher*, rather than by the *law of his conscience*, and is thus in danger of perverting and blunting the moral sense.

To this it may be added, that the teacher will often find himself very much perplexed in attempting to judge the acts of his pupils by fixed laws, and in awarding to all violations of them a prescribed penalty. Cases will frequently occur in which two scholars will offend against a given prohibition, with altogether different intentions,—the one having a good motive and forgetting the law; the other with the law in his mind and having a wicked design to violate it. Now, the written code, with its prescribed penalty, allows the teacher no discretion. He must maintain his law and punish both offenders, and thus violate his own sense of justice; or he must pass both by, and thus violate his word. He can not excuse the one and punish the other, as justice would evidently demand, without setting at naught his own laws.

An example will illustrate this point. A teacher has made a rule that "any child who whispers without leave shall be *feruled*." Now two little boys sit side by side. William is an amiable, obedient, and diligent little boy, who has never violated intentionally any wish of his teacher; while Charles is a sour-tempered, vicious, unprincipled fellow, who a dozen times within a week has sought to make his teacher trouble. Little John, who sits near William, drops his pencil, and it falls under William's desk. John looks for his pencil on the right and left of his seat, grows anxious and perplexed. William has noticed him, and he carefully picks up the pencil, while John perhaps is looking for it in another direction,—and with the kind intention of relieving his neighbor's anxiety and restoring his property, he touches his elbow, and softly whispers, "Here is your pencil, John,"—then immediately resumes his own studies, and is probably entirely unconscious of having violated any law. At the same instant, the artful Charles, half concealing his face with his hand, with his wary eye turned to the teacher, willfully addresses another pupil on some point in no way connected with study or duty. The teacher sees both these cases and calls the offenders to his desk. The one trembles, and wonders what he has done amiss, while the other perhaps prepares himself to deny his offence, and thus to add falsehood to his other sins. The *rule* awards to both the *ferule*. It is applied to Charles with energy, and with the conviction that he deserves it; but I ask, can a man with any sense of justice raise his hand to punish William? If so, I see not how he can ever again hold converse with his own conscience. Yet the *rule* allows him no discretion. He must violate either the rule or his conscience, and too often in such cases, he chooses the latter alternative.

Now my advice is, *make but few rules*, and never multiply them till circumstances demand it. The rule of *right* will usually be sufficient without any *special* legislation: and it has this advantage, that it leaves the teacher the largest discretion.

I have been thus full on this point, because so many fail here, and especially young teachers. It has cost many a young teacher much bitter experience to make this discovery for himself, and I have desired to save others who may hereafter engage in teaching, the pain and perplexity which they may so easily and so safely avoid.

For similar reasons, I should also urge that the teacher should avoid the too common practice of *threatening* in his school. Threatening is usually resorted to as a means of frightening children into their duty,—and, too often, threats are made without any expectation of a speedy necessity either to execute or disregard them. The consequence is, they are usually more extravagant

than the reality, and the teacher's word soon passes at a discount; his threats are viewed as very much like the barking of a dog who has no intention to bite. As threatening is, moreover, the language of impatience, it almost always leads to a loss of respect.

V. WAKE UP MIND IN THE SCHOOL, AND IN THE DISTRICT. There is usually but little trouble in government where the schools are deeply engaged in their studies or school exercises, and especially if at the same time, the feelings of the parents are enlisted. To this end I would recommend that early attention should be given to some efforts to *wake up mind*, such as have been described in a former section of this work. It will be found, when skilfully conducted, one of the most successful instrumentalities in aid of good order and good feeling in the school.

An ingenious teacher, too, may introduce other varieties into the school exercises, and thus sometimes turn the attention of discontented pupils from some evil design to give him trouble. So long as the teacher keeps steadily the main object of his school in view, namely, progress in the studies, he is excusable if occasionally, to break up monotony and excite a deeper interest, he introduces a well-considered new plan of study or of recitation. Indeed, much of his success will depend upon his power to do this, and in nothing will its advantages appear more obviously than in the government of the school. A great portion of the disorder and insubordination in our schools, has its origin in a want of interest in the school exercises. He is the successful teacher, and the successful disciplinarian who can excite and maintain the necessary interest.

As one of these varieties, I may mention the exercise of *vocal* music in school. I have already alluded to it. As a means of keeping alive the interest in a school, it is very important. Music is the language of the heart, and though capable of being grossly perverted, (and what gift of God is not?)—its natural tendency is to elevate the affections, to sooth the passions, and to refine the taste.

"The Germans have a proverb," says Bishop Potter, "which has come down from the days of Luther, that where music is not, the devil enters. As David took his harp, when he would cause the evil spirit to depart from Saul, so the Germans employ it to expel the obduracy from the hearts of the depraved. In their schools for the reformation of juvenile offenders, (and the same remark might be applied to those of our own country), music has been found one of the most effectual means of inducing docility among the stubborn and vicious. It would seem that so long as any remains of humanity linger in the heart, it retains its susceptibility to music. And as proof that music is more powerful for good than for evil, is it not worthy of profound consideration that, in all the intimations which the Bible gives us of a future world, music is associated only with the employments and happiness of Heaven?"

Almost any teacher can introduce music into his school; because if he cannot sing, he will always find that it will only require a little encouragement to induce the scholars to undertake to conduct it themselves. It will consume but very little time, and it is always that time which, if not employed in singing, would otherwise be unemployed or misemployed. It is the united testimony of all who have judiciously introduced singing into their schools, that it is among the best instrumentalities for the promotion of good feeling and good order.

VI. VISIT THE PARENTS OF YOUR SCHOLARS. I shall more particularly enjoin this, when I speak of the *teacher's relation to his patrons*, [chap. xii.] but I cannot forbear in this place to urge it upon the teacher as one of the *means of securing good order* in school. A great deal of the insubordination in our schools, arises from some misunderstanding, or some dislike entertained by the

parent towards the teacher, and spoken of in presence of the children. Whatever the pupils hear at home, they will be likely to exemplify in school. It should be the teacher's first object to become acquainted with the parent, and to let him understand, by a personal interview, all his plans and aims for the improvement of the school. This can be done best at the parent's own fireside. It has often happened, that by a friendly visit of an hour by the teacher, the parent's heart has been softened, his prejudices removed, his co-operation gained, and the cheerful and cordial obedience of his children in school secured.

These visits should of course be made in the true spirit of the teacher. They should be made in the honest desire of his heart to render his labors more successful. A visit made in such a spirit seldom fails to make the parents personal friends ever after; and of course, in case of a collision afterwards between him and their children, this is a very important point.

VII. REGISTER OF CREDITS. Registers of the standing of pupils in their schools and their classes, are very highly recommended by some, whose experience is entitled to confidence. I am inclined to place this among the means of securing good order. I would recommend, however, that they should be registers of *credits* only. Some recommend the use of "*black marks*," that is, the record of prominent faults and perhaps of punishments. My own experience teaches me that this is unwise. The teacher should not show a willingness to record and publish the faults of a pupil. He should, on the contrary, show a tender regard for his reputation. Besides, the child is less likely to be mindful of his duty, when his reputation is already *blackened* by his teacher. If Registers are to be kept at all, they should record the successes and virtues of the child rather than his failures and faults. And if, at the end of a week or a month, he is furnished with an abstract for the inspection of his parents, let it be so much of good character as he has earned for himself during the specified time.

I confess I am less sanguine than many others as to the utility of the register, either as an incentive to obedience or diligence; but if used at all, I think the above restriction is highly important.

VIII. AVOID GOVERNING TOO MUCH. By this I would be understood to urge upon the teacher the fact that his main business in school is *instruction* and not *government*. Government is a *means* and not the *end* of school-keeping. A very judicious and practical teacher—Mr. R. S. Howard—has well remarked: "The real object to be accomplished, the real end to be obtained in school, is to assist the pupil in acquiring knowledge,—to educate the mind and heart. To effect this, good order is very necessary. But when order is made to take the place of industry, and discipline the place of instruction, where the time of both teacher and pupil is mostly spent in watching each other, very little good will be accomplished.

It is a mistake that many teachers fall into, that they seem to regard *government* as their chief occupation, and, as we should naturally expect in such cases, it is often very poorly exercised. That is not the best government which is maintained as a matter of formal business. The noiseless under-current is far more efficient. I have always noticed that men govern best *when they do not seem to govern*; and those who make most effort and bustle about it themselves, are pretty sure to have the most boisterous schools.

I once in company with a friend officially visited a school where the teacher, a man of strong frame—six feet high, and with *lungs in proportion*, was *laboring* to keep order. Every word he uttered was in a stentorian voice which would have been painful to the pupils in a quiet room; hence, they took care to keep up a constant clattering of books, slates, and rulers, mingled with the constant hum of their own voices, as if for self-defence. It seemed to

be a mighty effort of each party to rise if possible above the noise of the other. "Silence! Order! I say," was constantly ejaculated in a voice that was almost sufficient, as Shakespeare's Hamlet would say, to "split the ears of the groundlings."

One of the most ludicrous scenes I ever witnessed, occurred in this school during an exercise in English grammar. The class occupied the back seats, while the teacher stood by the desk in front of the school. The children between the teacher and his class were variously employed—some manufacturing paper fly-boxes, some *whittling* the benches—(it was in New England); some were trying their skill at a spit-ball warfare; others were making voyages of exploration beneath the seats. The school, consisting of some seventy pupils, were as busy as the occupants of an ant-hill. The sentence to be parsed was, "A good boy loves study." No written description can present the scene as it was acted in real life.

It should be borne in mind that every word spoken by the teacher, whether to the class or to the school, was in a tone of voice which might have been heard at least an eighth of a mile, and that every exclamation was accompanied by several energetic *thumps* of a large oaken '*rule*' upon the lid of his desk. The language of the teacher is in italics. "*Mary, parse A.*" "A is an indefinite"—"*Silence! Order there!*"—"*article, and is prefixed to*"—"John!"—"No sir, it is prefixed to"—"*Martha, Martha! sit up!*"—"it is prefixed to—boy."—"Right."—"Good, next."—"Good is an adjective,"—"Order, Order, Order!"—thump, thump, thump!—"Go on, go on, I hear you!"—thump, thump!—"and belongs to"—"*Speak louder! Sit up there! What are you doing? And belongs to?*"—"boy."—"The Rule. The Rule! I say."—Here several children looked earnestly at the piece of timber he held in his hand.—"*The Rule, sir, the Rule.*"—thump, thump!—"You've got it in your hand," vociferated a little harmless-looking fellow on the front seat, while the scholar proceeded to recite the rule.—"*Adjectives belong to*"—"Lazy, lazy fellow! sit up there."—Here the class smiled, and the scholar completed his rule, asserting however that "*adjectives belonged to nouns*," and not to "*lazy fellows*," as the class seemed to understand the master to teach. Word after word was parsed in this way. (a way of teaching our language, which, if we could know it had been practised at the erection of Babel, would sufficiently account for that memorable confusion of tongues without the intervention of a miracle,) all the teacher, nearly exhausted by this strange combination of mental, oral, and *manual labor*, very much to the relief of all, vociferated "*That'll do!*" and the scene was changed.

At the close of the afternoon, we were told that "it was a very hard school, that it was almost impossible to keep order, and that he should be discouraged were it not that he saw a manifest improvement within a few days past!"

Now this teacher *made* the school what it was, by his own manner. He would have done the same in any school. He taught in the most effectual way the science and art of confusion; and notwithstanding the hard name he gave his school, he was *emphatically* the most disorderly and noisy member of it.

There was a change. On another day, accompanied by the same friend, we presented ourselves at the door of this same room for admittance. We heard no sound as we approached the entrance, and almost began to suspect we should find there was no school within. We knocked; and presently without our hearing the footstep of the person who approached, the door opened, and we passed in. The children looked up a moment as we entered, and then bent their eyes upon their lessons. The teacher softly handed us seats, and then proceeded with the recitation. His manner

was quiet and deliberate, and the school was orderly and busy. He had no rule in his hand, no heavy boots on his feet, (he had exchanged them for slippers on entering the school,) and no other means of giving emphasis to his words. He kindly requested, never commanded, —and everything seemed to present the strongest contrast with the former scene. The hour of dismissal arrived, and the scholars quietly laid by their books, and as quietly walked out of the house, and all was still.

"How have you secured this good order?" said we to the teacher. "I really do not know," said he with a smile, "I have said nothing about order." "But have you had no difficulty from noisy scholars?" "A little at first; but in a day or two they seemed to become quiet, and we have not been troubled since."

Now the secret was, that this latter teacher had learned to govern himself. His own manner gave character to the school. So it will ever be. A man will govern more by his manner than in any other way.

There is, too, such a thing as keeping a school *too still* by over-government. A man of firm nerve can, by keeping up a constant constraint both in himself and pupils, force a deathlike silence upon his school. You may hear a pin drop at any time, and the figure of every child is as if moulded in cast-iron. But, be it remembered, this is the stillness of constraint, not the stillness of activity. It is an unhealthy state both of body and mind, and when attained by the most vigilant care of the teacher, is a condition scarcely to be desired. There should be silence in school, a serene and soothing quiet; but it should if possible be the quiet of cheerfulness and agreeable devotion to study, rather than the "palsy of fear."

CORPORAL PUNISHMENT.

BY I. M. CLEMENS.

Superintendent James's paper in the October number of the MONTHLY is, it seems to me, a little radical.

Can it be possible that those of us who, in the old log school-house, received our flogging almost daily, are less honest, less truthful, less moral than we would have been had the rod never been used upon us? It is certain that the boys in our schools now, on whom the rod is never used, will become better men than their fathers?

If, indeed, "moral suasion" is the only instrument that the teacher needs to control her school, would it not be well for parents, Sunday school teachers, and even preachers, to learn the secret of its power? Hitherto its power has been unavailing, except in a limited degree, for notwithstanding the efforts that have been made to christianize the world, only a small portion of most communities can be said to be even *moral*.

Is it true, then, that a teacher in a public school can exert a greater moral or religious influence over the child than the preacher or the parent can in their legitimate spheres? It may be possible that truthfulness, love of the beautiful, and other virtues cannot be "whipped into a child," but it is also quite possible that the judicious use of the rod, or other proper form of punishment, may restrain him from the practice of the corresponding vices.

Not many children can be found who always do right, but multitudes can be found who do wrong almost continually, if not restrained; hence it is a rare thing to find a school in which some sort of punishment is not, at times, a necessity. If this be true it is a pertinent question to ask, what kind of punishment shall take the place of the rod? I shall not attempt to answer this question, but will refer to some modes of punishment I have seen used,

which in my judgment were more hurtful than the rod would have been.

Not long ago, I visited an A Grammar school in a neighboring city. When I entered the room the teacher gave me a seat and continued the recitation. A boy who sat in front of me left his seat and handed me his book. I took it and acknowledged his politeness as well as I could. He returned to his seat and showed his interest in the recitation by turning around and looking on with the boy next behind him. This I suppose was forbidden, for the moment the teacher noticed his position she turned upon him and said, "John, are you not gentleman enough to take a proper position at your desk in the presence of strangers?"

That was the cruellest punishment I ever saw inflicted upon a child in school. If the boy had violated a rule of the school, and deserved punishment, sarcasm was not the proper weapon. A moderate use of the rod in private would not have been half so hurtful. The boy did not deserve punishment at all, not even a reprimand. The case shows, however, the means that teacher used to control her school.

Shaking and cuffing are common forms of punishment where corporal punishment is forbidden. Pupils are made to stand in a corner of the room, to sit on the floor, or to stay in at recess, as punishment for wrong doing. On the other hand, instead of using any kind of punishment many teachers coax, flatter, hire, or frighten children to do what they want them to do. Only evil can come from such modes of dealing with children.

There are very few teachers who can govern a school of 40 or 50 boys and girls, coming as they do from the streets, from all sorts of homes, with all sorts of dispositions and habits, without the use of some physical force. Its use may not, ought not, to be frequent, but it must be known to be in reserve. It is far better for the children, that the rod, or other proper instrument of punishment, should be used, than that school should become demoralized by the failure of the teacher to maintain her authority in other ways; so also is it better to use the rod than to coax, to deceive, to do that which will lead to the formation of wrong habits of thought and action.

I do not defend the indiscriminate, nor even the frequent use of the rod, but I do defend the judicious use of it in place of the many vicious and cowardly substitutes now so commonly used. It is the same sort of sentimentality which is seeking to banish all sorts of punishment from the government of children, that carries sweetmeats and other dainties to the cell of notorious criminals, and that showers smiles and flowers upon the culprit at the bar of justice, while the victims of these heartless wretches are scarcely thought of.

It is no kindness to a boy to let him do as he pleases, unless he pleases to do right. It is not the way to make good citizens. There is no doubt but that the responsibility for thousands of wrecked lives lies at the door of the home and the school, and has its explanation in the fact that parent and teacher failed to restrain the evil tendencies of the child. They have suffered the child to form habits of wrong-doing rather than use the force necessary to check him in his downward course. The example of the Great Teacher is a safe one to follow.—*Ohio Educational Monthly*.

EDUCATION—CLASSICAL AND SCIENTIFIC.

[Extract from an address given by Canon Farrar to the Faculty and Students of the Johns Hopkins University, and a large audience at the tenth Annual Opening of the University.]

We sometimes turn from the distinctive phenomena of our times as though they were mere matters of course. The exhaustiveness

of the curriculum of your University is nothing less than the most distinctive sign of the times. Fifty years ago, no University in any way corresponding with this in the enlarged range of knowledge it comprehends existed among the English-speaking race. I well remember exclusive education was observed in the study of what was called the classics; by which was meant the Greek and Latin. Not only so, but those things were taught in a peculiarly pedantic way. Boys were suffered to grow up in ignorance, which was limitless and unfathomable; an ocean without bottom or shore. The system in vogue not only neglected some of the powers of all minds; but, far worse, all the powers of some minds. It was said boys like Samuel Parr were considered prodigies, and boys like Humphrey Davy and Walter Scott were sent out as little dunces. It was a system which treated plastic clay as unyielding metal, and endeavored to put the same polish to slate as to the diamond.

I remember when I first went to Harrow school boys were suffered to grow up almost entirely ignorant of the history of even their own nation; they were taught scarcely anything of modern languages; they were left in ignorance of science; and, I may say left in ignorance of all which was best worth knowing and learning often in the two things, Greek and Latin, to which everything else was ruthlessly sacrificed.

Several years of the brightest period of the boy's life were spent in not acquiring even the inflection of a single Greek verb, and in not writing elegiac couplets. Many of them could write Latin prose; but, I fear, except where it was borrowed, it was Latin prose that would make Quintillian stare and gasp. Although they could write something that passed for Greek verse, even a commonplace Athenian school-boy would have died of laughter at sight of it. In those days, every boy was required to devote a certain number of hours in the week to the fantastic folly of writing verses in languages of which he had not mastered the simplest elements.

In those days again, in even the amplest schools, their minds were cramped and limited by the same devotion to the classics. At Cambridge, mathematics flourished, and the knowledge of Greek and Latin was mainly tested by the knowledge of the languages themselves. At Oxford, mathematics had comparatively few adherents, and Greek and Latin were tested chiefly by a knowledge of their literature. I may speak of these things because they are matters of the past. We have changed all that, and have now learned to give due honor to every single branch of human knowledge.

For many minds the study of mankind is man; and, if history and literature must form a large part of the education of the young, then certainly we cannot afford to throw aside the study of those great languages which form the noblest literature of the noblest ancient races. What I endeavored in past days was only to plead that the study of Greek and Latin should not be exclusive; now I should plead that the study of Greek and Latin should never be excluded. As matter of fact, however, they are now studied in so thorough a manner, so enriched by comparative philology, that I should go so far as to deprecate the longer application of the word science exclusively to the physical sciences. I should endeavor to maintain no such preference; as, after all, the study of Greek and Latin has become a scientific study.

There are two worlds—the world of Nature and the world of Man. Man controls Nature, but Nature includes Man; and, therefore, the comprehension of the laws of Nature must include not only the study of things and forces, but also the study of men and their ways. In other words, if man is to be the lord of creation, he must study its laws and fashion himself in accordance with their teachings; and, therefore, we cannot for a moment contend we can

do without the accumulated experience of ages stored up in the literature of Greece and Rome. We are children, after all, of the Past. The Past throbs and tingles and lives in every fibre of our Present. Our finest hope is finest memory; and there is not only beauty, but also deep esteem and veneration, in the answer of the old Carthusian monk, who, being asked by a trifler how he managed to pass his time, answered—"I have considered the days of old and the years of ancient time."

The exclusive dominance of Greek and Latin is due to their inherent power. It was the survival of the Renaissance. That revival of the study of Greek and Latin shone like a new dome—perhaps like a new life; blew in like a freshening breeze upon minds so long drawn, by a preference, to scholasticism. By seeing the mighty power which it exercised over the minds of men like Shakespeare and Bacon, and also by reading of the perfect passion for knowledge it inspired in the minds of European scholars, you will be able to understand some of its force. Those were days in which Erasmus studied by moonlight, because he could not afford to buy a penny dip. Queen Elizabeth was able to answer learned deputations once in Latin and once in Greek, and studied Socrates and Thucydides as daily and earnestly as any student at the University. They were days when Lady Jane Grey, at seventeen, preferred Plato's *Phaedo* to the exhilarations of the chase, and was able to read seven or eight languages. Even in those days, you see, the right of women to higher education was recognized.

Greek and Latin, if only for the grandeur of the languages themselves, should be studied. It has been many years since I read Henry Nelson Coleridge. I still recall some of his expressions. "Greek," he said, "is the shrine of genius and of art. It is of infinite flexibility, as universal as the whole race, as individual as yourself, to which nothing vulgar is known, from which nothing refined is excluded; with words like pictures, with words like gossamer threads of gorse; not fathomed to its depths by Plato, not even lit up with all its ardor, nor rolling with all its thunders, under the Promethean touch of Demosthenes." Latin is the voice of Empire and of law, breathing the impulses of races and not the tenets of schools, instinct with the spirit of nations and not with the passions of individuals; tried, indeed, to its utmost by Virgil, and by him not found wanting. Greek and Latin are among the noblest instruments of thought ever elaborated by the human race, and we cannot possibly, without great damage to ourselves, neglect any system of education so fraught with the best possessions providence has preserved to mankind from the wrecks of barbarism and decay.

For a thousand years Greek was not only the language of Homer and Hesiod, of Plato and Epictetus, but of the holy Emperor Marcus Aurelius, and the language of the noble later Stoics. It was the language in which the New Testament was written, and into which the Old Testament was first translated. If you can read Greek, you can read any modern Athenian newspaper to this day. Read it, and hear Demosthenes speak. St. Paul spoke it, and in it St. Chrysostom thundered his words.

Latin was not only the language of Ennius and Virgil, but of St. Augustine; the language which, for many centuries, was almost the sole medium of communication between European scholars; it is the language of freedom, for in it Magna Charta is written; it is the language of theology, from Tertullian to Thomas Aquinas; of legislation, from the laws of the Twelve Tables to those of William the Conqueror; it is the language which at this very day is the means of communication between citizens who know no others. Besides all this, Latin is the first language in which many of the greatest discoveries were communicated to the world; the language of *De Revolutionibus Orbium* of Copernicus; the language of *Norum*

Organum of Bacon ; of *Systema Naturae* of Linnæus ; of *De Motibus Stellæ Martis* of Kepler ; of the *Exercitationes de Motu Cordis et Sanguine* of Harvey. So that, you see, these two languages cover the vastest realms of human thought. Latin will admit you, not only into the Forum, where immortal actions glow, but also the garden of Hesperides, and also into the courts of justice and laboratories of science. Of these languages it may be said, with as much truth as perjury, that their fruits are the fruits of nepenthe, and their flowers the flowers of amaranth.

And, yet, an immense service has been wrought for modern education by the widening of its curriculum. A man may be a perfect scholar, in the old, narrow sense, and yet very imperfectly educated in the new, if he knows nothing of the moon which sways the tides ; nothing of the sea which traverses the whole globe ; nothing of the Gulf Stream which warms our coasts, nothing of the trade winds that steadily swell our sails ; if he knows nothing of rain and dew, snow or hoar-frost or the lightning, of the vivacity and elasticity of the air.

This is the age, of all others, for progress. To the thirteenth century belongs the name of Roger Bacon ; to the fifteenth the name of Columbus ; to the seventeenth Newton ; and the nineteenth is, of all others, absolute and unsurpassed. In this country your civilization has spread forward with perfectly indescribable progress. Groups of log huts have now grown into immense cities. In your virgin forests is heard the scream of the steam engine. Mountains have been tunneled ; and the lands of the savage are now the metropolis of commerce. Everywhere man has left the impress of power which marks fire, flood, and air. If education had been allowed to remain stationary, it would have been disgraceful.

Of course, one reason for satisfaction in the various list of studies of modern education is because so many minds are differently constituted, and should not be stretched upon the same Procrustean bed. The minds of men differ. Some devote themselves almost exclusively to the study of the thoughts and deeds of men. Other men seem to require not a single gleam of imagination to illumine the mountain heights. I need not go back to the poet who said he had looked through the six books of *Euclid*, and did not think there was much in them ; or to the mathematician who after reading *Paradise Lost*, said it did not prove anything.

I once had the honor to receive a letter from Charles Darwin, in which he told me of his school days. He said he had learned little or nothing except what he had taught himself by private experiments in chemistry. Somehow or other this came to the ears of the head-master. The head-master, instead of encouraging the ardent mind of the boy, reproved him severely before the whole form, and called him *Pococurante* ; language which had no meaning for him and which he thought must have been something dreadful.

Take such a case as this : St. Bernard was so utterly dead to the outer world, that he rides the whole day by Lake Geneva, and in the evening asks where the lake is. A man like Linnæus is so sensitive to the outer world that, when he beheld a promontory standing boldly forth, all ablaze in the sunlight and aglow with the glitter of the golden gorse, he cannot refrain from kneeling down and thanking God for such beauty. A man like Salmasius fills whole pages with learned dissertations about the silks and linen fabrics of the ancients. Minds like these are radically different in their constitution ; and nothing could be so unfortunate as when they despise one another, as they too often do. Reaumer speaks with scorn of Montado, who had written six quarto volumes on the history of flies with four wings and of flies with two wings, with a supplement to the history of flies with two wings, and thought that very contemptible. It seemed to express the scorn of men's mutual

ignorance. Every ideal University, must, therefore, have appliances for the study of the whole circle of human sciences, and also have its share in every scheme of modern education.

Allow me to speak of the immense delight of scientific study. God has placed us in a world in which he means us to admire its beauty and its glory. There are beauties and wonders ; and God made them all ; and we can look from this world into the very arch of Heaven, and it is simply impossible to judge the difference in the degrees of happiness illustrated by the mind of a man who has gone through this world with a hearing ear and a seeing eye, and of another man who has been suffered to grow up blind and deaf to the glories of this planet in which God placed him. We are here to delight in these glories. God has given us the instinct of beauty ; and there is no simpler and plainer proof of his being than the fact that He has placed around us the means of abundantly gratifying it. A man of science may see as much as a man of art and letters. The world is no blank to him ; it means intensely and means good.

Besides this delight in science, may I not speak of its immense usefulness. Nature may delight us all with its innocent enchantments ; but it only reveals its secrets to the followers of Hercules, who are laborers. If I may take a common, conceivable instance, it is only to the mind of a Newton that the falling of an apple reveals the same fact as the orbit of a sphere ; and the very same law moulds the tear and preserves the rolling sphere and guides the planet in its course. It is only the mind of a Watts that the condensation of steam upon a spoon revealed the secret of the steam engine and revolutionized the whole life of the world. When a man like Galvani accidentally touches the frog's leg with a scalpel that has been in contact with electrodes, he breathes new life through all known science.

Because a spectacle-maker is an observant man as his children play with the lenses in their father's shop, we have the telescope and the microscope. Galileo, watching the swinging of the great bronze lamp in the cathedral at Pisa, and measuring it by the beating of his pulse, discovered the isochronism of the pendulum, which led to wonderful results. Huyghens, looking through a piece of Iceland spar, observing the causes of the double refraction of the dividing beams of light, put into our hands a means of reading the secrets of the stars. All these things may be called accidents ; but they are accidents which happen only to trained and observant minds, and I firmly believe there are hundreds of discoveries which still remain open secrets, and that, I believe, will be discovered by observing minds. I believe the greatest discoveries of modern times might have been anticipated by centuries, had the powers of observation been properly trained.

Then, again, let me allude to the immense increase in the number of sciences. There are sciences that seem to gyrate around, and make no progress. And sciences, properly so-called, are remarkable for their enormous strides. I need but give one single illustration from the science of electricity. The ancient Greeks had discovered that electricity was generated by rubbing a piece of amber. The Greeks named amber *electron*, from a word meaning "to draw," on account of its attractive power. Now consider the enormous strides that have been made to the knowledge we now have. We know now that lightning is nothing more than what a lady may brush out of her cat's back or out of her own hair. Imagine the great stride made in electricity since the days of your own great Franklin. On the 15th of June, 1752, with no more exalted magnetism than a kite, a hempen string, and a little key, he sent up his kite to the dark clouds, and suddenly saw the hempen fibres glistening on the string. He said at that moment of his life, conscious of the immortal name he would gain : "I would be content if that moment were my last." What immense

strides have been made since the days of Franklin, when we have been enabled to seize that lightning and to make it flash out a message; and again, what immense strides have been made since twenty-seven years ago, when the first Atlantic cable was laid. Everything seems to have been prepared for that very purpose from the earliest ages. In the language of Edward Everett, "warm messages and loving friendship were made to burn over the cold graves of men and women whose hearts, once warm as our own, had burst as the eternal gulfs closed over them a thousand years ago."

Let me add one word more on the subject of scientific studies. The ancient Greeks never made a more immense mistake than when Socrates said: "The men of science cull the fruits of a wisdom which is valueless." What an immeasurable mistake that was! So far from being valueless, it is most valuable. Science has not only revealed infinite time, but infinite organism and infinite space. As the microscope shows us, science has not only begun in wonder, but ended in wonder. Science is the means of communication between Heaven and earth. Science has not only gratified our curiosity, but she has been the great archangel of mercy, devoting herself to the blessing of mankind; painting with light the faces of those we love; enabling the miner to work in the deepest depths of the earth with comparative safety; giving eyes to the blind and ears to the deaf. She economizes labor, and extinguishes human pain. Science serves us in little things as well as great. She has lengthened human life. She has trampled upon disease. So much has she done to diminish human pain in the discovery of anaesthetics, that the sufferer, who, in former days would endure excruciating pain, may now lie hushed while, in the operation of iridectomy, the hand of some skilled manipulator cuts a speck out of the eye.

I must conclude; but, before I do so, one word on the true aim of education. Whether our education be in the sciences or languages, or perhaps in both, we must set steadily before us that which is the one aim and object we desire to obtain. There are some that wish to know only that they may know—which is base curiosity; and some wish to know only to be known—which is base vanity; and some wish to know only that they may sell their knowledge—which is covetousness. But there are some who wish to know that they may be edified, and some that they may edify—and that is heavenly prudence.

In other words, the object of education is neither for amusement, nor fame, nor for profit; but it is that one may learn to see and know God here and to glorify Him in Heaven hereafter. Our education is desired that, in the language of a Harrow prayer, "we may become profitable members of the Church and Commonwealth, and hereafter partakers of the immortal glories of the resurrection." Education is not a couch upon which to rest, nor a costume in which to promenade. Whatever removes us from the power of our senses, whatever brings the past, and distant and future into due prominence, is the principle that elevates us in the scale of manhood; and, therefore, that is the true and only object of education.

Try to be a man. Your last President, General Garfield, when only a boy, was asked what he was going to be. He made the answer: "First of all, I shall try to be a man; and if I do not succeed in that, I am quite sure I shall not succeed in anything else." You all remember, in Scott's *Rob Roy*, where, in the reply to a question, "Who are you?" Rob Roy replied: "I am a man."—"A man, that is very brief."—"It serves one who has no other answer to give." Our system of education should be to produce men. Behind the clerk, the scholar, the merchant, there should tower the man. There is nothing more [fatal] than to throw life away in the effort to gain the means of living.

Professor Huxley said: "That man has had a liberal education whose body has been so trained in its youth that it is a servant of the mind, whose mind is stored with great essential truths, whose intellect is like gold, who is full of force and fire, and whose passions have been trained to be the servant of a tender conscience, who has learned to love all beauty, to hate all falseness, and respect others as himself." I accept that definition of a liberal education as a very fine one; but I would add again, the only true object, is an education in righteousness, and in the great essential truths in one or the other of the great forms of religion. "We live by admiration, hope, and love;" there are parts to train that are neither of the mind nor of the body; there are spirits to train. We have bodies, it has been said, but we are spirits, and education is, in its highest and truest functions, the education of the spirit; that alone can teach us, after all, the only end of life, which is always that we shall be faithful to the best we know—faithful to God, faithful to our country, faithful to our fellow-men, and faithful to ourselves. Our education will never be perfect, unless, like the ancient temples, it is lighted at the top. It is only a religious education, after all, which can give us true happiness, and real and permanent success.

"Take thou no thought for aught save truth and right;
Content, if such thy fate, to die obscure,
Youth fails, and honor; fame may not endure,
And loftier souls spon weary of delight.
Keep innocent! Be all a true man ought!
Let neither pleasures tempt nor pain appall!
Who hath this, he has all in his having naught;
Who hath it not, hath nothing, having all."

The following is one of the short poems in Tennyson's new book:—

EARLY SPRING.

Once more the Heavenly power makes all things new,
And domes the red ploughed hills
With loving blue;
The blackbirds have their wills,
The throistles too;
Opens a door in Heaven from skies of glass.
A Jacob's ladder falls
On greening grass,
And o'er the mountain walls
Young angels pass;
Before them fleets the shower, and bursts the buds,
And shine the level lands,
And flash the floods;
The stars are from their hands
Flung through the woods.
The woods, with living airs, how softly fanned,
Light airs from where the deep,
All down the sand
Is breathing in his sleep,
Heard by the land.
O follow, leaping blood, the season's lure!
O heart, look down and up,
Serene, secure,
Warm as the crocus bud
Like snowdrops pure!
Past, future glimpse and fade through some slight spell,
A gleam through yonder vale,
Some far blue fell,
And sympathies how frail,
In sound and smell.
Till at thy chuckled note, thou twinkling bird,
The fairy fancies range,
And lightly stirred,
Sing little bells of change
From word to word.
For now the heavenly power makes all things new
And thaws the cold, and fills
The flower with dew,
The blackbirds have their wills,
The poets too.

Examination Papers.

EDUCATION DEPARTMENT, ONTARIO.—JULY
EXAMINATIONS, 1885.

THIRD CLASS.

PHYSICS.

Examiner—J. C. Glashan.

1. Define matter, body, solid, liquid, gas.

What is meant by saying that ice, water, and steam are three states of one and the same substance? What is the chief determining condition of each state?

2. Define mass, volume and density, and state the relation that holds among them.

How is the mass of a body generally measured?

A body loses in weight as it is carried from a high to a low latitude; what effect has this on its mass? If the body were to increase in volume while it lost in weight through removal towards the equator what would be the effect on its mass and what on its density?

3. Define force and energy, clearly distinguishing between them.

"If it requires a strong force to set a body in motion, it requires also a strong force to stop it."—(Stewart, p. 4.) Show that this is not true.

If a body having a velocity of 60 ft. per second be acted upon by no force whatever, what will be its velocity at the end of 5 seconds?

4. What is the cause of sound? By what experiments could you prove this?

5. "Rapidly mix some melting ice or some snow and some salt together, the mixture is colder than melting ice." What is the reason of this?

6. How can you magnify a near object? (Illustrate your explanation by a drawing.)

How can you magnify a distant object?

ARITHMETIC.

Examiner—J. J. Tilley.

1. Define:—Prime number, factor, common multiple, discount, exchange.

Draw a diagram showing that there must be $30\frac{1}{2}$ sq. yds. in a sq. rod, if the linear rod contains $5\frac{1}{2}$ yds.

2. A merchant bought 124 yds. of cloth at \$3.62 $\frac{1}{2}$ per yd. and 87 $\frac{1}{2}$ yds. at \$4.12 $\frac{1}{2}$ per yd. At what price per yd. must he sell the whole to realize a profit of 20%?

3. Simplify the following and give the result in £, s., and d.:—

$$\frac{2}{3}(3\cdot3+1\cdot25) \text{ of } £1 + \frac{1}{4} \text{ of } \frac{1\cdot125 - \frac{1}{2} \text{ of } 1\frac{1}{2}}{\frac{1}{10} \text{ of } 3\frac{1}{2} + \frac{1}{2}} \text{ of } 9s. + \frac{2\cdot16}{2\cdot09}d.$$

4. A farmer sold two loads of wheat, in all 110 bushels for \$94.95. One load was sold at 97c. per bushel, and the other at 72c. per bushel. How many bushels were there in each load?

5. A merchant bought cloth at \$2 per yard, and sold the whole at a profit of \$120; had he sold it at 20% less he would have lost \$96. How many yards did he buy?

6. What will be the cost of insuring a property worth \$47,580 at the rate of $\frac{1}{2}$ of 1%, so that in case of loss the owner may recover both the value of the property and the premium paid?

7. Divide \$4,941 among A, B, and C, so that nine months' interest on A's share at 3 $\frac{1}{2}$ per cent. per annum, nine months' interest on B's share at 3 $\frac{1}{2}$ per cent., and nine months' interest on C's share at 4 $\frac{1}{2}$ per cent. may all be equal.

8. I owe a man \$850, and give him my note at 90 days; what must be the face value of the note to pay the exact sum, if discounted at 1 $\frac{1}{2}$ % a month (bank discount)?

9. A and B engage in trade, A invests \$6,000 and at the end of 5 months withdraws a certain sum. B invests \$4,000, and at the end of 7 months \$6,000 more. At the end of the year A's gain is \$5,800 and B's is \$7,800. Find the amount A withdrew.

10. (1) If a brick 8 inches long, 4 inches wide, and 2 inches thick weighs 5 lbs., what will be the weight of a brick of the same material 16 inches long, 8 inches wide, and 4 inches thick?

(2) The top of a ladder reaches to the top of a wall when its foot is at a distance of 10 ft. from the bottom of the wall, but if the foot of the ladder be drawn 4 feet farther from the wall the top of the ladder will reach a point 2 ft. below the top of the wall. Find the length of the ladder.

EUCLID.

Examiner—J. Dearness.

NOTE.—Symbols, except of operation, may be employed. Use capital letters on the diagrams. It is recommended that every step in the demonstration should begin on a new line.

1. What is a postulate?

The postulates permit or ask for the use of the ruler and compass; with what limitations?

To what class of "Propositions" do the axioms and the postulates respectively correspond?

2. "A theorem consists of the hypothesis and predicate, and requires demonstration." Explain this statement by reference to two propositions, one of them being "The greater side of every triangle is opposite to the greater angle." (I. 18.)

3. Draw a straight line at right angles to a given straight line from a given point in the same. (I. 11.)

4. In the preceding, given the point at the end of the line, draw a line at right angles without producing the given line. (Apply I. 32.)

5. If from the ends of a side of a triangle there be drawn two straight lines to a point within the triangle, these shall be less than the other two sides of the triangle but shall contain a greater angle. (I. 21.)

6. In the preceding let ABC be the given triangle, D the given point within it, and AD, CD the lines drawn to D; show that the angle ADC is equal to the sum of the angles ABC, BAD, and BCD.

7. The complements of the parallelograms which are about the diagonals of any parallelogram are equal to one another. (I. 43.)

8. If the square described upon one of the sides of a triangle be equal to the sum of the squares described upon the other two sides of it, the angle contained by these two sides is a right angle. (I. 48.)

9. Prove the correctness of these rules:

The area of a trapezoid is equal to half the product of its altitude by the sum of its parallel sides.

The area of a rhombus is equal to half the product of its diagonals.

10. If a perpendicular (AD) be drawn from the vertex (A) to the base (BC) of a triangle (or the base produced), then shall the sum of the squares on AB and DC be equal to the sum of the squares on AC and BD.

THIRD AND SECOND CLASS TEACHERS.

MENTAL ARITHMETIC.

Examiner—J. J. Tilley.

Six questions will be considered a full paper. Value 12 $\frac{1}{2}$ each.

1. When gold is at a premium of 33 $\frac{1}{2}$ % find the value of \$20 currency.

2. Find the interest on \$600 for 5 yrs. 8 $\frac{1}{2}$ mos. at 8 per cent. per annum.

3. Find the price of the carpet 32 inches wide at \$1.33 $\frac{1}{2}$ per yd. which will cover a room 24 feet long and 21 feet wide.

4. A mixture of tea at 40c. and 60c. a lb., sold at 80c. a lb., and gave a profit of 66 $\frac{2}{3}$ % per cent. In what proportion was the tea mixed?

5. A, B, and C agree to build 50 rods of fence for \$120. After building 20 rods together A quit, after building 40 rods B quit, and C completed the job; how should the money be divided?

6. I sell goods at twice their cost; if they had cost \$30 more the same selling price would have given a profit of only 60%. Find the cost.

7. A person performed a journey at a certain rate of speed: if he had travelled a mile an hour faster he would have accomplished the journey in $\frac{1}{3}$ of the time; but, if he travelled a mile an hour less, he would have been 4 hours longer on the road. Find the length of the journey.

Miscellaneous.

LET THE ANGELS RING THE BELLS.

Let the angels ring the bells,
 Christmas bells !
 They first brought the news from glory,
 First proclaimed on earth the story :
 Let the angels ring the bells,
 Brimming o'er with mirth and gladness,
 Tumbling, turning round in madness :
 Christmas bells ! Christmas bells !
 Telling that, to shepherds told,
 In their midnight rhymes of old—
 That sweet tale once sung by them ;
 Christ is born in Bethlehem !

Let the angels ring the bells,
 Christmas bells !
 Let them ring, on tiptoe standing :
 Let them pause, the bells high landing ;
 Let the angels ring the bells,
 With their deep peals and sonorous,
 Blending in metallic chorus :
 Christmas bells ! Christmas bells !
 Now to soft notes gently dwindling,
 Then again to rapture kindling ;
 Ne'er before such joy to them :
 Christ is born in Bethlehem !

Let the children hear the bells,
 Christmas bells !
 With their romping shouts and laughter,
 Each the other running after ;
 Let the children hear the bells !
 Do not dwell upon their foibles,
 Let them be to them as joy-bells !
 Christmas bells ! Christmas bells !
 As they catch them, and glad listen,
 See the light in their eyes glisten ;
 Give them gifts of joy or gem ;
 Christ is born in Bethlehem !

Let the aged hear the bells,
 Christmas bells !
 Deaf and palsied, downward stooping,
 Sad and lone, round fireside grouping,
 Let the aged hear the bells !
 They right well discern their meaning,
 Mem'ries of their childhood gleaming :
 Christmas bells ! Christmas bells !
 They have heard them yearly ringing,
 Nearer their translation bringing :
 Sadly sweet the tale to them :
 Christ is born in Bethlehem !

Let creation hear the bells,
 Christmas bells !
 Cease her sighing and her moaning,
 Cease her travail and her groaning :
 Let creation hear the bells !
 Christ has bought her man's redemption,
 Christ has bought her sin's exemption :
 Christmas bells ! Christmas bells !
 Let her join them in their ringing ;
 Let her break forth into singing.
 He her tide of woe shall stem :
 Christ, once born in Bethlehem !

REV. J. E. RANKIN, D.D.

HALF-HOURS WITH SOME OF THE WONDERFUL PRODUCTIONS OF THE SEA.

BY MRS. G. HALL.

In our own waters, perhaps the anemones, with their gaily tinted petals, decorate the landscape more gorgeously than any other ; while in the tropical ocean the social reef-building corals,—so nearly allied to them,—are the chief ornaments of its submerged gardens ! The sea anemones are very simple in construction, and, beautiful as they are, occupy nearly the lowest grade in the scale of animal life. They are all capable of motion, breathing, eating, digesting, and able to change their forms at will, and yet bearing so great a resemblance to our garden flowers as to be designated by the name of "dahlias," wartlets, sagatia roses, dianthus, and other appropriate floral names. The beauty of many species is greatly enhanced by the fact that several colors are combined in individual specimens ; while in others the whole animal will be of one color, varied by different tints and shades. For ages, down under the sea, these wonderful creatures have been wearing our modern "combination suits," and have been dressed in all the glory of scarlet and gold, pink and grey, blue and white, green and crimson, with no discordant shades, as we so often see in human productions.

Imagine, then, these living flowers, expanding their crown of tentacles upon the brokey rocks, or modestly embellishing the flat bottom of the ocean while at rest, and if they desire to wander, having several modes of changing place, gliding slowly along upon their stalks, or turning themselves over, making use of their tentacles as feet ; inflating their bodies with water, so as to diminish their weight, and, like an airy balloon, drift with the current, while stretching out their fringes to the widest extent, like a real flower in full bloom. Would not a pink be more curious to us if it could walk ? or a rose, if it could reach after its own nourishment, and take care of its own buds ? And yet this is just what these flowers of the sea do.

In addition to their tentacles, these curious creatures are provided with wonderful little weapons in the shape of "thread-like lassos," of the sharpness of an arrow, called *cilia* (from a Greek word meaning nettle), which are shot out from innumerable slits in the tube within their bodies, transmitting a powerful stinging and numbing sensation, deadly to small prey, the victim being affected as if it had received a shock of electricity. This concealed battery often enables the anemone to conquer much larger and stronger creatures than they could hold simply by their tentacles. Woo to the marauder that mistakes the strength of the sea-anemone ! He will surely fall into his own trap.

The more we know of these gems of the ocean the more we shall admire their structure and transcendent loveliness. One of the most magnificent of them all is the "plumose." It may be recognized at once by its bold, cylindrical stem, firm and sturdy as the oak, standing out bravely from the objects to which it is affixed, and crowned with its lovely tufts and tentacles, fringed and cut, just like the petals of a pink. The color of the plumose is extremely variable, changed by every breath of wind and every slight curling of the surface of the ocean, from one prismatic tint to another. It is capable, too, of much alteration in its general form, shrinking to a mere shapeless mass, and then expanding itself to the fullest extent, or forming into many shapes, according to the caprice of the moment.

The snow-white anemones are among the most exquisite tenants of the sea,—the body of a yellowish brown color, the disk pale, and tentacles of the purest white. In fact, their colors are as various as their prehensile crown—fiery red, apple green, blue and orange,

Potosi is the highest city in the world.

The teacher should ascertain the pupil's manner of working and habits of study.

The teacher's real ability is to be tested only by the advancement of his dull pupils.

yellow and milk white. In some of these brilliant creatures, when fully expanded, you will see on the outer edge of the visible coating, behind the petals, a row of bright, round tubercles, looking like a set of turquoises around the disk; then losing all color, becoming pearls instead of turquoises, which transfiguration has earned for them the name of "beadlet."

The habit of the anemones is to attach themselves to some firm object, as a rock or a section of coral, or some crab or other crustacea, which latter is called the parasite anemone. In fact, when free, they swim backward, and whenever their base encounters something firm, no matter what, there will they fix themselves by suction and contentedly remain, waiting with open mouths for food to float within reach of their tentacles. Ocean-water furnishes a never-failing supply of the lower forms of infusoria, zoöphytes, and polyps, and when they cast off their young, it is to the un instructed eye as if, looking at a dahlia or aster, they should suddenly see the flower pluck a bud from its centre by the petals, extend them to the earth, and there deposit the germ, which should thereupon begin to develop into a mature flower, because they are formed like buds on the side of the parent, from which at the proper moment they detach themselves and become independent existences. Some species have a habit of throwing off portions of their base, and so forming into new individuals. It is only necessary that the severed piece should contain the three elementary tissues of the animal; namely, the tegumentary, the muscular, and the ciliated lining membrane, so tenacious of life and full of vivifying power are these delicate-looking creatures.

It would take a volume to fully describe even a small portion of the numerous varieties of sea-anemones, or "ocean flowers." Would that every boy and girl could have an aquarium and watch these wonderful creatures in all their habits and developments. It would well repay them, and us who are older, if we could spend hours of study upon these almost unknown inhabitants of the ocean.—*N. E. Journal of Education.*

UP THE HURRICANE.

During the past summer's outing, we pitched our tent for a few days at the mouth of the Hurricane River on the south shore of Lake Superior, between, and within easy reach of two noted curiosities, the Pictured Rocks and the Sable Banks, both of which have a place in the scientific and *belles lettres* literature of the country.

We had been tenting along the shore for some time and were lured to Hurricane by accounts of the trout fishing to be had in its waters, given by lumbermen who claimed to have been there. They told us of an old lumber road cut through a dense wood on the east side and paralled with the general course of the stream from its mouth up to the highlands in which it takes its rise and, also, in which were numerous small, spring-lakes, where speckled trout of fair size were so abundant and so easily taken, that the fisherman soon wearied with their catching. The Hurricane was itself a good trout stream according to their report, but their advice was to follow the road back for at least two miles, and thence turn off to the stream and fish up to the Falls where we would find the best sport. How far up the Falls were, none of them seemed to know.

We reached the mouth of the little river in the forenoon, and after an early dinner the Captain and I, leaving Jo to hunt for agates along a gravelly beach, and Jim and Dan, our Indian boatmen, to make the camp, took our rods and creels and went a-fishing.

Making a mistake not uncommon to those who travel a forest road for the first time, we turned off for the little river at the end

of about one mile, instead of two, as I afterwards learned, and after a short tramp through the bush, we began fishing, I going up stream and the Captain down.

I had scarcely wet my line however, when my companion, who was a thin-skinned and nervous gentleman and peculiarly sensitive to the bites of mosquitoes, announced his intention of quitting the stream and returning to camp at once. Remonstrance was useless with him, I well knew, and so, cautioning him to keep due east till he struck the road and then turn to the left, I heard him depart for home.

The afternoon was delightful. A pale sun sent long shafts of light glancing through the openings in the frondous masses of the evergreen foliage above. The cool waters of the Hurricane came racing over the vagrant slabs and blocks of sandstone that had been brought down by ice and floods from the parent masses crowning the highlands above. Old moss-grown logs dammed the waters here and there, and little fringes of blackalders at wide intervals fought the unequal battle of life close by the water's edge. By the sheltering edges of the rocks and under the logs and the alder-grown banks, many a speckled trout lay in wait for such unfortunate insects as were borne on the dancing waters from above.

It was in the primitive woods. No signs of men's presence were anywhere to be seen. Trees and logs and saplings and brush and stones were as strewn by nature's hand. Here and there was the shapely hoof-print of a deer that had come down to drink or to cross. On a moist, mossy bank a bunch of blue violets, mistaking this northern summer weather for a more southern spring, bowed their bonneted heads before the south wind. Delicate twin flowers peeped timidly up from beside mossy logs, and waving ferns growing close by the stream were reflected in its limpid pools.

From out the depths of the shadowy woods the liquid notes of that sweetest of all the northern wild-wood singers, the wood-thrush, came. He is the "leaf bird" of the Indians, though for what reason they were not agreed. One said, "Because he hides securely amid the thick leaves;" another, "Because he comes with the first leaves." I am on his chosen ground to-day. No place does he love so well as the canopy of green that overhangs the ribbon-like valley through which the Hurricane runs. From out the great depths of billowy foliage, song answers to song the green woods through. Of all the birds of the north woods, I like the wood-thrush best. It is the rarest singer of them all, not in the compass of its voice perhaps, nor in the scope of its song, for it is apt to content itself with sounding three notes; but these three are so clear, so resonant, so perfectly melodious, that one can listen to the repetition of the strain for hours and not weary. The hermit thrush, his cousin, may sing a more pathetic strain—at any rate it sings one of great tenderness and beauty; but the wood-thrush's notes are so full of joy, so suggestive of thanksgiving for mercies received—for the sunshine and the shadow, the green leaves and murmuring waters, that I cannot but accord him the chief place among the choristers of the northern woods.

I hardly know which is the source of the greater pleasure to me, when following, as on this occasion, the devious way of a trout stream through the woods, the capture of the wary trout or the varied beauties that nature so beautifully displays. All combined on this day to minister to my pleasure, but I remember, if possible, with a keener delight, the things I saw and heard around me than the biting of the fish.

Of the many objects that engaged my attention that afternoon, perhaps the most curious was a beaver dam. I had seen many an old and broken down monument to the engineering skill of these interesting little animals in my wanderings in the woods, but never before a new one. A swamp ash over a foot in diameter had been

gnawed down by the patient workers so as to fall across the stream where it rested over a foot above the water, on the upper side of which, sticks, poles, brush and browse had been woven and wattled into a compact mass, and the whole cemented by a coating of leaves, weeds and mud, causing a dam of such height and consistency, as to make a splendid trout pond above it, and to flood an acre or more of low land still above and to one side of that.

The beaver is a born engineer, and long before the arts of canal digging and dam building were practised by civilized man, he understood the utility of each. I have seen the remains of dams made by the Indian while yet in the savage state, to prevent the sturgeon, that had gone up stream to spawn, from returning to the lake whence they had come; but the savage Indian was a novice in the art of dam building by the side of the beaver. The dam this day seen was as simple as a dam could well be, but I have inspected their ancient works which exhibited so much skill and knowledge, that it was hard to refer them to mere brute intelligence.

In the deep water above the dam, where a thick, dark fringe of alders overhung, I caught four handsome trout, and as I lifted them out one by one, I fancied bright beaver-eyes peering at me through that fringe; but if such were the case, the closest scrutiny on my part failed to detect them. During fourteen summers spent in the woods where there were always recent signs of beaver to be seen, I never saw but two, one swimming in an inland lake and one in a river too big for them to dam. I never saw one in or about his habitation. There are few animals as shy as the beaver, and yet with all their engineering skill and shyness they fall an easy prey to the wiles of the trapper.

Passing beyond the dam, I at length came to a ford. "Here" thought I, "the road I came out on crosses;" and yet that seemed inconsistent with the information given concerning it by the lumbermen. I took notice that the road had not been used for a long time. No track of horse or wheel was to be seen. Only the wild deer cross here now. Yes, and a wolf! Here at the margin, one has stopped to lap the cool water, and while the left fore-foot has sunk sprawling into the mud, the others has been daintily held up and only the tips of the toes have left their impress. But such tips! There is nothing dainty in the prints of these claws? They are made for rough work and have seen their full share of it, I'll be bound. After drinking, the animal has backed to solid ground and has taken a leap that has carried him clear over. His is a big track and there is a fierce look about it. That wolf has been on the lookout for game, and a rabbit or a fawn or a full-grown deer, would not come amiss to him. For that matter if he were very hungry and had backing, he would not stand on ceremony if a man happened along. It was only last winter that a traveller on the road from Seney to Grand Marais, at a place not to exceed ten miles from this very spot, found a boot lying in the road. Imagine his astonishment, not to say alarm, when he found the boot, the foot and part of the leg of a man. Dropping the ghastly thing, the traveller hastened from the place, to find as he went on, bits of clothing, blood stains in the trampled snow, and last of all, the freshly gnawed skull of him who had been overtaken and devoured by a horde of hungry wolves. For aught I know this very wolf, whose track I see, was one of the savage pack that tore that poor traveller in pieces.

I did not spend a great deal of time examining that track, but kept on my way, fishing hastily here and hastily there, and as I felt the growing weight of my creel, fishing in the most favorable looking places only. Would I never come to the falls of which the lumbermen had told me? I stop and listen but hear only the wind in the pine trees, the music of the wood thrushes and the ripple of the water. Then I press on resolved to fish no more till the falls are reached.

Again I stop to listen, but no sound now, save the rush of water over the stones. The south wind had ceased its monotone and the thrushes have ended their songs. For the first time I observe a gathering gloom. The sun is obscured by watery looking clouds, and a gray haze is in the air. As I stop to note this change I hear the roll of distant thunder. Giving up at once the thought of further progress up stream, I unjoint my rod and set out for camp. As I leave the stream and enter the thicket of brush, I remember the ford and the road leading eastward from it. I know that the camp is north of me and if I take a course parallel with the general course of the stream I must come to the road that will take me back to my companions.

The heat that comes with the hush that precedes a storm in these latitudes is oppressive, and the brush thickets and down trees create obstructions that require the greatest effort to surmount. My progress is slow, and all the while the woods become gloomier and gloomier, till at last I find that I can barely reach my compass.

Almost ready to despair of being in the right course, I at last stumble into a road and at once assume it to be the road of the ford. It led in the right direction anyway, and so I turned to my right and hoped the worst was over.

On I went, giving no heed to compass now. It was too dark for that anyhow. Night was fast approaching—indeed it was upon me, and the storm was not far off. I could still look upward and see clouds through the openings in the tree tops, but on either side was a wall of darkness. Why did I distrust my course? Was it possible that I was on a road running parallel with the lake shore which was not intersected by the one I came out on? It never occurred to me that I might be on the wrong end of the right road. I turned to my compass again and struck a match, but it would not ignite, and I remembered when it was too late that I had neglected to replace accidentally dampened matches with dry ones before leaving camp. My compass then was useless and I could not help but realize that I was stumbling over a road that led, I knew not whither, while a tempest of thunder and rain was ready to break over my head. By a system of fallacious reasoning not necessary here to be explained, I was led to turn off the road to the left and re-enter the forest. It was a foolish thing to do, but just then I was ready to do anything, wise or foolish, that I fancied promised a way out of my difficulties.

Not far did I go before the woods opened and I thought the river was at hand, and I felt glad as if about to meet an old friend. But the opening was not to the creek. It was a tamarac swamp, and when I realized that, I was at a greater loss than ever. Oh! the gloom of that swamp and the dreadful feeling of uncertainty that overcame me. Was I lost? Dark objects playing me false seemed to come and go in the gloom of that horrible swamp, and I thought of the wolf whose tracks I had seen at the ford that day.

I did not venture very far into that tamarac swamp, for I felt that I was safer on the road let it lead whither it would, and so, turning about, re-entered the thick brush again. How I managed to pull through the thicket and get over the logs and not go wandering in a circle, I am unable to tell. It was too dark to keep in a straight course sighting by trees. I may have wandered some, for I was in that thicket quite awhile. As I pushed my way in through the brush and over the logs, I stumbled upon a splintered stump, and having my pockets full of birch bark collected before night-fall, I made a last effort to light a match. One by one my stock was struck, but in vain. A moving, bluish, malodorous streak, was the best I could get, and it seemed there was nothing for it, but to pass a tempestuous night alone and without fire in the woods; and, with the thought of that, came the memory of the wolf's track and of the traveller's boot and its ghastly contents.

It was useless to attempt to go further. I was bewildered, lost, and had no idea of the direction in which the road lay. It was equally useless to attempt to find a better shelter than a tree gave. In broad daylight that would not have been an easy task without an ax, but in this thick darkness it was an impossibility. If I could only find the best tree I knew I would do well, but how was I to find the best tree even? It would be far easier for that wolf to find me, than me the tree. And as I groped in the thick darkness for the hole of a leaning tree under which I might cower while the storm raged and the long hours of the night wore away, I felt there was a possibility of seizing that horrible wolf by the ears at any moment. While feeling around me for my tree, there came a double flash of lightning, and it disclosed something better than the best tree. It was a road—I suppose the road I had left. I was close by it and at once stopped right into it, and was glad enough to have embraced it.

An impulse led me to take the back track, leading as I supposed to the ford. If I could get there, I would be sure of getting back to camp as soon as it was daylight. But what a weary walk I had of it, before I came to the river, and how ever present were the wolf's tracks and the ghastly boot and the blood stains. I stumbled over roots and stumps and floundered through swamps and mud holes. The wild, weird scream of an owl close at hand sent the blood to my heart and the unexpected snort of an amazed deer followed by a crashing of brush fairly took my breath away. But I kept to the road. I know it would go somewhere—to a lumber camp or to a banking ground.

"Thank God! There's a light!"

Bang! Bang!

"What in the name of common sense are you shooting for, Jo, this time of night?"

"For you. We were afraid you were lost," Jo answers.

"M—m! I tole um you not loss! Know woods like um ole Ingen!" exclaimed Jim Kush-ke-tuh-wug, my boatman and guide for years.

My companions do not know to this day that I was lost. I exhibited my creel of forty-two trout, and said as little as I well could about the cause of my detention and nothing at all about the wolf's track at the foot. D. D. BANTA.—In *The Current*.

Practical.

DRAWING.

BY WILLIAM BURNS, DRAWING MASTER, HIGH SCHOOL, BRAMPTON.

(The Editor of this Department will be glad to answer questions for information addressed to him in care of the School Journal.)

XII.

LEAF DRAWING.

We promised in a former paper that fuller directions should be given at another time in regard to this branch of our work, and now that hot hurry of examinations has some-what passed, we will endeavor to redeem this promise. In our own opinion this part of the subject of Freehand Drawing should not be introduced at so early a stage as is done by many teachers, it leaves too much to the pupil's option, and this at a time when the eye has not become trained sufficiently to distinguish between artistic and non-artistic forms, between regularity and stiffness of outline; it would seem better to introduce it only after the pupils have acquired moderate skill in the drawing of curves and outlines, and also in drawing geometrical outlines, the former gives freedom to the hand and the latter correctness to the eye—unconsciously, perhaps, in both cases,

to the student. These drawings will also form very good preliminary exercises for Industrial designs, many of our prettiest patterns being compounded of leaves and leaf forms, and they are adaptable to so many varieties of form, shape and size, that they are largely used both in useful as well as in mere ornamental patterns.

The simplest plan of teaching this portion of Freehand Drawing would naturally be to take objects themselves and thus imitate nature as closely as possible, but here we meet with a difficulty, and, one too which shows the amazing wisdom and fertility of resource of the Creator, for without deviating from the main type, there is an innumerable variety in the mere outline of the leaves of the same tree; in fact we may assert, that no leaves on a tree are ever exactly alike—nay, further, that no two halves of a leaf are symmetrically alike. Hence we require to draw such an outline as shall retain the obvious feature of the leaf-form required, and yet be independent of these natural irregularities of detail. This will be more simply explained by taking three or more varieties of leaves and comparing them, e. g., the ivy—maple—grape-vine. It will be at once seen that the relative shapes of these leaves depend upon, (1) the length of the central vertical axis; (2) the intervals between the horizontal axes; and (3) the length of the horizontal semi-axes. In each of the specimens under consideration a difference may readily be noted. Let us consider them in order.



Ivy—taking the common type of this leaf, we shall find that by drawing a central axis and dividing it into six equal parts, we obtain the vertical proportions. Of these, three parts will give the relative height of the upper lobe; one that of the next curve, one and a half that of the next curve, and the remaining half that of the small lower lobe of the leaf;

also that the horizontal line through the centre division is equal to $\frac{1}{3}$ of the vertical axis, and the one through the widest point is about $\frac{2}{3}$ of the vertical; thus, taking these approximate measurements we obtain, by adding a smaller lower lobe, the general outline of this form. Maple—divide a central axis

into four equal parts, and make the central horizontal $\frac{1}{4}$ of the height, the upper horizontal $\frac{1}{4}$ of height, and the lower $\frac{1}{4}$ of height, joining these and then inserting the minor divisions a general outline of this leaf-form will likewise be obtained. Vine—take a vertical line and halve it, assume a point a little below this central point, and through it draw a horizontal equal on each side of the vertical to this upper portion. In this horizontal take another point about $\frac{1}{4}$ of the semi-horizontal, and join this by an irregular curve with the vertex, then by making another curved line to join the two points on this horizontal, and continuing it downwards about $\frac{1}{4}$ of the lower portion of the central axis, we obtain another point, then again making the lower lobe we obtain the form of this leaf. Of course any slight variety in these measurements will produce a different form of the leaf, but if adhered to in the main proportions, the leaf will be still recognized as belonging to the same group. Adding next the Veins, which must always be drawn to the prominent point of the leaf, strengthening in the outline, erasing the construction lines, and adding the stalk, we have completed the single type leaf. Oval, ovate, or ob-ovate leaves will present little difficulty if similarly treated. Always obtain the main outline before the edge is completed. In drawing the acute points of leaves it is best to commence in every case at the acute point,



carrying the line from it in each direction, this will give a sharper point than can be obtained by a continuous line around the outline. Let one side of the leaf be drawn then complete, the other by a sufficient of horizontal line, giving prominent points, as in the case of reversed curved before explained.

(To be continued.)

Smith's Falls, Dec. 9th, 1885.

DEAR SIR,—Please insert in CANADA SCHOOL JOURNAL, the answer, or solution to the following:—“Describe an ellipse by means of squares having given the major axis two inches.” J. C. H.

J. C. H.—Your question is indistinct, as no ellipse can be drawn from data given. If the major = minor axis then the figure is a circle; but if the minor = 0 then figure becomes a straight line, as an ellipse is a curve varying from a circle to a straight line according to the distance between the foci. Even with an assumed axis, the use of straight lines in drawing the ellipse is a clumsy method. If a surrounding figure is used it will be a parallelogram, not a square for an ellipse; if the square is taken the resultant figure will be a circle. (Vide paper VI.) The only use of a square will be to determine points at end of one axis, when the one axis and portion of curve are given. W. B.

Literary Chit-Chat.

The Christmas number of the “Art Journal” is devoted to Sir J. E. Millais, his life and work.

Prof. Huxley is to contribute to the *Nineteenth Century* a reply to Mr. Gladstone's article in the last number, on the “Dawn of Creation and of Wor-ship.” “When Greek meets Greek,” etc.

Gen. Rosecrans contributes to the *North American Review* an article entitled “The Mistakes of Grant,” in which he reflects very severely not only on the historical accuracy but on the candor and truthfulness of Gen. Grant's war papers.

The Christmas number of *The Globe* is quite creditable both to Canadian Art and to Canadian Literature. The Lithograph of “Miss Canada” strikes us as superior to anything of the kind we have before seen of home production.

The activity of Ginn & Company's presses is wonderful. Every week brings its batch of new announcements. “Greek Inflection,” by B. F. Harding, A.M., Teacher of Greek at St. Paul's School, Concord, N.H., is one of the latest announcements. To be ready January 1st.

Ginn & Company also announce, to be ready Dec. 15th, *Peare's Music Primer*, said to be a very convenient little work, prepared expressly for the use of Teachers in Primary grades, in the preparation of their younger classes for staff-notation, as taught in Mason's National Music course. A valuable feature of the book is a set of formulas for finding the pitch of a given key, with the aid of a pitch-pipe.

Mr. Goldwin Smith is now writing for the *Week*, over his own signature. In the last issue referring to Mr. Gladstone, he says “The strong point of this great and admirable man seems to be not so much forecast as oratorical presentation.” Is not a still stronger point the lofty ethical tone which is the key-note of all his utterances? An “embodied conscience” may be sometimes weak in matters of questionable policy or diplomacy, but is sure to intrench itself impreguably in the hearts of the people.

The publishers of *The Current* announce that, by a recent sale, this leading Western weekly has become the property of George W. Wiggs, Esq., a Chicago capitalist, and that its entire management will be intrusted to Alva E. Davis, Esq., a publisher of experience and wide acquaintance and interests. The editorial direction will remain in the hands of Gustavus C. Matthews, formerly of the *Louisville Courier-Journal* and the *Indianapolis News* (who has been an associate editor from the founding of the paper in 1883), and of John McGovern, late of the *Chicago Tribune*, who assumed the duties of an associate editor of *The Current* in July, 1884.

The Novelist needs to be a man of wide and varied technical knowledge. An amusing instance of the dangers into which he may rush in descriptions, when such knowledge is required is given by Mr. Howells:—After he had published “The Lady of the *Aroo-*

stock,” he received a letter from an unknown friend, an old salt, who knew whereof he spoke; and in this letter Mr. Howells was informed that if he allowed the *Aroostock* to go out to sea in the rig he had given her, she would be lost before she had fairly cleared the harbor. This frank nautical criticism was recognized by Mr. Howells, and in the next edition the vessel sailed forth under her proper rig.

January *Treasure-Trove* will contain an article by Pres. Thomas Hunter, of the New York Normal College; also a health paper by Dr. Dio Lewis. Mary E. Tousey will contribute “The Biography of a Beetle,” Prof. John Monteith will write about “The Little Rebels of Boston.” “On the Wings of the Wind,” by a popular writer, calling himself “One of the Boys,” will tell how to make an ice-boat. There will be a bright, short story, “Lance,” by Elizabeth P. Allan, and one by Sally Campbell, entitled “A Coward.” *Treasure-Trove*, in addition to its popularity as a magazine, has a special value to teachers as an aid and incentive in school studies, and in its peculiar field it is unrivalled.

The enterprising publishers of Webster's Unabridged Dictionary have enhanced the worth of that magnificent work by a most valuable feature, namely, a “Pronouncing Gazetteer of the World.” It gives a brief description of the countries, cities, towns, and natural features of every part of the globe, compiled from the most recent and authentic sources, and indicates the correct local pronunciation of every name. To teachers, especially, this new department of over 100 pages will be particularly acceptable, because the majority of school geographies do not furnish this information. Webster's Unabridged Dictionary is now one of the most—if not the most—valuable books in the market, and no library, school, mechanics' institute or editor's sanctum is suitably furnished that has not a copy.

Question Drawer.

Please answer through the columns of your valuable paper:—

1. What text-book on Canadian History is most suitable for a 3rd. class in an ungraded school?
2. What text-book in English Grammar would you recommend to those preparing for High School entrance?

P. T. M.

To whom should I write for information about the schools of British Columbia?

O. K.

In Hamblin Smith's Arithmetic page 99, examination paper I. and 5th exercise, we are asked to calculate the *limits* of the error in taking $\frac{11}{13}$ as an approximate value of 3.1415926 to seven places of decimals. I find the answer in one edition of arithmetic to be .0000012 and .0000013, and in another .0000006 and .0000009. Is either of these answers correct, and which? Also explain work. The answer that I would give is .0000003 and .0000004. E.W.D.

ANSWERS.

P. T. M.—1 It would be useless for us to recommend any other than the authorized text-book, as it would not be permitted in the schools. For your own use we think you will find Hughes' Topical History of Canada very desirable.

2. Mason's Outlines of English Grammar. The students might with profit use Mason's Advanced, excluding the greater portion of the notes; the book would serve for High School study subsequently.

O. K.—S. D. Pope, Esq., M.A., Superintendent of Education, Victoria, B. C.

Solution to pupil A's question in No. 43.

1. A has $\frac{110}{100} \times 125$ or $137\frac{1}{2}$ bbls. of B's standard.

C has $\frac{105\frac{1}{2}}{100} \times \frac{110}{100} \times 225$ or 261 bbls. of B's standard.

Flour brings $(125 + 150 + 225) \times \$7 = \$3500$.

Sum to be remitted = 96% of \$3500 = \$3360.

∴ \$3360 divided in the ratio of $137\frac{1}{2}$, 150, 261.

= \$ 842.30, A's share.

918.87, B's “

1598.83, C's

2. $\frac{2}{100}$ child's share = $2 \times \frac{2}{100}$ of brother's share.
 \therefore brother's share = $\frac{100}{2}$ of child's share.
 5 child's share + 3 child's share $\times \frac{100}{2} = \$12670$ and child's share = $\frac{1}{2} \times \$12670 = 1\%$ of this sum.
 \therefore child's share = $\$1,940 = 1\%$ of $\$1940 = \1920.60 .
 \therefore Brother's share = $\frac{100}{2}$ of $\$1920.60 = 3\%$ of $\frac{100}{2}$ of $\$1920.60 = \960.30 .
 E. R.

I give the following solutions to pupil A's questions in SCHOOL JOURNAL Nov. 26th :

1. Taking C's flour as the standard and reducing B's and C's to this standard we have

$$\begin{aligned} \text{Number of bbls. for A's share} &= 125 \\ \text{B's} &= \frac{150 \times 100}{116} = 136\frac{4}{11} \\ \text{C's} &= \frac{225 \times 100}{100} = 225 \end{aligned}$$

The commission merchant must remit A, B, and C in the proportion of 125, 136 $\frac{4}{11}$ and 225.

\therefore Amount to be remitted A, B, and C together = $(125 + 150 + 225) \times \$7 \times .96 = \$3360$

$$\begin{aligned} \therefore \text{amount remitted A} &= \frac{\$3360 \times 125}{498\frac{4}{11}} \\ \text{Amount remitted B} &= \frac{\$3360 \times 136\frac{4}{11}}{498\frac{4}{11}} \\ \text{Amount remitted C} &= \frac{\$3360 \times 225}{498\frac{4}{11}} \end{aligned}$$

2. If the brothers receive \$1 each after legacy duty is paid, the children receive \$2 each after duty is paid.

\therefore The 3 brothers receive \$3 and the 5 children \$10
 \$3 is the amt. left (after legacy duty is paid) from \$10

$$\begin{aligned} \$3_{97} + 10_{99} &= \$13_{96} \\ \therefore \text{from } \$13_{96} \text{ the children receive } \$10_{99} \\ &= \$9603 \therefore 1 \text{ child receives } \$1920.60 \end{aligned}$$

$$\begin{aligned} \text{From } \$13_{96} \text{ the brothers receive } \$3 \\ \therefore \text{from } \$3 \text{ the brothers receive } \$2880.90 \\ \therefore 1 \text{ brother receives } \$960.30 \end{aligned}$$

E. W. DUNLOP.

It appears that, notwithstanding all the fuss that has been raised, Mr. Morton will continue to be principal of our Public School, Newcastle. Miss Carroll, assistant High School teacher, will leave here and take charge of a school in Whitby. - *Canadian Statesman*.

Mr. William Montgomery has been re-engaged to teach the Public School, Guilds, for 1886 for the sum of \$450. He is very highly esteemed in the school section. During the past year he has given general satisfaction.

Less dependence on the text-book, less of the mechanical, less of formulated rules; more common sense, more dependence on principles evolved by reasoning, more observation, more following of the principles of the human mind, is what is needed in teaching. - *National Educator*.

Mr. Cruickshank, assistant teacher, Ingersoll High School, was presented by his pupils with a gold scarf pin. Miss B. Petric made the presentation, which Mr. Cruickshank acknowledged in suitable terms. This gentleman is leaving the school for another sphere of labor.

Clinton High School annual announcement is to hand. The staff consists of J. Turnbull, B.A., headmaster, gold medalist, Toronto University; S. W. Perry, B.A., gold medalist, Victoria University; Mr. David Robb, 1st Class, Normal; and Mr. H. S. McLean, 1st Class Provincial. The record of the school is exceptionally high.

The vacant positions on the staff of Ingersoll High School have been filled as follows: - Mr. Briden, B.A., principal, who retains Classics and English; C. A. Scott, B.A., of Kingston, Science Master; and W. J. Chisholm, B.A., of Hamilton, Modern Language Master. Mr. Taylor will take full charge of the work in Mathematics. The newly appointed teachers have high recommendations and have large experience in their profession.

An exciting contest took place in Wallaceburg last week in reference to the appointment of a principal for the Public School. Messrs. Ayerst and Wrigley, formerly publishers of papers in Wallaceburg, and both former principals of the school, were rival candidates for the position, as well as a number more. The vote of the board was a tie for each, and a compromise was effected by the appointment of a third man, Mr. Thornton. - *St. Thomas Journal*.

F. W. Merchant, M.A., who has accepted the headmastership of Owen Sound High School, at a salary of \$7,500, was presented by the pupils of the Ingersoll High School, of which he was the headmaster for many years, with a handsome clock and statuette. An address, couched in feeling words, and expressed in elegant language, was read by Miss Ada Ferguson, and the presentation was made by Mr. C. Cameron. Mr. Merchant replied in appropriate words, thanking the pupils for their kind address and beautiful present, and wishing the school and pupils success in the future.

Many of the lady teachers through the country are getting up Christmas entertainments, loading trees with Christmas joy-fruit, and such like events of a pleasurable and seasonable nature. Well done, ladies! The Christmas fruit,—not visible on the tree, but surely lurking in its branches,—namely, friendship, good-will, love, will be more durable than any other; and kind hands and smiling faces will be remembered for years, though the toys be broken, the books torn, and the candies have vanished. Ladies, you have struck the right chord.

Mr. P. E. Harding, late principal of S. S. No. 3, Fullerton, who is about to enter the ministry, was presented by his pupils at an entertainment held after school examination, with a fur overcoat and an address. Captain Francis presided on the occasion, and Master John Gill, on behalf of the pupils, presented the seasonable and valuable gift. The trustees expressed their satisfaction with the state of the school and the progress made during the three years Mr. Harding had been principal. Miss Francis is retained in the junior department for another year.

The music teachers of this Province will hold meetings in the theatre of the Education Department, Toronto, on the 29th and 30th of this month. Among other celebrities who will be present, Mr. H. E. Holt, Musical Director of the Boston (Mass.) Public Schools, is announced. He will illustrate the system of teaching children to read music, as applied in the Boston schools under his direction. The object of the convention is the formation of a Provincial Musical Association. For a nominal fee any person may attend the several public meetings, recitals, and concerts, and teachers, and lovers of music are cordially invited.

Educational Notes and News.

The Chatham High School Board is advertising for a head master.

Mr. Preston, the popular and efficient teacher of Bethany Public School, has been re-engaged for 1886.

Mr. George Pearce has been engaged as teacher of the senior department, Little Britain Public School, for the ensuing year.

The school-house at Muirkirk was destroyed by fire. Loss about \$1,200.

A fire occurred at Orford, the Orford school-house, Section No. 7, being burnt, loss \$1,000, cause of fire unknown.

Miss Cattenach, teacher for the junior department of the Dutton Public School, has been re-engaged for 1886.

Miss Bancroft, late of St. Thomas Model School, has been engaged in the junior department of Corinth school for 1886, at a salary of \$260.

The following are engaged in Wyoming Public School for 1886. Mr. C. S. Falconer, 1st C, principal; Miss Loan, of Barrie, 2nd Prov., and Miss Woods, of Forest, 3rd class.

Mr. J. P. McLaren and Miss Edith Riggs, both of Enniskillen, take charge respectively of the Lotus School, Manvers, and Crystal Spring School, Cartwright, for the ensuing year.

The trustees of Shedden school section have two new teachers for the coming year—Mr. Leach for the senior department and Miss C. Stafford for the junior department.

Jos. Drummond has been engaged to teach the Vereker school for next year. This makes Mr. Drummond's eighth year in the school.

A petition, very numerously signed, has been forwarded to the Hon. the Minister of Education by the inhabitants of Vienna and the township, praying for the retention of the High School in that village.

For Friday Afternoon.

NOTHING TO SHOW.

MARY H. ROWLAND.

"My day is all gone"—'twas a woman who spoke,
 As she turned her face to the sunset glow—
 "And I have been busy the whole day long ;
 Yet for my work there is nothing to show."
 No painting nor sculpture her hand had wrought ;
 No laurel of fame her labor had won,
 What was she doing in all the long day,
 With nothing to show at the set of the sun ?
 What was she doing ? Listen ; I'll tell you
 What she was doing in all the long day,
 Beautiful deeds too many to number ;
 Beautiful deeds in a beautiful way ;
 Womanly deeds that a woman may do,
 Trifles that only a woman can see,
 Wielding a power unmeasured, unknown,
 Wherever the light of her presence might be.
 She had rejoiced with those who rejoiced,
 Wept with the sad, and strengthened the weak ;
 And a poor wanderer, strayed in sin,
 She in compassion had gone forth to seek.
 Unto the poor her aid had been given,
 Unto the weary the rest of her home ;
 Freely her blessings to others were given,
 Freely and kindly to all who had come.
 Humbly and quietly all the day long
 Had her swift service for others been done ;
 Yet for the labor of heart and hand
 What could she show at set of the sun ?
 Ah, she forgot that our Father in heaven
 Ever is watching the work that we do,
 And records He keeps of all we forget,
 Then judges our work with the judgment that's true ;
 For an angel writes down in a volume of gold,
 The beautiful deeds that we all do below ;
 Though nothing she had at set of the sun,
 The angel above had something to show.

MY ADVICE TO YOU.

Don't be lazy !
 There is full enough to do,
 Enough for me, enough for you.
 Don't be lazy !
 Drive at something, keep a-driving,
 If you would be rich and thriving.
 Don't be lazy !
 Don't be lazy !
 Stir about and you will find
 Something that will suit your mind.
 Don't be lazy !
 'Tis a truth well worth your knowing,
 Idleness has rapid growing.
 Don't be lazy !

A LITTLE BOY'S FIRST RECITATION.

G. A. P.

I think it's not an easy task
 To speak a piece in school,
 But still I do not wish to ask
 To be excused the rule.
 For little boys must some day take
 The places of the men,
 And if they would good speakers make,
 Must try and try again.
 This be our motto : and now here
 I'll close my little rhyme,
 Hoping, should I again appear,
 To better do next time.

—Good Times.

Humor.

Suzette, a bit of a French girl, being a guest at her grandmother's house, had been liberally feasted, when a second dish of pudding came on. Looking at the steaming dish, she exclaimed with a sigh :

"Say, gram'ma, I wish I was twins."

"Do I love George," mused Clara, softly, "or is it simply a sister's affection that I feel for"—Just then Bobby burst noisily into the room, and interrupted her sweet meditations. "Get out of here, you little brat!" she shouted; and seizing him by the arm, she shot him through the door. "Ah! no," she sighed, as she resumed her interrupted train of thought. "My love for George is not a sister's love. It is something sweeter, purer, higher, and holier."

Mother—"Whom do you think baby resembles?" Uncle—"It has its father's nose." Mother—"and my mouth." Uncle—"Yes; fact. And I also notice that, with papa's nose and mamma's mouth, it leaves precious little room for forehead."

"Are you familiar with Bryant?" asked a young lady of a timid young man whom she was trying to draw out. "Oh, yes," he replied proudly, brightening up. "I graduated at one of his business colleges."

Teacher—"Suppose you have two sticks of candy and your big brother gives you two more, how many would you have then? Little boy (shaking his head)—you don't know him, he ain't that kind of a boy."

Old Professor Hurthard used to say that the students "couldn't fool him." For his part, they might joke all they pleased; "but they couldn't catch him." About three o'clock one morning a party of students went over to the professor's house and rang the bell. By-and-by Professor Hurthard clad in his dress-gown, opened a window, and thrusting out his head, asked what was the matter.

"Why, Professor," said the spokesman, "the burglars are bad, and we thought we'd stop and tell you that one of your windows is open."

"Which one?" he asked, anxiously.

"The one you have got your head stuck out of, Professor!" replied the students, howling derisively in chorus.

Some of the violin cases are shaped like coffins. Two street urchins in New York, seeing a musician in a black cloak, with a violin-case carefully held, paused, and gazed in wonder after the figure. At last one of the lads exclaimed :

"Well, Tommy, blest if that ain't the smallest funeral I ever see!"

"Good gracious!" exclaimed the hen, when she found a porcelain egg in her nest. "I shall be a bricklayer next."

Big sister (shouting to Bobby): "Bah-see! Bah-see! You are wanted to do an errand."

Bobby (shouting back): "Tell mother I can't do it now. I'm too busy."

Big sister: "It's not mother that wants you. It's father."

Bobbie (hastily): "All right. Tell him I'm a-comin' liko a streak o' lightin'."

It was one of the good little boys from a Sunday-school near Boston, who gave this interpretation to a verse taught by his teacher: "Behold a greater than Solomon is here!" "Hold a grater to Solomon's ear!" When at a loss to give the answer "Cain" to a question relative to that individual, the teacher, to jog his memory, asked: "What does a man walk with?" Quick as a flash came the reply, "A woman."

The following advertisement appears in a Southern paper :

"Teacher wanted in District No. 10—Masculine gender; one who will prohibit tobacco-chewing, swearing, and fighting in and around the school-house; Democrat or Methodist preferred. D. W. Smith, director."

A north-side school-teacher showed me an excuse which a ten-year-old boy wrote for his absence one day last week. He signed his father's name to it. It read as follows :

"Miss — : Please exchange Joey. He was necessity obtained."

A would-be complimentary editor writes a puff about the "mild schoolmarm of Brownsville; the intelligent compositor renders it the "wild" schoolmarm. Query: "which is she when she reads the item?"

A newly married lady who recently graduated from Vassar College, is not very well posted about household matters. She said to her grocer not long since :

"I bought three or four hams here a couple of months ago, and they were very fine. Have you got any more like them?"

Grocer: "Yes, ma'am, there are ten of those hams hanging up there."

"Are you sure that they are all off the same pig?"

"Yes, ma'am."

"Then I'll take three of them."