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JAMES V. WRIGHT

Table of Contents.

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EDITORIAL NOTES	AGE. 373
EDUCATIONAL THOUGHT	
MATHEMATICS-	374
Third Class Arithmetic	375
ARBOR DAY EXERCISES-	575
The Maple—"Woodman Spare that Tree"—Planting the Oak—A Danger—Forest Song—Song—To the Oak—In Greenwood—The Birch—The Willow	-377
EXAMINATION PAPERS-	••••
Durham Promotion Examinations	377
HINTS AND HELPS	5
Correcting Compositions-Teaching Arithmetic	377
ARBOR DAY PAPERS-	
"Study the Trees "-Horticalture in the Schools-Plant- ing on Arbor Day-Hardy Shrubs for School Grounds	-379
SPECIAL PAPERS-	
An Address by Lord Lansdowne 379	-380
CORRESPONDENCE-	
Our Overcrowded Profession-Over Supply-One Cause of the Trouble	380
English-	-
The Face Against the Pane	381
EDITORIAL-	3
Matthew Arnold	280
QUESTION DRAWER	
EDUCATIONAL MEETINGS-	383
Scientific Temperance-Peel County Teachers' Associa- tion	384
SCHOOL ROOM METHODS-	304
Exercise in Language-Magical Nine-Some Primary Work in Addition-A Method in Spelling-A Spelling Lesson-Alesson with Obieve	

Editorial Notes.

THE Christian World maintains that the results of school work should be guaged "by the mental and manual dexterity of the children rather than by the difficult extraction of tightlypacked theoretical knowledge," and that "a school without a workshop for boys and a model kitchen and laundry for girls," should be as rare as a white elephant or a black swan.

According to the Michigan Moderator, Arbor Day is a child of Nebraska, just "sweet sixteen." "The first celebration of the day was at the instance of ex-governor J. Sterling Morton, of Nebraska, in 1872. On that day 12,000,000 trees were planted in Nebraska." Ex-governor Morton's name should go down to posterity with all the honors due to the originator of a grand and beneficent idea.

TEACHERS will read with interest the report in another column of an excellent lecture on "Temperance in its Scientific Aspects," delivered by Prof. Bowman in London. The lecture is the first of a course of five which have been arranged for in that city. The idea is a good one, and could be adopted in many other places with advantage. Just now when teachers are introducing the subject of scientific temperance into their schools, the lecture of Prof. Bowman is particularly appropriate, and will be found to contain many useful hints.

THE Board of Education of the North-West Territories, which commenced operations two years ago, has just issued, for the first time, its "Regulations," in printed form. The programme of studies for the Protestant school differs somewhat from those of the older Provinces. We shall take an early opportunity of comparing. The arrangement of an entirely new curriculum of study for schools just in process of formation affords an admirable opportunity for a departure from the stereotyped courses, and the introduction of improvements which are hard to incorporate in older systems. No doubt the educational authorities in the North-West have improved the opportunity.

In an article in the April Nineteenth Century, Miss Beale, Principal of the Cheltenham Ladies' College, lays great stress on so learning history as not merely to be able to talk about it, but to understand its meaning in view of the social and political problems of our own time. The mas-

nearly so useful for this purpose as the selection of some typical era, such as the Commonwealth, for a thorough investigation. So in literature, it is better to master such a work as the "Areopageitica" than to ramble over the whole field. On geometry Miss Beale rightly sets value, in view of its aid to clearness of thought, in which women, as a rule, are, Miss Beale thinks, lamentably deficient.

Journal.

"How can I preserve order in my class-room, while going on with my teaching?" is an everrecurring question, especially in the case of young teachers. One of the best answers we have seen in a sentence is, "See to it that each pupil has something to do and a motive for doing it." It will, no doubt, be found much easier to furnish the work than to apply the effectual motive. In order to do this the character of the individual pupil will have to be carefully studied. The conscientious teacher will aim always to use the highest and best motives that can be made available. The child's innate love of knowledge seems to be nature's own stimulus to study, and in the hands of a skilful teacher, can often be made wonderfully effective.

THE Christian World says that the worst that has ever been said with regard to the unpractical nature of the education given in the London Board Schools, and the total absence of anything in the nature of manual training for children whose lives are destined to be spent in manual employments, has been fully confirmed in an exhaustive inquiry carried on by a special committee of the London School Board. It is shown that physical training generally, and the training of the eye and hand in particular, are almost entirely neglected, and the mental work is a mere cramming of the child's mind with a mass of undigested facts. There is no relation between the school work and the facts of life ; no education of the faculty of accurate work, and the faculty of dealing with things instead of words. "The boys are machines," is the report of one inspector.

'THE exercise in spelling by "Jasaw" in our "Methods" department, is a good illustration of the manner in which a skilful teacher may depart from stereotyped methods with the best results. The reason given by the little boy for liking the new method better, "Because we have to think more," is very suggestive. It is a very common but mistaken impression that school boys and girls do not like having to think. tery of epitomes of universal history is not They do not like dry routine drudgery. But

the healthy child normally delights as much in the exercise of the mental as in that of the physical powers. The thought-compelling exercise, provided it is neither so easy as to be uninteresting, nor so difficult as to be discouraging, is just what will delight him. By the way, will not other teachers follow "Jasaw's" good example, and describe, for the benefit of fellowteachers, some of their successful methods ?

"Just as duellists, sometimes, make simultaneously the fatal opposing thrusts, and the blood of the two men flows and mingles on the clashing blades, and two men die, each by the other's hand, so two youths, though only in wanton sport, or friendly social debauchery, help to spill each other's blood and sap the very purity and strength out of each other's life. In plain English, we can put our hands upon a dozen fellowstudents, to-day, who have helped each other DOWN.

THE above, from the Acadia Athenaum, not only contains a terrible indictment against the individuals referred to, but enunciates a sad truth which every student would do well to ponder. The man or woman, the boy or girl, who does injury to the character of another, making him or her a worse man or woman, even though it be without malice aforethought, commits a terrible crime, and incurs a fearful responsibility.

WE are glad to chronicle the appointment of two ladies to seats on the Board of the new West Toronto High School, that is to be. The innovation will, we believe, prove to be wise and salutary. Educated women have done and are doing excellent service on school boards in England and the United States. To say nothing of many other weighty considerations, the fact that a large proportion of both teachers and pupils in the public and high schools are of the female sex, is of itself a sufficient reason why that sex should be represented on the managing boards. Their keener perceptions, and, in many respects, nicer sense of justice and propriety, as well as their better opportunities for acquiring knowledge of school methods in their relation to home work, and to the conduct and character of the children, are so many additional reasons why women should form a part of every school board.

TEN boys, ranging in age from eight to twelve years, were recently before the Toronto Police Court on each of two successive days, charged with such offences as burglary, larceny, trespass, etc. This deplorable fact led Col. Denison, the Police Magistrate, to say forcefully :----

"The reason for all this trouble with these boys is that no playgrounds are provided for them. They have no way of amusing them-selves; they cannot play at all; they cannot do anything, therefore they turn their attention to stealing and other crimes."

cheaper, to say nothing of higher considerations, motive in such demonstrations.

to provide playgrounds, than to support police, magistrates, prisons, penitentiaries, and houses of correction for the criminals manufactured through the want of them.

PROF. TYNDALL, in the course of a lecture delivered a few years ago at the Birbeck Institution, on "My Schools and Schoolmasters," referring to his own experience as a teacher in Queenwood College, Hampshire, said :-

"At Queenwood I learned, by practical experience, that two factors went to the formation of a teacher. In regard to knowledge he must, of course, be master of his work. But knowledge is not all. There may be knowledge without power-the ability to inform without the ability to stimulate. Both go together in the true teacher. A power of character must underlie and enforce the work of the intellect. There are men who can so rouse and energize their pupils-so call forth their strength and the pleasure of its exercise—as to make the hardest work agreeable. Without this power it is questionable whether the teacher can ever really enjoy his vocation ; with it I do not know a higher, nobler, more blessed calling than that of the man who, scorning the 'cramming' so prevalent in our day, converts the knowledge he imparts into a lever to lift, exercise, and strengthen the growing mind committed to his care.

Those are golden words. Every teacher may profitably ponder them, and ask himself to what extent he possesses that "power of character," and what he is doing daily to cultivate it.

THE New York Nation has a paragraph wondering at and deprecating the difficulty which the Sophomore Class at Columbia College have had in giving up the custom of burying, or "triumphing over," Legendre. "Hostility to a text-book or to a subject of study, finding expression in public demonstrations of joy at getting rid of it, is so distinctly a childish or schoolboy feeling that one would naturally expect that a young man on entering a university would be rather ashamed of it, as of a love of marbles, or pegtops, or hoops. But it has survived at Columbia to this day, in spite of the growth of the college in numbers and the rise of the standard of age." This year first a steamboat excursion, with a "burial" at sea, and then a torchlight procession through the streets, were projected. In reference to the latter the Nation says :-

"We wonder whether the youths who are to take part in it, who are presumably from eighteen to nineteen years old, and have in most cases the advantage of coming from homes of more or less cultivation, have ever considered what must be the effect on the rest on the community, and especially on the youths who cannot go to college, of seeing a whole sophomore class parading publicly by way of expressing their detestation of study.³

The custom has not much save its boyishness to recommend it, but we fancy most outsiders This is but a variation of the old lesson about know enough of college boys to know that it is Satan and idle hands. The failure to provide not really detestation of the study, but rather suitable playgrounds for children in the cities is fondness for any kind of a lark to break the as unwise as it is cruel. It would be vastly monotony of college life, which is the prevailing

Educational Thought.

"WERE the schoolmaster as noisy as a politician, or as visible as an orator, or as charming as an artist in a studio; the public would hasten to crown with laurels at least all those great in this calling; but they live and die in a world where those who lay the mighty foundations of a cathedral are forgotten, compared with those who carve its columns or design its colored glass."-Prof. David Swing.

THE end of education :- To think ; to reason ; to feel nobly; to see the relations of things; to put the ages together in their grand progress; to trace causes; to prophesy results; to discern the sources of power; to find true beginnings instead of unknowable causes ; to perceive the moral asgoverning the intellectual, and both as dominating the material ; to discern the lines along which humanity is moving, and distinguish them from the eddies of the day.-T. T. Munger in the Century.

"THE tremendous unity of the pine absorbs and molds the life of a race. The pine shadows rest upon a nation. The northern people century after century lived under one or other of the two great powers of the pine and the sea, both infinite. They dwelt amidst the forest or they wandered on the waves, and saw no need of any other horizon. Still the dark green trees or the dark green waters jagged the dawn with their fringe or their foam, and whatever elements of imagination or of warrior strength or of domestic justice were brought down by the Norwegian or the Goth against the dissoluteness or degradation of the south of Europe, were taught them under the green roofs and wild penetralia of the pine.'

IF there were no such things as industrial pursuits, a system of education which does nothing for the faculties of observation, which trains neither the eye nor the hand, and is compatible with utter ignorance of the commonest natural truths, might still be reasonably regarded as strangely imperfect. And when we consider that the instruction and training which are lacking are exactly those which are of most importance for the great mass, of our population, the fault becomes almost a crime, the more that there is no practical difficulty in making good these defects. There really is no reason why drawing should not be universally taught, and it is an admirable training for both eye and hand. Artists are born, not made ; but everybody may be taught to draw elevations, plans, and sections; and pots and pans are as good, indeed better, models for this purpose than the Apollo Belvidere. The plant is not expensive; and there is this excellent quality about drawing of the kind indicated, that it can be tested almost as easily and severely as arithmetic. Such drawings are either right or wrong, and if they are wrong the pupil can be made to see that they are wrong. From the industrial point of view, drawing has the further merit that there is hardly any trade in which the power of drawing is not of daily and hourly utility. In the next place, no good reason, except want of capable teachers, can be assigned why elementary notions of science should not be an element in general instruction. In this case, again, no experience or elaborate ap-paratus is necessary. The commonest things—a candle, a boy's squirt, a piece of chalk-in the hands of a teacher who knows his business may be made the starting-points whence children may be led into this region of science as far as their capacity permits, with efficient exercise of their observational and reasoning powers on the road. If object-lessons prove trivial failures, it is not the fault of object-lessons, but that of the teacher, who has not found out how much the power of teaching a little depends on knowing a great deal, and that thoroughly; and that he has not made that discovery is not the fault of the teachers, but of the detestable system of training them which is widely prevalent.-Prof. Huxley in Popular Science Monthly.

THE total school population, between the ages of six and fourteen years, of the United States, as per last year's report, was 10,928,943. The total number of teachers was 323,066, of whom, so far as the sexes were separated in the returns, there were 104,249 male teachers and 191,439 females.

Mathematics.

All communications intended for this column should be sent before the 20th of each month to C. Clarkson, B.A. Seaforth, Ont.

THIRD CLASS ARITHMETIC 1887.

1. PROVE the rule for the multiplication of fractions.

The two fundamental operations on fractions are,

(1.) To multiply a fraction by a whole number.
(2.) To divide a fraction by a whole number. We take these for granted and put the proof in the form of an arithmetical equation.

Suppose $\frac{9}{3}$ and $\frac{5}{11}$ are the given fractions of which the product is required. Then product = $\frac{9}{7} \times \frac{5}{11}$. If times product = $\frac{9}{7} \times \frac{5}{11} \times 11$. But $\frac{5}{11} \times 11 = 5$,

 $\therefore \text{ II times product} = \frac{3}{7} \times 5, \text{ and this} = \frac{3}{7}, \text{ from (I)}$ $\therefore \text{ product} = \frac{30}{7} \div \text{ II} = \frac{30}{7}, \text{ from (2)}$

and we see that the product = $\frac{6 \times 5}{7 \times 11}$, hence the rule.

N.B.—In some proofs given by standard authors the explanation of the rule is needlessly abstract, so that the explanation itself is more difficult of apprehension than the fact to be explained. In other cases the attempted proof is in reality only an example of the sophism petitio principii.

Simplify
$$\frac{(7\frac{1}{4}-3\frac{1}{2})\times \{4\frac{1}{5}-(2\frac{1}{3}-1\frac{7}{10})\}}{2}$$

Simplify $\frac{7}{(7\frac{1}{4}+3+\frac{1}{2})} \div (1\frac{1}{2}-9\frac{1}{2}\times\frac{9}{77})$

Multiply N and D by 4, and remove the inner brackets

 $(29 - 14) \times (4\frac{9}{10} - 2\frac{1}{8} + 1\frac{7}{10})$ $(29+14) \div (1\frac{1}{2}-9\frac{1}{2}\times \frac{9}{77})$ $=\frac{15\times(5\frac{9}{10}-2\frac{1}{3})}{43\div(1\frac{1}{2}-1\frac{17}{154})}=\frac{15\times\frac{107}{30}}{43\div\frac{60}{154}}$ 107 × 30 _ 1605

=

 $2 \times 43 \times 77$ 3311. It may be well to remark that examiners in Ontario have never been in the habit of giving more than one half the full marks for the bare answer without a full exhibition of the method of solution. The chief value of such a question as this is a disciplinary value. If the result is obtained in a disorderly, slip-shod way, the whole benefit of such exercises is lost, and the student's time is somewhat worse than wasted by confirming him in habits of carelessness and haste.

(2.) A, B and C rent a pasture for \$92. A puts in 6 horses for 8 weeks; B 12 oxen for 10 weeks; C 50 cows for 12 weeks. If 5 cows are reckoned as 3 oxen, and 4 oxen as 3 horses, what shall each pay?

Solution.—5 cows=3 oxen, ∴600 cows=360 oxen, 3 horses=4 oxen, ∴48 horses=64 oxen. Now, 6 horses for 8 weeks=48 horses for one week =64 oxen for 1 week. Also, 12 oxen for 10 weeks=120 oxen for 1 week.

And 50 cows for 12 weeks=600 cows for 1 week = 360 oxen for I week.

= 300 OXEN IOT I WEEK. Thus the shares are as 64:120:360, that is as 8:15:45. Therefore A's share is $\frac{9}{58}$ or $\frac{1}{77}$ of $\$92 = \$10\frac{1}{74}$, which leaves $\$81\frac{3}{77}$ to be paid by B and C. whose shares are as 1:3, hence B must pay $\frac{1}{4}$ and C $\frac{3}{4}$ of $\$81\frac{3}{177}$, or B pays $\$20\frac{1}{77}$ and C three times as much = $\$60\frac{18}{77}$. $much = $60\frac{14}{14}$.

3. A does a work in ten days; B in 9 days; C in 12 days. All begin together, but A leaves $3\frac{2}{5}$ days before the completion; B in $2\frac{2}{5}$ days before the completion. In what time was the work done?

SOLUTION. -Represent the time each worked by three lines.

A	3 % days	1
B	- 2 § days	t i
2 7 3 day	‡ day	ŧ

Thus C works alone $2\frac{3}{5}$ days, B and C together $\frac{4}{5}$ day, and A, B and D together for the remainder of the whole

time. Thus C does $2\frac{3}{6} \times \frac{1}{12} = \frac{1}{6}\frac{3}{6}$ of the work alone B and C do $\frac{4}{5} \times (\frac{1}{12} + \frac{1}{9}) = \frac{7}{45}$ of the work, leaving $\frac{168}{166} - (\frac{18}{46} + \frac{7}{45})$ or $\frac{1}{4}\frac{18}{8}$ to be done by A, B and C to-gether, at the rate of $\frac{1}{10} + \frac{1}{9} + \frac{1}{12}$) per day $= \frac{163}{160}$ per day. For this they require $(113 \div 53)$ days or $2\frac{7}{53}$ days. Hence the whole time $= 2\frac{7}{53} + 3\frac{2}{5} = 5\frac{1}{2}\frac{1}{6}\frac{1}{6}$ days. N.B.—The algebraical solution is more simple and straightforward. Thus let x = whole time by C, etc. 4. Prove the rule for division of decimals.

4. Prove the rule for division of decimals. Suppose we have to divide .0083 by .854.

Quotient = $\frac{.0083}{.854}$ = $\frac{.0083 \times 1000}{.854 \times 1000}$ = $\frac{8.3}{.854}$, which reduces the question to the elementary stage, viz., dividing a decimal by a whole number, and establishes the rule.

Divide to six decimal places .0078539 by .9921461, We shall use the contracted method with the combined method of multiplication and subtraction :--OPERATION. 992,1,4,6,1) 78539 (0.007916 9089

160 61 7

5. On March 23rd a bank gives me \$845 for a note of \$860. When is the note due, interest 8 %? Bank Int = \$860 - \$845 = \$15 Int. on \$860 for 1 day = $(860 \times \frac{18}{160}) \div 360 = \frac{43}{125}$ \therefore No. days = $15 \div \frac{43}{125} = 78\frac{2}{13}$ or 79 days. Subtract 3 days grace, 76 days, from March 23rd gives Interest of the second s

June 7th. 6. Find the cost in sterling, of 184 tons, 17 cwt, 3 qrs, 14 lbs of copper, invoiced to a Toronto importer at £87, 17s. 11d. per ton.

Price of I ton = $\pounds 87$ 17 11

 $\begin{array}{c} 11001 + 1001 - 507 17 11 \\ \text{```I cwt = $\exists 4 7 10\frac{3}{4}$} \\ \text{```I qr = $\exists 4 1 11\frac{1}{15}$. Hence we have $$\exists 4 $\exists 10\frac{1}{2}$ 16 8 \\ \exists 4 7 10\frac{1}{5}$ × 17 = 74 14 $2\frac{3}{5}$ \\ \exists 1 $11\frac{1}{15}$ × 3\frac{1}{2}$ = $$$ 3 16$ 10\frac{3}{3}\frac{3}{5}$ \\ \end{array}$

Total price =
$$\frac{16251}{7931}$$

7. I bought certain 4 per cent. stock at 75 and after a number of years sold out at 95, and found that I had made $7\frac{1}{2}$ % per annum, simple interest. How long did I hold the tool. hold the stock ?

Solution.—\$75 invested brings \$4 a year \$75 sold out "\$20 profit \$75 at $7\frac{1}{2}$ % " $$4\frac{1}{5}$ per annum.

Thus we get the equation (\$4 × No. years) + \$20 = \$ $\frac{1}{2}$ × No, years or \$20 = \$ $\frac{1}{2}$ × No. years *i.e.* 20 ÷ $\frac{1}{2}$ = No. years = 12 $\frac{1}{12}$.

VERIFICATION.

\$4 a year for 12_{15} years yields \$49 $\frac{9}{18}$ interest. \$20

\$75 at $7\frac{1}{2}$ % for $12\frac{4}{13}$ years gives $\overline{\$69\frac{3}{13}}$ profit.

8. There is a mixture of vinegar and water in the proportion of 93 parts vinegar to 7 parts water. How much water must be added so that in 25 parts of the mixture there may be 2 parts water ?

A certain number must be added. Then we have this result :-

93:7 + Reqd No. = 23:2

93:7 + Reqd No. =23:2 or $2 \times 93 = 23$ (7 + Reqd No.) *i.e.*, 186 = 161 + 23 times Reqd No. or 25 gallons = 23 times Reqd No. $\therefore 1\frac{2}{3}$ gals = Reqd No. to be added. OTHERWISE :---Water now = $\frac{1}{3}\frac{2}{3}$ of the vinegar. But it must be made = $\frac{1}{3}\frac{2}{3}$ of the vinegar ; Amount to be added = $(\frac{1}{3} - \frac{1}{3}\frac{1}{3})$ of vinegar = $\frac{2}{3}\frac{2}{3} \times \frac{2}{3}\frac{2}{3}$ gals = $1\frac{2}{3}\frac{1}{3}$ gals, as before.

= $\frac{3}{24} \times \frac{3}{25}$ gais = $I_{\frac{3}{24}}$ gais, as before. 9. I invested \$10,000, but sold out at 20 % discount. How much must I borrow at 4 % so that by investing all at 8 % I may just retrieve my loss? N.B.—The statement of this question is enigmatical and unsatisfactory. What do the examiners mean by the phrase "I borrow money at 4 %?" Is it at 4 % per an-num? Is it at simple interest or compound interest ? When is the loss to be retrieved, immediately or a the end of a num? Is it at simple interest or compound interest ? when is the loss to be retrieved, immediately or at the end of a year? If they mean that the difference between the pre-sent worth of the money borrowed at 4 % and the present worth of the whole loaned at 8 %=the \$2,000 lost by selling out \$10,000 at 20 % discount, they might have taken the trouble to say as much. It is to be hoped that taken the trouble to say as much. It is to be hoped that no such indefinite question will be found on the arithme-tic paper next July. We can surely have questions of sufficient difficulty without resorting to vague enigmas like this. It would be like taking a ticket for a lottery to guess at the meaning intended. Perhaps the words "at par" are intended to be understood after \$10,00c, and "per annum" after 4 %, and 8 %, but who can tell?

Io. A square field containing 27¹/₂ acres has a diagonal path across it. What is the length of the path in yards ?

2 (side)² = (diagonal)³. Euc. I. 47. \therefore diagonal = side × $\sqrt{2}$. Now side = \sqrt{area} , or

side = $\sqrt{(\frac{5.5}{3} \times 4840 \text{ sq. yds.})}$

 $e = \sqrt{13^{4} \times 4040}$ or $= \sqrt{(55 \times 2420)}$ = $\sqrt{(55^{2} \times 2^{2} \times 11)}$ = 110 $\sqrt{11}$; \therefore side $\sqrt{2} = 110\sqrt{11} \times \sqrt{2} = 110\sqrt{22}$ yds. 11. When the temperature of a cube of zinc is raised from 32° F. to 212° F. each dimension is thereby increased 3%. Find the percentage increase in the bulk.

 $3\% = 36 \div 100 - \frac{1}{1000}$. So that if the side is 1000 at first, it becomes 1003 after expansion. Consequently the cubical content increases from \$1000³ to 1003³.

Now $1003^8 = (1000 + 3)^8 = 1000^8 + 3^8 + 9000 \times 1003$ And $1000^8 = 1000^8$

Increase of bulk = $3^3 + 9000 \times 1003 = 9027027$ That is on

1,000,000,000 the expansion is 9027027 n 100 '' '' '' 9027027 .: on

12. Water is flowing at the rate of 10 miles per hour through a pipe 14 inches in diameter, into a rectangular reservoir 187 yds by 96 yds. In what time will the sur-face be raised one inch.

One inch deep on the reservoir will contain $187 \times 96 \times 9 \times 144$ cubic inches.

10 miles per hour = $5280 \times 12 \times 10$ inches in 60 minutes $= 5280 \times 2$ inches per min.

Area of section of pipe = $3^{2} \times 7^{3} = 7 \times 22$ square inches, Hence $7 \times 22 \times 5280 \times 2$ cub. in. are brought in per min.

No. min. reqd = $\frac{187 \times 96 \times 9 \times 144}{7 \times 22 \times 5280 \times 2}$

 $=\frac{17\times9\times36}{14.3064}$ minutes. 7 × 55

CORRESPONDENCE.

The following problem by MR. WM. LINTON, NEW HAMBURG was mislaid.

A township issues debentures with coupons attached to borrow \$2000 at 6%. The tender of C at \$2040 is ac-cepted. He receives one fourth of the principal back each year, *i.e.*, \$500; and the interest on the unpaid prin-cipal, each year, viz \$120, \$90, \$60 and \$30. What rate does C receive on his investment?

This is an interesting practical question to which we hope to receive a number of solutions.

hope to receive a number of solutions. We have a neat solution of the cistern question given in the March number. It is by MISS ANNA TAIT (aged 14). a pupil of MR. PALLES, Carrying-Place. To the same question solutions were sent too late for last issue by MR. FLANAGAN, Iroquois. MR. J. B. MORRISON, Birtle, Man. and MR. T. F. FLAHERTY, Lucan. The last named gentleman has examined the "bankrupt" of the January No. and pronounces him "without doubt a fraud." He agrees with MISS (JERRIE that there can be no \$20,000 assets such as are :poken of in the problem, and demon-strates this by assuming for the sake of argument that his total assets were just \$20,000. We do not remember where this problem came from, but if it was not originally intended for an impossible question, perhaps there may have been some figures misplaced, thus spoiling the ques-tion for solution. tion for solution.

A. B. M. asks which of the following statements is the better to place before a junior class :-

(a) I acre costs \$85; ... 5 acres cost 5 × \$85

(b) I " " \$85; ... 5 " " \$85×5 The latter is the more correct form, unless we understand (5×85) and $\{(8_5 \times 5), \text{ in which case both are accurate. For we can say :---If I acre cost $1, 5 acres cost $5... at $85 per ac, the cost would be $5 \times 85. Usually, however, we say $85 multiplied by 5, so as to avoid the appearance of making the multiplier a concrete number. In the case of$ areas this needs careful explanation :— Thus 4 ft. $\times 3 \text{ ft}$ = 12 sq ft. is nonsense, and is liable to produce injurious confusion of thought in the mind of the pupil. Some of contrastor of thought in the matter of the paper. Some of our readers remember an arithmetic in our schools which taught that 2s. $6d. \times 2s. 6d. = 6s. 3d$. But the former times were not better than these. That was thirty years ago.

CORRECTION,—Question 16, April 1st, should read :— Prove that $a^3 + b^3 + c^3 - 3$ abc=(a+b+c) $(a+bx+cx^3)$ $(a + bx^{a} + cx)$, where $x = \frac{1}{2}(-1 + \sqrt{-3})$. Several solutions received to No. 17 all agree in "begging the question." No good solution has come to hand.

G. E. T., Lefroy. "In the expression $\frac{5}{4} + \frac{3}{4} \div \frac{7}{4} \times \frac{7}{4} + \frac{3}{8}$ of $1\frac{1}{4}$, what signs must be dealt with first, secondly, etc?"

ANSWER. By a general convention the expression is understood to mean the sum of three terms thus :-- $\frac{5}{4}$ + [$\frac{3}{4}$ \div ($\frac{7}{4} \times \frac{7}{4}$)] + ($\frac{3}{4}$ of $1\frac{1}{2}$); so that the signs \times , \div , and "of" must be understood to operate before the signs +, +. It

must be understood to operate before the signs +, +. It would eliminate all ambiguity to use brackets. J. McL., Lynn Valley. "A man assisted part of the time by a boy completed a piece of work in 15 hours. The man got for his share of the pay five times as much as the boy received for his share; but the man was paid twice as much as the boy in proportion to the amount of work does by each ... It how many hours could the man do the done by each. In how many hours could the man do the work without assistance?"

SOLUTION.—The man worked 15 hours. Suppose he did 1 of the whole work, and the boy 1 of the same per ×x

hour. Also suppose the boy worked z hours. Then the man's

work is represented by $\frac{15}{x}$, and the boy's part by $\frac{z}{y}$. Con-

sequently their wages are represented by $\frac{30}{x}$ and $\frac{z}{y}$. Thus we have the proportion

 $\frac{30}{x}: \frac{z}{y} = 5:1; \text{ or } \frac{30}{x} = \frac{5z}{y} \text{ i.e. } \frac{6}{x} = \frac{z}{y}; \text{ which, being in-$

terpreted, means that the boys part of the job was as much as the man could have done in 6 hrs. Therefore *alone* he would require 15+6=21 hrs. Ans.

Arbor Day Exercises.

THE MAPLE.

OH, tenderly deepen the woodland glooms, And merrily sway the beeches; Breathe delicately the willow blooms,

- And the pines rehearse new speeches; The elms toss high till they brush the sky, Pale catkins the yellow birch launches,
- But the tree I love all the greenwood above Is the maple of sunny branches.
- Let who will sing of the hawthorn in spring, Or the late-leaved linden in summer
- There's a word may be for the locust tree, That delicate, strange new-comer;

But the maple it grows with the tint of the rose When pale are the spring-time regions, And its towers of flame from afar proclaim

- The advance of winter's legions.
- And a greener shade there never was made Than its summer canopy sifted, And many a day, as beneath it I lay

Has my memory backward drifted, To a pleasant lane I may walk not again,

Leading over a fresh, green hill,

Where a maple stood just clear of the wood-And oh, to be near it still !

-Charles G. D. Roberts.

" WOODMAN, SPARE THAT TREE."

MOST teachers will probably be familiar with the touching account given by G. P. Morris, of the circumstances which led him to write the beautiful

lines commencing as above. The *Popular Educator* suggests that the teacher should tell the story to the pupils, and have them memorize the verses, and recite or sing them on Arbor Eav.

Mr. Morris, in a letter to a friend, dated New York, February I, 1837, gave in substence the following account :- Riding out of town a few days since, in company with a friend, an old genileman, he invited me to turn down a little romantic wood-land pass not far from Bloomingdale. "Your land pass, not far from Bloomingdale. "Your object?" inquired I. "Merely to look once more at an old tree planted by my grandfatuer iong be-fore I was born, under which I used to play when a boy, and where my sisters played with me. There I o ten listened to the good advice of my parents. Father, mother, sisters—all are gone; nothing but the old tree remains." And a paleness overspread his fine countenance, and tears came to his eyes. After a momen.'s pause he added: "Don't think me foolish. I don't know how it is: "I never ride out but I turn down this lane to look at that old tree. I have a thousand recollections about it, and I always greet it as a familiar and well-remembered friend." These words were well-remembered friend." These words were scarcely uttered when the old gentleman cried out, "There it is !" Near the tree stood a man with his coat off, sharpening an axe. "You're not going to cut that tree down, surely?" "Yes, but I am though," said the woodman. "What for?" inquired the old gentleman, choked with emotion. "What for? I like that ! Well, I will tel you. I want the tree for firewood?" "What is the tree worth to you for firewood?" "What is the tree worth to you for firewood?" "Why, when down, about ten dollars." "Suppose I should give you that sum," said the old gentleman, "would you let it stand?" "Yes." "You are sure of that?" "Positive." "Then give me a bond to that effect." We went into the little cottage in which my com-panion was born, but which is now occupied by the woodman. I drew up the bond. It was signed, woodman. I drew up the bond. It was signed, and the money paid over. As we left, the young girl, the daughter of the woodman, assured us that while she lived, the tree should not be cut. These circumstances made a strong impression on my mind, and furnished me with the materials for the song I send you.

WOODMAN, spare that tree!

- Touch not a single bough ! In youth it sheltered me,

- And I'll protect it now. 'T was my forefather's hand
- That placed it near his cot ; There, Woodman, let it stand;
- Thy axe shall harm it not.

That old familiar tree, Whose glory and renown

- Are spread o'er land and sea, And woulds't thou hack it down?
- Woodman, forbear thy stroke ! Cut not its earth-bound ties ;
- O, spare that aged oak, Now towering to the skies !

When but an idle boy I sought its grateful shade ;

- In all their gushing joy,

Here, too, my sisters played. My mother kissed me here: My father pressed my hand— Forgive the foolish tear; But let that old oak stand.

My heart-strings round thee cling, Close as thy bark, old friend; Here shall the wild-bird sing, And still thy branches bend. Old tree ! the storm still brave ! And, woodman, leave the spot ; While I've a hand to save, Thy axe shall harm it not.

-G. P. Morris.

PLANTING THE OAK.

IN mellowing skies the mated robins sing, The west winds blow the flag of clustered stars, And showers of roses waft the skies of spring

- O'er bloodless fields and monuments of wars,
- The waters purling flow the green woods through, The hermit moons ascend the glimmering sea,

Peaceful, as when war's silver trumpets blew

A truce of God or pastoral jubilee.

- Here, as we gather on this festal day, To plant the acorn, heir of centuries old,
- The oak of warrior kings and courtiers gay, Of airy dryads and the age of gold,
- What war scenes rise,-what navies dark and grand,
- With peaking oars and serried shields and bows,
- What Roman roads with bannered eagl's spanned, And cooled with shades of pendant mistletoes !
- acorn, acorn! Fancy sees again
- M morial hills and forests cool and broad, Where villeins cluster 'mid the rosy rain
- O: darkening sunse's 'round the feudai lord ; Sees the rude arkwrights with their trenchers white.
- Old Norman barons, knights of gay Gascogne, and palgraves tall with battle axes bright,
- And marching palmers,-gone, forever, gone !
- I hear grand Nelson's cry,-"Strike, hearts of oak!"
- And see the smitten Dane-ships strew the shore,
- And, from the Baltic roll the battle smoke O'er deep-sea graves of mourning Eisinore ; Before the oaks I see Gibraltar fall,
- And Trafalgar, and from the Tagus sweep The Genoese, on oak-ribbed caravel,
- To pluck the golden empires of the deep.
- O oaks of eld, where wandered kirtled maids, When swung the orioles in the sunlit rain, I see thee gathered for the palisades,
- From which gonfanon never yet was ta'en; see thy trunks once spun with gossamers,
- Where fanchons sung, in rows defiant rise, And cavaliers with golden stars of spurs, Their shelter seek, with battle-wearied eyes !
- Mother of cradles, where the infant dreams ! Father of ships, that thunder on the sea !
- The soldier's lance above whose steel tongue gleams Or Cross, or Crescent, or the Fleur-de-lis !
- Couch of the victor, who no more shall wake ! The dead king's throne, when, 'mid the hush of
- prayers, dark lords pass, their last, quick look to The take.
- The mullioned windows towards the altar stairs.

- We plant the acorn, —open here the mould, The violets break while thrushes flute and sing,
- Earth's new-made vesture let the spade unfold, We plant the acorn in the breath of spring. The sun will find it, and the April rain,
- The jocund June, and summer's wandering
- wind; Life's resurrected powers renew again
- The embryo oak, and nature's chain unbind.
- Like her, the maid of far Mauritius' palms,
- Virginia, in Provence tale of love, Whose simple history still the worn world
- charms, Who 'mid the citron shades was wont to rove,
- And tamarinds cool, and fans of cocoanuts gay, And planted there a seed in gratitude For every fruit she tasted,—so, to-day, We plant the acorn, grateful for the wood.
- Rise, acorn, rise, the south wind's breath shall blow
- Among thy lobed and sinuated leaves, As in the Vosges, where the child oaks grow,
- Or Javan valleys where the sea wind breathes,
- The showers thy buds, regenerate, shall baptize, And earth shall feed thee like a mother strong,
- Heir of the sun, the cloud, the eternal skies, And earth's new ages, eloquent and long.
- The heir of peace,-the dove descends and falls From Christ's own hand upon young Freedom's brow :
- We weave the garlands of new festivals, Like poets old, to lay upon the plough,
- No more for dragon-ship, or palisade, The young tree rises by the crumbling wood, But children plant the royal oaks to shade The councils sweet of human brotherhood !
- Hezekiah Butterworth in Youth's Combanion

A DANGER.

- BUT I behold a fearful sign,
- To which the white man's eyes are b ind.
- Before these fields were shorn and tilled,
- Full to the brim our rivers flowed. The melody of waters filled
- The fresh and boundless wood.
- And torrents dashed and rivulets played, And fountains sported in the snade.

The rivers, by the blackened shore

With lessening currents run; The realm our tribes are crushed to get

May be a barren desert yet.

These grateful sounds are heard no more, The springs are silent in the sun,

FOREST SONG.

TUNE-" Work for the Night is Coming." A song for the beautiful trees,

A song for the forest grand,

The lords of the emerald cloak, The ladies in living green,

For the beautiful trees a song

Hurrah for the beech tree trim, The hickory staunch at core,

The locust so thorny and grim,

And the silvery sycamore.

And shelter the earth below,

So long as the mountains rise,

May the forest sing to the skies. Hurrah ! for the beautiful trees, -Hurrah ! for the forest grand,

The pride of His centuries, The garden of God's own hand.

So long as the rivers flow,

-Adapted from Prof. W. H. Venable.

The peers of a glorious realm, So brave, and majestic, and strong,

The linden, the ash, and the elm.

Hurrah for the kingly oak, The maple, the forest queen,

The pride of His centuries, The garden of God's own hand.

-Bryant.

-The Moderator.

SONG.

SWEET spring is returning; She breathes on the plain, And meadows are blooming In beauty again. Now fair is the flower

And green is the grove, And soft is the shower

That falls from above. Full gladly we greet thee,

Thou loveliest guest, Ah, long have we waited By thee to be blessed! Stern winter threw o'er us

His hoary, cool chain, We longed to be breathing In freedom again.

And welcome, thou loved one Again and again, And bring us full many Bright joys in thy train. And bid the soft summer Not linger so long.

E'en now we are waiting To greet him in song.

TO THE OAK.

A song to the oak, the brave old oak, Who hath ruled in the greenwood long? Here's health and renown to his broad green crown And his fifty arms so strong !

There's fear in his frown when the sun goes down, And the fire in the west fades out ;

And he showeth his might on a wild midnight, When the storm through his branches shout. Then, here's to the oak, the brave old oak,

Who stands in his pride alone;

And still flourisheth he, a hale green tree, When a hundred years are gone.

-Chorley.

IN GREENWOOD.

'TIS merry in greenwood—thus runs the old lay— In the gladsome month of lively May. When the wild birds' song on stem and spray Invites to forest bower.

Then rears the ash his airy crest,

Then shines the birch in silver, vest,

And the beech in glistening leaves is drest, And dark between shows the oak's proud breast. Like a chieftain's frowning tower.

-Sir Walter Scott.

THE BIRCH.

GIVE me of your bark, O Birch tree ! Of your yellow bark, O Birch tree ! Growing by the rushing river, Tall and stately in the valley ! I, a light canoe will build me. That shall float upon the river, Like a fellow leaf in autumn, Like a fellow water lily! Lay aside your cloak, O Birch tree ! Lay aside your white skin wrapper, For the summer time is coming, And the sun is warm in heaven, And you need no white skin wrapper.

-Longfellow.

THE WILLOW.

O, WILLOW, why forever weep, As one who mourns an endless wrong ! What hidden woe can lie so deep? What utter grief can last so long? Mourn on forever, unconsoled, And keep your secret, faithful tree ! No heart in all the world can hold A sweeter grace than constancy.

-Elizabeth Allen.

EVERY school should thoroughly inculcate the maxims :- All honest labor is honorable. Loyalty to a definite purpose is the condition of success in life. No man has the right of something for no-thing. There is no abiding safety away from the path of duty.

Examination Papers.

DURHAM PROMOTION EXAMINATIONS. March 20, 1888.

GRAMMAR.

JUNIOR III. TO SENIOR III.

1. Define :- Noun, pronoun, phrase, preposition, and adjective.

2. Tell the part of speech of each italicized word in the following :- What ! do you think your cutter and horseblanket worth twenty dollars in the state they now are?

3. Write out the whole subject part of the fol-lowing sentences: -(1) Slowly the horse ran away; (2) Later in the day, that little fellow with his cap on, may go with you; (3) John's brother, Thomas, came home to-day.

4. Write four short sentences, one of each kind (viz., declarative, interrogative, etc.), using the following words as nouns—use only one of the words in each sentence :-Fly, rose, work, jump.

5. Write out separately the modifiers of horse in the following sentence, and tell the kind[•]of each : —My father's black horse, Jep, is now standing in his stable.

6. Write a composition, not less than ten lines, on Casabianca, or on skating.

GRAMMAR.

SENIOR III. TO JUNIOR IV.

I. Supply suitable words in the following sentences, and tell what duty they perform. (a) I will wait — you — the corner. (b) The rose is — (c) He said — to the horse and it stopped.

2. Write four sentences. one of each kind (viz. declarative, interrogative, etc.), using the following words as verbs—use only one of the words in each sentence :-- Crow, smoke dust, cane.

3. Write the phrases in the following sentence, and tell the kind of each with reasons :- On the housetop, at daybreak, a man stood, after the fire in the main building had been extinguished by the efforts of the *people* on the ground. Parse the italicized words.

4. Analyse :-- (1) Long before daylight the busy little fellow was at his lessons; (2) Around his chair, in sympathetic. mirth, its tricks the kitten tries.

5. Tell the class and subdivision of each italicized word in question 4.

6. Write a composition of at least twelve lines on "Canadian Trees" or "Tobogganing."

GRAMMAR.

JUNIOR IV. TO SENIOR IV. 1. Analyse the following, and parse the words in italics :

"Beneath, in the churchyard lay the dead,

In their night encampment on the hill."

2. In the following sentences, change the masculine nouns into feminine and the feminine into cuine nouns into feminine and the reminine into masculine :—(I) The belle of the day and heroine of the hour, was the countess, sister of the sorceress or prophetess, who had lately become the bride of a duke. (2) The actres, who was also a songstress, delighted the king and queen, the marchioness, the viscount, and the czar. Parse the italicized words.

5. Distinguish clearly the difference in the meaning of :

(a) He saw me home. He saw me at home.

(b) He thought little about it. He thought a

little about it. (c) How odd that it is true! How odd that it

should be true ! 4. Express these several thoughts in one simple

sentence and underline the subject :-- The boy wrote. He was a good boy. / He wrote a letter. He wrote to his father. He wrote from school. He wrote on his birthday. It was a long letter. He wrote it early in the morning. He wrote it before breakfast.

5. Correct, with reasons :—(1) you didn't ought to have went so early; (2) we have a daily mail every day now; (3) between you and I_1 he is

not so clever as he thinks; (4) the horse of Mr. H. M. Drummond, Esq., steps nice and holds up his head splendid.

6. Write a composition on 1888, using the folo. Write a composition on roos, using the low lowing outline :—(1) Why Leap-year? (2) What difference between Leap-year and any other year? (3) Is 1900 Leap-year? (4) A description of any important event that has occurred in the year.

DRAWING.

1. Classify triangles, and illustrate each kind. 2. Define :-- Square, verticle line, pentagon and oblique line.

3. Draw a chair, two views, side and front; and a teapot.

4. Draw a wood saw, a snail shell, and a clover leaf.

5. Draw from memory a vase, height, $1\frac{1}{2}$ inches, width of top and bottom, $\frac{1}{3}$ height; apply the reversed curves for sides.

Hints and Helps.

CORRECTING COMPOSITIONS.

THE objection will be made that correcting all these manuscripts will be slavish work for the If these manuscripts were to be taken teacher. home by the teacher and corrected, this would be a home by the teacher and corrected, this would be a serious objection. Teachers—faithful teachers— now suffer from over-work quite generally. But it is not necessary to correct all the mistakes, nor even many of them at a time. The great point is to make the pupils always do their best; to accept no careless work. If this is done they will outgrow more than sixty or seventy per cent. of their mis-takes without even having them corrected. Theore-tically, this would seem impossible marctically it tically this would seem impossible, practically it will be found true. It will not take long to examine the manuscripts sufficiently to detect careless work, and this is the main point. The mistakes that need careful watching are such as are frequently re-peated by the pupil, because such repetition indi-cates that a wrong habit is being formed. Such mistakes (unless they pertain to spelling, the use of capital letters, or punctuation) usually occur in the pupil's oral language in the discussions of the same topic in class, where the teacher can easily detect and correct them. Such common errors as the phrase "There is -," followed by a plural subject, or the use of seen for saw or done for did, must often be made the subject of sharp criticism ; pupilsexcept very young pupils—will neither outgrow them, nor will they overcome them by any uncon-scious process. But mistakes of this nature are fewer than the teachers will be at first disposed to think. The fact that these must be carefully watched is no argument against the point that many mistakes never need be corrected and that the best language is that which least directs the mird from the thought to the expression. — Thomas M. Balliet, in Educational News.

TEACHING ARITHMETIC.

IT is affirmed that there are two tendencies in the study of arithmetic that need to be checked. The first is expressed in the statement that pupils have less accuracy and facility in number work than formerly. This is probably true of some schools and some classes; and it plainly shows the need of better methods of work in those schools or of more and better graded exercises or of limitations in subjects and topics. The second tendency is expressed in the statement that, although pupils do the greater part of their work in arithmetic intelligently, yet they are not so able as former pupils were to think out, to solve, without help, problems that involve difficulties. This statement, too, is probably true of some schools and classes. It is obvious that to guard against this tendency it is necessary that pupils should be made to depend upon themselves, should be trained to think by thinking, and to this end should be required to solve problems carefully graded as to difficulty, and not expressed in stereo-typed forms. In the study of arithmetic, as in all other studies, this statement of John Stuart Mill is true: - "A pupil from whom nothing is ever de-manded which he cannot do never does all he can." -Illinois School Journal.

21

Arbor Day Papers.

978 22.

"STUDY THE TREES."

BY THE HON. B. G. NORTHROP, LL.D.

"WHAT are the marks by which children can distinguish our common trees?" is the suggestive question of a reader of the School Journal who wants to lead her scholars to study trees. Surely our grand trees are worthy of careful observation. One is often surprised at the ignorance of both teachers and scholars, especially in cities, in regard to the trees which are growing all around them. Says a school official in one of our large cities— an expert in examining teachers—"I am confi-dent that the majority of our female teachers cannot distinguish and name half a dozen of our common shade trees." A prominent professor in Yale University says: "I have lately talked with colege students who could not give the names of more than three kinds of trees in New Haven. Many study books more than things, and greatly need a bit of Nature's teaching. For Nature is the great educator. "Books are the art of man. Na-ture is the art of God." Books serve us best used as helps in studying nature. Observation pre-cedes reflection and furnishes the material for reflection. A couplet of Milton well sets forth the need of early habits of observation of all common objects:

" To know those things which about us lie In daily life, is the prime wisdom.

Trees form fit subjects for such object lessons as will lead children in their walks by the roadside, in the park, or the woods, when at work or play, to observe and discriminate them and thus to appreci-ate their beauty and value. Years before they can study botany, they can be led to distinguish each by such common marks as the leaf, flower, fruit, form, bark, or grain of the wood. I often found teachers and scholars unable to tell the kind of wood used in the floors, doors, wainscoting, window-frames, blinds, or sashes of their schoolrooms, simply because their attention had never been called to such common things. In a lesson on form, for example, the teacher may say, "On what kind of trees are the limbs horizontal, or at right angles to the trunk? None of you can Then I shall not tell you. Each of you answer. should look carefully at the trees on your way home to-night and be able to tell me to-morrow." How interesting that morrow's lesson when so many with the air and interest of explorers report what they found in the schoolyard, dooryard, cemetery, roadside or nearest woods. One such fact or truth which a child discovers for himself is worth a thousand told him by the teacher, for every discovery thus made invites and facilitates future acquisitions and fosters that habit of observation which, when early formed, is of priceless value. Similar lessons on the leaf, flowers, fruits, and

even the grain of the wood, with specimens in hand, favor clear perception and accurate discrimination. Of these six marks, the bark seems at first least distinctive, though to the careful observer each kind shows a distinct individualism in color, form, and in the lines, seams, or sutures. Children can easily see whether it is smooth or rough, notched or shaggy, hard or soft, thick or thin, tough or brittle. These studies will awaken love of trees, and make youths practical arbor-ists, so that they will want to plant and protect Then they will find that there is a peculiar trees. pleasure in the parentage of trees, whether forest, fruit, or ornamental.—*Florida School Journal*.

HORTICULTURE IN THE SCHOOLS.

This was one of the subjects debated at our Ottawa meeting, and was suggested by the reading of a paper contributed by Mrs. A. L. Jack, of Chautauqua Basin, P.Q. That something should be done in this direction was strongly advocated by Prof. MaCoun, A. A. Wright, and L. Woolverton, especially in view of the lamentable ignorance of the general public of this department. The result of the discussion was a resolution commending to the consideration of the Minister of Agriculture the importance of some knowledge of trees and shrubs,

the bringing about of this end, first-class teachers be, after a certain time, compelled to take a short course at the Ontario Agricultural College; and that the schoolyards be made ample enough to contain an arboretum of native forest trees and shrubs properly labeled.-Canadian Horticulturist.

In connection with the above, we reprint the following interesting article from the current number of the Horticulturist :-

HORTICULTURE AND THE YOUNG.

BY A. M. SMITH, ST. CATHERINES, ONT.

It seems to me that if our children were better instructed and thus made more interested in Horticulture, it would be a great step towards solving the question which we often hear asked and discussed, "How shall we keep the young folks on the farm?" for we who were brought up there all know that some of the most pleasant recollections of our childhood are associated with this subject. Who does not remember some favorite apple tree or other fruit tree, under whose shade he reclined when a boy, and listened to the humming of the bees amongst its blossoms, and the songs of birds on its branches, and what interest he took in the growth and ripening of its fruit, and in the gather-ing and eating of the same? Who can forget the fragrance of the old lilac and syringa bushes in the front yard, or the whiteness of the snowball, or the beautiful brightness of the morning glories that climbed over the porch and kitchen window, or the smiling faces of the old-fashioned tulips, pansies, peonies, poppies, sweet williams, and marigolds, that greeted him along the garden walk? Who Whe does not recall with pleasure the search for wild flowers in the forest, in the early springtime, and the gathering of wild strawberries in the meadows in summer, and the nutting expeditions of autumn? There is a natural taste in childhood for horticulture, and the question how to cultivate and develop it is one of great importance, and one which I am glad to see is taking a place amongst the discussions of our Fruit Growers' Association. The subject of introducing it into our schools and making experimental gardens of our school grounds, which was brought up at Ottawa, is one of importance and which I hope to see carried out; but in the meantime we should be doing something at home to interest our children there. How many of our farmers ever give their children a rod of ground to cultivate for their own, either for fruit or flowers? or give them a tree to plant, the fruit of which they may claim as their own? How few of them ever exercise any taste themselves in laying out their grounds, or in planting shade and ornamental trees, shrubbery or flowers, to make their homes attractive I and yet they wonder when their chil-dren go where these things are, that they should be attracted by them. I believe that the nice grounds and the well-kept lawns stocked with choice trees, shrubs, and flowers of our town and city residences, are one of the great attractions to farmers' sons and daughters, and that if the home yards were more tastefully adorned with them, where there is no valid excuse for their absence, the young people would be far less inclined to leave their country homes. Then interest the children at home in these things; give each one a plot of ground for his own; give them seeds and plants and trees even ; teach them how to cultivate them, and let them feel that they have an ownership in the farm, and they will not be in so great a hurry to leave it. A few years ago I was enlarging my fruit garden, and my wife suggested that] should plant a tree for each of the children. It was astonishing with what eagerness they all joined in with the suggestion, even to the youngest, a lit-tle girl of six years—"And can I have a tree too, papa?" she said, "and have the fruit all to my ownself?" Well, it was finally arranged that each member of the family should select a tree of what ever fruit they wanted, and they were planted. None entered more joyously into the scheme than the little ones, and an old uncle in his second childhood, who lived with us, and the care and attention that those trees received would put to shame most of our orchardists, each one vieing with the other to see who should have the finest tree and the first fruit. The old uncle's ripened first, a a golden apricot, which was the last fruit he ate beand of the care of lawns, to be taught, not as a fore he entered the golden gates to eat the fruit of given them. Let us sketch set study, but as a recreation; and that to aid in the tree which stands by the River of Life in the some of its possible results.

Celestial City. The fruit on the other trees has since ripened and the children will soon be separated, but I am sure none of them will ever forget their own fruit tree on the old homestead.

PLANTING ON ARBOR DAY.

(Written specially for Educational Journal.)

BY R. W. PHIPPS.

WHAT may be called the educational movement in favor of tree-planting-that in connection with the schools of the province-is destined, if properly managed, to be of great benefit to the community. But the way in which this can be best done, depends on the amount of ground obtainable, and one or wo other circumstances.

If the school ground be small, and need not be used for the purposes of a playground, that is to say, where a quiet country road, or an adjacent common, give ample scope for out-of-door amusements, the school plot can be made beautiful with green lawns, bright with flower beds, and dotted with ornamental trees, climbing plants can cover its fences, and wreath its verandah posts, the whole school and its surroundings presenting an appear-ance infinitely superior to that of the ordinary school-building in its plain unadorned lot.

Where, on the other hand, a schoolyard, say of half an acre, must be used as a play ground, per-haps the only thing that can be done is to border it with a row of trees, evergreens, I should think, on the north and west, ten feet apart ; deciduous trees on the east and south, at thirty feet apart. Perhaps here a word may be profitably said concerning the method of planting these or any trees. Trees will grow on rough poor soil, if planted so closely that in summer their foliage shades the whole earth beneath them, for then they mulch one another and moisture is preserved in the soil. But a tree planted at a distance from others in such soil labors under great disadvantages, and mulching, that is, laying straw or rough manure around the tree to a distance of three feet, is absolutely necessary in poor soils, and of great benefit in any soil. Or, if the surface of the earth be well stirred three or four times during the heated months, taking care not to injure the roots, it will answer the purpose better still. It is often, too, of great advantage, for the first two or three years, if the tree be at all large when planted, to hold it firmly by stakes and ligatures or cross pieces. The object is that neither passers by nor wind may shake the roots. But there are two points to be guarded against here, first, that if the bandage be tight it may check the circulation of the sap, next, that it may act as a lever to lift the tree. With a little care neither can happen.

Some soils need no preparation ; and, in fact; trees will grow on most soils. But how different is the manner of their growth. In the majority of cases, as the most important part of a gun is said to be behind the stock, so the pr r cipal part of tree planting should be done before the tree comes on the ground. Care should be taken that the earth be deeply stirred, mellow, and, if possible, rich. But if we dig deeply in stiff soils, some attention to drainage is necessary, else there is danger of forming water holes. In tree planting, there is, when done on an ordinary scale, no excuse for not doing it well. One or two loads of manure, not rough, but such as will thoroughly mix with the earth, and a day's digging, will prepare the ground for a good number of trees, the space is so small. At first not more than three feet square need be prepared, but in after years we must extend the circle of mellowed soil in advance of the roots. Or if you have stiff clay, some sand well mixed with it— surface sand—will be of great service; or among sand some clay. In fact, care for the ground be-fore planting, for the tree when planting, and for-both afterwards, and the tree will generally be as

both atterwards, and the tree will generally be as superior to one uncared for asa palace to a pigaty. But speaking of school efforts, what would really benefit, to a very large extent, the cause of tree planting, as far as the schools can aid it, would be some general measure to secure them each a larger piece of land, on condition that they should plant it with trees and care for them. Regulations too, might be laid down as to the manner of planting, the kind of trees, and the description of care to be given them. Let us sketch out a plan and notice

Suppose that, either by the government or the school sections, or both combined, an acre of land could be added to each rural school on some such conditions as suggested above. There are over four thousand such schools in Ontario. We should have throughout the province that number of beau-tiful little groves. Say these were planted each three-fourths with some cheap tree, such as maple, for cutting out, the rest with white ash or some other valuable wood to remain. At the end of thirty years there should be left on each acre about 500 valuable trees, eight or nine feet apart. In the meantime the other three-fourths would have been cut out for firewood, and would yearly have yielded a considerable amount to each school, while the trees standing at the end of thirty years ought to be worth between five and ten millions of dollars. be worth between five and ten millions of dollars. In the meantime successive pupils would have enjoyed the benefit of the groves; they would have given shelter to the schoolhouse in winter, certain climatic benefits might undoubtedly be expected, and each grove in addition would have formed a very valuable experimental plantation, for the farmers of the vicinity.

This is a matter for future consideration. At present let us hope that this Arbor day will be well observed and many thousand trees planted. In other countries this celebration is by no means confined to the schools, but in much more general. Every effort should be made to make it so in Ontario.

HARDY SHRUBS FOR SCHOOL GROUNDS. (Written specially for Educational Journal.)

J. HOYES PANTON, M.A., F.G.S.,

Professor Natural History, Ontario Agricultural College.

As the ornamentation of school grounds is be-ginning to occupy considerable attention, a leaf from our experience on shrubs upon the college grounds, may be of service to the teachers through-out the province, in enabling them to make a pro-per selection for planting on the approaching Arbor Day.

MANAGEMENT.

The shrubs may be planted singly or in clumps in the latter form they do best when all the land between them is cultivated; in any case, the soil should be cultivated around the shrub for a distance of three feet, so as to keep the soil clean and loose.

Great care should be exercised in planting, making a hole large enough to allow the roots to be arranged properly among the loose soil on the bot-On the approach of winter tender varieties tom. should be protected, by using coarse manure as a mulch above the roots, and covering the shrub with evergreen brush in a way best suited for protection. Any weeds which may appear from time to time, between periods of cultivation, after being tied may be left as a sort of mulch around the shrubs.

For school grounds I think it is wise to plant only hardy varieties. The following statement of our results will be of service to guide in making a selection; for shrubs which withstand the climate of Guelph may be termed very hardy and may be grown successfully in most parts of Ontario.

By paying attention to size of shrub and color of by paying attention to size of single and color of foliage, beautiful clumps, containing three to five shrubs, can be formed. Some attention should also be paid to the time of flowering, so as to have plants in bloom throughout the season. Having plants from different families will be of service in the study of botany, and thus the shrubs prove of practical use, as well as ornamental.

RESULTS AT GUELPH.

Anacardiaceae (Sumach Family).

Rhus (Sumach).-This genus is represented by four species which seem hardy.

Berberikaceae (Barberry F.)

Berberis (Barberry).—Both species, common and purple, have done well. The latter is a very handsome shrub, but the family has a bad reputa-tion for hain of the family has a bad reputation for being a source of the rust we find on wheat.

Caprifoliaceae (Honeysuckle F.)

Lonicera (Honeysuckle).—Six species of this feet high, flowering July and August. enus are hardy and flowering early, and are among 14. Symphoricarpus glomerata (Indian Currant). genus are hardy and flowering early, and are among the most attractive shrubs on the lawn.

Virburnum (Snowball).--Seven species, hardy. In some the berries give the shrubs a beautiful appearance.

Weigela.—This genus is not quite so hardy as the preceding, but its beautiful bell-like flowers are well worth some extra care.

Sambucus (Elder.)—Two species ; do well. Symphoricarpus (Snowberry.)—More attractive for the beauty of its white berries than the small flower it bears.

Cornaceae (Dogwood F.)

Cornus (Dogwood).-Three hardy species thrive in this family. C. stolonifera is interesting on ac-count of its reddish bark.

Leguminosae (Bean F.)

Caragana (Pea-tree.)—This genus of Russian shrubs is represented by several hardy forms which are dwarf-like in appearance, but seem to be doing well.

Colutea (Bladder senna.)—Attractive for its yel-low flowers and peculiar bladder-like reddish pods.

Oleaceae (Olive F.)

Syringa (Lilacs.)-Eight species; hardy.

Forsythia (Golden Bell) and Lingustrum (Privet.) Do well.

Chionanthus (White Fringe.)-Has not been as thrifty with us as the preceding, but the shrubs seems to have been injured by some other means than the climate.

Rosaceae (Rose F.)

Spiraea.-This genus is represented by ten hardy varieties, which are among the most beautiful shrubs we have. Some flowering in spring, S. chamaedri-folia, S. aurea; others in July, S. Billardi, S. callosa.

Pyrus Japonicus (Japan quince)—Not so hardy as some of the preceding.

Rosa.-In this genus the briers are thrifty.

Saxifragaceae (Saxifrage F.)

Philadelphus (Mock Orange.)—Six varieties in this genus are very interesting for their hardiness and their beautiful white fragrant flowers with which some of them are covered in June.

Ribes (Flowering Currrants).—Five varieties have done well, and in early spring beautify the lawn with their golden and crimson flowers.

Hydrangea - paniculata (Shrub Hydrangea).-This beautiful shrub, flowering in August, blooms at a time when few are in flower. It is not quite so hardy as the other representatives of this family.

The following fourteen shrubs are the best adapted for ornamental purposes on account of their size, time of flowering, and hardiness :--

I. Berberis purpurea (Purple-leaved Barberry, three to five feet high, flowering May. Purple foliage.

2. Ribes aureum (Golden Currant), five to seven feet high, flowering May and June.

3. Syringa Persica (Persian Lilac), four to six feet high, flowering May and June.

4. Lonicera Tartarica (Tartarian Honeysuckle), five to nine feet high, flowering May and June.

5. Viburnum opulus (Snowball), five to nine feet high, flowering May and June.

6. Spirae chamaedrifolia (Germander - leaved Spiraea), three to five feet high, flowering May and June. Very handsome.

7. Weigela rosea (Rose-colored Weigela), three to six feet high, flowering June.

8. Philadelphus coronarius (Mock Orange), five to ten feet high, flowering June.

9. Spiraea aurea (Golden-leaved Spiraea), five to seven feet high, flowering June. - Golden-colored foliage.

10. Symphoricarpus racemosus (Snowberry), three to five feet high, flowering June.

11. Colutea arborescens (Bladder Senna), four to six feet high, flowering June,

12. Spiraea sorbifolia (Ash-leaved Spiraea), four to seven feet high; flowering July. 13. Spiraea Billardi (Pink Spiraea), four to six

Beautiful flowers and very hardy.

Special Papers.

AN ADDRESS BY LORD LANSDOWNE.

THROUGH the kindness of a friend we are enabled to place before our readers the following address delivered last autumn to the students of the Ottawa Normal School by His Excellency the Governor-General. The encouraging and thought-ful words of Lord Lansdowne will be read with special interest in view of the fact that he is so soon to leave our shores :

Principal and students of the Normal School ; I thank you very much for the kind words in which you have welcomed us here to-day. You know that a few weeks ago I looked forward to the pleasure of meeting you. I was unluckily prevented on that occasion, and I am very glad to have the good fortune to have come here upon this. It al-ways gives me pleasure to visit this school. These Normal Schools occupy a very distinct and noteworthy position in the admirable educational system of this great Province, and it is scarcely too much to say that in regard to the facilities which they offer for the professional training of teachers they are unsurpassed by any similar institutions upon the American continent. Let me, however, before I go furthur, express the interest with which I inspected the Kindergarten section of the Model School. It had never been my good fortune to see the exercises of a Kindergarten school betore, and I was very much struck with their ingenuity, and with the intelligence and brightness of the little pupils who went through them. The method in which they are conducted illustrates two great educational principles. The first of these is that we cannot begin education at too early an age, and the second, which is, I think, applicable not only to the youngest students but to all children, is that we cannot, be at too great pains to make education we cannot be at too great pains to make education bright and palatable to those to whom it is given. Modern education has made very great strides in that respect. I was reading the other day an an-ecdote told by James Russell Lowell in an address delivered not very long ago at Harvard College, of a little friend of Scott's who wrote to him telling him the he could not conceive (the heribility) him that he could not conceive "the horrible and wretched plague" that her multiplication table was to her. She went on to say that "the most devilish thing in the multiplication table is eight times eight and seven times seven." I feel no doubt that under the Kindergarten system even seven times seven and eight times eight are capable of presentation in an endurable, if not an acceptable, form to those who have to learn them. I have certainly no intention of inflicting upon you a lecture upon teaching. The subject is a special one, and those who have no practical acquaintance with it have little right lo lay down the law with regard to it. In spite of this, there are probably no peo-ple who get so much good advice given to them as school teachers. The whole race of teachers ought to be angels rather than human beings by this time if lectures could make them good. Upon the general principles we shall probably all of us be pretty well agreed, namely, that the object of teaching should be not to load the mind with a mass of ill-assorted details, but to put it through such a course of intellectual training as will strengthen its fibre and add to its activity, just as gymnastics add to the strength and activity of the human body. We shall also, I think, all of us be disposed to admit that some part of the subjects taught, particularly those in the more advanced courses, should be selected with some reference to the vocation followed by the student in after life. Most of us will, I presume, also agree that thoroughnes in teaching and learning is a great point, and that we should as much as possible avoid mere "cram." I must say, however, with regard to the I must say, however, with regard to the question of cram, that it has often struck me that we are needlessly hard upon cramming and the crammers. I cannot myself conceive of any system of education which will altogether get rid of cram. Cram is the natural outcome of examinations. Now, although examinations may be over-done, I believe they are indispensable. There is no other manner of determining the proficiency of a large number of pupils, so that in the interest of the teacher himself examinations are likely to be insisted upon. They afford, moreover, a test not

(Continued on page 386).

Correspondence.

OUR OVERCROWDED PROFESSION.

- 24

MR. J. WALLIS, in his paper on this subject, 15th ult., says, and every well informed thinker must agree with him, "I do not think the root of the evil has yet been reached." The advantages, both direct and indirect, of an exhaustive discussion would be so great as to make it well worth the time, trouble^a and space even if a few millions of pages of sentimental platitudes, and educationa taffy be somewhat ruthlessly sacrificed.

Teaching is governed by the same economic laws as everything else, and as in every other case, legislation should be limited, as much as possible, to facilitating their operations. It should never be framed in favor of, or against, any legitimate class. Unnecessary legal interference may appear to accomplish its object. It always causes more or less loss and trouble, and, eventually, things adjust themselves to the nature of the circumstances, plus or minus the friction.

The country requires a certain kind of labor. Any scheme for increasing the cost by arbitrary regulations is wrong and more or less ineffective.

Any system, like the one now in force, of flooding the market by the wholesale manufacture of teachers at the expense of the country, is also wrong, fails to accomplish the best results and is, incidentally, very mischievous.

In teaching, as in every thing else, the payment offered, money, honor, position, etc., fixes the amount of valuable successful qualities within the reach of judicious selection. If the country wanted horses and limited the price to forty dollars, the stables would be full of plugs.

If the government crammed and licenced every possible boy and girl, those possessing the more valuable, successful qualities would be drawn off to more profitable occupations even more than at preleaving the mere sticks to scramble for a sent. precarious existence with the hordes of just weaned educators. The consequent low price and low quality of the general public teaching would restrict a really good education to the rich. Private schools and special instruction are increasing even in New England now. Besides, it would increase, if pos-sible, the already dangerous disgust at everything but what is imagined to be a genteel occupation, or soft place, and intensify the enormous, universal, natural thirst for a gaudy daily appearance in an altitudinous collar or extrudinous dress improver. To quote recent operations in the market : Hoeing potatoes was firm at \$33 per month, cramming eight to ten year old children with the beauties of Tennyson, etc., by printed analysis, weak and unsteady at \$18 33 1/3.

There is no educational "Safe Cure," "Discovery," pedagogics in thirteen weeks warranted, or patent system of any real value. All that is necessary is honest intention and good business common-sense. Acknowledge, practically, teaching to be a profession, a life work; require as in every other business, except navvying, loafing, etc., those who want to be teachers to serve an apprenticeship as pupils, and gain some experience of the actual work, before being trusted with the sole charge of the school. "Teachers advocated this, and inst.

Want of assistance is the crying necessity in most of the schools all over the country. From a few dollars, or even nothing, to \$200 per annum, raised or lowered according to the quantity and quality of the supply, and guarded, by a sufficient pressure of strictly professional work, from being used as a means of support while seeking what is imagined to be "something better"—would, not only by the process of "the survival of the fittest," give the best obtainable teachers—but would, unless prevented by too much red tape and patent system, render it possible for a large and ever inc easing meajority of all the schools in the country to have th advantages of the more useful branches of the High School work. All good work, conforming to the official programme, should be not even merely supercilously accepted, but encouraged.

If there be such a scarcity of lawyers, doctors, ministers, clerks, etc., as to demand state interference, the same system will apply. It is absurd, and a vicious misuse of public money to prepare a lot of men and women for a necessary work with the proof before us that all but a small percentage

that are worth anything, will abandon the work when their labor begins to be most valuable.

There is, and can be, naturally and properly, no surplus of those who ought to be teachers. That some thousands of young men and women of fair muscle, defective education and very ordinary brains indeed, were crowding after a hundred positions, worth in many cases less than \$250 per annum, while the C. P. R. was paying from \$2 to \$5 per day for common labor, and good laundry work was paid in proportion, is an illustrative part of one of the grand economic questions of the day, that requires cultivated thought and uncommon common sense to deal with.

and and noblest of all. To disseminate the truth that, in proportion, as the people are *well educated*, patriotic, and benevolent, they will understand the exceeding profitableness of making every effort, and giving love, honor, and money to secure the best and most successful qualities obtainable.

MANITOWANING. G. F. PAYNE

OVER-SUPPLY.

SEVERAL opinions have been presented on the subject of "over-supply," and suggestions made as to its remedy. In order that the interchange of opinion may still go on, I respectfully submit mine for the approval or criticism of those interested in the bettering of the educational system of our Province.

Our system is, without doubt, a good one, but it does not meet all the requirements and demands of the advancing age. The faults are too apparent to need enumeration, and the present question subordinate to no other—is how to reduce the supply of teachers, and constantly increase the efficiency of those engaged in the work.

In order to remedy any existing evil, it is necessary first to get at the root of it. To find out, then, the cause of this over-supply is the first step, and after finding out the cause and removing it the difficulty vanishes.

With a view to this we must first ask, "Why are there so many in the profession, and so many more pressing into it year after year?"

One answer is contained in "Examiner's" statement that it is easier to slip into the profession and stay there than it was seven years ago. The thirdclass of to-day is easy to obtain, and when it expires an extension can be obtained which insures the holder for another term of three years. Besides, the provincial character of it makes the certificate sought after by the majority.

Another reason is that a great many aspirants to the professions of law, medicine, and the ministry, make teaching a sort of stepping-stone to the end at which they are aiming. This has a degrading at which they are aiming. This has a degrading tendency; they teach only for money to further their ends. Desire to rise is certainly laudable in anyone, and deserves encouragement, but a man (or woman either) can rise in the teaching profession, and I place it above both law and medicine, on a level with (and I am somewhat inclined to place it above) the ministry. To offset this state-ment regarding their teaching for money and not for the benefit of the schools, they may say that they work hard. We grant that, but their work is in their own interests, in the line of the profession they are aspiring to, and not in the line of educational thought which shall promote the interests of the immortals under their charge. It should be the aim of principals to secure the services of those who intend to make teaching a life work. It is not often that those intending to enter other professions attempt anything higher than a third-class Some of them do pass the second-class certificate. non-professional, and by that means get into schools for three years (often less), thus occupying positions that might have been taken by others with second-class Normal certificates, who might have retained the position for a sufficient length of time to make their influence felt in the interests of education.

a vicious misuse of public money to prepare a lot of men and women for a necessary work with the proof before us that all but a small percentage upon it as an easy way of making a living (they life.

generally take their ease too), while others enter with the excuse that their health is such as will not admit of their entering any other field of labor. Such should take to some more health-giving employment, for if a healthy liver and good digestion are anywhere needed, they are indispensable in the school-room.

Other reasons might be advanced why such numbers seek the examination halls every summer, but these will suffice for the present article.

I will now suggest some changes, which in my opinion will remedy, in part at least, the existing evil under consideration.

evil under consideration. Two of the changes I favor have aready been mentioned, viz., that no third-class certificates be issued, and no certificates of any grade be written for by anyone under twenty-one years of age; or, if written for at eighteen, that another examination be passed at twenty-one, upon which the certificate be issued. Objection may be taken to the first change mentioned, on the ground that small schools cannot afford to pay a second-class teacher. The changes I propose will, I think, fully meet this.

(1) That all candidates write on the same papers, and all examinations be conducted after the fashion of the Civil Service Examination. (2) That all certificates be granted for life or good conduct, and the holders be required to write at stated periods (once every three or four years) on some subject previously prescribed, bearing on the work of education. (3) That all schools be graded according to the value of the rateable property in the section and the salaries fixed, so as to prevent the system of trustees advertising for teachers and teachers "tendering" for schools, as no board of trustees is capable of judging from an application, even though it be accompanied by testimonials, whether the applicant will be suitable for the needs of their school or not. The result often is that the school is given to the "lowest bidder." (4) That the power of engaging teachers be taken from trustees and given into the hands of a committee specially appointed; this committee to settle all disputes arising between teachers and trustees, and thus save teachers from unjust dismissal. (5) That teachers be graded as well as schools, not according to their Normal school standing, but to their actual success as teachers of schools. As they succeed in the profession, promote them to a more important position and a higher salary. This will have a tendency to lengthen the stay of a teacher in one school, and induce him to use every possible means by which he may succeed, and prevent the present system injurious to both teacher and school, of changing every year or two.

In addition to this, I express my agreement with "Teacher's" opinion in the issue of 2nd April, that intending teachers, both male and female, apprentice themselves for three years' in some graded school, and do not start out experimenting on forming character in others while their own remain undeveloped. Many trades require three years to learn, some of them more. Preparation for the ministry, for law and medicine, is not made in a short period of thirteen weeks, and why so important a calling as teaching should be the single exception is hard to understand.

I would especially call attention to the proposed change of making the examinations and the teacher's position similar to the Civil Service examination and position. In my opinion it will give teachers more liberty of speech and action. I hope to see further opinions, and also to see something *done* soon in this direction.

ANOTHER TEACHER.

ONE CAUSE OF THE TROUBLE.

DEAR SIR,—I have read with much interest the articles in your JOURNAL on the over-supply question, and I believe that it is a question that should be fully discussed, as it is one of very great importance, not only to teachers but also to the country at large.

I notice that some suggest raising the standard of age as a means of overcoming the difficulty. I consider this a good plan. I myself started to teach while I was very young, and I believe it was injurious to me, and perhaps to every pupil that I taught. If I had not commenced to teach till three years later than I did, I believe I should have been a better teacher and a happier man my whole line

But while we suggest remedies, would it not be well for us to consider the cause of this trouble, also the part the teacher himself has in it.

It is generally acknowledged that there is a tendency at the present time to change from physical to mental employment. There seems to be a desire on all sides for a higher social life than is to be found in many places among the laboring and farming community, and this desire tends to cause farming to be looked upon as drudgery and manual labor as degrading. Young people in search of a labor as degrauing. Young people in search of a pleasant and easy life, at once seek some of the learned professions, taking teaching as a "step-ping stone to something higher." People talk of the thousands a year earned by physicians, lawyers, etc., till young people look upon these profesyers, etc., thi young people look upon these processions almost as mines where gold is to be had for the picking up. Then again, we see young women entering the teaching profession as the easiest means of becoming independent; some of them have need of the help thus gained, some have not.

Now what are the teachers themselves doing i It is true that in their conventions they often discuss the matter and point out remedies, but when they get back to their schools, do they not encourage every bright and promising pupil to do his utmost to prepare for high school. And once in the high school, do not the teachers there direct their energies to preparing them for teachers?

I think that if teachers would consult their own interests, they would turn their attention to giving pupils a good education rather than pressing them into a profession in which many of them are certain to fail to their life-long injury, and to the injury of hundreds of others-they would strive to teach them that the one who fills a low position well is more noble and probably more happy than the one who fills a high position poorly. If teachers would do this, in my opinion there would be less trouble owing to an over-supply in the profession.

Yours truly, W. MOORE. LITTLE CURRENT, April 6, 1888.

English.

All communications intended for this column should be sent to W.H. Huston, M.A., care of THE EDUCATIONAL JOURNAL, Toronto, not later than the 5th of each month.

THE FACE AGAINST THE PANE.

BY M. E. HENDERSON.

So strongly are our sympathies appealed to in this poem, that Mabel, patiently watching, wist-fully peering out into the night, her face pressed against the window-pane, seems to us no mere poetic creation, but a suffering human creature.

Her natural timidity is heightened by hearing the peculiarly shrill cry of the seagull and the melancholy moaning of the waves ceaselessly rolling up on the beach.

To her feverish imagination, the scream of the seagull seems ominous, and the willow-tree, tossed by the wind, suggests the uncontrollable convulsiveness of grief.

Her anxiety for her father and for her lover, whose boat is still buffeted by the waves, is so real, and so simply described, that the interest of the

und so simply described, that the interest of the pupil in the story will be very readily enlisted. Underlying the touching narrative of merely personal sorrow is the lesson of a sympathy broad enough to include the great human brotherhood,

"Men, my brothers, men, the workers,"

and especially those toilers on the sea, whose dangers so often seem to us mythical because they are distant, though of their terrible reality the annual records of a herring fishery, and the rusty anchors and shattered timbers cast up on an ironbound coast, afford only too indisputable proof. The prayer,-

"Hear us when we cry to Thee

For those in peril on the sea," to thoughtful pupils should have a very real mean-

In connection with this poem, read "The Three Fishers," by Charles Kingsley, p. 220, Fourth Reader.

4. "A-trembling in the rain." The force of this expression may be seen by the pupils if a practical illustration is resorted to. They have observed the light of a gas-jet or of a lantern when the rain is failing. The light appears reflected in myriads of rain-drops, and, as these in succession fall, the light appears to quiver through hem.

6. "Screech." The sound of the word suggests the cry.

6. "Sea-bird." Sea-gull, a peculiarly graceful bird.

7. "Breakers." Either a bar to break the force of the waves, or the billows themselves; in this instance, the latter.

8. "Making moan." Moaning. Strong alliterative effect.

9. "Wind . . sobs and grieves." Perhaps the wind is here represented as mourning over the wreckage and dire disasters that it may cause. Compare :

And Ardennes waves above them her green leaves,

Dewy with nature's tear-drops, as they pass,

Grieving, if aught inanimate e'er grieves, Over the unreturning brave."

9-10. "Eaves of the cottage." Ask the pupils to describe the situation of Mabel's home. The lonely cabin of a fisherman could not but inspire melancholy thoughts in one naturally timid.

11-15. By questioning, obtain from the pupils the fact that in moments of fear or strong nervous excitement, common objects may, to the terrified imagination, assume supernatural forms.

The willow-tree, so familiar to the girl, now ap-pears as an old witch, swaying to and fro, wildly wringing her hands.

16. "Wringing." Why not clasping, pressing? Do people wring their hands to express pleasurable emotions?

17. "Gaunt." Having the lean appearance peculiar of old age. "Palsied." Shaking, trembling.

23-27. In order to divert Mabel's attention from the storm raging without, she is urged to leave the window where she is faithfully watching, to prepare the evening meal and make the cottage cosy and inviting for her father and lover who are braving the elements.

24. "Cabin." The fisherman's cottage.

25-28. Mabel quite breaks down on being reminded of the danger to which her father and lover are exposed.

28. "Mabel—timid Mabel." Spoken chidingly. Notice the expression, "little Mabel," implying a desire to protect.

30. "A-steeping." The use of the prefix a is archaic, though n this instance it is perhaps a provincialism.

32-34. These lines are intended to be reassuring How could there be danger to her brave-hearted lover in a boat so seaworthy, or to her father, who is thoroughly acquainted with the rocks of the coast ?

33. Is the reef referred to above or below the surface of the waves?

34. The waves dashing against the reef are whipped into foam.

39-55. In this splendid description of the storm, the raythmical effect will be scarcely perceived by the pupil, if the passage is not first read aloud by the teacher.

39. The leaden sky is laced with serrated lines of vivid lightning.

40. "Rolls." In reading, employ median stress, the swell to be placed on the vowel sound.

41. "Lullings," pauses, intervals. This line should be read in a softer tone than line 40, and should be read in a solice tone that the meaning may be more clearly brought out by prolonging the vowel sound in the word " lullings." Pause slightly after the word.

42. "Solemn." Does this word describe the bell, or is the meaning of the line, " The bell tolls solemnly?

43. "Souls." The reference here is not to the spiritual essence, the undying part of man; the meaning is simply, "lives lost at sea."

Read lines 42, 43, slowly, solemnly, and in a measured tone; dwell on the word *tolls*, prolonging the vowel sound, in order to imi are the tolling of a funeral bell.

44. " No sexton sounds" the knell.

On the first syllable of sexton, employ the rising infl-ction, and on the second, the falling inflection circumflex).

44. Note the unusual use of sounds.

46. "Unseen fingers." The wind. The poet represents the bell as being tolled by some super-natural agency, unobserved in the mad career of the wind.

Line 44 prepares us for this idea.

47. "Tearing by." Sweeping by. The expression suggests the resistless force of the wind.

48, 49. These lines should be read with imita-tive effect. On *tolls*, employ median stress and falling inflection, prolonging the vowel sound.

49. See line 43.

50. May God have compassion on them !

56. Notice the abrupt transition from the emotion of pity to energy.

59. "Shoals." Sometimes shallow places. In this instance sand-banks or rocks, which render difficult the entrance to the harbor.

60. The rocket (a danger signal) is sent from the lighthouse in order to indicate to ships sailing homeward, the position of the shoals; also to discover the position of ships in distress.

62, 63. After the gleam of the rocket fades, waves of light undulate the dark sky, as if they were "echoes of the gleam."

64, 65. These questions will likely elicit the reply that Mabel's anxiety is blanching her face.

66. "Helpless sail." The poet seems to claim our sympathy for the very vessel, no longer under the control of the sailors.

70. Notice the emphatic repetition of the state-ment that the "sail" has foundered.

71-74. Note the under-current of pain in the speaker's words, especially marked in the repeti-tion of "no more."

75, 76. The beams of the rising sun redden the shallow water and the shore to resemble rubies.

79. "Ancient." Old, weather-beaten.

80. "Pleasant." The brightness indicated in lines 75-80 finds a rugged contrast in 81-85.

82. Note how the poet arouses the expectancy of the reader.

83. "Stark and white." Stiff and pale.

84. " Ah ! so ghastly," horribly white. In reading these lines, pause after hands, white, and ghastly.

85. "With sea-weed in their hair." Note the suggestiveness of this picture.

81-89. In the fisherman's cottage, at the window still is Mabel, but it is her last vigil. Her unseeing eyes will never again witness the painful scenes of earthly strife. The devoted maiden,

> " Cold, with the sightless face Turned to the skies,'

sees with spiritual vision the beacon light.

The teacher, in going over the poem, should obtain from the pupils the substance of each incident in the whole poem.

After the story has been read, the pupils should be asked to paraphrase it.

Great care should be exercised by the teacher in the oral study of the poem, as the ability of the pupils to express the scory in their own words will depend upon their comprehension of its meaning and their appreciation of its beauty.

Next, the poem should be treated as a lesson in reading. Many of the passages in the poem may be read by the class in unison with advantage, as the previous study of the meaning of the poem will tend to an intelligent rendering of it. Where, reading in unison is asked for, the passage should always be first read by the teacher.

26

BUSINESS NOTICES.

WE direct attention to the advertisement, 16th page, of the "Concise Imperial Dictionary," It is our intention to handle this Dictionary in connection with the JOURNAL, and we offer it in the best binding, and the EDUCATIONAL JOURNAL for one year, both for \$5.50, plus 14 cents for postage. Subscribers who are paid in advance may deduct the amount they paid for one year, send the balance, and have the book at once.

WE desire to repeat our request that Inspectors and Secretaries of Associations send us programmes of their forthcoming Conventions as soon as issued. We desire to make announce ments of such Conventions, with somewhat fuller particulars than may be found on a departmental list. Moreover, as this list contains only the names of Inspectorates in which Teachers'Institutes are held, a great many Conventions of Teachers, not being upon that list, are unknown to us, and unannounced. Give us an opportunity to make your operations known to the whole body of Teachers, all of whom take an interest in what concerns the profession. Also, please send us a summary of proceedings.

FOLLOWING is a list of coming Teachers' Institute Meetings, with names of Inspectors who will attend them, so far as we have received them to date :---

S. Wellington, at Guelph, May 3rd and 4th. Mr. Houston, Parliamentary Librarian.

Glengarry, at Alexandria, May 10th and 11th, Dr. McLellan.

East Kent, at Ridgetown, May 10th and 11th. Inspector Tilley.

Northumberland, at Cobourg, May 10th and 11th. Mr. Houston.

East Lambton, at Watford, May 10th and 11th

Carleton, at Ottawa, May 17th and 18th. Dr. McLennan.

Editorial.

TORONTO, MAY 1, 1888.

MATTHEW ARNOLD.

THIS distinguished man of letters, whose sudden death from heart disease on the 16th ult. has called forth such widespread and profound regret in literary circles, was the son of the celebrated Dr. Arnold, of Rugby, whose educational fame is wide as the English speaking world. Matthew Arnold was born in 1822, at Laleham. He received his education in its various stages at Winchester and Rugby schools, and at Balliol College, Oxford. He was elected scholar in 1840, when but eighteen years of age. Three years later he won the Newdigate prize for English verse. He graduated in honors in 1844, and the next year was elected a Fellow of Oriel College. From 1847 to 1857 he occupied the position of private secretary to the late Lord such as "God and the Bible," "Literature and Lansdowne. In 1857 he married and in the Dogma," etc. In these he dissects religious

same year received an appointment as one of the Lay Inspectors of Schools, under the Committee of the Council on Education. In this position, which he retained until a short time before his death, he rendered excellent service to the cause of public education.

Mr. Arnold first gained literary notice as a poet. His first publication was "Strayed Reveller, and Other Poems." This was published in 1848, over the signature "A." In 1854 he published a volume of poems over his own name, made up of new pieces and selections from previous volumes. In 1857 he was elected Professor of Poetry at Oxford, a position which he continued to hold for ten years. In 1858 he published "Merope," a tragedy after the antique, prefaced with a treatise on the principles of Greek tragedy. Three years later, in a course of lectures on translating Homer, he advocated the adoption of the English hexameter as the best equivalent of the Homeric ryhthm, an opinion which found few adherents. In the same year, 1861, he presented the first of a series of Reports on the Educational Systems of France, Germany, and Holland, which countries he had visited as Foreign Assistant Commissioner to the Commissioners appointed to inquire into the state of popular education. In 1865 he again visited the continent to acquire information respecting foreign schools for the middle and upper classes. In 1886 he made a third visit, to procure for the Education Department information on certain questions connected with the maintenance and management of elementary schools, and published on his return a valuable report. He first visited the United States in 1883, and again in 1886. The three discourses delivered during the first visit were afterwards published and made the last volume of his works given to the public. In his recent article in the Nineteenth Century, in which he gives the result of his latest observations and reflections on the United States, favorable and unfavorable criticism are mingled, but the comparative moderation of the latter did not prevent it from arousing considerable irritation in the minds of many in the great Republic, whose citizens are much more used to praise than to dispraise.

Mr. Arnold's collected poems were reprinted in 1877, and again in 1881 and 1885. He has edited the Prophesies of Isaiah, and selections from Wordsworth, Byron, Johnson, and Burke. He published in 1879 a volume of mixed essays, and in 1882 a volume bearing the title of "Irish Essays and Others." During his later years he confined himself almost exclusively to prose, of which he was one of the greatest English masters. His numerous essays on political, social, literary, educational, and religious topics, are models of clearness and elegance in style, as well as of vigorous and subtle thought and profound, trenchant criticism. The elegance is that of artistic simplicity; the criticism is, unhappily, mainly of the destructive kind. This latter feature is painfully prominent in some of his larger works,

creeds and doctrines with the most unflinching and audacious boldness. He was an apostle of religious doubt in its modern phases. The prevalence of this element renders his more serious works peculiarly unsatisfying, notwithstanding the preëminent talent which shines forth from every page, and casts a tinge of sadness over his life history. Though the son of Arnold of Rugby, one of the strongest and bravest of Christians, he utterly failed to lay hold of the strong Christian faith which was the secret and the motive power of his father's noble and ennobling career. The tone of Matthew Arnold's writings, so far as they touched the sources of our highest hopes and fears, was uncertain, vacillating, and depressing. It is impossible to know what he believed or disbelieved in reference to God and a future life. His influence went to unsettle rather than to strengthen; to pull down rather than to build up. One cannot rid oneself of the conviction that his own inner life must have been peculiarly unhappy. Endowed with a lofty moral nature, a large capacity for appreciating the highest truths, his thoughts and aspirations seem to have constantly fallen short of any satisfying goal. But he was, nevertheless, a man of unstained purity, of transparent honesty, of unflinching moral courage. He never hesitated to say the thing he believed to be true. and he never pretended to believe that which he could not make a matter of personal conviction. His name and fame as a man of spotless integrity, and a writer of singular brilliancy, will endure long after his dreary agnosticism shall have been forgotten.

The poem on "Rugby Chapel," which will be found in the High School Reader, and is one of the selections prescribed for the next Third Class Teachers' Examination, will be familiar to most of our readers. It is a beautiful and touching tribute to the memory of his revered, father, and is pervaded throughout, both in rhythm and in sentiment, with a sad, sombre, melancholy, exquisitely adapted to the mournful reminiscences connected with the theme. Those who have studied it will be interested in a few extracts which we have collated from other of his poems. We present them simply as samples of his varieties of style and his philosophy of life, without further remark or criticism, for which we have no room :---

FROM "ABSENCE."

THIS is the curse of life 1 that not A nobler, calmer train Of wiser thoughts and feelings blot Our passions from our brain ;

But each day brings its petty dust Our soon-choked souls to fill ; And we forget because we must And not because we will.

FROM " DOVER BEACH."

AH, love, let us be true

To one another ! for the world, which seems To lie before us like a land of dreams, So various, so beautiful, so new, Hath really neither joy, nor love, nor light, Nor certitude, nor peace, nor help for pain ; And here we are as on a darkling plain, wept with confused alarms of struggle and of fight, Where ignorant armies clash by night.

27 -88

FROM "EMPEDOCLES ON ÆTNA."

FOR, from the first faint morn Of life, the thirst for bliss Deep in man's heart is born ; And, skeptic as he is, He fails not to judge clear if this be quenched or n. Nor is that thirst to blame. Man errs not that he deems His welfare his true aim. He errs because he dreams The world does but exist that welfare to bestow. We mortals are no kings For each of whom to sway For each of whom to sway A new-made world upsprings, Meant merely for his play ; No, we are strangers here; the world is from of old. In vain our pent wills fret, And would the world subdue, Limits we did not set Condition all we do ; Born into life we are, and life must be our mould. Born into life !---man grows Forth from his parents' stem, And blends their bloods, as those Of theirs are blent in them ; So each new man strikes root into a far fore-time. Born into life, we bring And, when here, each new thing Affects as we come near ! To tunes we did not call our being must keep chime. We do not what we ought, What we ought not we do. And lean upon the thought That chance will pull us through ; But our own acts for good or ill are mightier powers. Yet, even when man forsakes All sin-is just, is pure, Abandons all which makes His welfare insecure-Other existences there are that clash with ours. Like us, the lightning fires Love to have scope and play; The stream, like us, desires An unimpeded way; Like us the Libyan wind delights to roam at large. Streams will not curb their pride The just man not curb their price The just man not to entomb, Nor lightnings go aside To give his virtues room; Nor is that wind less rough which blows a good man's barge. Nature, with equal mind, Sees all her sons at play, Sees man control the wind, The wind sweep man away : Allows the proudly-riding and the foundering barque. And lastly, though of ours No weakness spoil our lot, Though the non-human powers Of Nature harm us not, The ill deeds of other men make often our life dark. What were the wise man's plan ?---In this sharp, toil-set life, To fight as best he can, And win what's won by strife-But we an easier way to cheat our pains have found. THE LAST WORD. CREEP into thy narrow bed, Creep, and let no more be said ! Vain thy onset ! all stands fast. Thou thyself must break at last.

They out-talk'd thee, hissed thee, tore thee ? Better men fared thus before thee ; Fired their ringing shot and pass'd, Hotly charged—and sank at last.

Charge one more, then, and be dumb ! Let the victors when they come, When the forts of folly fall, Find thy body by the wall !

FROM "OBERMANN ONCE MORE." In his cool hall, with haggard eyes, The Roman noble lay ; He drove abroad, in furious guise Along the Appian way.

He made a feast, drank fierce and fast, And crown'd his hair with flowers-No easier nor no quicker pass'd The impracticable hours. The brooding East with awe beheld Her impious younger world, The Roman tempest swell'd and swell'd, And on her head was hurl'd. The East bow'd low before the blast In patient, deep disdain; She let the legions thunder past, And plunged in thought again. So well she mused, a morning broke Across her spirit grey, A conquering, new-born joy awoke And filled her life with day. Poor world," she cried, "so deep accurst, That runn'st from pole to pole To seek a draught to slake thy thirst-Go, seek it in thy soul." She heard it, the victorious West, In crown and sword array'd 1 She felt the void which mined her breast, She shivered and obey'd. She veil'd her eagles, snapt her sword, And laid her sceptre down ; Her stately purple she abhorr'd, And her imperial crown. She broke her flutes, she stopp'd her sports, Her artists could not please She took her books, she shut her courts, She fled her palaces. Lust of the eye and pride of life She left it all behind, And hurried, torn with inward strife, The wilderness to find-Tears wash'd the trouble from her face ! She changed into a child ; 'Mid weeds and wrecks she stood-a place 'Mid weeds and wrecks sne stood—a place Of ruin—but she smiled. Oh, had I lived in that great day, How had its glory new Fill'd earth and heaven and caught away My ravish'd spirit, too 1 No thoughts that to the world belong Had stood against the wave Of love that set so deep and strong From Christ's then open grave. No cloister floor of humid stone Had been too cold for me; For me no Eastern desert lone Had been too far to flee. No lonely life had passed too slow, When I could hourly scan Upon His cross, with head sunk low, That nailed, thorn-crowned man. Could see the Mother with the Child Whose tender winning arts Have to His little arms beguiled So many human hearts t And centuries come and run their course, And unspent all that time Still, still went forth that Child's dear face, And still was at its prime. Ah, ages long endured his span Of life—'tis true received— That gracious Child, that thorn-crown'd Man 1 He lived while we believed. While we believed, on earth He went, And open stood His grave, Men call'd from chamber, church and tent, And Christ was by to save. Now He is dead ! Far hence He lies , In the lone Syrian town: And on His grave, with shining eyes, The Syrian stars look down. FROM "A WISH," I ASK not each kind soul to keep

Tearless, when of my death he hears, Let those who will, if any, weep ! There are worse plagues on earth than tears.

I ask but that my death may find The freedom to my life denied; Ask but the folly of mankind Then, then, at last, to quit my side.

Spare me the whispering, crowded room, The friends who come and gape and go;

The ceremonious air of gloom — All which makes death a hideous show !

Nor bring, to see me cease to live, Some doctor full of praise and fame, To shake his sapient head and give

The ill he cannot cure a name.

Nor fetch to take the accustom'd toll Of the poor sinner bound for death, His brother doctor of the soul To canvass with official breath

The future and its viewless things

That undiscovered mystery Which one who feels death's winnowing wings Must needs read clearer, sure, than he !

Bring none of these ; but let me be, While all around in silence lies, Moved to the window near, and see Once more, before my dying eyes.

Bathed in the sacred dews of morn

The wide aerial landscape spread— The world which was ere I was born, The world which lasts when I am dead ;

Which never was the friend of one, Nor promised love it could not give, But lit for all its generous sun, And lived itself, and made us live.

There let me gaze till I become In soul, with what I gaze on, wed ! To feel the universe my home; To have before my mind-instead

Of the sick room, the mortal strife, The turmoil for a little breath-

The pure eternal course of life, Nor human combatings with death !

Thus feeling, gazing, might I grow Compos'd, refresh'd, ennobled, clear; Then willing let my spirit go To work or wait elsewhere or here.

Question Drawer.

WHAT authority has the teacher over pupils while on the way to and from school?-G.H.V.B.

[Sec. 37, Regulations of the Education Depart-ment of Ontario, provides that "pupils shall be re-sponsible to the teacher for their conduct on the school premises, or in going to and returning from school, except when accompanied by their parents or guardians, or by some person appointed by them, or on their behalf." This imposes a pretty heavy responsibility upon the teacher.]

I. Should pupils in Part I. and Part II. be allowed to use the ruler in drawing the exercises on the fly leaves of their readers?

2. What is the percentage required to pass a pupil on the promotion examinations published from time to time in the JOURNAL?

4. Would you teach the analysis of letters to young pupils just learning to write, or should writing be taught to them merely as an imitative exercise?

5. Supposing a pupil were so thoroughly vicious as to baffle all your attempts at reaching his better nature, would you suspend him before trying the effects of corporal punishment?

6. Are the examiners on the Entrance examina-tion in History supposed to set questions in History on anything outside the matter contained in the Public School History?—W.H.

[1. We do not understand the question. We fancy Drawing masters would condemn the use of rulers in drawing generally.

2. It varies according to the views of the In-spector and the difficulty of the papers.

4. We suppose writing, as all other subjects, is best taught scientifically, and that the pupil should first learn to make the parts of the letters.

5. Yes, if I had the power, as the responsible teacher should have. We don't believe the rod will reach his "better nature," when all other efforts have failed.

6. We don't know. If the pupil has mastered intelligently what is contained in the authorized text-book, he will be sure to pass.]

[A number of Questions and Answers have been crowded out in this issue but will appear in our next.]

Educational Meetings.

SCIENTIFIC TEMPERANCE.

VIEWED FROM A CHEMIST'S STANDPOINT.

(Adapted from the Report in the London Adveriiser.)

A LARGE gathering of teachers and others crowded the rooms of the Women's Christian Temperance Union in the Oddfellows' Hall, to hear the first of a series of lectures under the auspices of the organization mentioned and the City Prohibition Club. The object of these lecturers is to set forth how best temperance can be taught upon easily understood scientific principles in the public schools, that subject now being upon the curriculum. The lecturer was Prof. J. H. Bow-man, and the chairman Mr. C. F. Colwell, a prominent member of the city Board of Education. who, in introducing the speaker, referred to the growing importance of the temperance question. Prof. Bowman said an expenditure of \$900,000,000 per annum and 60,000 deaths annually, as was the record in the United States in direct connection with and as a result of the drink traffic, were serious matters, and facts like these no doubt caused the study of the cause to be made a part of the school course by the Provincial Minister of Education. He laid down as a principle that there was a singular adaptiveness in one part of nature to another, such as air for the lungs, or water for the natural sensation of thirst. The subject, he said, was "Alcohol in contrast with water, the use of water and the usage of alcohol." Seven-eighths of the whole body was water; 79 per cent. of the muscles was water and 80 per cent. of the brain, a large proportion of the blood and 99 per cent. of the saliva. Insensible evaporation from the surface of the body was going on all the time, and to supply the waste people must drink. The gelatine so largely composing this body would become dry and hard without a supply of fluid. In illustration he asked, if a person wished to lubricate a sewing machine, how would be choose between oil and sulphuric acid, the one being bland, the other cor-rosive? Without doubt the oil would be chosen, because it has the properties necessary to meet the requirements of the case. From this obvious point he went on to show what fluids should be supplied the body in order that all its functions may be smoothly and properly performed. In his experiments he guarded carefully against an exaggeration of the effects of alcohol by using rum instead of pure alcohol. He showed that it was combustible— would burn alarmingly. He divided foods into two great classes, those containing vegetable and ani-mal gluten, and those containing starch. The former produce tissue in the human system, and the latter heat and force. He poured rum on the white of an egg (albumen) and it became a toughlooking coagulated mass. Alcohol had an affinity for water, which it withdrew from the egg. Water aided in the digestion of gluten. He produced four bottles, two containing digestive fluid com-posed of water, pepsin, and muriatic acid—being of similar composition to the digestive fluid of the stomach. In one of these he had put boiled egg, in the other lean meat; both were digested. Two other bottles were presented having the same fluid, with the addition of rum. The same quantities of egg and beef had been introduced, but no digestion had taken place. Digesting food with a supply of alcohol in the stomach was like trying to toboggan with the slide covered with sand. If you mixed enough snow with it you could get down after a while. Only to the extent that you mixed water with rum or other strong drinks would there be digestion. He contrasted the action of rum and water on sugar and starch, showing that the former would not dissolve them, while the latter would. He called attention particularly to the fact that the effect of alcohol on starch was to precipitate it. That's how it is that alcoholic drink "takes the starch out of a man."

A small quantity of solution of starch in water was added to each of two tubes, one containing water, the other three parts water and one part rum. In a few minutes the starch was precipi-tated in the second test-tube. This was made ap-

of the contents of each test-tube to two large glasses containing iodine and water (a very delicate test for starch). In one case the presence of starch was shown by the mixture turning blue; in the other no effect was produced, thus showing that a small quantity of rum has the effect of completely precipitating all starch which may be pre-sent in a solution. In the digestive process starch must become sugar before it can be assimilated in the system. He spoke of the division of foods into "crystalloids" and "colloids," and illustrated the effect of alcohol upon the membrane which surrounds all the internal organs. Alcohol is a solvent of fat, while water is not, and so it comes that drinkers of the former die of fatty degeneration of the heart and apoplexy. Alcohol paralyzed the nerves. Dip the tongue in rum and you cannot taste a little sugar placed upon it. Pure alcohol could not be swallowed because it would cause paralysis of the glottis. Alcohol affects the nerves. Observe the perennial effect—the perpetual blush-on the face of the drinker. His nerves have been paralyzed and will not perform their proper functions. By experiment he produced the hurid, bluish flame of alcohol by heating some "good, harmless home-made wine," in a glass vessel, and some "innocent" cider was shown to con-tain the same dangerous element. For the purposes of illumination alcohol was useful. Having demonstrated the terrible effects of alcohol on the various organs of the body and its functions, Prof. Bowman said we may well ask, Can these things be true? They seem too astounding to be true. But there is no mistake about it. It seemed to him that the great hope of the temperance movement was the educating of the people through the children, and he trusted that the time was not distant when this curse of strong drink would be forever banished from our midst.

On motion of Rev. W. M. Roger, seconded by Crown Attorney Hutchinson, the lecturer was tendered a cordial vote of thanks, to which he responded.

PEEL COUNTY TEACHERS' ASSOCIATION.

THE annual convention of this Association was held in the Music Hall, Brampton, on Thursday and Friday, the 1st and 2nd of March. In the absence of the president, the chair was ably filled by the vice-president, Mr. E. Trought. During the con-vention almost all the teachers of the county were in attendance.

A discussion, led by Mr. Hassard, of Streetsville, on "the new text books," roused the teachers into denunciations of the lack of care and judgment evinced in the preparation of the public school books, especially in reference to the definitions in the new Arithmetic and the very exalted and dignified language of the History. It was gener-ally complained that the latter was usually totally beyond the comprehension of the pupils, and that the book was therefore useless as a text book for them. One or two of the members attempted the defence of the verbiage of the History, on the ground that it furnished opportunity for extending the vocabulary of the children.

It was resolved that at the Promotion examinations henceforth the examinations in literature for entrance to the Fourth class shou d be on the lessons TO THE EDITOR,in the last half only of the Third Reader. It was also decided that the spelling for promotions should be from related words in sentences and phrases instead of isolated words.

Mr. J. J. Tilley, Director of Institutes, gave a lesson in fractions to a class of boys, and in a short time, the class, which had never before been taught anything of fractions, had an intelligent knowledge of how to represent almost any part, and of the relative values of those fractions having He led the children the same denominators. from the knowledge which they had of the fraction $\frac{1}{2}$, and which he showed quite clearly was the known in this case, to represent by fractional symbols any of the fractional parts called for. He urged upon teachers the importance of letting the pupils make, or (at the least) see the actual division of the different objects used into their fractional parts. The interest and attention of the children was very marked. Most assuredly Mr. Tilley showed on this occasion, that attention on parent to the audience by adding a small portion the part of the pupil is secured by the teacher's

skill in furnishing occasion for the use of faculty upon the material.

Mr. Tilley's address on "Principles of Educa-tion," was most interesting. In a word, his ad-dresses and lecture were so thorough and able that Mr. Tilley has made himself very popular as an educator, not only with the teachers of the county, but as well with the people of the vicinity who were privileged to hear him.

Mr. D. J. McKinnon, P.S.I., read extracts from answers of candidates at the last entrance, and pointed out the necessity of helping the pupil to see clearly for himself the substance of what he reads, and the absurdity of giving set dictionary definitions as explanations of words and phrases. His remarks showed that pupils coming away from examinations were not generally qualified to de-cide just how much of their work was correct, and the point was raised, whether it was not an im portant part of the teacher's work to see that pupils know what they know.

Mr. Earngey, Meadowvale, showed his plan of teaching the railway systems of Ontario. It was to prepare an outline of the Province on a somewhat large scale, and then proceed to build before the class the various lines of railway, and marking the different towns, etc., along the road. At the same time, he advised the class should proceed in the same way with the maps which they have drawn in their exercise books. He argued that the impression thus made by seeing the roads built, as it were, would be more lasting. This plan commended itself to the Association

as a very excellent one.

"The value of Grammar as a Public School Study," was discussed by Mr. Trought in a very thoughtful paper, but as Mr. Trought has consented, at the request of the Association, to publish that paper in the JOURNAL, I shall refrain from remarks thereon.

After a hearty vote of thanks to Mr. Tilley, and the completion of the ordinary routine business of the Institute, this most sucessful and interesting meeting closed.

W. G. JESSOP, Rec. Secretary.

School-Room Methods.

EXERCISES IN LANGUAGE.

I. Write a list of name words derived from the following action words :- Speak, heal, sing, live, drink, fly, bind, strike, feed, warm, keep.

2. Write a list of words of opposite meaning to the following :- Begin, later, this, heavy, cold, old, beautiful, timid, rough, yes, gain, true, white.

3. Use each of these words correctly as an active word :- Head, finger, hand, breast, toe, black, foot, ink, eye.

4. Write sentences containing the following words correctly used : -Complement, compliment, stationary, stationery, pass, passed, lightning, lightening, coarse, course, respectively, respectfully .---Intelligence.

MAGICAL NINE.

Lo Ind abrion
I playing with matches I found out the following,
which, it is possible, is old to some of your
readers : That, by arranging the matches in the
form of a square, nine in each row and three in
in four more and $\equiv \equiv \equiv \equiv$ still have nine
each way. (2.) I could make
seven each way = without adding
any. (3) I could make eleven
each way without adding any (4)
By adding tour more $=$ = I could make
tweive of inificen each way as a
I he solutions to the above are very simple and have
proved a good lesson to little ones just beginning
to count, add, and subtract.

HAMILTON.

T. L. R.

OUESTIONS IN MENTAL ARITHMETIC.

TWENTY minutes allowed for this exercise. Pencils are not to be used except in writing the answers.

1. Change 4 to an equivalent fraction having 54 for its denominator.

2. If a hat can be made from $\frac{3}{4}$ of a yard of velvet, how many hats can be made from $4\frac{1}{2}$ yards?

3. What part of $\frac{13}{20}$ is $\frac{7}{20}$?

4. What number is that which, if $\frac{2}{5}$ of itself be added, the sum will be 96?

5. What was the cost of gloves which are sold for \$1 a pair at a loss of 20 per cent. ?

6. The interest of a certain sum for 6 months a: 4 per cent. is \$8; what would be the interest of the same sum for I year at 8 per cent. ?

7. A man sold $\frac{2}{8}$ of his farm and had 100 acres left. How many acres had he at first?

8. How many square yards in the ceiling of a room 31 feet long and 18 feet wide?

9. If 7 pounds of tea cost $3\frac{1}{2}$, what will 20 pounds cost when the price is 10 per cent. higher ?

10. At \$2 a rod what is the difference in the cost of fencing a lot of land 20 rods square, and another lot containing the same area which is 40 rods long?—Journal of Education.

SOME PRIMARY WORK IN ADDITION.

	IIIII IIII	m. II II II II
Ъ.	IIIIIIII II	n. III III III I
c.	IIII II	o. II II II
d.	IIIIIII II	p. IIII IIII I
	IIIIIIII I	g III III I
<i>f</i> .	ШШП Ш	r. IIII IIII II
g.	III III III	s. IIIIII
h.	IIIII III	A IL IL IL IL I
i.	IIIIIII II-	u. II II II II II
j.	III III IIIII IIIII	v. III III I
k.	IIIII IIIII	w. IIIIIIIII
1.	IIII IIII	z II II

1. Read examples a to l inclusive, as, Five marks and four are nine marks, etc. (Do not count the ones in a group. Practice until you can name the group at sight, a seven, a six, etc., without counting.)

2. Read examples a to l inclusive, using the following form :- The sum of 5 marks and 4 marks is 9 marks, etc.

3. Write examples a to *l*, inclusive, using the sign + for and, and = for are; as, 5 + 4 = 9, etc. Read orally : as, 5 plus 4 equals 9.

4. Read examples a to l, inclusive, merely give ing the sum. Try to do this in five seconds.

5. Make problems in addition to fit each of the examples from a to l. Talk about the chickens and eggs you have to sell, or the apples, nuts, cookies or books you have given away; about birds, cher-ries, flowers, insects, etc. Picture in your mind the number of chickens, eggs, etc., instead of the figures.—Shoemaker and Lawrence, in New Practical Arithmetic.

A METHOD IN SPELLING.

BY JASAW.

INSTEAD of asking the pupils to write on their slates the words, Bruce, Scotland, monarch, crown, sad, grieved, pondered, etc., found in Third Reader, in the lesson on "Bruce and the Spider." I asked them to write :-

- The name of the king mentioned.
 The country in which he was king.
- The word used instead of sovereign king. (3.)

(4.) The name of that which he wears in authority

- (5.) The word meaning sorrowm.
 (6.) The word meaning sad.
 (7.) The word meaning thought, etc. The word meaning sorrowful.

Of course it is expected that the word spelled by the pupil is the one found in his reader. I asked my pupils which plan they liked the better. They answered the latter. I then asked one of the boys why he liked the latter the better. He replied, "Because you've got to think more." Hence if they find it necessary to "think more," it is an educative process. educative process.

In second classes the work might be slightly simplified. Not much, however, as the difference

in the text of their readers would be almost enough simplification. For example: --On the "what kind of banks" of "what river," when "who" was "near," No "what kind of lad" was so "what" as I? No harp like "whose" could play "how," and where ever I went was my poor dog, "what was his name?

The parts quoted require an answer. That ans-wer would be written on the slates and corrected by the teacher, when from ten to twenty had beeu given.

In this method we have more than one exercise. Let us see what the pupil does in answering the quotations given by the teacher.

(1. He will require to "know" the "facts" of the lesson.

(2.) To know the facts he must "read" the lesson a number of times.

(3.) In reading the lesson so often he learns to "read it well."

(4.) Knowing that his spellings will be given in the above manner, he will rivet his "attention" on ' on the "words and ideas" of the lesson while preparing it, in order to follow the teacher's dictation when he goes to the class.

(5.) Then he must "reflect " and "think " where the teachers quote to get the correct word.

(6.) He then "spells" the word mentally.

(7.) He then "writes" the word.

Thus we see that he learns facts, reads, reads well, cultivates attention, cultivates memory, reflects, thinks, spells, and writes.

In the Pt. II. class, the method mny be somewhat similar. Suppose the words fast, behind, long, good, down, old, over, etc., are found in the lesson, I don't ask them to spell these words, but ask them to spell the opposite to each, slow, front, short, bad, up, new, under, etc. These words of opposite mean ing may seem simple to us, but just try it with Pt. II. pupils, and you will find that they require to think before they write them. In doing so they also develop the faculty of comparison.

A SPELLING LESSON.

- A PRETTY deer is dear to me;
- A hare with downy hair;
- I love a hart with all my heart, But barely bear a bear;
- Tis plain that no one takes a plane
- A rake, though, often takes a rake
- To tear away the tares.

- And through the whole, hole wears. And writ in writing "right" may write It "wright" and still be wrong; For "wright" and "rite" are neither "right," And don't to write belong.
- Beer often brings a bier to man, Coughing a coffin brings.
- And too much ale will make us ail, As well as other things.

 - The person lies who says he lies. When he is but reclining; And when consumptive folks decline, They all decline declining.
 - A quail don't quail before a storm,
 - A bough don't bow before it ; e cannot rein the rain at all, w
 - No earthly power reigns o'er it. A dyer dyes awhile, then dies ;
 - To dye he's always dying,
 - Until, upon his dying bed,
 - He thinks no more of dyeing.
 - The son of Mars mars many a sun ;
 - All deys must have their days ; Tis meet that men should mete out meat
 - To feed misfortune's son ; The fair should fare on love alone,
 - Else one cannot be won.
 - The springs spring forth in Spring, and
 - Shoot forward one and all; Though Summer kills the flowers, it leaves shoots. The leaves to fall in Fall.
 - would a story here commence, But you might find it stale ;
 - So let's suppose that we have reached The tail end of our tale.

A LESSON WITH OBJECTS.

THE children were just beginning their second school year and were reading in the Second Reader.

The lesson in hand at this hour was number work. Each pupil was supplied with a number of wooden tooth-picks. (They cost five cents a thou-sand). The object was to teach the fraction onesand). The object was to teach the nation out four half. The teacher told one pupil to count out four When each pupil in the class had laid before ton him on his desk the number dictated to him, he was asked to divide what he had into two equal piles. Notice that the teacher did not stand before the class with a few tooth-picks in her hands, and do the work herself while the pupils sat with hands folded and looked into her face and said in concert, Yes ma'am.'

This work was entirely new to the pupils, each pupil had something to do and each one went to work. They did not all work alike. One boy who had ten tooth-picks, put them into a pile and looked at it a moment and then divided it as one would divide a lump of butter. He looked at each pile, then, and seemed to say to himself, "They are about the same size." The quick eye of the teacher saw how he divided the number ; she did not tell him he was wrong, but she led him to see that he was. She said, "How many have you in this pile?" The boy said "six." "How many in the other?" "Four." "I asked you to put the same number in each pile." Here she left him to correct his in each pile." Here she left him to correct his work, Some others were more philosophical; they placed one tooth-pick in one place and another in another place to begin with. They then placed another with the *first* one and another with the second and so on until their "pile" was used up. Of course when they were done, their number was divided into two equal parts. Each pupil was then divided into two equal parts. Each pupil was then called upon to tell what he had done. They told it somewhat as follows:--Pupil-I have divided my pile of tooth-picks into two equal parts. Teacher —What do you mean by equal parts? P. Parts that are the same size. T. How many have you in that are the same size. T. How many have you in each part? P. I have four in each part. T. How many had you to divide? P. I had eight to divide. T. When we divide anything into *two equal* parts each part is called a *half*. What is the half of eight? P. Four is the half of eight.

It will be observed that the teacher had purposely avoided all odd numbers. At another lesson she will begin with the odd numbers. If she works as carefully and philosophically as she did in this lesson she will, first, give one tooth-pick to divide into halves, and afterward the other odd numbers.

The outcome of this work is to establish clearly in the child's mind the idea of one-half. Sometimes teachers use the tooth-picks as if they thought the idea was to divide tooth-picks. Objects should be used in such a manner as to enable the child to get along without them. The teacher should be the first to recognize this ability. If she should find that the child can get the correct result every time without the use of objects, she knows that the child has gone *beyond* the objects. He has no use for them. E.g., Mary had eleven apples; she gave May half of them. How many did she give May? She thinks a moment and says 5½ apples. This is pretty good evidence that she does not need objects to work with. But suppose the pupil fails and the tooth-picks are handed him. If he had been taught how to use objects to find the half of anything, he will place one in one place another in another until all are disposed of but one. He will break that one into two equal pieces, placing one piece in each pile. He will then count what he has in each pile.

When shall we cease to use objects? is often asked. The answer is, when the pupil does not need them. He does not need them when he can obtain the result in an intelligent way without them.—Indiana School Journal.

HERE is a list of twenty words which no one person in ten, says a Baltimore paper, will spell correctly without preparation : — "Abhorring, bayou, aisle, trisyllable, agreeable, amateur, be-leaguerer, mysterious, different, illiterate, initial, crowd, exemplary, complaisant, recommend, col-lectible, chaise, solicited, actually, preparation,"

To pare a pair of pears

All rays raise thyme, time razes all;

(Continued from p. 379.)

only of the proficiency of the pupils, but of the teachers themselves, and where, as in this Pro-vince, large sums of public money are spent upon education, those who contribute them will probably always insist upon examinations as a means of making it evident that the public money has been properly spent, and is producing the required results. So long, however, as examinations con-tinue you will not be able to prevent special preparation for them, and that after all is the princi-pal feature of cramming. We may, on the other hand, I think, fairly ask both teachers and pupils to remember that the scope and objects of educa-tion extend very far beyond these examinations. As we grow older we become painfully aware that the last school examination is by no means the last examination which, in another sense of the word, we have to go through during the course of our lives, and we probably find that the questions we have to solve as we grow older are severer and more difficult than those which are put to us at the school or the University. The real object of the teacher's efforts should be to prepare his pupils to answer these life-long questions in an honor-able and effectual manner. I am glad to have the pleasure of meeting a large number of those who have adopted the profession of teaching, and who will one day themselves have charge of classes and schools. There is no profession more honor-able or more responsible than that of a school teacher. It is an honorable profession because no task is more honorable than that of him or of her who is entrusted with the guidance of the young, and with the moulding of the character of those who will one day take a part as citizens in the af-fairs of their country. It is a responsible profes-sion, because if that guidance is exercised in a thoughtless or injudicious spirit the whole direction of the life of a human being may be altered and perverted. We see this clearly when those of us whose school days are left far behind look back at them. Comparatively recent events may have become indistinct or forgotten, but we see as clearly or even more clearly than we did at the time the principal events of our school life. The teacher whom we trusted because he trusted us and whom we treated well because he treated us well, is remembered as if weeks instead of years had passed since we sat in his classroom. I think if there is one point more than another which teachers should recollect it is that only half, and that perhaps not the largest half, of the lesson which they have to impart is contained in the school books which lie upon their desks. A school or a class is a reflection of the community upon a small scale, and there is scarcely any strong or any weak point in the human character which may not be developed within it. A good teacher will do more for his pupils by setting them an example in, and inculcating upon them, such qualities as good temper, a sense of honor, a hat-red of untruth, and a love of fairness and justice, than he could by the most laborious insistance upon book learning. With these few words I will only wish you very heartily success in the profession you have adopted. It is, as I said just now, an honorable profession, and one the importance of which is recognized more and more every year. It is one perhaps of which the emoluments may not be great or the prizes many, but it is one in which the most useful and valuable services can be done to the State. I wish you every success, and am very glad to have been given an opportunity of meeting you here this morning.

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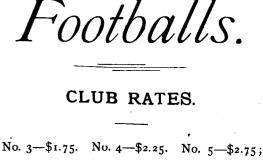
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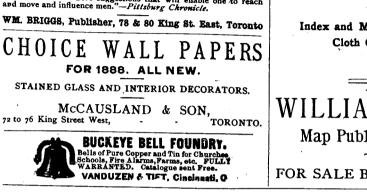
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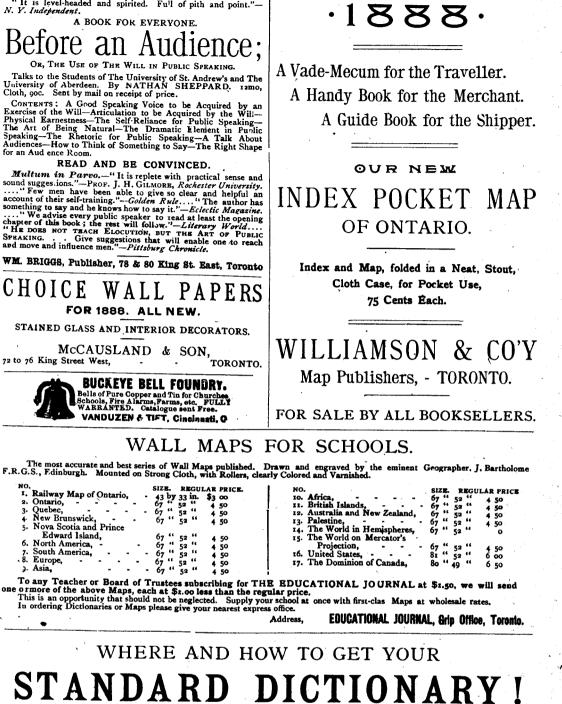
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- Wednesday, 4th July.
- A.M. 9 00-11.30.. P.M 2.co-4.30... .Arithmetic and Mensuration. .English Grammar.

- Thursday, 5th July. A.M. 9.00-11.30.....Algebra. P.M. 2.00-4.30...... English Composition and Prose Literatu e.

 - riday, 6th July. A.M. 9.00-10.15. Reading and Orthoëpy.

 - 10.20-11.30.... Drawing. P.M. 2.00-3.30..... Bookkeeping. 3.35-5.05..... Precis Writing and Indexing.
- Saturday, 7th July. A.M. 9.00-10.30. Latin Authors

 - A. M. 9.06-10.30.... Latin Authors. French do German do 9.00-11.00.... Physics, P.M. 2.00-4.30..... Latin Composition and Grammar. French do do
- German do 2.00-4.00....Botany. Oral Reading to be taken on such days and hou as may best suit the convenience of the Examiners.
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- DAYS AND HOURS.
- DAVS AND HOORS.
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- Wednesday, 4th July. A.M. 3.00-11.00Arithmetic P.M. 2.00-4.30.....English Grammar. Thursday, 5th July. A.M. 9.00-11.30Algebra. P.M. 2 00 4.30....Chemistry. Friday, 6th July. A.M. 9.00-11.30Botany. Saturday, 7th July. A.M. 9 00-11.30Physics. P.M. 2.003.30 French Authors. 3:355-35..... do Composition
- a 35.5.35...... do Composition and Grammar.
 I uesday, 10th July. A.M. 9,00-11.30 English Composition and Prose Literatur FIRST "C" OR HONOR EXAMINATION FOR MATRICULATION.
- DAYS AND HOURS. SUBJECTS, esday, 10th Yuly. A.M. 8.40°8.55.....Reading Regulations. 9.00-11.30.....English Composition and Prose Literature. P.M. 2.00-4.30.....Greek-Pass (for matriculants only).

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 A.M. 9 00-11.30 Algebra.
 P.M. 2.00-4.30.... English Poetical Literature.
 Thursday, 12th July.
 A.M. 9.00-11.30 History and Geography.
 Friday, 13th July.
 A.M. 9.00-11.30 Trigonometry.
 P.M. 2.004.30.... Trigonometry.
 P.M. 2.004.30.... Chemistry.
 P.M. 9.00-11.30 Chemistry.
 P.M. 9.00-11.30 Botany.
 Monday, 10th July.
 A.M. 9.00-11.30 Chemistry.
 P.M. 9.00-11.30 Chemistry.
 P.M. 9.00-11.30 Chemistry.
 T.M. 9.00-11.30 Chemistry.
 P.M. 9.00-11.30 Chemistry.
 Thursday, 10th July.
 A.M. 9.00-11.30 Chemistry.
 Thusday, 10th July.
 A.M. 9.00-11.30 Latin Authors.
 P.M. 2.004.30..... do and Greek Grammar.
 Tuesday, 17th July.
 A.M. 9.00-11.30 Latin Composition.

Tuesday, 17th July.
 A. M. 9.00-11:30 Latin Composition.
 P. M. 2.00-3:30..... French Authors.
 3:355-35..... do Composition and Grammar.
 Wednesday, 18th July.
 A.M. 9:00-10:30 German Authors.
 10:35-12:35.... do Composition and Grammar.
 P.M. 2:00-4:30.... Greek Authors.
 TORONTO, February, 1888.

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