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THE Conveners of the Manitoba Teachers' Association which was held during the last days of October, is said to have been the best yet held in the Province. We had hoped to give a summary of proceedings in this number, but deficiency of both material and space have prevented. The Association put itself on record by resolution in regard to the following matters :—The need for training of all teachers, the desirability of making successful practice a condition of a permanent certificate, the necessity for keeping the academic and professional sides of the teacher's education entirely separate, the need of reference libraries, and the value of training institutes for increasing the professional knowledge of the regularly certificated teacher.

that this was true of nearly one-fourth of the voters in the Southern States, and that the percentage had increased in the decade since 1870. But of course the United States is hampered not only by the Southern difficulty, but also by the constant and immense influx of illiterate foreigners.

IT is not too much to say that the views and feelings which the children imbibe in the schools to-day, will go a long way towards determining the national characteristics of the men and women of the next generation. This fact lays a heavy responsibility upon teachers. They should aim at being themselves well-informed, broad-minded, dispassionate and just, in order that they may lead their pupils to take broad and impartial views of public and especially of international questions. No reproof can be too severe for the teacher who inculcates narrow and one-sided views and prejudices, in regard to other nations. These remarks are suggested by a note on "The Behring Sea Question," in a late number of the Michigan *Moderator*, which we can best characterize by giving it *verbatim*. Had the writer taken the trouble to read recent articles on the question in some of the leading papers of his own country, he could not have failed to get better information and might have got broader and juster views. It is to be hoped that no teacher will take a statement so full of inaccuracies as his guide in the school-room.

Russia ceded Alaska to the United States in 1867, and with it the right enjoyed by her, uncontested for 100 years, of controlling the seal-fishing in Behring Sea. The islands where the seals breed are outside the three mile limit, but our Government claims the right of protecting the seals there from indiscriminate slaughter and speedy extermination. Canadian vessels have been caught raiding there. A revenue cutter seized Canadian vessels there in 1886, and the question is now up between England and the United States. The English minister has once acknowledged the justice of our claim, but now wishes to arbitrate the matter, refusing to agree to the old doctrine of regarding Behring sea as a "closed sea." England's policy concerning pearl diving off the islands of the Indian coast is exactly like that of the United States concerning the seal fishing, but as *Lowell* so well puts it in the *Bigelow Papers* :

"Sauce fer goose aint jest the juice  
For ganders with J. B.,  
No more than you and me."

WILL the writer of the essay on "The Utility of School Education," kindly send us his address, in order that we may reply to his note.

OWING to some delay in transmission the "copy" for the "English Department," came to hand too late for this number. An interesting paper entitled "A Visit to Longfellow's Home," will appear in this department in our next.

WE must again remind our subscribers that all communications for the JOURNAL of whatever kind, must be substantiated with the name and address of the writer, in compliance with a safe and almost universal journalistic rule. Of course the name will not be published, save with the writers consent.

THE *Educational Review* says: "Compulsory education is receiving a large share of attention both in the press and on the platform throughout the Maritime Provinces. Chief Supt. Crocket, in a recent address before the St. John County Teachers, intimated that when the Government perceived that there was a strong sentiment in favor of compulsory attendance it would add a clause to the Education Act giving power to enforce it. He complimented the teachers of St. John County that they unanimously passed a resolution favoring compulsory attendance at schools, even though they knew it would add materially to their labors."

FROM the logical standpoint compulsory and universal education is one of the first corollaries of free schools. The United States are proud of their free school system and yet *Harper's Weekly* tells us that, in that country twenty-one states have no compulsory law, and that where there is such a law it is seldom enforced. "In New York, Superintendent Draper has forcibly urged its enforcement; but it is the master's ferule, not the law that the New York truant fears." Whether as the cause or the effect of this state of things, we are further told that at the last census in the United States, ten years ago, eleven per cent. of the entire adult population could not read or write;

## \* Special Papers. \*

### A DEFENCE OF GRAMMAR.\*

BY A. PURSLOW, M.A., LL.D.

AT the meeting of the Provincial Teachers' Association, held in August last, Mr. Rowe, Model School Master of Kingston, moved a resolution for the abolition of Technical Grammar from the Public School programme, and for the substitution in its stead of what is called Language Training. This motion is reported to have been carried; and thus is put in danger a subject of study, which, taught when it ought to be, and as it ought to be, I regard as one of the most useful subjects on the programme, whether looked at from the practical or from the intellectual point of view. How Mr. Rowe supported his motion, and the nature of the charges he brought against Technical Grammar, will be seen by consulting the condensed report of his address as printed in the EDUCATIONAL JOURNAL of October 1st.

In making his charges Mr. Rowe is sometimes definite and sometimes very indefinite; but notwithstanding his variety of speech, I believe that what was all the time in Mr. Rowe's mind as the object of his anathemas was that something that *used* to be called Grammar. I refer to that everlasting round of rules, disconnected statements, ready-made definitions, dry paradigms, and endless conjugations, which with little explanation, oftener with none, used to be assigned pupils to memorize and to recite parrot-like, without their being expected to understand it, much less to be able to apply it.

If any such absurdity as this is perpetrated anywhere now-a-days and called grammar teaching; if this is what Mr. Rowe calls technical grammar; if this is the sort of thing he wishes and is striving to abolish, I for one, in the name of common sense and humanity wish more strength to his elbow and cordially bid him "God-speed." Such cruel folly is open to all the charges Mr. Rowe urges; it merits the severest condemnation of every rational teacher.

But has the grammar teaching done in this Province for the past ten or twelve years been of this character? Has that done since the introduction of the Public school grammar been at all of this character? Don't Mr. Rowe's charges come too late? I am loath to believe that, in these days of Model Schools and rational methods of instruction, of enlightened teachers and active inspectors, there is a single teacher in any corner of Ontario guilty now-a-days of teaching grammar in the absurd way I have described and which I am as ready as any man to condemn.

This antiquated absurdity—this setting children to memorize rules, definitions, etc., *must* be the sort of thing Mr. Rowe condemns, for this only is open to the charges which he makes. But is this sort of thing technical grammar? To give the latter such a meaning, and then to condemn it and urge its abolition seems to me like giving a bad name to a good dog and then

hanging him. I may call the memorizing of rules, definitions, etc., a bungling attempt to teach theoretical grammar. For when we speak of teaching technical English grammar, we mean, I presume, teaching English grammar technically; and teaching English grammar technically ought to mean what the teaching of other subjects technically always means. I ask myself what means technical education in any art—carpentering, iron-working, surveying, tanning, painting, teaching? If I am not mistaken, technical education in any of these arts is two-fold. It consists, first, of a theoretical part, *i.e.*, the imparting of a knowledge, definite, accurate and comprehensive, of the laws and principles that underlie that art; second, of a practical part, *i.e.*, an exposition of the best methods of applying the acquired theoretical knowledge to the perfect working out or practice of that art. Now, the first part may be taught without the second. For instance, I may be taught all about the nature of colors and the laws of perspective and yet never put brush to canvas. The second may be taught (or possessed as a natural gift), without the first. I may be taught to sing (in a way), without knowing music; or to paint as Benjamin West did at nine years of age. Again, either part may be taught and as much of the other as circumstances may permit. In any case, however, the best craftsman will, undoubtedly, be he who has been given a thorough knowledge of both parts; and any craftsman will be good to just the extent that the two parts—principles and practice—have gone hand in hand; in other words to the extent that he has received a technical education in the art.

Now, apply this to the art under discussion—the art of fluent and correct English speaking and writing—efficiency in which is aimed at by instruction in English grammar. This art is no exception to the rule just mentioned; natural gifts being equal, that boy or that girl, that man or that woman will be the most fluent and correct speaker and writer, whose knowledge of the principles of the language is most thorough; and whose ability to apply those principles readily and accurately in practice is most extensive. Moreover, as in other arts, those persons will be good speakers or writers just to the extent that principles and practice in their grammar lessons have proceeded together. I said that in a technical education, either part—a knowledge of principles or of practice—may be taught, and as much of the other as circumstances may permit. This hits exactly the position of grammar in our Public Schools. The age and mental capacity of our pupils, the shortness of the school-life of most of them and the fact that they are all the time hearing bad language out of school, make it incumbent upon us to begin the practical part of their grammatical education at an age which unfits them to grasp that knowledge of the principles that ought, when possible, always to accompany the practice. Little ones in the First and Second Books must be taught to express themselves in a certain way because it is right, and to not express themselves in a certain other way because it is wrong. The teacher's "do" and "don't do," is their ultimatum. At their tender

age, practice and precept are everything, theory *nil*.

By the time the Third Book is reached, however, the pupils will be sufficiently intelligent to understand *why* they must express themselves in certain ways and not in other ways; and the teacher, remembering that principles as well as practice are necessary to perfect workmanship, will begin to combine these by teaching the nature of the Sentence, and the Parts of Speech with abundant exercises thereon in some, such way as is outlined in Part I. of the Public School Grammar. Then, as pupils increase in age and in mental strength, the teacher will advance to the more difficult facts and principles which underlie and govern our English tongue. He will constantly appeal to the pupils' experience or observation to attest the existence of these facts and principles, and then, as soon as they are understood and mastered, he will show their application to every day language by embodying them in exercises, oral or written, as is done all through the Public School Grammar, and he will review and review till these facts and principles become so much part and parcel of the pupils' mental equipment that they can readily and rightly employ them in their daily speech and writing.

The foregoing is what I understand by technical grammar, and so far from such grammar "being a hindrance only," I feel sure that it is the best means of accomplishing that for which Mr. Rowe so earnestly pleads. I think it is evident that the result he wishes to bring about and the result I wish to bring about are one and the same, viz:—an ability on the part of our pupils to speak and write readily and correctly. As to the means to be used to bring about this result, Mr. Rowe and I partly agree and partly differ. Mr. Rowe says that the result can be brought about in one way only, viz:—"by making every lesson a language lesson, and by a careful course of oral and written composition extending from the beginning to the end of the Public school course." We agree as to the course to be pursued with First and Second Book classes; we agree that every lesson should be made a language lesson to the extent that both teacher and pupils should use nothing but the best of English; we agree that paramount importance should be attached to "oral and written composition from the beginning to the end of the course." We differ in this, that, from the lessons in oral and written composition, Mr. Rowe would, all through the Public school course, banish grammar as being "a hindrance only"; whereas I, from the Third Book up, would base these lessons on facts and principles learned in their grammar lessons.

Advocates of the course Mr. Rowe would pursue dignify it with the name Language Training; and they speak of it as something naturally and necessarily opposed to grammar teaching—as if there was a case in court, Language Training *versus* Grammar. Of course there is no real antagonism between grammar and language training. As well talk of antagonism between the principles of gas-making and lighting the streets; between Mathematics and ready and accurate sum-working.

\* The substance of an address delivered before the Co. of Durham Teacher's Association, Friday, November 7th.

Again, the language-trainer cannot go far in his methods without putting himself under an obligation to the very grammar he hates and despises. In his language lessons, he must have names for what he is talking about, and these names he will borrow from grammar. He must needs base his language teaching on the uncontested principles of grammar, or else call upon his pupils "to accept in blind faith" on his mere *ipse dixit*, the facts which govern the usage he is teaching. And would not this latter course have a tendency to dwarf and "dull their powers of perception and reason?"

Let us follow out an example. A boy from his lisping days has said "I done it." A teacher of either method will tell him that he must not use such expressions. The best reason a mere language trainer can ever give him is that it is contrary to good usage. He may enjoin upon the boy not to use this expression, but he can never point him to any general principle violated which would deter him from saying not only "I done it" but also "we seen him," and "we have came;" for to teach principles is to teach grammar. The teacher of technical grammar would check the boy as early and as often as the language trainer, and would practise him in the right expression, but would at the same time create an appetite for further and fuller information on the subject by telling him that when he got on far enough in his grammar lessons he would learn *why* the expression he used was wrong, and *why* the expression taught him was right. Then when the boy came to study the verb, the teacher would make plain the difference in function of a past tense and perfect participle, so that the boy would see for himself why he could not rightly use the latter for the former. And as for such a distinction as the above being too abstruse for a Public School boy, I say fearlessly that there is something wrong with the boy, or with the teacher, or with both, if that teacher cannot impart to the boy a right conception of such a matter and a conception too that he can readily put into practice long before he has to leave the Public School. In what respect, I would ask is such a conception more incomprehensible than notation of decimals, or multiplication or division of fractions?

I have said that in making his charges against what he calls technical grammar, Mr. Rowe must have had in mind that mass of rules, definitions, etc. which, when taught in any shape to young children, and which when taught without understanding and without application to youths of any age, I have called an antiquated absurdity. If Mr. Rowe did not refer to this antiquated absurdity, but to grammar as it has been taught of late years, and especially as it has been taught within the last three, I enter on its behalf a decided plea of "not guilty" to each count in the indictment.

I set no value whatever on the evidence adduced by Mr. Rowe to substantiate his charges. He thinks it sufficient to satisfy an ordinary court of law. I venture to think otherwise, and make bold to state that if grammar is to be abolished from the Public School programme on such evidence, other subjects, whose right to be on that

programme few persons question, will have to be abolished too.

The evidence adduced by Mr. Rowe is that he sent three questions to twenty-five English Masters of High Schools, and from fifteen obtained answers more or less confirmatory of his views. These were the questions:—

1. Have pupils on entering the High Schools clear conceptions of the elementary principles of Grammar?

2. To what extent do they seem to apply the knowledge possessed in speaking and writing?

3. Would you prefer to have them enter with more language power and little or no technical knowledge except what would likely be gathered in a thorough course of practical language-training?

Now if, in these questions, I were to substitute for Grammar almost any other subject on the programme and send them out to the same fifteen gentlemen, their answers would be just as condemnatory of the subjects substituted as they were of grammar. For instance, I would ask—"Have pupils on entering the High School clear perceptions of the elementary principles of Reading, of Writing, of History, of Arithmetic?" They may read in a way, they may write in a way, they may work sums in a way, but I venture the assertion that their conceptions of the elementary principles of Reading, Writing, Arithmetic are every whit as indefinite and misty as they are of the elementary principles of grammar.

Again, for the second question I will ask—"To what extent do they apply such knowledge as they have of the principles of Writing, Reading and Arithmetic to their every-day work in these subjects, or even to their work at the Entrance where success depends upon their applying it?"

Once more, the full force and evidential value of the third question would be seen if I were to put the question this way:—"Would you prefer to have pupils enter with more ability to work arithmetical questions accurately, and little or no knowledge of the principles of Arithmetic except what would likely be gathered in a thorough course of practical arithmetic, i.e., of showing them 'how to do it'?" Who would consider that the adverse answers we should receive established the fact that Writing, Reading and Arithmetic are "too abstruse for Public School pupils," and justified us in urging the abolition of these subjects from the Public School programme?

The test selected by Mr. Rowe is a candidate's knowledge of, and ability to apply his grammar at the High School Entrance Examination. I accept the test, and will now show how it works. The result may surprise others as it did me. From the record of the marks made at the Entrance Examinations into this High School for the last nine years, I have taken the percentage of the marks made by all the candidates in each year in the two subjects of Grammar and Arithmetic.

The following table shows that the average difference in favor of grammar was 12·78 and that in no year was the candidates' knowledge of Arithmetic better than their knowledge of Grammar. In one year only

was it as good, while taking all the years together it was twelve per cent. worse.

	Gram.	Arith.	Diff.
1882.....	62%	42%	20
1883.....	55	35	20
1884.....	58	31	27
1885.....	51	50	1
1886.....	54	43	11
1887.....	51	51	0
1888.....	50	37	13
1889.....	56	46	10
1890.....	54	41	13

And in running its race with other subjects, just consider how heavily Grammar is handicapped. All that is taught and that pupils can be made to retain of other subjects is all the time so much to the good; but of the time devoted to grammar teaching, how much of it is spent, not in advancing, but in combating the active lessons and bad practice of the home, the street and the play-ground! In other subjects the only enemy is forgetfulness; but the grammar teacher has to fight an enemy that is constantly sowing tares in his field. And yet, in spite of this enormous and ever present opposing force, the grammar teaching of the past, and grammar teaching, be it remembered, done till lately according to wrong and mistaken methods and aims, can show the results established by my figures. Verily, if Mr. Rowe is justified on the strength of the test he has applied, in writing the word T E K E L on the walls of our Public Schools with regard to Grammar, he must trace there the same fateful characters with regard to Arithmetic and other subjects.

## Book Notices, etc.

*An Easy Method for Beginners in Latin.* By Albert Harkness, Ph.D., LL.D., Professor in Brown University. D. Appleton & Co., New York.

This book is, as described in the Preface, at once a Book of Latin Exercises, a Latin Reader and a sufficient Grammar for the Beginner. It proceeds on what is now almost universally recognized by competent teachers as the sound educational principle, that of approaching the language on its practical side. The first lesson introduces the learner to complete Latin sentences with verb, subject and object. Thus at the very outset he finds himself using the language, instead of being shut up to a long, dry preliminary study of mere forms and rules. The method of treatment throughout is largely inductive. The learner is not required to memorize arbitrary rules, and is allowed to see grammatical principles embodied and illustrated in the language itself before he has any occasion to apply them to his work.

*Helps for Ungraded Schools.* Compiled from various sources. Milton Bradley Co., Springfield, Mass.

This is a small manual descriptive of educational material and of its most advantageous use. A number of short chapters treat of language work, form study, clay modelling, color, stick laying, card-board sewing, weaving, folding and cutting of paper, drawing, number work, weights and measures, geography and physical training. One chapter is devoted to Froebel, the kindergarten and its gifts and occupations. Its clear type, attractive style and valuable hints and suggestions, render it of importance to the Primary teacher.

# The Educational Journal.

*Tables for Chemical Analysis.* By A. T. Richardson, B.A., Science Master, Isle of Wight College. Price 2s.

We have received a copy of above work, and have much pleasure in recommending it to students of this branch of science. The method of arrangement is clear and concise; both the directions and results are very plainly given, thus giving the experimenter a feeling of certainty in his conclusions, not always gained from works of this nature.

*Handbook of Latin Writing.* By Henry Preble and Charles P. Parker. Ginn & Co.

Those who believe that, as the proper method to teaching Latin Syntax is to begin the translation of an author at the earliest moment possible, so, too, the best way of teaching composition is to begin at once with continuous passages of English, will find this little book very useful *from the teacher's standpoint*. Its distinctive features are these. The common *pontes et foveæ astinorum* are tabulated to start with so concisely and definitely that, while the pupil will duly pass them over with sublime indifference and often lack of understanding, yet the master will find the task of connecting exercises by inserting references to a set of principles greatly simplified. Many know the importance of this to both master and pupil. The unusual length of the passages set emphasizes the importance of the art of connection of sentences. It is very doubtful whether the construction, "Brutus cui Cæsar ignovit et eum postea pro filio habuerat" (p. 17), while good Latin should have been referred to.

*The Satires of Juvenal.* Edited by Thomas B. Lindsay, Ph.D. Appleton's Classical Series.

The notes are admirably concise, but never stinted. The usual satires are omitted, and the rest sufficiently expurgated to adapt the book to mixed classes. It is well illustrated.

*Xenophon's Hellenica.* Book I. Edited by the Rev. Launcelot D. Dowdall.

One of the best of the series of "Cambridge Texts With Notes." The annotation is exceptionally full and shows much care.

*Best Things from the Best Authors.* Penn Publishing Co., Philadelphia.

This is the sixth volume of a series issued periodically, and fully sustains the high character of the previous volumes. The readings and recitations are miscellaneous, comprising selections from the best authors of England and America, well adapted for private study and for public entertainment. Public readings have become institutions of the age, and the professor of elocution and the amateur alike are perplexed often to find appropriate selections for their audiences. The selections in this volume have been compiled by experienced and competent judges, and cannot fail to satisfy the necessities of all.

*Talks by George Thatcher,* the celebrated minstrel. Penn Publishing Co., Philadelphia.

This is a small, cheap, but absolutely unique volume, abounding in fun and sources of laughter. The droll events of every day are presented in monologues, parodies, sketches and jokes; and wit and humor flash along every page to make dull days and nights bright and cheerful. The author relates in one of his monologues that he has a boy whose stupidity is beyond everything in life. His mother on one occasion sent him to the butcher's to see if he had pig's feet. He came back and told his mother he couldn't tell, the butcher had his shoes on. This suggests the character of the jokes. The book would not fail if read before an audience to entertain it a whole evening.

NINETY out of every hundred criminals became so before the age of twenty: and ignorance of cause and effect is the chief reason why. The colleges and schools may correct this.—*Uncle Ben, in Education.*

## \* Question Drawer. \*

OUR best thanks are due to several kind correspondents who have very courteously called our attention to an error in the reply given in last number to ALPHA BETA'S question as to the location of the "Long Sault" mentioned in the *Heroes of the Long Sault*. Without reference to the article, not having a copy of the Fourth Reader or of Parkman at hand, we gave the location of the *Long Sault* rapids on the St. Lawrence, instead of that of those on the Ottawa. That the *Long Sault* referred to is on the latter river is evident from the sentence in the extract commencing, "Entering the mouth of the Ottawa, etc." We quote the correct answer as given by the correspondent whose note came first to hand:

The "Long Sault" mentioned on p. 156, Fourth Reader, is a rapid on the Ottawa River. The term "Long Sault" is, strictly speaking, applied to one rapid six miles long, out of a series of ten called the Grenville Rapids, which extends from Grenville twelve miles down the Ottawa. The name "Long Sault" is often, however, applied to the whole series. Such is the use in Parkman's narrative. The obstacles to navigation thus presented are overcome for the "running" of timber by the great Carillon Dam and slides, for vessels, by the Grenville Canal. (See Pub. Sch. Geog., p. 45, Hist., p. 147, H. S. Geog., p. 81.)—SINOS.

Several correspondents have also kindly sent answers to ALPHA BETA'S question No. 4, in compliance with our request. As the matter is of some interest, and the methods given are not identical, we insert the three following, which each can test for himself:

D.M.H., Hepworth, Ont., sends the following answer to "Alpha Beta" (Nov. 15, 1890):

To find day of the week on which a given date falls. (New style.)

(a) If in 19th century, A.D.:—

Diminish number of the year in which the date occurs by 1.

To the number as diminished, add its fourth part, omitting fractions,

And the number of days in the year up to, and including, date.

Divide sum obtained by 7.

Remainder after division, if 0, shows day to have been Sunday.

Remainder after division, if 1, shows day to have been Monday.

Remainder after division, if 2, shows day to have been Tuesday, etc.

Try the rule with recent dates that you remember.

(b) If date was in the latter half of last century, add 1 to the sum obtained according to rule given above, and proceed with division. (Calendar was changed in England in the reign of George II.)

(c) If date be in the next century (20th) add 6 to the sum obtained according to rule given above, and proceed as before.

(d) If in 21st century, add 5 to sum.

" 22nd " " 4 to sum,

and proceed, etc.

"DUTTON" states the rule as follows:

To find the day of the week when the date is known: Divide the years of the century given by 4, to ascertain the number of leap years occurring since the first century given, and this quotient, added to the years of the century, together with the day of the month and the assignment of the month, will produce a number indicative of days, which, divided by 7, will give in remainder the desired day of the week. If there be no remainder the day is always Saturday. Here is the assignment of the months:

June + 0	April + 2	Oct. + 3	Nov. + 6
Sept. + 1	July + 2	May + 4	Feb. + 6
Dec. + 1	Jan. + 3	Aug. + 5	Mar. + 6

Leap years: Jan. + 2

Feb. + 5

What day of the week was May 2, 1813?

1813

3 = No. of leap years in 13 years.

4 = assignment of May.

2 = date of the month given.

22 ÷ 7 = 3 with 1 remainder.

Indicates the first day, viz., Sunday.

"H.S.A." gives the following:

Ratio for months:—

0	1	2	3	4	5	6
June Sept. Dec.	April July	Jan. Oct.	May	Aug.	Feb. March Nov.	

Ratio for centuries:—

0	1	2	3	4	5	6
200 100	700	600	500	400	300	
900 800	1,400	1,300	1,200	1,100	1,000	
1,800 1,500	1,700		1,600	1,900		
2,200 1,600	2,100		2,000	2,300		
2,600	2,500		2,400	2,700		
3,000	2,900		2,800			

To the last two figures of the year add 25%, neglecting fractions, add the day of the month, the ratio of the month and the ratio of the century. Divide by 7. Remainder indicates day of week.

To find day of week on which Nov. 21, 1890, falls:

25% of 90 = 22	90
Day of month = 21	21
Ratio " " = 6	6
" " 1800 = 0	0
	—
7   13	13
	19 — 6

Sixth day of week—Friday.

[WE unintentionally omitted to answer the second part of "Young Teacher's" first question in last number. Captain Henry A. Ford, to whom we have before on several occasions been indebted for similar favors, kindly sends the following fuller answer:—One territory, Dakota, was subdivided (about equally) and that to make the two States of North Dakota and South Dakota. The other new States have boundaries precisely coincident with those of the territories from which they were respectively formed, and they retain the territorial names. Their populations, by the census of this year, are: Washington, 349,516, an increase of 365.3 per cent. since 1880; South Dakota, 327,848, and increase of 233.63 per cent.; North Dakota, 182,425, increase 394.26 per cent.; Montana, 131,769, increase, 256.5; Idaho, 84,229, 158.29 per cent. of increase; and Wyoming, 60,589, 191.45. No other parts of the Union except the new territory of Oklahoma (population 61,701), which was filled at one bound and rush, exhibit such tremendous percentages of growth, though Nebraska and Colorado show up respectfully, the one with 135.17, the other with 111.48. The capitals of the new States are: For Washington, Olympia, on Puget Sound; South Dakota, Pierre, on the James River; North Dakota, Bismarck, on the Missouri; Montana, Helena (pronounced Hel'ena), near the Missouri; Idaho, Boise City, near Snake River; Wyoming, Cheyenne, in the Rocky Mountains. All except Pierre were previously capitals of territories. The capital of Oklahoma is Guthrie, though I believe a bill for its removal to Oklahoma City got through the late Legislature, after many troubles and some violence. In the matter of the pronunciation of "Arkansas," (see JOURNAL of same date, page 197), it is an interesting fact that, at the instance of the State Historical Society, some years ago, a brief Act was passed by the Legislature, legalizing the orthoëpy Ar'kansas—the only case of the kind on record, at least in Uncle Sam's domains.]

TEN PRINCIPLES FOR PRIMARY TEACHERS.—1. Arouse the minds of your pupils. 2. Give them something to do. 3. Tell only what you cannot get your pupils to tell you. 4. Make your pupils talk about what you have told them. 5. Review everything that is taught. 6. Teach a lesson or explain a text before asking your pupils to memorize it. 7. Make the lesson brisk and brief. 8. Enlist timid and dull pupils. 9. Cultivate sympathy with your pupils. 10. Give command only when example and suggestion will not suffice.

## Teachers' Meetings.

### TEACHERS' CONVENTION.

THE annual Convention of the teachers of Prescott and Russell Counties was held at Vankleek Hill, on Thursday and Friday, October 9th and 10th. In the absence of the President, Mr. Summerby, I.P.S., occupied the chair. Owing to the almost impassable state of the roads and the indifferent railway facilities to the Hill, the attendance on the first morning was small, but before the second day more than one hundred had assembled. The sessions were held in the Model school, which had been prettily decorated for the occasion—the teachers having spared no pains to render everything attractive and comfortable. The programme presented was as follows :

Lessons on Phonic Reading, by Miss Clarke and Miss Vankleek.  
Canal System of the St. Lawrence, Mr. Johnston.  
Fourth Class Literature Lesson, Mr. Hardie.  
Arithmetic—The True Remainder, Mr. Weir.  
Arithmetic Discount, Mr. McMahon.  
Phonic Reading, Miss Bond.  
Grammar—Inflection, Mr. Moore.  
Arithmetic—Decimals, Mr. Wight.  
The Imaginative Faculty, Mr. Hayes.  
Essay on Canada, Mr. Stewart.

The programme was interspersed with musical selections, several of which were Kindergarten songs by the pupils of the Model school, and much credit is due to the teachers for the trouble they took in this connection. Another instructive and interesting feature of the proceedings was the animated discussions that followed most of the papers. On Thursday evening a public meeting was held in the Town Hall, the programme consisting of music, vocal and instrumental, kindly provided by residents of the village, and an address by Rev. Mr. Halliwell on "The Teacher's Influence."

The election of officers for next year resulted as follows :

President, Mr. Summerby, I.P.S.; Vice-President, Mr. Hardie, Hawkesbury High School; Secretary Treasurer, Mr. J. Belanger, Plantagenet; Committee—Mr. Cheney, Mr. Wight, Mr. Sanderson, Mr. Moore and Assistant Inspector Dufort.

### WEST LEEDS TEACHERS' CONVENTION.

THE regular meeting of the West Leeds Teachers' Association was held in the Gananoque Model School on Thursday and Friday, the 13th and 14th inst. Although favored with fine weather, the attendance was not so large as might have been desired, owing partly, no doubt, to the condition of the roads. In the absence of the President, Mr. Johnson, Mr. Smellie was appointed to the chair, and during the first day conducted the proceedings in his usual happy manner. The forenoon was occupied in appointing committees and transacting other necessary business.

#### AFTERNOON SESSION.

The first on the programme was a very interesting lesson taught by Miss Legge to a class of pupils, showing her method of collecting and arranging the pupils' ideas on a subject preparatory to having them write a composition on it. Then followed an exhibition of calisthenics by the pupils of Miss McLaurin's room, which gave evidence of very careful training. Miss Walker's class then rendered several kindergarten songs, which were much appreciated by the teachers present.

Mr. Linklater next took up the subject of History. He showed what the aims in teaching history should be, pointed out the difficulties encountered in teaching it, and gave a general method of treating the subject. He discussed the subject thoroughly and showed that the result of the methods of teaching which had to be resorted to at present, in order to prepare pupils for examinations, was to disgust them with the subject, whereas the chief object in teaching history in Public schools, he contended, should be to cultivate such a taste for the subject that after leaving school the pupil would experience more pleasure from the reading of history, biography and other weighty literature, than from the light and sensational reading so much in demand at the present day. At the close of his address he submitted the following resolutions, which after quite a

lengthy discussion, were adopted by the Association :

"Whereas this Association is of opinion that preparation of candidates for the Entrance Examination in history leads to the adoption of methods contrary to what we believe to be the rational method of teaching the subject, and in a great measure destructive of the object which should be secured in teaching it, and whereas the nature of the subject is such that it cannot be properly taught from any one text book, and whereas the text book now authorized is altogether unsuitable for Public school pupils, therefore be it resolved :

1. "That in the opinion of this Association, history should be struck off the syllabus of subjects for Entrance Examination.

2. "That the Association recommends that the present text book cease to be authorized at the end of the current year, and that no text book in history be authorized for use in Public schools.

3. "That the secretary forward a copy of these resolutions to the Minister of Education."

After a short address from Dr. Badgely, in which he gave some reminiscences of his school days, the Association adjourned.

#### FRIDAY.

The committee appointed to consider the proposition of abolishing technical grammar, reported as follows :

1. "We are of the opinion that much of the grammar now taught in schools is beyond the comprehension of the average Public school pupil, and consequently is of little or no value as mental discipline.

2. "We think that the chief object of language teaching in the Public school should be to train pupils to use the English language with facility and correctness.

3. "This object is to be secured, not by the study of technical grammar but by a well graded course of training in oral and written composition.

4. "We therefore recommend that this Association endorse the resolution passed at the last meeting of the Ontario Teachers' Association, viz.: That technical grammar should be removed from the Public school curriculum except so far as it may be taught incidentally in a thorough course of practical language training."

After a short discussion the resolutions were voted upon and carried.

The following officers were then appointed for the ensuing year :—President, Mr. Linklater; Vice-President, Miss Legge; Sec.-Treasurer, Mr. Moulton. Executive Committee—Messrs. Johnson, Smellie, Sexton, Callander and Miss Clendenning. This was followed by an intermission, during which the teachers were entertained by several well rendered songs from the pupils of Miss Leslie's division.

A delegation from the W.C.T.U. waited on the Association in the interests of temperance, and offered a prize to the pupil taking the highest standing on an examination paper based on the Public School Temperance. They also advocated altering the regulations so as to make temperance a compulsory subject for Entrance Examinations. (It is now an optional subject. When taken the marks obtained are added as a bonus.) The committee on temperance brought in the following resolutions bearing upon the matter :

1. That we approve of the Department Regulations with reference to this subject, believing that if the teachers honestly carry out the regulations, the desired object will be effected.

2. That we approve of the action taken by the W.C.T.U. to promote the study of temperance in schools, and we urge the teachers of this inspectoretate to compete for the prize offered by the Union.

3. That this competitive examination be held on the Thursday before Easter, and that the papers be forthwith transmitted to the secretary of the Union.

Mr. Callander then outlined his method of teaching physical geography by means of the geographical board and moulders' clay. He advocated that the natural activities of the child, such as are displayed in making mud pies, etc., should be directed in the proper channel and thus made to serve a valuable educational purpose. The ideas thrown out were good and received the hearty endorsement of the teachers present.

W. Curle, B.A., mathematical master in the Gananoque High school, next took up the subject of decimal fractions. He disapproved of the method

by which many pupils are taught before entering the High School, and presented what he believed to be a more rational method of teaching the subject. Champions soon appeared in the lists for the method disapproved of, and an animated discussion followed in which many of the teachers participated.

The last paper was given by Mr. Barr, writing master in the Gananoque schools, and proved very interesting. He took up the subject of writing, and by means of illustrations on the blackboard showed how easily the pupils could be given a proper conception of the forms of letters by means of letter-building, in which all the letters, small and capital, are built up from the fundamental principles.

After a few remarks from Rev. Mr. Hughes, the Association adjourned to meet at the village of Newboro', on the third Thursday in May.

### RESOLUTIONS PASSED BY NORTH WELLINGTON TEACHERS.

THE North Wellington Teachers in convention assembled at Mount Forest, unanimously passed the following resolutions :—

It was resolved that the present text-book on History in the Public schools is altogether unsuitable, and that the President and the Secretary be requested to memorialize the Minister of Education to authorize a new and better school book on this subject.

It was resolved, though not quite unanimously, that there should be two entrance examinations to the High schools as at present.

It was resolved that the compulsory clauses of the Act should be enforced and the law amended to make it workable, also that the hundred days attendance required of each pupil between the ages of seven and thirteen years inclusive, shall be made either during the first or the second half year.

That Industrial Schools should be established in every county or group of counties, to which pupils might be sent whose presence in the Public schools is detrimental to the interests of the other pupils.

That Third Class Certificates should be valid only in the counties where granted unless endorsed by the Inspector.

That teachers should serve as assistants or pupil teachers in efficient rural schools for six months before being admitted to attend the Model Schools for the fall term, to be trained for Third Class Certificates.

JOHN A. HARPER, Glen Allen, President.  
A. K. MCLEAN, Harriston, Secretary.

MOUNT FOREST, Nov. 14th, 1890.

### Correspondence.

#### THE "SEMINARY" METHOD AT QUEEN'S.

To the Editor of THE EDUCATIONAL JOURNAL:

SIR,—As you ask in your last issue for a fuller description of the "Seminary" method of instruction, as adopted at Queen's University, I shall be happy to give you an account of the plan that is pursued in the department of mental and moral philosophy. Books to be read in connection with a prescribed course of study or a series of lectures are, as Principal Grant has already intimated, placed in the class room in a book case for which each student has a key. These books may be used at any hour of the day except when a class is being held, but must not be taken from the class room. The students themselves appoint a librarian, whose duty it is to notify the professor when a volume is missing.

The "Seminary" is in philosophy a natural expansion of the method which has for a long time been employed with the regular pass classes. This method consists in the exaction of weekly or fortnightly essays on subjects akin to the work which is being taken up in the lectures. Intermediate between this work of the ordinary classes and the advanced honors to which is given the name of "Seminary" work, stand the classes devoted to an examination of a specified text. This study of a special text is begun even in the pass class of Junior Philosophy, in which each student has a translation of the *Theatetus* of Plato and the *Ethics* of Aristotle, and is expected to make them out as

(Continued on page 220.)

## Primary Department.

### FIRST STEPS IN READING.

ARNOLD ALCOTT

(Continued from last number.)

ANOTHER way in which we may convince the little five-year-olds that the language which they have been accustomed to use may be written or printed, is as follows:—

TEACHER—"Tell me something which happened in your home this morning, Johnnie."

But poor, shy, little Johnnie gazes at his teacher for a little, and then turns his head away. And now, Miss Hope with her sympathetic, winning smile says, "Johnnie, what did your dog do before you came to school this morning?" Johnnie quite unconsciously says, "Jack ran after me this morning in the yard."

TEACHER—"Now children I'm going to put on the blackboard what Johnnie has said, and I want you all to remember whereabouts I put it. And so she writes in bright, yellow chalk the sentence, "Jack ran after me this morning in the yard." And by way of attracting more attention, the teacher draws around this a triangle with a flag on top, which is known in the little folks world as a tent.

Then the teacher questions again, and Mary says, "Our baby was sick this morning." And this is written in blue chalk and a little house drawn about it, and so on with one or two other pupils.

The teacher must always be sure to have the little pupils remember exactly what was said in order that the proof may be as clear as possible.

#### Re THE PROOF.

Miss Hope says, "I am going to send for a scholar from Miss Forward's room (one of the senior classes) and I shall ask her to tell us what I have written on the blackboard. You know that she could not have heard what any of you said." The scholar comes in, and reads the exact words which Johnnie and Mary, etc., said, and so proves that there are written signs by which we represent what we speak. We know by experience that this forms an exceedingly interesting lesson to primary pupils. We have shown one or two of the methods, by which we have presented this proof to our pupils, and as the best way to develop self-help is by independent activity, we leave our readers to think out other ways and means for themselves.

#### WORD-RECOGNITION.

The next step in the process is the recognition of words. Of course, this is done by means of the Phonic system. And the teacher who knows how to handle this system well, is able to produce children who can read any word in the English language if it be properly marked. "Multitudinous," "philosophical," "idiosyncrasies"; and such like, are very much appreciated by these bright little readers.

Before we can proceed intelligently any further in the teaching of Reading, word-recognition must be so perfect that the words are recognized unconsciously or automatically. And this can only be

attained by special gymnastics on word-recognition, especially on difficult combinations, and with those pupils who are deficient, and who are slow in this branch of Reading. Let me give a few suggestions, which I know are useful:—

1. Whenever possible let the sounds of the letters be taught in little stories, such as "s" representing the old goose hissing; "ch," the puffing steam-engine; "t," the man with the umbrella up; and so on, teaching the sounds and the forms, by comparison with objects, if possible. Also have the children personate the letters.

2. Again, do be careful not to ask the children to make the little letter that has the hissing sound, and so on; but say make "s," make "t," etc. Children have no difficulty in remembering the names of things which are familiar to them. The little tots in the house are quite familiar with the "refrigerator," and one hears them saying "portmanteau," and "amphitheatre," if they have seen these.

3. Use script from the first. One or two lessons on the printed letters will be sufficient to impress the forms. But of this subject more in another number.

#### FRIDAY AFTERNOONS.

Now, let me tell you of two ideas which are very interesting for Friday afternoons, and as a rest between the lessons:—

a.—Have an *exhibition* in your class, and let the pupils bring samples of grain, salt, sugar, etc., also some hardware, toys, dolls, and so on. Then have exhibitors to tell of the merits of this and of that article. We had this in our class, and all I say is "try the experiment for yourselves."

b.—Select a bright object such as a small table-napkin ring. Tell the scholars that one is to hide it in any place in the room in which it can be seen. Then, that another pupil who has previously been sent out of the room, is to come in and find it. And of course we may say "hot," "cold," etc., according as he is near to, or far from the object. I imagine the delight, and the clapping, if the pupil is quickly successful. I confess it took the teacher a good while to find the object, when she had a chance. Of course, we ought to choose as seekers those dullest in the quality of observation, as this faculty chiefly is developed by this game, then the hiders are consequently the brighter pupils.

We have given our readers a few ideas, which we trust will prove instrumental in helping them on to more independent effort.

And I am tempted just here to quote a passage from Oliver Wendell Holmes, in the "Autocrat of the Breakfast-Table":—

"An admiring friend said to a bright conversationist the other day, that he ought to be more careful of his speech, for he was really wasting merchantable literature. The talker took him to a window out of which were visible a dusty street and a sprinkling-machine, and said, 'What would be the state of the highways of life, if we did not drive our *thought-sprinklers* through them with the valves open, sometimes?'

"Besides, there is another thing about this talking, which you forget. It shapes our thoughts for us;—the waves of conver-

sation roll them as the surf rolls the pebbles on the shore. Let me modify the image a little. I rough out my thoughts in talk as an artist models in clay. Spoken language is so plastic,—you can pat and coax, and spread and share, and rub out, and fill up, and stick on so easily, when you work that soft material, that there is nothing like it for modelling. Out of it come the shapes which you turn into marble or bronze in your immortal books, if you happen to write such. Or, to use another illustration, writing or printing is like shooting with a rifle; you may hit your reader's mind, or miss it;—but talking is like playing at a mark with the pipe of an engine; if it is within reach, and you have time enough, you can't help hitting it."

#### ONE DAY'S VISIT.

RHODA LEE.

"THESE ladies would like to see something of our primary work, Miss Martin. You might let them see some of your music methods." With this scant word of introduction, accompanied by an encouraging nod, the door closed on the active principal of the M— school and we found ourselves in a bright and tastily-decorated room, wherein were seated between sixty and seventy sunny little spirits who constituted the First Book class of the town.

Unceremonious visitations of this sort are not the most delightful experiences in a teacher's life, but our intrusion was accepted in a cheerfully philosophical manner and we received a most cordial welcome. Before many minutes had elapsed, indeed with almost the first word, a feeling of content, with the thought, "We have come to the right place," possessed us and we sat down prepared to learn.

Of what we witnessed in the music line hereafter. Let me tell you first of one or two general impressions the hour's work made upon us.

Was it magnetism, sympathy, power of inspiration, or what, that while it influenced and moved at will, also held the class. Bright, wakeful activity was stamped on every face. Ah! one thing I noted. Miss M— never did anything herself that a scholar could do for her. Whether it was to make some little illustration on the board, to rub it off, or to render personal assistance, all wished most anxiously to be made useful.

It seemed to me that the aim of the teacher was the employment of every hand and mind, and truly there were few wandering eyes or listless looks.

The co-operative activity among those little folks was marvellous. When a question was asked almost every hand was raised to make some answer. In any class recitation or in singing every voice was heard.

"Naturally bright children, I fancy," my friend whispered to me. At the time I was inclined to agree with her, but I believe that argument of "the difference in children" to be a very weak one, resting on an extremely sandy foundation. In a class of sixty or seventy children anywhere in our Province there will generally be only the usual percentage of naturally bright or

naturally dull ones. It rests with the teacher to determine whether her class, as a whole shall be bright or otherwise.

The teachers who aim at a genuine spirit of co-operation know that external incentives come first. Little posts of honor are organized, and in every way the children are made to understand that it lies within every one's power to aid substantially both their teacher and their fellow-pupils. The spirit of helpfulness is very strong in some children. Let it be exercised. While awaiting the music lesson one or two blackboard novelties attracted my attention. It required but a glance at these to see that the system followed was the *Tonic-sol-fah*. We are "one-ideal" enough to think that by no other system can good results be obtained in junior classes.

Beside the ordinary modulator, was a bird modulator, the different songsters being made in the colours producing the mental effects of the tones.

On a side-board was a carefully executed drawing of two little birds on an old tree bough while deftly worked were the words "Sweet Songsters." Below this were written the names of the best singers in the class—those who made the best efforts, I hope.

Somewhere in the same locality was a tabulated record which I discovered was the result of a Friday competition held the previous week, between the girls and boys. The girls were ahead.

The music lesson began with a series of voice exercises too varied and numerous to describe at length. An easy succession of notes sung to different vowel sounds and combinations; one tone sung to different syllables and increasing and diminishing in force, and many other excellent exercises for producing sweetness and flexibility of the voice, followed. Imitative exercises were included in the voice practices.

Then followed ear exercises, hand signs, modulator, time, and the lesson ended with the singing of a song that indicated no mere mechanical work, but shewed that the class understood and appreciated what they were delighting us with.

One device in which the children were greatly interested was a piano which this bright young lady made of eight of her scholars, ranging from a sturdy little chap who represented *doh* to *high-doh*, the tallest girl! As the teacher played on her animated piano, the scholars in their seats sang the different notes, with some rather difficult intervals.

We listened delightedly for some time to these truly grand results, but before leaving the class I had one question to ask: "Does your usual lesson include all this work?" I inquired. In answer my attention was directed to a programme, hung in a convenient place, which on examination I found to be a plan of work for each day in the week. Every lesson began with voice and modulator exercises, but the other subjects were taken in order upon different days.

"To that table, I attribute to a large extent my success in music, this term," added Miss M.— "While I am still far from being satisfied with my singing, I find that in this subject as in all others, by having a systematic plan of work I can accomplish much more in the time. When a

programme is strictly adhered to we avoid any unjust sacrifice of one branch to another."

I had intended speaking of many other good things we saw in our visit, but I have to remind myself that the space of the primary department is limited and also that there is always a possibility of tiring even the most patient and indulgent of my readers.

## \* Hints and Helps. \*

### WHAT I SAW IN A SCHOOL-ROOM.

A TEACHER sent one of his assistants to visit a certain school. He made this report.

I noticed that the teacher was self-possessed, and the pupils did not stare at me.

The signals were promptly obeyed; only a very light tap of the bell was given.

The pupils were very quiet, and yet very busy; they got permission to speak before speaking.

The pupils seemed to do all the work; the school was run by them.

They were very kind to the teacher.

The room was very clean, the desks were smooth and bright, the books laid in order.

At the close of each recitation there was music or marching.

The doors were then opened and the air refreshed before the next recitation.

There was nothing tiresome about the exercises; there was a general brightness and elasticity.

The physical training of the pupils seemed to be attended to as much as the mental training.

There seemed to be a desire to know, and a willingness to listen.

There was a comradeship between the teacher and the pupil. When the teacher heard a certain thing she said, "I did not know that before."

The teacher seemed to be a superior person—very neat in appearance, and with good manners.—*Ex.*

### BEAUTIFYING THE SCHOOL-ROOM.

PROF. H. H. FISK.

LET the windows of the school-room be beautified by living plants and blooming flowers, contributing alike to the good health and good morals of the pupils; and let the ugly, monotonous slated board, which is not only offensive, but really injurious to the eyes, be enlivened by crayon sketches, be they ever so simple, and by ornamentations in bright but harmoniously arranged and judiciously grouped colors. Let the sayings of masters of prose and poetry be emblazoned as "memory gems," and thus kept before the eyes and minds of the pupils. Let the children enter airy, well-lighted rooms, the walls decorated with tasty, neatly-framed and well distributed pictures or busts. Portraits of Washington, Jefferson, Franklin, Lincoln, hanging in the parlor or the school-room, have taught lessons of honor, patriotism and truth to many an earnest child. After reading some of their noble deeds, which every child admires, has not many a boy gone to the picture, studied it with the deepest interest, and studied himself, too, with a firm resolve that he would try to live up to the example set by these illustrious men? In the days to come, the features of the martyred Garfield will be a glorious illustration of what patience, honesty, integrity, iron-will, indefatigable industry, love and devotion to parents, wife, children and country may accomplish—in a word, what virtue implies. Can we not have fit school-room ornaments of this class—ornaments that shall associate us with models in the past and daily teach us *object lessons* of earnestness, patience and love?—*Exchange.*

### GIVE THE PUPILS A CHANCE.

ALLOW the pupil to say what he wishes to say on whatever subject he is asked to talk about. Teacher how would you like to have some one interrupt you two or three times before you finish your first sentence on a subject that you have been asked to explain? Suppose you were writing a paper on *superstition*, and your first sentence is, "Ignorance

is one of the factors of superstition." Now you begin to read and get as far as "Ignorance is"—and some one says, "Now what do you mean by *ignorance*?" Wouldn't you feel like telling him to wait awhile and he will not be so ignorant?

Are pupils ever treated so? A pupil begins to explain a problem in arithmetic, and he does not begin just as the teacher thought he would and he is stopped and questioned on this and that till he does not know his own name.

Problem.—A bought seventy-five shares of stock at ninety-four and sold it at five per cent. premium. What did he gain, the par value of each share being \$50?

The pupil has solved by getting the cost of the seventy-five shares at ninety-four and then finding the amount for which they were sold, and then finding the difference between the two. Of course this is correct. But the teacher thinks that it is better to find gain on one share first and multiply that by seventy-five for the total gain. Everybody knows this is right too, and possibly the better method.

The pupil begins to explain as follows: "The par value of seventy-five shares at \$50 is—" Tr. What do you want the par value for? The pupil is somewhat bothered and hesitates a little, and the teacher says, "Do you think that is the best way to do that problem?" Pu. I thought that was right. Tr. What is the cost of one share? Pu. Ninety-four. Tr. Ninety-four what? Pu. Ninety-four per cent. Tr. Well, what of? Pu. Par value. Tr. Of what? Pu. One share. Tr. Well, now what is the par value of one share? Pu. \$50. Tr. Well, now, go on.

He begins again as he did before, and is stopped again and told to go on where they quit. He does not know where they quit. He has not worked according to that plan, and he should be heard through in his own plan. He should have credit from his teacher for all that is correct. The truth is, children are almost questioned and instructed to death. Keep still and give them a chance.

We do not wish to be understood to say that a teacher should never talk. There is a time to talk, but the teacher should be sure that the time has come, and that he has something to say that will benefit the pupil. We are more likely to talk too much than too little. Don't hurry pupils. Let them think. Talk enough to give them something to think about, and give them time to think; and let them say what they think without disturbing them.—*Indiana School Journal.*

"How to live?—that is the essential question for us. Not how to live in the mere material sense only, but in the widest sense. The general problem which comprehends every special problem is—the right ruling of conduct in all directions under all circumstances. In what way to treat the mind; in what way to manage our affairs; in what way to bring up a family; in what way to behave as a citizen; in what way to utilize all those sources of happiness which nature supplies—how to use all our faculties to the greatest advantage to ourselves and others—how to live completely? And this being the great thing needful for us to learn, is, by consequence, the great thing education has to teach. To prepare us for complete living is the function which education has to discharge: and the only rational mode of judging of any educational course is to judge in what degree it discharges such functions."—*Herbert Spencer.*

"MANY years ago, when I was a child, the teacher of the school where my early studies were performed closed his connection with the establishment, and after a short vacation another was expected. On the appointed day the boys began to collect, some from curiosity, at an early hour, and many speculations were started as to the character of the new instructor. We were standing near a table with our hats on—when a small and youthful-looking man entered the room and walked up toward us. Supposing him to be some stranger, we stood looking at him as he approached, and were thunderstruck at hearing him accost us with a stern voice and a sterner brow, 'Take off your hats. Take off your hats and go to your seats.' The conviction immediately rushed up in our minds that this must be our new teacher. The first emotion was that of surprise, and the second was that of the ludicrous, though I believe we contrived to smother the laugh until we got out into the open air."—*Jacob Abbott.*

# The Educational Journal.

*Published Semi-monthly.*

A JOURNAL DEVOTED TO LITERATURE, SCIENCE, ART AND THE ADVANCEMENT OF THE TEACHING PROFESSION IN CANADA.

J. E. WELLS, M.A. - - - - - *Editor.*

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## ★ Editorials. ★

TORONTO, DECEMBER 1, 1890.

### THE MINIMUM AGE-LIMIT.

**I**N another column will be found a letter from Mr. Hammond, of Aylmer, touching the foreshadowed intention of the Education Department to raise the minimum age at which young men and women may become legally qualified to enter the teaching profession. Mr. Hammond agrees with us in approving the principle of the proposed change. He admits that more of the maturity of character which age alone can bring is desirable in teachers, but thinks that to raise the minimum from seventeen or eighteen years to twenty-one at a stroke would be going altogether too fast.

There is much force in the considerations urged by Mr. Hammond. He is very probably right in the opinion that it would hardly do to go forward with so great a bound. We may here observe that we have no certain information that such is the Minister's intention. As the article to which our correspondent refers intimates, our knowledge was derived from the newspapers; if memory serves us from the report of a speech made by Mr. Ross on some public occasion. Though the report, from what-

ever source derived, was seemingly definite and to the effect stated, we deem it very unlikely that so sweeping a change will be made at once. Leaving other considerations aside, it would hardly be safe to reduce the number of candidates suddenly to so great an extent, however largely the supply of candidates may at present be in excess of the demand. We shall probably have to wait for the meeting of the Legislature to learn the exact nature of the change determined on.

Mr. Hammond's argument is, however, based not so much upon the fear of too sudden a reduction in the number of candidates entering the profession, as upon the fear of a marked deterioration in the quality. We confess we had not viewed the matter in that light. It is probable that our correspondent's opportunities for personal observation have been much better than our own. We shall be very glad, as the question is one of importance, if other teachers will act on his suggestion and give us in brief the benefit of their observations and opinions. Meanwhile we may offer a remark or two, of a tentative rather than controversial character.

The force of Mr. Hammond's argument depends upon the correctness of his opinion that the difference in the ages at which candidates present themselves, say for the Second Class Non-Professional, indicates a corresponding difference in mental ability. Assuming the correctness of this view, it might still be justly said that mere mental ability, as manifested in the mastery of text-books, is but one—though we admit a most important one—of the qualities essential to good teaching. It is by no means the case that the parts which make the successful student are uniformly associated with the other qualities of mind and heart which make the successful teacher. It is often found, too, as we all are well aware, that the comparative "smartness" of one young student, as compared with another of the same age, does not indicate greater natural abilities, but simply an earlier development. Not infrequently the duller boy proves to be, a few years later, the abler and stronger man.

Again, can it be the fact, as Mr. Hammond supposes, that the reason why some students obtain their Second Class Non-Professional Certificates at seventeen or eighteen and others at the age of twenty to twenty-three is, as a rule, simply that the latter have, even as youths, less natural ability than the former? Is not the difference described altogether too wide to be accounted for on that principle? Is it not rather due in most cases to the difference in early opportunities? Mr. Hammond's statement that the most successful teachers in our schools to-day are

those who have passed through the school of necessity, whose financial circumstances were such as to compel them to gain their own livelihood before reaching the age of twenty-one years, seems to us to favor the latter view. May it not be that the reason why one student is prepared to pass the examination referred to at seventeen or eighteen, while another is not so prepared until three or four years later, is often that the former has been able to attend school regularly while the other has been obliged to earn his living? In that case the latter has had the additional advantage of "having passed through the school of necessity," and so is pretty sure to make the better teacher.

Once more, and very briefly. Which is the most likely to remain in the profession? This is a vital question. Is it not the rule that the clever students who obtain their Second Class at seventeen or eighteen are the ones who will make their teaching a stepping-stone to some more lucrative profession, and that those who commence to teach at a riper age are more likely to continue in the work? It is worthy of consideration, too, that the large reduction in the number of candidates for certificates which would result from raising the age to twenty-one would be the most effectual means of raising the emoluments of teachers more nearly to the level of those in other learned professions. The longer time afforded for preparation would make it easy also for the Department to set up a higher standard of qualification. But the higher salaries and qualifications would, in their turn, render the profession more attractive to ambitious students, thus tending strongly to counteract the very tendency which Mr. Hammond fears.

### PROPOSED HIGH SCHOOL TEACHERS' ASSOCIATION.

**L**AST summer the High School and College Examiners at work in Toronto upon the Third Class and Second Class papers, discussed informally the proposal to form a High School Teachers' Association. A committee was asked to make arrangements, if possible, for a general meeting in the Christmas holidays, of High School teachers and others interested. This committee are calling a general meeting for the purpose indicated, during the approaching holidays.

The Science Association, the Modern Language Association and the Classical Association are to meet in Toronto on Dec. 29th, 30th and 31st, and arrangements have been made with these associations to give place to a general meeting on the evening of December 30th.

The business of this meeting will be, it is

announced, to consider the question of forming an association of High School teachers only, or an association of High School teachers and all others interested in Secondary Education, with the different associations already formed (the Science, the Modern Language and the Classical Associations), and any others that may be formed, as sections thereof. We are not informed what is to be the relation of the proposed association to the High School Section of the Provincial Teachers' Association, or whether it is likely to interfere with or supersede that section. We can readily conceive that such an association as that contemplated, of those interested in Secondary Education, might become very useful both to the teachers themselves and to their special department of Educational work. But we should regret any movements that would tend directly or indirectly to weaken the Provincial Association. Whether the proposed organization is likely to have that effect we are unable to judge. We shall be better able to form an opinion after the meeting, during which the reasons-to-be of the new association will no doubt be fully discussed. The Science, Modern Language and Classical Associations are all giving promise of good work; but there are, it seems to us, important advantages in having the Public and High School Masters meet and confer together in a general association. Perhaps it is still intended to do this as heretofore. We wait for more light.

#### POLITICAL SCIENCE.

**A**N apology is due to some of our friends for our failure, through an oversight, to give in last number some information asked in reference to the "Toronto University Studies in Political Science," referred to in our columns some time since. These studies are to be printed from time to time by authority of the Minister of Education and presented to the Legislative Assembly as Appendices to his Annual Report. We learn from Professor Ashley that no arrangement was made for the sale of the first number. We understand, however, that the Educational Department will readily send copies to those who care to apply for them. It is probable, we believe, that when the next Report is presented to the House a certain number of copies may be placed for sale with the booksellers. It seems to us highly desirable that this should be done, as nothing but good can result from diffusing the kind of information these essays are adapted to supply, and thus interesting as large a number of persons as possible in a class of studies which has a close relation to the future well-being and

progress of the country. As yet, but one essay has been printed—that by Mr. McEvoy on the "Ontario Township." Our readers may be interested to know that Mr. McEvoy, the writer, has since won the Ramsay Post-graduate Scholarship in Political Economy for an essay on the History of Canadian Currency and Banking; and that he has lately been appointed Fellow in Political Science in the University. He will devote himself specially to the study and teaching of Canadian Constitutional History.

A second essay is being prepared by one of Professor Ashley's pupils, and will be issued toward the end of January, on Municipal Works (Water, Gas, Electricity, Street-cars, etc.), with special regard to Canada—a subject of great present interest to the people of many Canadian municipalities. It is possible that a third instalment of the "studies" may be issued before the end of the present session.

THE Executive Committee of the National Teachers' Association decided at their annual meeting in St. Paul, Minn., this year, to hold their next meeting in Toronto. The meeting will open here on July 14th, and continue one week. The association is a vast one, numbering 16,000 persons, male and female. The St. Paul meeting was attended, it is said, by twelve thousand members of the Association, and it is thought that as many will be present in Toronto next summer. It has been suggested that the occasion will be opportune for forming the proposed Dominion Association. It may also be found expedient to have the name of the American National changed to International Association, which it is becoming in effect.

#### \* Literary Notes. \*

"UNDER the Mistletoe" is the subject of a pleasant sketch by Ernest Ingersoll, in *The Chautauquan* for December, treating of early legends and customs connected with Christmas greens and celebrations. A poem, "The Prayer," by Katharine Lee Bates, is also especially appropriate to the commemoration of this anniversary.

SINCE the meeting of the General Conference in Montreal last September, the Methodist Book and Publishing House makes another stride forward in its popular periodicals. A new paper for young people, with the progressive name "ONWARD," an eight-page, well-illustrated weekly, is issued at the low price of 60 cents a year, singly—over 5 copies, 50 cents a year. It is edited by the Rev. Dr. Withrow. The popular *Methodist Magazine* (\$2 per annum) and the *Sunday School Banner* (60 cents per

annum) will also be considerably enlarged and improved. The Rev. William Briggs, Toronto, is the publisher of these periodicals.

MR. STOCKTON'S serial, "The House of Martha," goes on merrily in the *Atlantic* for December. The *Atlantic* is fortunate in securing so clever a serial for the new year. With its short stories from Rudyard Kipling and Henry James, its papers by Mr. Lowell and Francis Parkman, and the hitherto unpublished letters from Charles and Mary Lamb, 1891 will be a red-letter year for the magazine. Margaret Christine Whiting writes about "The Wife of Mr. Secretary Pepys," a delightful, gossiping article, with amusing quotations from the immortal Diary. Mr. A. T. Mahan, in "The United States Looking Outward," shows the isolation of the country, not only in respect to position, but in regard to trade; and prophesies a change in public opinion, which will lead to a more active policy in trade with other countries. Amongst other attractive matter is Dr. Oliver Wendell Holmes' two-page poem, called "But One Talent."

THE December number of *St. Nicholas* has for frontispiece Rembrandt's wonderful portrait of himself, engraved by T. Johnson. This portrait is referred to in Mrs. Dodge's account of Holland and its strange features. There are to be two of these papers, and it is the first which here appears under the name "The Land of Pluck," fully illustrated by new drawings made expressly by George Wharton Edwards. New and old readers of "Hans Brinker" will welcome these sketches gladly. Another important contribution is "The Story of the Golden Fleece," re-told for American boys and girls by Andrew Lang, with illustrations by Birch—this number containing the introduction only. The serials, by J. T. Trowbridge, Noah Brooks, and Mrs. C. V. Jamison, are the strongest stories for the young now in course of publication; all three serials are strongly illustrated, the first by Sandham, the second by W. A. Rogers, and the third by R. B. Birch.

A STRONG attraction of *Little Men and Women* for 1891 will be the beautiful twelve-chapter Serial Story, *Lady Gay*, by Mrs. George Archibald, illustrated by Virginia Gerson. "Lady Gay" is a real little girl, with many delightful cousins and friends, boys and girls, some big, some little, but all real children, living to-day. There will be several other sets of stories; "The Little Freighter," by Jennie Stealey, a story about two "little men" in the far Southwest; "Kittie's Papa," by Anna Hannah—true stories told to Kitty by her papa's mother; "Fruits of Sunny Lands," by Mrs. Anna M. Henderson, who has seen the fruits she tells about growing in their own clime. Besides, there will be short stories, little articles in history, natural history, botany, etc., and poems and jingles—all beautifully pictorial. January begins the new volume. One dollar a year, postpaid. D. Lothrop Co., Boston.

THERE is nothing like a fixed, steady aim, with an honorable purpose. It dignifies the nature and insures success.—*Stopford Brooke*.

# The Educational Journal

## \* Mathematics. \*

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

### CORRESPONDENCE.

THE correspondence on hand cannot all be disposed of in this issue. Its volume proves that the JOURNAL is found a faithful friend to its patrons. We are glad of so much assistance in making this column vigorous and useful. The following letter explains itself:

I think the *Alpha* problem given in your issue of July 1st, admits of several solutions besides Mr. Reynolds', published in JOURNAL of October 15th.

Mr. Reynolds, in equation (1) assumes that  $f$  is not greater than  $\frac{1}{3}$ , and when he says that  $y$  is less than  $6\frac{1}{2}$  he assumes that the man does more work in a day than the boy does. The problem, however, does not restrict us to the case in which  $y < 6\frac{1}{2}$  and  $f$  not less than  $\frac{1}{3}$ . We may suppose  $y$  to be any positive integer whatever, and  $f$  any fraction less than  $\frac{1}{3} + \frac{1}{x}$ . This will give us a number of other solutions.

Even in the case supposed by Mr. Reynolds we may, in equation (3), assume  $y$  equal to any positive integer less than 7, and thus obtain six other solutions.

The problem is evidently indeterminate.

W. D.  
MACLEOD, N.W.T., November 3rd, 1890.

PROFESSOR DUPUIS, of Queen's College, Kingston, has kindly sent the following problem with solution. No doubt it will gratify the tastes of many of our advanced readers:

Theorem. In any concyclic polygon whose vertices lie in consecutive order upon the circle, if  $n$  be the number of sides,  $D$  be the continued product of the perpendiculars from any point on the circle to the diagonals, and  $S$  be the continued product of the perpendiculars from the same point on the sides, then

$$D^2 = S^{n-3}$$

Let  $a, b, c, \dots$  denote consecutive vertices. Then  $ab$  is a typical form for any side, and  $ac$  a typical form for any diagonal.

Let then  $p(ab)$  be a type form for the perpendicular from the point  $O$  to a side, and  $p(ac)$  be a type form for the perpendicular to a diagonal.

Since there are  $n$  vertices, there are  $\frac{1}{2}n(n-1)$  joins, of which  $n$  are sides. There are accordingly  $\frac{1}{2}n(n-3)$  diagonals, a diagonal being a join of any two non-consecutive vertices.

Now in the triangle  $Oab$ , if  $\delta$  be the diameter of the circle,  $\delta p(ab) = Oa \cdot ob$ .

And since there are  $n$  sides, each involving, in the foregoing form of expression, the distances of two vertices from  $O$ ,  $Oa$  will appear twice in the continued product. So also will  $Ob, Oc, \dots$

$$\therefore 8^n \cdot \pi \cdot p(ab) = (\pi Oa)^2, \quad (A).$$

Where  $\pi$  denotes the continued product of all the quantities of which the one written after it is a type form.

Again, since  $n-3$  diagonals pass through each vertex,  $n-3$  perpendiculars are drawn to these, each involving in its expression the distance of this vertex from  $O$ . And as there are  $\frac{1}{2}n(n-3)$  diagonals in all,

$$\delta^{n(n-3)} \cdot \pi p(ac) = (\pi Oa)^{n-3}, \quad (B)$$

Whence eliminating  $\delta$  between (A) and (B),

$$\pi p(ac) = \sqrt[n]{\pi p(ab)} \cdot \delta^{\frac{n(n-3)}{2}}$$

or,  $D^2 = S^{n-3}$

Q.E.D.

Making  $n=4$ ,  $D^2=S$ ;  $n=5$ ,  $D=S$ ;  $n=6$ ,  $D^2=S^3$ , etc. Thus the pentagon is the only polygon for which the continued product of the perpendiculars upon the sides is the same as for the diagonals.

Again, let  $T$  denote the continued product of the perpendiculars from the point  $O$  to the tangents at all the vertices, and let  $P(at)$  denote the perpendicular to the tangent at vertex  $a$ .

Then,  $\delta p(at) = Oa^2$ .

Whence, taking all the vertices,

$$\delta^n \pi p(at) = \sqrt[n]{\pi(Oa)^2} \cdot \delta^{\frac{n(n-3)}{2}}$$

And by comparison with (A),

$$\pi p(at) = \pi p(ab)$$

or  $T=S$ .

That is, the continued product of the perpendiculars from any point on the circle to the sides, is equal to the continued product of the perpendiculars from the same point to the tangents at the vertices. Or, if a polygon be inscribed in a circle, and its polar be circumscribed, the continued product of the perpendiculars, from a point on the circle to the sides, is the same for both polygons.

N. F. D.

MR. LESLIE J. CORNWELL, B.A., of Ingersoll Collegiate Institute, has communicated a method of finding the H.C.F. of two or more fractions, which will appear in a future issue.

HERMAN JENNER, of Charing Cross, has sent solutions of most of the III. Class arithmetic paper, which we shall use by-and-by.

For solution No. 27, page 146. Public School Arithmetic, D.H.F.

Please give both the problem and the reference to the book. Let all correspondents pay attention to this rule.

ARITHMETIC, II. CLASS, JULY, 1890.

(For the questions see page 198 in the last number.)

SOLUTIONS, by W. Prendergast, B.A., Seaforth Collegiate Institute.

[NOTE.—Questions 2 and 3 are not expressed with sufficient precision. The words "when discounted at 7%" in No. 2, admit of various interpretations, e.g., they may mean 7% *true discount* with or without days of grace, and this interpretation leads to two different answers, or they may mean 7% *bank discount* with or without days of grace, and this interpretation leads to other two answers. Probably the candidates who wrote gave all four of these answers on one or other of their papers. The examiners might easily have avoided this ambiguity. In the same way No. 2 admits of four correct answers. No. 1 has several times been answered in full in this column. These remarks will explain why the solutions begin at No. 4.—MATHEMATICAL EDITOR.]

(4) Line joining opposite corners of cube is hyp. of a right-angled triangle. Edge of cube and diagonal of face are the other sides.

Edge of cube =  $3\sqrt{2}$ ; diagonal of face =  $\sqrt{2} \times 3\sqrt{2}$ .

$$\text{Required distance} = \sqrt{3} \times 3\sqrt{2}.$$

$$= 1.73205 \times 1.259921$$

$$= 2.18225 \text{ yards.}$$

$$= 78.559 \text{ inches.}$$

At first :

(5)  $\frac{1}{1000}$  of taxable pro-

perty = int. on debt.

$\frac{3}{2000}$  of taxable pro-

perty = school tax.

$\frac{15}{2000}$  of taxable pro-

perty = city tax ; subse-

quently.

int. =  $(\frac{3}{100} \times \frac{84}{100})$  of for-

mer amt.

S. tax =  $\frac{1}{3}$  of former

amt.

C. tax =  $\frac{3}{30}$  of former

amt.

Taxable property =  $\frac{3}{30}$  of former amt.

Now int. =  $(\frac{1}{100} \times \frac{1}{25} \times \frac{3}{30})$  of tax property.

School tax =  $(\frac{1}{200} \times \frac{1}{10} \times \frac{3}{30})$  "

City " =  $(\frac{1}{200} \times \frac{3}{30} \times \frac{3}{30})$  "

Whole =  $\frac{3}{100} \times \frac{1}{1000} (\frac{84}{25} + \frac{11}{2} + \frac{17}{2})$  "

=  $\frac{168}{10000}$

=  $16\frac{2}{5}$  mills on \$.

(6) If  $\frac{1}{x}$  be the fraction by which the rate of duty is increased, then  $\frac{1}{x}$  = the fraction by which the consumption of grade is decreased.

$$\frac{1}{x}(1 - \frac{1}{x}) = \text{increase in revenue.}$$

$$\frac{1}{x}(1 - \frac{1}{x}) = \frac{1}{10} \quad x = 9.47.$$

$$\text{Increase of rate} = \frac{1}{9.47} \text{ of itself.}$$

$$= 10.55 \text{ per cent.}$$

(7) Vol. of 1 grain of gold =  $\frac{1}{19.3}$  of vol. of 1 grain of water.

" " silver =  $\frac{1}{10.5}$  of vol. of 1 grain of water.

" " " =  $\frac{193}{105}$  of vol. of 1 grain of gold.

" " " =  $\frac{193}{1155}$  of vol. of 1 grain of gold.

Vols. are as 1 :  $\frac{193}{1155}$ .

then are  $\frac{1155}{193}$  cub. in. of gold in mixture, and

$\frac{193}{1155}$  cub. in. silver.

Weight of mixture =  $252.458 \times \frac{1155 \times 10.5}{193} + \frac{193 \times 10.5}{1155}$

$$= 252.458 \times \frac{10.5 \times 10.5}{1155} = 4554.357 +$$

- (8) Train gains 110 yds. on A in 9 sec.  
 " meets B 609 sec. after overtaking A.  
 " gains  $\frac{110 \times 609}{9}$  yds. on A in 609 sec.

= distance between A and B when train meets B.

$117\frac{1}{3}$  yds per min. = A's rate.

$850\frac{2}{3}$  " " = train's "

$66$  " " = B's rate.

B meets A in  $\frac{110 \times 609}{9} \times \frac{1}{183\frac{1}{3}} = 40\frac{2}{3}$  min.

$$(9) (a) \frac{1}{5} = \frac{2}{10}; \therefore \frac{1}{5^3} = \frac{1}{10^3}; \frac{1}{5^7} = \frac{128}{10^7}$$

$$\text{Hence } \frac{1}{3.5^3} = \frac{1}{3} \text{ of } .008 = .00222; \text{ and } \frac{1}{7 \times 5^7} = \frac{1}{7} \text{ of } .000128 = .00018.$$

$$\therefore \text{Expression} = 2(.2 + .008 + .00064 + .00018) = 2 \times .208658 = .417316. \text{ Ans. } .4173.$$

$$\frac{.208658}{.00018} = 117\frac{1}{3}.$$

$$\therefore 1 \text{ metre} = 100 \text{ centimetres} = 1.09363 \text{ yards.}$$

$$\therefore 1 \text{ centimetre} = .00109363 \times 36 = .03937068 \text{ inches.}$$

$$\therefore 1 \text{ inch} = 1 \div .03937068 \text{ centimetres} = 2.539954.$$

$$\therefore 1 \text{ cub. inch} = (2.539954)^3 \text{ cub. centimetres.}$$

= 16.3861, which is most easily obtained by using contracted multiplication and working the result to five places, so as to insure the accuracy of the fourth place. The absolutely correct result is 16.3861759.

(10) Sold for  $(\frac{1}{10} \times \frac{1}{10} \times \frac{9}{100} \times \frac{9}{100} \times \frac{9}{100})$  of value.

cost = 8

gain = .36220258.

.36220258 = int. on 8 for two years.

.226387 = rate per cent. simple int.

.2052 = " " compound int.

(11) (a) \$128 yields a gross income of \$8 yearly.

tax = .144, net income = .7856.

(b) \$128 yields 12.80 gross.

2.56 = insurance, etc.

2.1312 = taxes.

.81088 = net income.

Incomes derived from equal sums invested are as 7.856 : 8.1088.

Amounts invested to give equal incomes are as 8.1088 : 7.856.

\$4,989 divided in this proportion gives \$2534 and \$2455.

$$(12) (\frac{1}{3} + \frac{1}{30} + \frac{1}{30}) \div 100,000 = \frac{411}{30,000,000} = \frac{I}{72992\frac{28}{31}}$$

(i) ∴ assumed divisor differs so little from 73000, that assumed quotient is nearly correct.

(ii) Correct quotient =  $\frac{1}{72992\frac{28}{31}}$  of No.

Assumed " =  $\frac{I}{72992\frac{28}{31}}$  of No.

C. Q. = A. Q.  $\times \frac{72992\frac{28}{31}}{I}$ .

= A. Q.  $- \frac{72992\frac{28}{31}}{73000}$  of A.Q.

= A.Q.  $- \frac{A.Q.}{10000} - \frac{5.7}{73000} A.Q.$

i.e. a greater degree of accuracy would be attained if from the result obtained as directed in the problem, one ten-thousandth of itself were subtracted.

II. CLASS PAPER, 1889.

A leaves P for Q, 39 miles distant, at the same time that B leaves Q for P; they travel at uniform rates of speed until they meet. B then increases his speed by  $\frac{1}{3}$  of his former rate, and reaches P in five hours from the time he met A; while A, after resting for an hour, proceeds at  $\frac{1}{3}$  of his former rate, and reaches Q at the same time that B reaches P. Find the rate at which each person set out.

*Solution.* If A had maintained his former rate he would have reached his destination  $3\frac{2}{3}$  hours after the meeting, and B would have reached his in  $5\frac{1}{3}$  hours.

The time required to finish is directly proportional to distance and inversely to rate, but distance

is inversely proportional to rate ;  $\frac{1}{3}$  :  $\frac{1}{5}$  inversely as the square of their rates.

$\therefore$  rates are as  $5:4$ .

Times required to walk a mile are as  $\frac{1}{5}:\frac{1}{4}$ .

At their regular rates A would take  $(\frac{5}{5}-\frac{3}{5})$  hours less than B to walk the whole distance.  
 $\therefore$  B takes  $\frac{2}{5}$  hours longer to walk a mile than A.

$(\frac{1}{5}-\frac{1}{4})$  of A's time for a mile =  $\frac{2}{5}$  hours.

A's rate =  $4\frac{2}{3}$  miles per hour.  
 B's " =  $3\frac{3}{4}$ .

N.B.—The editor of this column can take two more pupils by correspondence, to fill vacancies caused by sickness, etc.

## Examination Papers.

### UNIVERSITY OF TORONTO—ANNUAL EXAMINATIONS, 1890.

#### JUNIOR MATRICULATION.

##### ARTS.

##### PHYSICS.

##### PASS.

Examiner—Iva E. MARTIN, B.A.

NOTE.—Candidates must not attempt more than five questions in each division.

#### I.—STATICS, KINETICS AND KINEMATICS.

1. Define "uniform velocity" and "uniform acceleration." How is a variable velocity measured?

Two bodies fall from heights of 20 and 30 feet, and reach the ground simultaneously. What was the interval between their starting?

Explain why a man walking in a shower of rain in general holds his umbrella a little in front of him.

2. Define "force" and state how it is measured. Distinguish the absolute and gravitation units of force and find the relation between them.

A force  $F$  generates in a body in one minute a velocity of 1,300 miles per hour. Which is the greater force,  $F$ , or gravity?

3. Define "moment of a force" and "couple." How is the moment of a force about a point represented geometrically?

If a substance be weighed in a balance having unequal arms, and in one scale appear to weigh 12 pounds, and in the other 3 pounds, find the true weight of the substance.

4. Find the "centre of inertia" of : (1) A triangular lamina of uniform thickness and density ; (2) a sphere with a smaller spherical cavity.

A right cylinder rests upon an inclined plane on the point of turning over. If the diameter of the cylinder be equal to the length of its axis, find the inclination of the plane.

5. Enunciate Newton's Laws of Motion.

A man steps on an elevator, which thereupon descends with a uniform acceleration of 10 feet per sec. What sensation does he experience, and calculate its amount?

6. What are the conditions of equilibrium of forces acting in one plane?

Three ropes are tied together, and a man pulls at each. If, when their efforts are in equilibrium, the angle between the first and second rope is  $90^\circ$ , and that between the first and third is  $150^\circ$ , what are the relative strengths of the men as regards pulling?

#### II.—HYDROSTATICS.

1. State the principle of the transmission of fluid pressure and mention any practical application of this principle.

The diameter of one cylinder of a hydrostatic press is 16 feet and of the other cylinder 1 inch. A horse is placed upon the piston of the larger cylinder and is balanced by an ounce weight on the piston of the smaller one. Find the weight of the horse, the pistons being without weight and balancing in the same horizontal plane.

2. Define "density" and "specific gravity" of a substance and explain how they are measured.

Two fluids of equal volume, and of specific gravities,  $s_1$ ,  $s_2$ , lose one-fourth of their whole volume when mixed together; find the specific gravity of the mixture.

A block of wood weighs, in air, exactly the same as a block of iron; which is really the heavier?

3. State the conditions of equilibrium of a floating body.

A ship sailing from the sea into a river sinks two inches, but after discharging 40 tons of her cargo, rises an inch and a-half; determine the weight of the ship and cargo together, the specific gravity of sea water being  $1.025$ , and the horizontal section of the ship for two inches above the sea being invariable.

4. State and explain Boyle's Law.

A cylindrical diving bell of height 5 feet is let down till the depth of its top is 55 feet. If the water barometer stands at 33 feet, find the space occupied by the air.

If a small hole be made in the top of the diving-bell, what will be the effect? Give reasons.

5. Describe the use and explain the principle of (1) the barometer, (2) the siphon.

If a silver coin float in the mercury within a barometer, will the mercury rise or fall in consequence? Give reasons.

What influence has the height of the barometer on the siphon.

6. Describe the action of a common pump.

How is the maximum height to which water will rise in a pump determined?

If a well-cover were made perfectly air-tight to prevent surface water entering, would the action of the pump be interfered with?

#### BOTANY.

##### PASS.

Examiner—J. J. MACKENZIE, B.A.

NOTE.—Six questions constitute a full paper. No more are to be attempted. All candidates must take questions 1, 2 and 3. Candidates for Honors must take questions marked \*.

\*1. Give an accurate description of the plant submitted, indicating especially what you would consider the characters peculiar to the species.

\*2. Refer it to its proper position amongst Phanerogams and mention several allied Canadian plants.

\*3. Illustrate fully by drawings the parts of the flower and construct a floral diagram to show the relationships of the floral organs.

\*4. Show how the foliage of most aquatic Phanerogams is adapted to their mode of life. Give examples.

5. What do we understand by symmetry in a flower? Draw the floral diagram of a symmetrical and an asymmetrical Canadian flower.

\*6. What is meant by Phyllotaxis? Illustrate your answer by reference to the plant submitted.

\*7. Give an account of the various functions performed by stipules and bracts. Illustrate your answer as fully as possible by reference to Canadian plants.

#### ENGLISH POETICAL LITERATURE.

##### HONORS.

Examiners { A. H. REYNAR, LL.D.  
 D. R. KEYS, M.A.

NOTE.—Honor candidates and candidates for the Senior Leaving Examination will take questions 1–8 inclusive. Candidates for Scholarships will take questions marked with an asterisk.

1. Write a brief account of the great work to which Shakespeare is indebted for the groundwork of this drama.

2. When did Coriolanus live? Describe the condition of the Roman people at that time.

3. Does this drama reveal the political sym-

pathies of Shakespeare? Give reasons in support of your view.

\*4. *Menenius*. A letter for me! It gives me an estate of seven years' health; in which time I will make a lip at the physician: the most sovereign prescription in Galen is but empiric, and, to this preservative, of no better report than a horse-drench. Is he not wounded? he was wont to come home wounded.

*Virgilia*. O, no, no, no.

*Volumnia*. O, he is wounded, I thank the gods for 't.

*Menenius*. So do I too, if it be not too much —brings a victory in his pocket? the wounds become him.

*Volumnia*. On's brows: Menenius, he comes the third time home with the oaken garland.

*Menenius*. Has he disciplined Aufidius soundly?

*Volumnia*. Titus Lartius writes, they fought together, but Aufidius got off.

(a) Why is this in prose form? Write note on Shakespeare's changes from verse to prose.

(b) Who was Galen? Note the anachronism.

(c) *Empiric*. Derive and explain. Give other readings.

(a) *O, no, no, no*. What does this express beyond the negation? How is it that Virgilia denies, while Volumnia asserts, that Coriolanus is wounded?

(e) "Brings a," "On's brows." Account for the ellipsis.

(f) *The oaken garland*. What did this signify? Is Shakespeare correct in giving the garland three times to Coriolanus?

\*5. *Coriolanus*. Shall remain!— Hear you this Triton of the minnows? mark you His absolute 'shall'? 'Twas from the canon.

*Cominius*. Shall! *Coriolanus*. O good, but most unwise patricians! why, You grave, but reckless senators, have you thus Given Hydra here to choose an officer, That with his peremptory 'shall,' being but The horn and noise of the monster's, wants not spirit

To say he'll turn your current in a ditch, And make your channel his? If he have power,

Then veil your ignorance; if none, awake Your dangerous lenity. If you are learn'd, Be not as common fools; if you are not, Let them have cushions by you. You are plebeians,

If they be senators: and they are no less, When, both your voices blended, the great'st taste

Most palates theirs. They choose their magistrate, And such a one as he, who puts his 'shall,' His popular 'shall,' against a graver bench Than ever frown'd in Greece.

(a) Explain the references in "*Triton of the minnows*," "*Hydra*," "*a graver bench*," etc.

(b) "*'Twas from the canon*." What does this mean? Give reasons for your view. What different meaning is sometimes taken?

(c) Write a note on Shakespeare's use of the subjunctive as illustrated in this passage.

(d) "*Of the monster's*." Explain the construction.

\*6. Give an outline of Volumnia's appeal to Coriolanus to spare the city.

\*7. Contrast Volumnia and Virgilia. In illustration of Vigilia's character quote the sayings ascribed to her in this play, and also the words addressed to her by Coriolanus.

\*8. By disregarding the dramatic unities what advantages does Shakespeare secure in the development of the character of Coriolanus?

\*9. Discuss the relation of the ethical element in comedy and in tragedy. Show how the due balance is maintained in this play.

\*10. What is the effect of the comic passages introduced by Shakespeare into his tragedies? Illustrate from this play and from any other play of Shakespeare.

# The Educational Journal

far as possible for himself. What is begun in the pass classes is carried out more fully and systematically in the First Honor class which meets daily to study the philosophy of Kant and Green's *Prolegomena to Ethics*. In his *Philosophy of Kant*, as contained in Extracts from his own Writings Professor Watson says : " My plan was to set a class of more advanced pupils at work upon extracts from the philosophy of Kant, to watch them as they forced their way through its perplexities, and to put forth a helping hand only when it seemed to be needful. The experiment justified itself. No method that I have tried—and I have tried several—has been so fruitful in results."

These two methods are naturally supplemented by the "Seminary" system of teaching honor students. In the calendar are suggested different courses of reading, any one of which the student is at liberty to select. When he has made a selection we expect him to be able from time to time to present in writing what he has thought out for himself on the subject, the teacher aiding him only by suggestions and a criticism of his manuscript. From the very outset our aim is to help the student to help himself, but we think that he who wishes to obtain an honor standing must furnish satisfactory evidence that he is able to help himself.

This "Seminary" plan is not an entire novelty even at Queen's College. Already it may be said to have passed through its period of trial. As long ago as the session of '83-'84 I remember Professor Watson saying that he had made experiments in connection with this system of instruction, and that in his belief it was an excellent way of ascertaining the real merits of candidates for honors. And ever since then the "Seminary" method has been given a prominent place in the work laid down for honors in philosophy. It affords me pleasure, therefore, to commend to your notice a scheme which may fairly be said to have been for some time in successful operation. I am, sincerely yours,

S. W. DYDE.

Nov. 21, 1890.

## THAT PROPOSED CHANGE IN THE SCHOOL REGULATIONS.

To the Editor of THE EDUCATIONAL JOURNAL.

SIR,—The Hon. Minister of Education has intimated that in the near future there will be a change in the school law affecting the minimum age at which persons may become legally qualified to enter the teaching profession, viz., raising the minimum age of males and females from eighteen and seventeen years respectively, to twenty-one for each.

You comment very favorably on the proposed change, and I must certainly agree with you in the main argument—that more maturity of age is very desirable; but the extent of the proposed change may well "give us pause."

Notwithstanding the fact, that now and again we find a "book worm" that is almost a prodigy at passing examinations, but who is a lamentable failure as a teacher, you perhaps will agree with me that in general the pupil with the best all-around ability as a student, becomes the best teacher.

Now, Sir, the best all-around students obtain their Second Class Non-Professional Certificates at seventeen or eighteen years of age, some much younger, while pupils with much less natural ability will obtain the same certificate at an age of twenty to twenty-three.

The clever pupil will scarcely wait three or four years that he may enter the teacher's profession, but will select some other avocation, while the student of inferior ability, obtaining his certificate at about the time the law will permit him to teach, enters the profession with a result that may be readily imagined.

Thus it will be seen that the teaching profession will lose those whom it is most desirable to retain, and retain those whom it is most desirable to lose.

I venture the statement, that the most successful teachers in our schools to-day are those who have passed through the school of necessity, whose financial circumstances were such as to compel them to gain their own livelihood before reaching the age of twenty-one years. Such persons as these would be practically barred from entering the profession. But it is not for the teachers I am pleading, but for the best interests of education.

While I admit that the Hon. Minister of Education is taking a step in the right direction, I must also confess that I believe he is taking a step twice

the length that the best interests of education demands.

Would it not be well for the Hon. Minister to act upon the resolution passed at the last Provincial Teachers' Association—that the minimum ages of male and female teachers be nineteen and eighteen years respectively?

I should be pleased to learn the opinions of other teachers on this important question.

Thanking you for your valuable space,  
I am sincerely yours,  
THOS. HAMMOND,  
Aylmer P.S.

## School-Room Methods.

### METHODS IN SPELLING.

#### 1. INTRODUCTORY.

Select any simple word in the children's reading vocabulary, and from this form a list of words similar in sound.

Example :—

<i>man</i>	<i>let</i>
pan tan yet set	
fan Dan pet met	
ran Nan wet net	

Take each word in turn ; have it sounded by the class. Let the children decide in each case what letter must be written to represent a special sound : as the decision is made in each case, make a second column of words similar to the first, but use colored crayon, as an aid to distinguishing between spelling by name and by letter.

#### 2. Stems and special endings

Example :—	row	rower	sing	singing
	sow	sower	ring	ringing
	run	runner	jump	jumped
	dig	digger	romp	romper
	give	giver	seem	seemed

#### 3. Stems with all possible changes.

Example :—

work	works	worked	working
worker	workers	workman	workmen
turn	turns	turned	turning
return	returns	returned	returning

#### 4. Association of ideas to form a vocabulary.

Example :—A picture, as a nest, shown.

nest + eggs + lay = BIRD.			
straw	blue	hatch	
hay	{ weave	{ small	{ birdies
hair	wove	thin	young
	build		{ feed { worm
	built		bug

#### 5. Words arranged to express :

##### a. Time.

Example : Now, then, yesterday, once.

##### b. Place.

Example : Here, there, upon, over, under.

##### c. Quality.

Example : Large, small, pretty, blue, white.

##### d. Action.

Example : Sit, run, jump, talk, laugh.

##### e. Manner.

Example : Fast { quick { smooth { fine  
{ quickly { smoothly { finely

##### f. Space.

Example : Deep, high, low, wide, narrow.

##### g. Which one.

Example : This, these, that, those.

##### 6. Associate opposites.

Example : { large } big { thin { sharp  
{ small } little { thick { dull

The Germans employ this little device to a large extent in their language building and spelling.

#### 7. Words of similar sound but of different meanings.

Such words should be taught from use in sentences.

Example :—a. It is too late,

It was too early,

b. It was two o'clock,

He gave me two apples,

c. It is time to go,

"Early to bed early to rise."

d. It is two o'clock ; it is too late for

you to go.

It is too bad for two boys to strike one another.—*American Teacher.*

## For Friday Afternoon.

### "BOYS WILL BE BOYS."

"Boys will be boys," We resent the old saying  
Current with men,  
Let it be heard, in excuse for our straying,  
Never again !  
Ours is a hope that is higher and clearer,  
Ours is a purpose far brighter and dearer,  
Ours is a name that should silence the jeerer,  
We will be men ?

"Boys will be boys" is an unworthy slander ;

Boys will be men !  
The spirit of Philip in young Alexander,  
Kindled again !  
As the years of our youth fly swiftly away,  
As brightens about us the light of life's day,  
As the glory of manhood dawns on us, we say :  
We will be men !

"Boys will be boys !" Yes ! if the boys may be  
pure, Models for men ;  
If their thoughts may be modest, their truthfulness  
sure, Say it again !  
If boys will be boys such as boys ought to be—  
Boys full of sweet-minded, light hearted glee—  
Let boys be boys, brave, loving and free,  
Till they are men !

### WHAT IS A GENTLEMAN ?

WHAT is a gentleman ? Is it a thing  
Decked with a scarf-pin, a chain and a ring,  
Dressed in a suit of immaculate style,  
Sporting an eyeglass, a lisp and a smile ?  
Talking of operas, concerts and balls,  
Evening assemblies and afternoon calls,  
Sunning himself at "At Homes" and bazars,  
Whistling mazurkas and smoking cigars ?

What is a gentleman ? Say is it one  
Boasting of conquests and deeds he has done ?  
One who unblushingly glories to speak  
Things which should call up a blush to his cheek ?  
One who while railing an action unjust,  
Robs some young heart of its pureness and trust ?  
Scorns to steal money or jewels or wealth,  
Thinks it's no crime to take honor by stealth ?

What is a gentleman ? Is it not one  
Knowing instinctively what he should shun,  
Speaking no word that can injure or pain,  
Spreading no scandal and deepening no stain ?  
One who knows how to put each at his ease,  
Striving instinctively always to please ;  
One who can tell by a glance at your cheek  
When to be silent and when he should speak ?

What is a gentleman ? Is it not one  
Honestly eating the bread he has won,  
Living in uprightness, fearing his God,  
Leaving no stain on the path he has trod,  
Caring not whether his coat may be old,  
Prizing sincerity far above gold,  
Recking not whether his hands may be hard,  
Stretching it boldly to grasp its reward ?

What is a gentleman ? Say, is it birth  
Makes a man noble or adds to his worth ?  
Is there a family tree to be had  
Spreading enough to conceal what is bad ?  
Seek out the man who has God for his guide,  
Nothing to blush for and nothing to hide ;  
Be he a noble or be he in trade,  
This is a gentleman nature has made.

—Ex.

A YOUNG woman should be so educated that every youth—coming within the circle of her all-powerful influence—will receive nothing but practical benefit. Countless sins and miseries would thus be saved. Wise and virtuous women are God's modellers—on earth—of a nation's heroes and sages—*Uncle Ben., in Education.*

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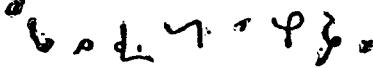
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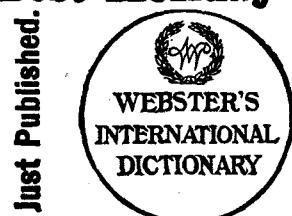
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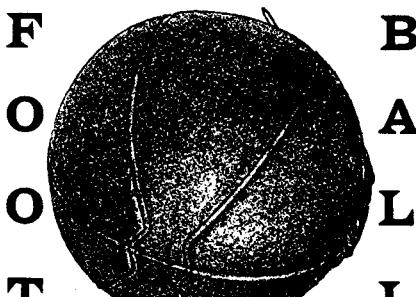
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| 11.15 A.M. to 12.30 P.M. .... | Geography. |
| 2.00 to 3.30 P.M. ....        | History.   |

##### SECOND DAY.

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| 9.00 to 11.00 A.M. ....       | Arithmetic.  |
| 11.05 A.M. to 12.15 P.M. .... | Drawing.     |
| 1.15 to 3.15 P.M. ....        | Composition. |
| 3.25 to 4.00 P.M. ....        | Dictation.   |

##### THIRD DAY.

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| 9.00 to 11.00 A.M. ....  | Literature.                             |
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