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The Canada School Journal.

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CANADA SCHOOL JOURNAL HAS RECEIVED

An Honorable Mention at Paris Exhibition, 1878.

Recommended by the Minister of Education for Ontario.

Recommended by the Council of Public Instruction, Quebec.

Recommended by Chief Superintendent of Education, New Brunswick.

Recommended by Chief Superintendent of Education, Nova Scotia.

Recommended by Chief Superintendent of Education, British Columbia.

Recommended by Chief Superintendent of Education, Manitoba.

The Publishers frequently receive letters from their friends complaining of the non-receipt of the JOURNAL. In explanation they would state, as subscriptions are necessarily payable in advance, the mailing clerks have instructions to discontinue the paper when a subscription expires. The clerks are, of course unable to make any distinction in a list containing names from all parts of the United States and Canada.

INDUSTRIAL DRAWING.

We have much pleasure in calling the attention of our readers to Dr. Rand's letter which will be found *in extenso* on another page of this issue. The subject it deals with is one of the very foremost importance, as the facts cited by the writer, and others that could easily be referred to, conclusively prove. For example, a prominent Toronto merchant, who has returned recently from a visit to England, in giving an account of the state of trade and manufactures there spoke of the woollen industry as being in a prosperous condition everywhere except in Bradford and added that the manufacturers of that locality had determined, as a means of relief from depression, to establish very largely at their own expense a school of design. This resolution shows better than almost anything else could have done the progress made during the past twenty years in the appreciation of the art of drawing in connection with manufactures, and it forms a striking endorsement of the views put before the Finance Minister by Dr. Rand.

The vagaries of Oscar Wilde and his fellow-aesthetes are simply another sign of the times. There is going on everywhere a struggle for the realisation of higher ideals in the region of taste as well as in that of utility, and, crude and bizarre as are some of the notions of the school referred to, the votaries of sunflowers and dados are really helping on a very important work. Cost and enduring qualities being equal every one would naturally prefer an elegant article even of ordinary wear or of domestic use to an ill-fashioned or tawdry one, and the more educated the taste by contact with what is really refining the more marked does this preference become. A beautiful fire-screen or furniture cover is a "thing of joy" just because it is a "thing of beauty," and it is not surprising that the manufacturer of old fashioned tweeds or carpets should find it hard to dispose of them in competition with goods marked by beautiful colours and elegant patterns.

In the Province of Ontario something has been done during the past few years to diffuse a more general knowledge of in-

dustrial drawing, but as yet only the first steps have been taken. Fortunately we have a Government that is abreast of the times, and now that the School of Design, which has been kept going for some time under great difficulties, is to be transplanted to and taken under the special charge of the Education Department, we may expect much more rapid progress to be made. Every teacher who goes out with a license to teach should be compelled to acquire, as part of his professional training, at least an elementary knowledge of design and industrial drawing. There should be some place assigned to the subject in every school time-table, for it is impossible to say beforehand whether our great artists and designers will be found in cities or rural districts. Designing possesses this great advantage over every other kind of drawing, that it is a creating and not a mere copying process, and the power of fascination which it possesses in virtue of this fact renders it useful as a means of recreation in a school.

We are not in a position to say whether the representations of Dr. Rand are likely to be effective or not, but as it is currently reported that Mr. Walter Smith is open to an engagement in Canada it is very desirable that an effort should be made to induce him to begin here a work similar to that which he has carried on so successfully for many years past in Massachusetts. Canada has at least fairly entered upon what promises to be a comprehensive industrial career and her people may as well make up their minds at the outset that her status as a manufacturing country will depend very largely on the extent to which a knowledge of industrial drawing is diffused amongst the pupils attending her common schools. It seems feasible that Mr. Smith's services should be procurable by a retainer from the Dominion Government supplemented by additional sums from the Governments of such Provinces as chose to enjoy the benefits of his experience in organizing a system of industrial drawing in connection with their systems of education. The work of education is of course provincial in its character, but industrial education might well be made an exception. At all events we hope to hear of something being done as the result of the step Dr. Rand has taken and we hope to hear also of his action being endorsed by others who are interested in the work.

QUESTION DRAWER.

We propose to commence in the next number of the CANADA SCHOOL JOURNAL a department for correspondents who write to us for information on matters connected with school-work. We do not bind ourselves to answer all questions even when we have the facts at hand necessary to enable us to do so; in order to secure an answer the question should relate to some matter of general importance. Every question should be accompanied by the name, address, and occupation or the sender, not only as a guarantee of good faith but in order that we may communicate with him by letter if it should be desirable to do so.

QUEEN'S COLLEGE.

The closing exercises of the University of Queen's College, Kingston, have been, this year, more than usually interesting. The College has evidently started fairly upon a new stage of its career, and all who are interested in the work of higher education will bid her "God speed." The retirement of Dr. Williamson from the important position he has filled since the establishment of the institution means the loss to the College of his learning and experience, but it will at the same time afford the management an excellent chance of filling his place with a thoroughly vigorous man. Prof. Fletcher, who has just concluded his first session's work, was a decided acquisition, and it is to be hoped that the College will be equally fortunate in the new incumbent when they get a successor to Dr. Williamson. One incident cannot fail to attract the attention of every reader of the account we publish of the proceedings, that is, the public appearance of a young lady to receive a prize which she had won after keen competition with members of the sterner sex. Queen's has freely thrown open her doors to the ladies, and she will not lose anything by doing so. Other colleges will soon find themselves constrained to follow her example. Principal Grant's address, racy and almost audacious, was thoroughly characteristic of the man. After reading the published reports of it one need wonder no longer at the influence for good he exerts over the students who come in contact with him. Queen's, like other colleges, has her financial difficulties, but few other colleges are so fortunate in having at their heads men of such mental and physical energy as Principal Grant. If a way out of her difficulties is possible for Queen's he will soon find it.

GEOGRAPHY IN SCHOOLS.

Owing to frequent changes in the political condition of some countries, and to additions made from time to time to our knowledge of the physical features of others, the teacher is apt to find himself at a loss when he is required to go into details with his pupils. No country gives so much trouble in this respect as the one of which our knowledge should be most minute and accurate—the Dominion of Canada. We propose, therefore, to place before our readers from time to time geographical information collected from the most recent and most trustworthy sources, by way of supplement to what is contained in the ordinary text books on geography. Much of what appears in our notes on the subject will be accessible in the newspaper press, but it very often appears there subject to corrections afterwards made, and at all events it will, we trust, be found convenient to have the facts put in as compendious and systematic a form as possible. We commence this month with a few facts relating to the route and present condition of the most interesting and important of our great public works, the Canada Pacific Railway, the information given being gathered entirely from official documents and from the statement made recently in Parliament by the Minister of Railways and Canals.

GEORGE PAXTON YOUNG, LL.D.

In doing honour to Professor Young Queen's College has done honour to herself, for he is one of those men—as rare in the field of education as in that of statesmanship—who confer distinction on titles of honour. He has attained to the very foremost rank of Canadian scholars by dint of his own ardent pursuit of learning rather than as the result of early training, for his collegiate course in Scotland was not marked by any extraordinary pre-eminence. For ten years he has been lecturing to crowded classes in University College on Mental and Moral Philosophy with distinguished success, and for the same length of time he has filled the important position of Chairman of the Central Committee of the Education Department of Ontario with great advantage to the cause of education. As a thinker he is original and profound; as a teacher he is lucid in his expositions and enthusiastic in his work; as a man he is singularly free from those faults of manner and temperament which so frequently prevent otherwise great men from being fully appreciated. It will be the earnest hope of all who know him that Dr. Young may long continue to fill the double sphere of practical usefulness he has filled for a decade past, and to reflect increasing honour on one College by wearing its degree, and on another by taking an important part in the training of its students.

TEACHING TEMPERANCE IN SCHOOL.

As the desirability of having temperance taught in Public Schools has been recognized by the Minister of Education, the following quotation from Dr. Richardson's address to teachers on the subject, in Exeter Hall, will be of interest:—

"We will tell the truth on this subject, and we will teach it; but if there is a class of the community that can tell this truth most forcibly, a class upon whom this duty devolves more than upon all others together, it is the school-master and school-mistress class. They hold the keys of this mystery of infamy. They are the teachers of the millions that are to be. Upon their act and word may hereafter depend everything that may eventuate in the life of an individual. I want to urge you who are not already engaged in our cause to make it yours, and in yourselves to implant the lessons of complete temperance, absolute temperance, absolute abstinence from the cause of this evil. Nothing else will do, or carry force. You must cut off this evil thing and show its uselessness and injury. Then as to the way in which you should proceed. I do not think it is of much service to begin with the youngest children. Their little minds are best let alone, and the same may often be said of persons more advanced in life, who should be allowed to lead up to the argument themselves. Let children begin to feel and to know that there is something wrong in the drink, and then is your opportunity to commence. The points most important to explain are the nature of this drink, what it is, that it is not a drink in itself, but a purely artificial something in water. Tell them how it exists, when it was first discovered, how it is made, and what it is. Then it is important to show them that there is not one alcohol only, but a family of them, that certain of these alcohols would kill directly, and that by a mere accident one of them came into common use. You can then show the evils that spring from it, the laws framed against it, as well as the proverbs against it. To more advanced

scholars, the relation of this substance to food may be explained, that it does not belong to the category of foods at all, and it is fallacious to think that it imparts warmth. But the great lesson of all will be taught by your own abstaining example. You will, as abstainers, have in your work serener minds, and minds less inspired to inflict punishment, and more thoroughly inspired to create peaceable and powerful impressions on those around you, than if you took into your system, even in moments of languor, this pernicious and mortal enemy."

FASHIONS IN SCHOOL.

The New World has little trouble with fashions or class distinctions of any kind. In an American city it is possible to see barefoot boys going to the same school with children who are driven in luxurious carriages and attended by liveried footmen. The notions of some school boards in "Merrie" England are more strict in regard to customs, dress, &c. Even the apparently unimportant question of the method of wearing the hair has recently led to the rejection of pupils by at least two school boards, and in one case to litigation and the punishment of a refractory and determined parent, who threatened the complete overthrow of the school system in his district by sending his daughter to school with her hair in curl papers. She was refused admission, and her father was actually fined by an intelligent (?) magistrate because she was not at school.

Another young lady of sixteen was prohibited by a school board in Cornwall from attending school because she wore her hair fringed on her forehead. There would be a great many vacant seats in American schools if a similar rule were adopted in this country. We are almost afraid to think of the number of teachers who would have to resign if Cornish rigidity should be introduced into America. British liberty is a great blessing. What is the use of a Constitution, if it cannot prevent the introduction of curl papers and fringes into school.

—The question of remuneration to public school inspectors is one that should receive more liberal treatment from county councils than is generally accorded to it. The work done by energetic men in the position of Dr. Agnew who has charge of the whole county of Frontenac and Mr. Burrows whose district includes Lennox and Addington, involves a great deal of physical discomfort and hardship. Both of these gentlemen have to travel through long distances and over bad roads in the discharge of their duty as their districts include townships that have been only recently settled. The legal remuneration is ten dollars a school; but an inspector who has the oversight of such a district is worth more than the minimum allowed by law. No inspector is allowed to take charge of more than a certain number of schools even if there are more in his county, and this provision, proper enough in itself, limits his emoluments to a comparatively small sum. The remedy for a state of affairs which has existed too long lies in the hands of the county councils who in order to secure good men for the position should be willing to pay reasonable salaries and make liberal allowances for travelling expenses.

—The matter of appointing a conductor of teachers' institutes for the Province has been recently discussed in more than one teachers' convention. The creation of such an office is in the interest of Education very much to be desired. That the presence of some experienced educationist is needed at every institute is shown by the prevalent practice of inviting those who may happen to be available, but it is not possible in all cases to secure such aid and when secured it is not always so valuable as would be the assistance of one who made the working of teachers' institutes a special study. The institute is now a fixed and important feature of our school system, diffusing amongst those who have not had the benefit of long professional training some insight into recent methods, and enabling the most expert to improve themselves by the interchange of ideas. Any proposal calculated to make it still more useful to the teacher is well worthy of the attention of the Education Department.

Geographical Notes.

THE CANADA PACIFIC RAILWAY.

The term "Canada Pacific Railway" has hitherto been a somewhat vague one, since up to a comparatively recent period the line had no fixed terminus at either end, while the route, except in a few short sections, was not absolutely determined. During the past twelve months considerable progress has been made in settling the final location of the main line and some of its more important branches, and the work of construction is now going on at several points. The franchise of the whole road, with power to build branches, was transferred a year ago by the Government of the Dominion to a private Company, but part of the work of construction is still, and will continue for some years, under Government auspices and be carried on at the public expense.

The western terminus of the main line has been settled for the present at Port Moody, on Burrard Inlet, near the mouth of Fraser River. The eastern terminus was formerly fixed at Callander, near the east end of Lake Nipissing, but during the past year it has by the amalgamation of the Canada Pacific with other lines been virtually transferred to Montreal. As Montreal harbour is open for navigation only in summer, the company will no doubt seek a winter port terminus somewhere on the Atlantic sea-board, the places most frequently mentioned in this connection being St. John in New Brunswick, Portland in Maine, and Boston in Massachusetts.

The extension of the Canada Pacific from Callander to Montreal has been partly effected by amalgamation with the Canada Central, which connects Ottawa city and the town of Brockville with the valley of the Upper Ottawa. This line has been running for many years as far north as Pembroke, and will be opened for traffic to Callander within the next few months. The extension from Ottawa to Montreal is intended to be effected by means of the western section of the Quebec, Montreal, Ottawa, and Occidental railway, which has been purchased by the Canada Pacific Company from the Quebec Government. At present the whole of that part of the road east of Callander goes by the title of the "Eastern Section."

The route of the main line from Callander westward has been located as far as Algoma Mills, a port on the north shore of the Georgian Bay midway between Bruce Mines and Spanish River. It passes to the northward of Lake Nipissing running up the valley of the Sturgeon River and down that of the Spanish River to a point

near the mouth of the latter. It then skirts the shore of the Georgian Bay to Algoma Mills, which will be for some time the western limit of the work of construction. Part of the section between Callander and Algoma Mills is under contract and the whole line from Montreal to the latter point will probably be in operation in a few months.

From Algoma Mills westward the main line will probably be continued around Lake Superior and as close to the Lake as engineering considerations will admit of, the country being rocky and construction difficult. At the east end of the lake it will pass within twenty or thirty miles of Sault Ste Marie, and at the west end it will connect with what is known as the Thunder Bay branch at some point on the latter not yet fixed, but from present indications the junction will be close to the terminus at Prince Arthur's Landing.

The Thunder Bay branch, including the whole of the section between Lake Superior and Red River will henceforth be part of the main line. It has been under construction for several years past and will be ready for the carriage of passengers and freight after the first of July next, though the work of ballasting will not be completed till the summer of 1883.

It was originally intended that the crossing of the Red River should be at Selkirk, and that the main line should cross the narrows of Lake Manitoba and take a northerly route by way of Battleford and Edmonton to the Yellow Head pass of the Rocky Mountains. The idea of crossing at Selkirk has been temporarily, if not finally, abandoned and a railway bridge has been built at Winnipeg. The part of the Pembina branch between Winnipeg and Selkirk thus becomes part of the main line which now runs westward from Winnipeg by way of Portage la Prairie to Brandon where it crosses the Assiniboine River. Brandon, according to the official map issued by the Canada Pacific Company, is some three or four miles east of the 100th meridian, and from this point to Winnipeg and Emerson the road is open for traffic.

From Brandon westward the main line has been definitely located up the valley of the Qu'Appelle River, on the south side of the latter, as far as Moose Jaw Creek. This is a small tributary of the Qu'Appelle from the south, and it is crossed about midway between the 105th and 106th meridians. The Company have applied to Parliament for leave to substitute the Kicking Horse for the Yellow Head pass, and pending the completion of the explorations in the Rocky Mountains it has been agreed to finally locate no more of the road until it is ascertained whether the proposed route is easible.

The Kicking Horse Pass lies a few miles north of the 51st parallel of latitude, while Kamloops Lake, on the west side of the Rocky Mountains, lies about the same distance south of it. Should this pass receive the final approval of the Government, the main line will be continued westward from Moose Jaw Creek across the South Saskatchewan, between the Calgary and Old Bow forts, and through the Rocky and Selkirk Mountain ranges to connect with the section now under construction in British Columbia between Kamloops and Yale. Between the last named two points—or rather between Savona's Ferry, near the east end of Kamloops Lake and Emory's Bar near Yale—the line follows very closely the valleys of the Thompson and Fraser rivers. A few weeks ago the contract for the construction of the remainder of the main line—namely, from Emory's Bar to Port Moody—was let by the Government. The route lies for some distance south of Yale on the west side of Fraser River, and then crosses it so as to reach Port Moody, which is some miles north of the mouth of the Fraser. There will probably be a branch to connect New Westminster with the main line.

The new branches of the Canada Pacific at present are: (1) a line into Sault Ste Marie from Algoma Mills; (2) the Pembina branch from St. Boniface to Emerson, east of the Red River; (3) the Winnipeg and Pembina Mountain branch from Winnipeg west of Red River to Smuggler's Point—which is on the United States frontier, about thirteen miles west of Emerson—with a westerly extension to the Souris River running fifteen miles north of the frontier; (4) the Brandon and Souris branch from Brandon south westerly to a point on the western boundary of Manitoba about fifteen miles north of the frontier, with a westerly extension parallel to the boundary line as far as the 100th meridian; and (5) the Winnipeg and Stonowall branch. The Pembina branch has been in operation for two years past. The Winnipeg and Pembina Mountain branch is largely graded and the work of track-laying has been commenced. The other branches are merely located. Several branches northward from the main line have been projected, but they are not yet finally located, or accepted by the Government.

Adopting the Kicking Horse Pass the length of the main line from Montreal to Port Moody is 2950 miles. The following table of approximate distances is computed from the reports of the Minister of Railways, and is given subject to corrections made as the result of more accurate measurements hereafter:—

MAIN LINE.	
Montreal to Port Moody.....	2950 miles.
Montreal to Ottawa.....	120 "
Ottawa to Callander.....	235 1/2 "
Callander to Prince Arthur's Landing.....	650 "
Prince Arthur's Landing to Winnipeg.....	494 "
Winnipeg to Portage la Prairie.....	53 1/2 "
Portage la Prairie to Brandon.....	74 "
Brandon to Moose Jaw Creek.....	275 1/2 "
Kamloops to Port Moody.....	215 "
BRANCHES.	
Carleton Place to Brockville.....	45 1/2 "
Algoma Mills to Sault Ste Marie.....	50 "
St. Boniface to Emerson.....	64 "
Winnipeg to Stonowall.....	20 "
Winnipeg and Pembina Mountain branch.....	220 "
Brandon and Souris branch.....	195 "

In connection with the above or any subsequent geographical sketch any further information, so far as the facts are obtainable, will be cheerfully given to any correspondent who applies for it.

Mathematical Department.

UNIVERSITY OF TORONTO.

JUNIOR MATRICULATION—1881.

PROBLEMS.—HONORS.

1. If a straight line terminated by the sides of a triangle be bisected, no other line terminated by the same two sides can be bisected in the same point.
2. If two equal circles be described cutting each other in *A* and *B*, and from *A* a chord be drawn cutting them in *C* and *D*, prove that the part *CD* between the circumferences will be bisected by the circle described on *AB* as diameter.
3. Circles are described on two of the sides of a triangle as diameters, and each meets the perpendicular from the opposite angular point on its diameter in two points; prove that these four points lie on a circle whose centre is at the intersection of the two sides.

4. Prove that
$$a^2 \left(\frac{1}{b} - \frac{1}{c} \right) + b^2 \left(\frac{1}{c} - \frac{1}{a} \right) + c^2 \left(\frac{1}{a} - \frac{1}{b} \right) = a + b + c.$$

5. If $x+y+z=xyz$ prove that—

$$\left(\frac{x}{y} + \frac{y}{z} + \frac{z}{x} + 2\right)^2 = (1+x^2)(1+y^2)(1+z^2).$$

6. Solve the equations—

$$\begin{aligned} x+y+z &= 2(a+b+c). \\ ax+by+cz &= 2(ab+bc+ca). \\ (b-c)x + (c-a)y + (a-b)z &= 0. \end{aligned}$$

7. A waterman rows a given distance a and back again in b hours and finds that he can row c miles with the stream in the same time as d miles against it. Find the time each way and the rate of the stream.

8. ABC is an isosceles triangle, D the middle point of the base BC . If any straight line drawn through D meets one side in E and the other produced in F , then AE, AC, AF are in harmonic progression.

9. Given $\tan^2 x + \sec 2x = \frac{7\sqrt{3}-10}{\sqrt{3}}$, find x .

10. If A_1, B_1, C_1 be the angles which the sides of a triangle subtend at the centre of the inscribed circle, prove $4\sin A_1 \sin B_1 \sin C_1 = \sin A + \sin B + \sin C$.

11. If $\cos^2 \theta = \frac{\cos \alpha}{\cos \beta}$, $\cos^2 \theta_1 = \frac{\cos \alpha_1}{\cos \beta_1}$ and $\frac{\tan \theta}{\tan \theta_1} = \frac{\tan \alpha}{\tan \alpha_1}$, prove that

$$\tan \frac{\beta}{2} = \tan \frac{\alpha}{2} \tan \frac{\alpha_1}{2}.$$

12. If $\cos \theta = \tan \lambda \cot \alpha$, $\cos \phi = \tan \lambda \cot \beta$, and $\sec \theta \sec \phi = \sec \lambda \tan \theta \tan \phi - \tan \alpha \tan \beta$; show that $\cos^2 \lambda = \cos^2 \alpha \cos^2 \beta$.

13. Four points, moving each at a uniform speed, take 198, 495, 891, 1155 seconds respectively to describe the length of a given straight line. Supposing them to be together at any instant at the same end of the line, and to move in it continually from end to end, what interval of time will elapse before they are together at the same point again?

SOLUTIONS TO PROBLEMS.

1. Let DE be terminated by the sides of any $\triangle ABC$. Through K , its middle point, let if possible, another line FG be drawn, also bisected in K . Then as in I. 16, $\angle FDK = \angle KEG \therefore AB$ is parallel to AC , and ABC is not a \triangle rect. ad. ab. Thus FKG is not bisected in K , and FG is any line drawn through K and terminated by AB and AC .

2. Let $\triangle KB$, the semi-circle on AB , cut CD in K , then K is the middle point of CD . For \angle at $C = \angle$ at D . (III. 28 and 20). \angle 's at K are rt. \angle 's. (III. 31). $\therefore BKC$ is congruous with $\triangle BKD$. i.e. $CK = KD$.

3. Let PRS be the given \triangle . Take PR and PS for the diameters of two circles, cutting PS in N and PR in M respectively. Then PNR and PMS are semi-circles. $\therefore RN$ and SM are the perpendiculars on the sides PS and PR . Produce RN and SM to meet the circles in C and D . Then, if the circles cut these perpendiculars in A and B , a circle will go round the figure $ABCD$.

The \triangle 's RMO and SNO are similar—
 $\therefore RO:OM = SO:ON$,
 \therefore Rect. $RO.ON = SO.OM$,
 i.e. Rect. $DO.OB = AC.OC$, (III. 35.)
 $DO:OA = CO:OB$, and $\angle DOA = \angle COB$.

Hence (VI. 6.) $\triangle DOA$ is equiangular with $\triangle COB$, i.e. angle $D =$ angle C .

Now if a circle be described so as to pass through the points A, B, C , (IV 5), D will be on the circumference of that circle. For if not it is either within or without the circumference. If within, produce AD to meet the circle at E , then the angle $ADB > AEB$ (I. 21.), $\therefore \angle ACB$ (III. 21.) i.e. D is both $=$ and $>$ C , hence D does not fall within the circle. Similarly we may show that it does not fall without. Hence D is on the circumference of the circle through A, B , and C .

Since P is the intersection of two lines which bisect two chords at right angles (III. 3.) P must be the centre of the circle $ABCD$.

4. The Numerator and Denominator are symmetrical expressions. The Numerator is of 0 dimensions and the Denominator of -1 dimensions. Hence their quotient must be one dimension and must involve a, b, c symmetrically. The only such quantity is $a+b+c$. But there may be some numerical factor. To find this put given fraction $= K(a+b+c)$, where K is some number independent of a, b, c . Put $a=1, b=2, c=3$, and we get $6=6K$ or $K=1$.

\therefore Fraction $= (a+b+c)$.

5. We have left hand side—

$$\begin{aligned} &= \left\{ \frac{x+y+z}{y} + \frac{x+y+z}{x} + \frac{x+y+z}{z} - 1 \right\}^2 \\ &= \left\{ \frac{xyz}{y} + \dots \dots \dots \right\}^2 \\ &= \{xx+yz+xy-1\}^2 \\ &= 1+x^2z^2+y^2z^2+x^2y^2+2xyz(x+y+z)-2xz-2yz-2xy. \\ &= 1+x^2z^2+y^2z^2+x^2y^2+x^2y^2z^2+(x+y+z)^2-2xz-2yz-2xy. \\ &= 1+x^2+y^2+z^2+x^2z^2+y^2z^2+x^2y^2+x^2y^2z^2 = (1+x^2)(1+y^2)(1+z^2). \end{aligned}$$

6. (1). $x+y+z=2(a+b+c)$.
 (2). $ax+by+cz=2(ab+bc+ca)$.
 (3). $(b-c)x+(c-a)y+(a-b)z=0$.

Observing that $(b^2-c^2)+(c^2-a^2)+(a^2-b^2)$ would $=0$, we see that the values $x=b+c, y=c+a, z=a+b$, satisfy (3). It is easily seen that these values also satisfy (1) and (2) and hence are roots. There are no other roots since the equations are all of one dimension.

7. Let $r_1, r_2 =$ rate down, rate up, and $r_3 =$ rate of stream per hr. Also $t_1, t_2 =$ time " time "

Then we have $\frac{r_1}{r_2} = \frac{c}{d} \therefore \frac{t_1}{t_2} = \frac{d}{c}$

Divide b hrs. in the ratio of $d:c$, and we get—

$$t_1 = \frac{bd}{c+d}, t_2 = \frac{bc}{c+d}$$

$$\therefore r_1 = \frac{a(c+d)}{bd}, r_2 = \frac{a(c+d)}{bc}$$

And $r_3 = \frac{r_1 - r_2}{2} = \frac{a(c^2 - d^2)}{2bcd}$

We may verify our results by putting $a=48$ miles, $b=10$ hrs., $c:d=3:2$, when $r_1=12, r_2=8$, and $r_3=2$ as it should.

8. $\triangle ABC$ is isos., D the middle point of BC, DF any line cutting AC in E , and meeting BA produced in F . Then AE, AC , and AF are in $H. P.$ Draw $AG \parallel$ to BC , meeting DF in G . Then AGE and $D.C$ are similar \triangle 's. $\therefore DE:DC = GE:GA$.

Also \triangle 's AFG and BDF are similar, and $BD=DC$.
 $\therefore DC:DF = GA:GF$. Then, ex aequali, (V. 23.)
 $DE:DF = GE:GF$.

Hence the line DF is divided harmonically in E and G . i.e. FG, FE , and D are in $H. P.$

But $FG:FE = AF:AH = AF:AE, HE$ being \parallel to BC . Also $FG:FD = AF:AB = AF:AC$.

Thus $FG:FE:FD = AF:AE:AC$, and they are in $H. P.$

9. $\tan^2 x + \sec 2x = 7 - \frac{10}{3}\sqrt{3}$,

$$\begin{aligned} &= \frac{1 - \cos 2x}{1 + \cos 2x} + \sec 2x \\ &= \frac{\sec 2x - 1}{\sec 2x + 1} + \sec 2x \\ &= (\sec 2x + 1) - \frac{2}{\sec 2x + 1} \end{aligned}$$

Write K for $\sec 2x + 1$ and

$$K - \frac{2}{K} = 7 - \frac{10}{3}\sqrt{3}$$

$$\therefore K^2 - (7 - \frac{10}{3}\sqrt{3})K - 2 = 0.$$

∴ $K=1 + \frac{2}{3}\sqrt{3}$, or $6-4\sqrt{3}$, which gives

∴ $\sec 2x + \frac{2}{3}\sqrt{3}$,

∴ $2x=30^\circ$. $x=15^\circ$.

10. $A_1 = 180 - \frac{1}{2}B - \frac{1}{2}C = 90 + \frac{1}{2}A$, since $\frac{1}{2}A + \frac{1}{2}B + \frac{1}{2}C = 90$.
 $B_1 = 90 + \frac{1}{2}B$.
 $C_1 = 90 + \frac{1}{2}C$.

∴ $4 \sin A_1 \sin B_1 \sin C_1 = 4 \sin(90 + \frac{1}{2}A) \sin(90 + \frac{1}{2}B) \sin(90 + \frac{1}{2}C)$ &c.
 $= 4 \cos \frac{1}{2}A \cos \frac{1}{2}B \cos \frac{1}{2}C$.
 $= (2 \cos \frac{1}{2}A \cos \frac{1}{2}B) 2 \cos \frac{1}{2}C$.
 $= \{ \cos \frac{1}{2}(A-B) + \cos \frac{1}{2}(A+C) \} 2 \cos \frac{1}{2}C$.
 $= \cos \frac{1}{2}(A-B) 2 \cos \frac{1}{2}C + \cos \frac{1}{2}(A+B) 2 \cos \frac{1}{2}C$.
 $= (\sin A + \sin B) + \sin C$.

11. From data we have—

$$\frac{\sec^2 \theta - 1}{\sec^2 \theta_1 - 1} = \frac{\frac{\cos \beta}{\cos \alpha} - 1}{\frac{\cos \beta}{\cos \alpha_1} - 1}$$

or $\frac{\tan^2 \theta}{\tan^2 \theta_1} = \frac{\cos \beta - \cos \alpha}{\cos \beta - \cos \alpha_1} \times \frac{\cos \alpha_1}{\cos \alpha} = \frac{\tan^2 \alpha}{\tan^2 \alpha_1}$ per data.

$$\frac{\cos \beta - \cos \alpha}{\cos \beta - \cos \alpha_1} = \frac{\sin^2 \alpha}{\sin^2 \alpha_1} \cdot \frac{\cos^2 \alpha_1}{\cos^2 \alpha} \cdot \frac{\cos \alpha}{\cos \alpha_1} = \frac{\sin^2 \alpha \cos^2 \alpha_1}{\sin^2 \alpha_1 \cos^2 \alpha}$$

$$\frac{\cos \beta - \cos \alpha}{\cos \alpha_1 - \cos \alpha} = \frac{\sin^2 \alpha \cos \alpha_1}{\sin^2 \alpha \cos \alpha_1 - \cos \alpha \sin^2 \alpha_1}$$

Whence $\cos \beta = \frac{\cos^2 \alpha \sin^2 \alpha_1 - \sin^2 \alpha \cos^2 \alpha_1}{\cos \alpha \sin^2 \alpha_1 - \sin^2 \alpha \cos \alpha_1}$
 $= \left(\frac{\cos^2 \alpha}{\sin^2 \alpha} - \frac{\cos^2 \alpha_1}{\sin^2 \alpha_1} \right) + \left(\frac{\cos \alpha}{\sin^2 \alpha} - \frac{\cos \alpha_1}{\sin^2 \alpha_1} \right)$
 $= \left(\frac{1 - \sin^2 \alpha}{\sin^2 \alpha} - \frac{1 - \sin^2 \alpha_1}{\sin^2 \alpha_1} \right) + \left(\frac{\cos \alpha}{1 - \cos^2 \alpha} - \frac{\cos \alpha_1}{1 - \cos^2 \alpha_1} \right)$

or $\cos \beta = \frac{\cos \alpha - \cos \alpha_1}{1 + \cos \alpha \cos \alpha_1}$

$$\frac{1 - \cos \beta}{1 + \cos \beta} = \frac{1 - \cos \alpha - \cos \alpha_1 + \cos \alpha \cos \alpha_1}{1 + \cos \alpha - \cos \alpha_1 + \cos \alpha \cos \alpha_1}$$

$$= \frac{(1 - \cos \alpha)(1 - \cos \alpha_1)}{(1 + \cos \alpha)(1 + \cos \alpha_1)}$$

i.e. $\tan^2 \frac{1}{2} \beta = \tan^2 \frac{1}{2} \alpha \tan^2 \frac{1}{2} \alpha_1$.

or $\tan \frac{1}{2} \beta = \tan \frac{1}{2} \alpha \tan \frac{1}{2} \alpha_1$, Q.E.D.

12. $\cos \theta = \tan \lambda \cot \alpha$
 $\therefore \sec \theta = \cot \lambda \tan \alpha$, and by symmetry
 $\sec \varphi = \cot \lambda \tan \beta$,

∴ $\sec \theta \sec \varphi = \cot^2 \lambda \tan \alpha \tan \beta = \frac{\cos^2 \lambda}{1 - \cos^2 \lambda} \tan \alpha \tan \beta$ (A.)

Again $\sec^2 \theta - 1 = \cot^2 \lambda \tan^2 \alpha - 1$

i.e. $\tan^2 \theta = \frac{\cos^2 \lambda (1 - \cos^2 \alpha)}{\cos^2 \alpha (1 - \cos^2 \lambda)} - 1 = \frac{\cos^2 \lambda - \cos^2 \alpha}{\cos^2 \alpha (1 - \cos^2 \lambda)}$ (B.)

and by symmetry $\tan^2 \varphi = \frac{\cos^2 \lambda - \cos^2 \beta}{\cos^2 \beta (1 - \cos^2 \lambda)}$ (C.)

Substituting (A), (B), (C) in the third relation transposed, and then squaring we have—

$$\left(\frac{\cos^2 \lambda}{1 - \cos^2 \lambda} + 1 \right)^2 \tan^2 \alpha \tan^2 \beta = \sec^2 \lambda \tan^2 \theta \tan^2 \varphi$$

$$\therefore \frac{(1 - \cos^2 \alpha)(1 - \cos^2 \beta)}{\cos^2 \alpha \cos^2 \beta (1 - \cos^2 \lambda)^2} = \frac{(\cos^2 \lambda - \cos^2 \alpha)(\cos^2 \lambda - \cos^2 \beta)}{\cos^2 \alpha \cos^2 \beta \cos^2 \lambda (1 - \cos^2 \lambda)^2}$$

∴ $\cos^2 \lambda (1 - \cos^2 \lambda) = \cos^2 \alpha \cos^2 \beta (1 - \cos^2 \lambda)$

or $\cos^2 \lambda = \cos^2 \alpha \cos^2 \beta$, Q.E.D.

12. If the words "together at the same point again" mean at the same end of the line from which they started, then it is plain that each point must travel some multiple of twice the length of the line. Hence the time required is=L.C.M. of twice the times=124740 seconds. But if the words mean the point at which they are all first together, the required time is=L.C.M. of the times=62370 seconds.

ELEMENTARY ALGEBRA.

As many of our readers are pursuing this science, without the advantage of having experienced teachers, and as the majority of elementary text-books exhibit nothing but mechanical methods, we have thought that it would be well to give some examples of methods likely to be of service to junior students preparing for examinations.

1. If $a = \frac{1}{2}$, $b = \frac{1}{3}$, $c = \frac{1}{4}$ and $x = 0$.

Find the value of $\frac{a^2 - b^2}{x} - \frac{b^2 - c^2}{x^2}$

The first term = finite quantity $\div 0 = \infty$

"second term is infinitely $>$ first term $\therefore x^2$ is infinitely $<$ x
 \therefore first term - second term = $-\infty$

N. B.—We have taken 0 to mean, not nonentity, but a "quantity less than any assignable quantity."

2. If $x = \frac{1}{y} = \frac{1}{z} = 0$; find the value of

$$2xy + \frac{z}{2x} + \frac{x}{z} + \frac{2y}{x} - \frac{1}{2} \left(\frac{x}{z} + y \right) \left(\frac{x}{y} + z \right)$$

We have $y = z = \frac{1}{x}$ Substitute this value for y and z and

expression = $2 - \frac{1}{2x^2} + x^2 + \frac{2}{x^2} - \frac{1}{2} \left(x^2 + \frac{1}{x} \right) \left(x^2 + \frac{1}{x} \right)$
 $= 2$, since $x=0$.

3. Simplify $(a+b-2c)^2 + (a+c-2b)^2 + (b+c-2a)^2$.

Observe that $6a^2$ is part of the result, and that $-6ab$ is also part of it. \therefore by symmetry $6(a^2 + b^2 + c^2 - ab - bc - ca)$ is the whole result. For a, b, c will be similarly involved in the result, which must consist entirely of squares and double products, by which we mean products having 2 as one factor, and ab, bc &c for the other.

4. Find the sum of $(a+b+c)(x+y+z) + (a+b-c)(x+y-z) + (a-b+c)(x-y+z) + (-a+b+c)(-x+y+z)$.
 $ax+ay+az+bx+by+bz+cx+cy+cz$.

$$\begin{matrix} + & + & - & + & - & - & + \\ + & - & + & - & + & - & + \\ + & - & - & - & + & - & + \end{matrix}$$

Sum = $4ax+4by+4cz$.

The second, third and fourth terms are written down at once from the first term by changing the sign of every term that contains only one of the negative quantities. Thus the second term is derived from the first by changing c into $-c$ and z into $-z$. Hence to get the second product we make the same changes in the first product. But $(-c)(-z) = +cz$, hence we only change the sign when a single one of the quantities enters into the product.

5. The product of three consecutive even numbers is divisible by 48.

Suppose $2n, 2n+2$, and $2n+4$ are the numbers.
 Product = $8n(n+1)(n+2)$.

Now one of every three consecutive numbers is evidently a multiple of 3, and one a multiple of 2, \therefore product is divisible by 6, and hence on the whole by 8×6 , or 48.

6. The sum of three consecutive odd numbers, increased by 1, is always divisible by 12, but never by 24.

Let numbers be $2n-1, 2n+1, 2n+3$.
 Sum of squares + 1 = $12n^2 + 12n + 12$
 $= 12\{n(n+1)+1\}$

Now one of the two, n and $n+1$ is even. Hence, $n(n+1)$ is even, and $n(n+1)+1$ is odd.

\therefore Expression = 12 times an odd number, and cannot be a multiple of 24.

7. Simplify $(a+b+c)^2 + (a+b-c)^2 + (a+c-b)^2 + (b+c-a)^2$.

See number 3. $a^2 + a^2 + a^2 + a^2 = 4a^2$
 $2ab + 2ab - 2ab - 2ab = 0$.
 \therefore Answer $= 4(a^2 + b^2 + c^2)$.

8. Simplify $(ax+by+cz)^2 + (ax+cy+bz)^2 + (bx+ay+cz)^2 + (bx+cy+az)^2 + (cx+ay+bz)^2 + (cx+by+az)^2$.

[N.B.—Observe the symmetry. Only a, b, c are permuted. If we write a, b, c in circular order, thus c, a, b , starting with a , we

may read off a, b, c and a, c, b , the coefficients of the first two terms. Similarly, starting from b and from c , we can read off the other four sets of coefficients. Cx , notice that if we change a into b , b into c , and c into a , the first term and the fifth change places, also the second and the third, and the fifth and the sixth, so that the expression remains as at first. This is the proof of symmetry, which in the present example was patent enough without testing, though it does not always happen to be so manifest by mere inspection.]

Looking at the perfect squares, and also at the double products, we see that $2a^2(x^2+y^2+z^2) + 4ab(xy+yz+zx)$ is part of the result. Hence by symmetry

$$2(a^2+b^2+c^2)(x^2+y^2+z^2) + 4(ab+bc+ca)(xy+yz+zx)$$

is the whole result, for the sum must consist wholly of squares and double products.

9. Simplify $(a+b+c)^2 + (a+b-c)^2 + (a+c-b)^2 + (b+c-a)^2$.

[N.B.—First observe the symmetry. The signs only being permuted.]

Reasoning as above, we see that $a^3 + a^3 + a^3 = 3a^3$, i.e., $2a^3$ is part of the result, and also $3a^2b + 3a^2b - 3a^2b + 3a^2b$, i.e., $6a^2b$ is part of the result.

Now, perfect cubes have only one other sort of term, viz., abc .

Therefore, $2(a^3+b^3+c^3) + 6(a^2b+a^2c+b^2a+b^2c+c^2a+c^2b)$ is part of it. To find its coefficients, put $a=b=c=1$, when given expression = 30. This shows that the expansion contains 30 terms; but the part already found gives 42 terms, hence the remaining part is $-12abc$.

$$\text{Ans.} = 2(a^3+b^3+c^3) + 6(a^2b+a^2c+b^2a+b^2c+c^2a+c^2b) - 12abc.$$

10. If x is an odd number $x^2 - x$ is divisible by 24, and $(x^2+3)(x^2+7)$ by 32.

(a) For $x^2 - x = (x-1)x(x+1)(x^2+1)$. Also, since x is odd it is of the form $2n+1$. Substitute this for x and we have

$$(2n)(2n+1)(2n+2)(4n^2+4n+2).$$

Now the first three factors are consecutive numbers, and some one of them must be divisible by 3. It is also plain that 8 is a factor of the expression, $\therefore 24$ must be a factor.

(b) Substitute $2n+1$ for the odd number x and we have $16(n^2+n+1)(n^2+n+1)$,

and the last two factors are two consecutive numbers, \therefore one of them must be even, and expression = an even multiple of 16, i.e., a multiple of 32.

$$11. \text{ If } 4a^2b^2c^2(x^2+y^2+z^2)(a^2x^2+b^2y^2+c^2z^2) = \{(b^2+c^2)a^2x^2 + (c^2+a^2)b^2y^2 + (a^2+b^2)c^2z^2\}^2$$

when $a > b$, and $b > c$, show that $y = 0$.

Multiply out, and arrange in powers of y

$$(a^2-c^2)b^4y^4 + 2\{(a^2-c^2)(b^2-c^2)a^2x^2 + (a^2-c^2)(a^2-b^2)c^2z^2\}b^2y^2 + \{(b^2-c^2)a^2x^2 - (a^2-b^2)c^2z^2\} = 0.$$

Now $a^2 > b^2 > c^2$, $\therefore a^2 - c^2, b^2 - c^2, a^2 - b^2$, are all positive quantities. \therefore the coefficients of y^4 and y^2 are positive.

\therefore it is necessary that each term = 0, if their sum = 0 or $y = 0$.

12. Given $x+y+z=0$; $x_1+y_1+z_1=0$, show that

$$(x^2+x_1^2)yz + (y^2+y_1^2)zx + (z^2+z_1^2)xy - (x+x_1)y_1z_1 + (y+y_1)z_1x_1 + (z+z_1)x_1y_1.$$

Multiply out and $xyz(x+y+z) + x_1^2yz + y_1^2zx + z_1^2xy$

$$= x_1y_1z_1(x_1+y_1+z_1) + x^2y_1z_1 + y^2z_1x_1 + z^2x_1y_1,$$

$$\text{i. e. } x^2yz + y^2zx + (x_1+y_1)^2xy = x^2y_1z_1 + y^2z_1x_1 + (x+y)^2x_1y_1,$$

or, $x^2y(z+x) + y^2z(x+y) = x^2y_1(z_1+x_1) + y^2z_1(x_1+y_1)$, an identity on multiplying out.

PROBLEMS FOR SOLUTION.

By T. F. O. Penotanguishene. A point is taken in an equilateral triangle, and the distances from that point to the angles are respectively 10, $7\frac{1}{2}$, and $12\frac{1}{2}$ chains. Find the area of the triangle

By T. F. O., Appin, Ont. 1. A mortgage of \$3000 is drawn for nine years @ 7%. The principal is payable in equal annual instalments, and interest on all unpaid principal payable therewith. How much must a man pay for this mortgage in order to realise 8% per annum, on his money?

2. A man and a boy work at a job on alternate days. The boy can do it alone in thirteen days. If the man begin first the work will be completed half a day sooner than it would be were the boy to begin first. Find in what time both man and boy working together can do the work.

3. Is the answer given correct—Smith and McMurphy's *Advanced Arithmetic*. No 20 p. 264?

For the benefit of readers we append the problem and answer given. Editor *Math. Dep.*

A semicircular plot of ground whose radius is 12 yds. has inside the circumference a path 2 yds. wide; the rest of the space is a flower-bed. Find the size of the bed. Answer 100 sq. yds. 5 sq. ft. $20\frac{1}{2}$ sq. in.

Contributions.

HENRY WADSWORTH LONGFELLOW,

The death of Longfellow leaves a blank in the roll of American litterateurs that will not be easily refilled. If not the greatest of American poets he is at least fairly entitled to the post of pre-eminence amongst the poets whom America has produced. In one sense, and that a very important one, he is hardly an American poet at all, for his modes of treating his subjects, and very often his subjects themselves, belong to the Old World rather than the New. It seems strange that a man of his fine intellect and generous sympathies could live from 1807 to 1882 and witness the progress made by his own country through its turbulent struggles upward to higher national life without showing in his writings some traces of the effect produced by those struggles on himself—strange, but not unprecedented, for the Sturm-und-Drang period of German national life had just as little effect on the placid temperament of Goethe. When Longfellow did choose an American subject it was usually legendary in its character and as remote as it well could be from topics suggested by the surging democracy by which he was surrounded but of which he himself formed no part, and the real character of which he apparently never understood.

Longfellow is one of the poets of nature, and of nature in her calmer moods. He loves the sunshine and the zephyr, not the thunder-cloud or the hurricane, just as he prefers to depict humanity in comfort and at rest rather than humanity panting and struggling to free itself from the fetters of evil that hamper and irritate it. The best passages in his best poems are those which delineate with loving minuteness of detail the impressions produced by nature, and the nearer her condition to one of perfect repose the more fondly he dwells upon the scene he is depicting. Of all his poems "Evangeline" furnishes the best illustration of this peculiarity and nothing even in "Evangelino" can surpass the following brief description of the Indian Summer:—

Such was the advent of autumn. Then followed the beautiful season Called by the pious Acadian peasants the Summer of All-Saints! Filled was the air with a dreamy and magical light, and the landscape Lay as if new-created in all the freshness of childhood. Peace seemed to reign upon Earth, and the restless heart of the Ocean Was for a moment consoled.

Longfellow's highest claim to approbation is the absolute purity of his life and writings. Not an incident of the former known to

the public calls for censure from the most censorious ; not a sentence of the latter would be objected to by the most puritanical critic. He has written much that helps to supply a felt want amongst his fellow-men, and even those struggling mortals whose struggles he hardly seemed to notice are soothed and encouraged by the burden of his placid song and the lofty ideals it embodies. In this connection every one will at once recall his "Psalm of Life," "Excelsior," "Resignation," "The Builders," "The Village Blacksmith," and others too numerous to mention. The effect of his musical verse upon others can best be described by citing his own beautiful description of the effect of such poetry upon himself.—

The day is done and the darkness
Falls from the wings of Night,
As a feather is wafted downward
From an eagle in its flight.

I see the lights of the village
Gleam through the rain and mist,
And a feeling of sadness comes o'er me,
That my soul cannot resist.

A feeling of sadness and longing,
That is not akin to pain,
And resembles sorrow only
As the mist resembles the rain.

Come read to me some poem,
Some simple and heartfelt lay,
That shall soothe this restless feeling,
And banish the thoughts of day.

Not from the grand old masters,
Not from the bard's sublime,
Whose distant footsteps echo
Through the corridors of time

For, like strains of martial music,
Their mighty thoughts suggest

Life's endless toil and endeavour
And to-night I long for rest.

Read from some humbler poet,
Whose songs gushed from his heart,
As showers from the clouds of summer
Or tears from the eyelids start.

Who, through long days of labour,
And nights devoid of ease,
Still heard in his soul the music
Of wonderful melodies.

Such songs have power to quiet
The restless pulse of care,
And come like the benediction
That follows after prayer.

Then read from the treasured volume,
The poem of thy choice,
And lend to the rhyme of the poet
The beauty of thy voice,

And the night shall be filled with music,
And the cares that infest the day
Shall fold their tents, like the Arabs,
And as silently steal away.

Longfellow, like Wordsworth, was almost devoid of humour, but, unlike Wordsworth, this defect never causes him to make himself ridiculous when he is aiming at being pathetic. He was one of the most conscientious of artists, putting everything he produced into the best form possible before giving it to the world. For this amongst other reasons already referred to he has written much that posterity will not willingly let die and he has had the good fortune—rare amongst poets—of finding himself fully appreciated in his lifetime as he went along. His path was indeed flowery and his lot one of the most fortunate that could happen to a son of toil. His highest praise is that he was generous in sharing with others the flowers that grew by his roadside and that he always deserved his good fortune.

By occupation Longfellow was one of the great fraternity of teachers, but in this line he had not the qualifications necessary to attain to distinction. He was a conscientious and intelligent worker, respected rather than adored by his students owing to his want of enthusiasm, and exercising far more influence over them by his poems than by his prelections. He filled for many years the chair of "Belle Lettres" in Harvard University near which he continued to reside from his retirement from academical work in 1854 to the day of his death. To his life-work may be fitly applied his own beautiful and suggestive words :

Let us do our work as well
Both the unseen and the seen ;
Make the house where gods may dwell
Beautiful, entire, and clean.

CHARLES ROBERT DARWIN.

This great but simple minded philosopher and prince of observers of natural phenomena has after a long and honourable career gone to his rest. Born in 1809 he was fortunate in obtaining a good

education, and graduated in Cambridge in 1832. A long voyage as naturalist to a surveying expedition sent out under the command of Capt. Fitzroy of the Royal Navy turned his attention permanently to natural science and afforded him an opportunity of collecting a large fund of valuable knowledge which he gave to the world in several works. Gradually the facts which came under his keen observation inclined him in the direction which marks his first great work "The Origin of Species," published in 1859, and the development theory which underlies his system was in 1871 still more fully elaborated in his "Descent of Man." Later works from his pen have appeared, but they are rather collections of facts than attempts to explain phenomena by the theory of "Natural Selection" which he has made so familiar to all modern students of natural history. It would be unfair to hold Mr. Darwin responsible for all the lengths to which those who call themselves his disciples have gone even in his life-time. As the result of his writings the development theory of creation has obtained a strong, if not an enduring, hold on the scientific thought of the age, but with this he concerned himself little. While the battle which he raised by his books was being waged furiously between the Spencers, Huxleys, and Haeckels on the one hand and the whole host of the orthodox thinkers, including many scientists, on the other, the venerable philosopher was spending his time in quietly watching plants devouring insects and in studying the various modes in which man and other animals express their feelings and emotions. Mr. Darwin was the recipient of many honours from Universities and other learned bodies, and his place is already assured to him alongside of such men as Lyell and Faraday in the great temple of science.

RALPH WALDO EMERSON.

Few names of literary men are more familiar than that of the poet essayist, and philosopher whose name heads this obituary notice. His death occurred the other day at the advanced age of seventy-nine the greater part of his life having been spent in complete literary retirement at Concord. He graduated at Harvard at the age of eighteen, and then studied for the ministry of the Unitarian Church. He took charge of a congregation in Boston but by that mental restlessness which never left him through life he was constrained to abandon the pulpit and devote himself to his favourite pursuit, the investigation of man's place in the universe and of the relation he sustains to it. The term "philosopher," in its ordinary sense, is hardly applicable to Emerson, for he never elaborated any system, but many of his utterances are quite philosophical in tone however unsatisfactory his theory of human existence and destiny. He may fairly be regarded as a disciple of Carlyle, but while on the one hand he is no slavish follower of his acknowledged master, on the other he falls far short of him in that peculiar power which gave the latter such an influence on the present generation. The most characteristic work of Emerson is his "Representative Men," in the course of which he portrays his conception of the characters of Plato, Swedenborg, Montaigne, Shakspeare, Napoleon, and Goethe, whom he regarded as types of their respective classes. No doubt they were, and yet for anything the reader can see he might as well have chosen other six historical names with almost equal propriety. In nothing does he more closely resemble Carlyle than in this species of literary caprice. Whatever fault may be found with Emerson's opinions his life was admittedly stainless. He hardly merits the title of a great thinker, but he has long exercised and will still continue to exercise a considerable influence, rather however by stray thoughts strikingly expressed than by the promulgation of what may be called his philosophy of life.

INDUSTRIAL DRAWING.

It is well known that New Brunswick has for some time taken an advanced position on the question of Industrial Drawing, and it is with pleasure that we publish the following letter of the able and most energetic Chief Superintendent on the subject.

In a prefatory note Dr. Rand says:—"It seems to me that when mineralogy, geology and agriculture command so large an attention from the Government of Canada, it is reasonable to suppose that it can as legitimately give attention, in the safe way suggested, to the economic aspects of industrial art, its relations to the industries of the people, actual and potential, in all the chief communities of Canada,—just as emigration agents are sent out to set forth the resources of the country. Were there a competent adviser in art education whose services, by way of suggestion and criticism, were available on the application of any community or province, we should be able to avail ourselves at the outset of the dearly bought experience of the world, and could use it to purpose as the years go by, and the industrial contest grows sharper."

TO THE HONORABLE SIR LEONARD TILLEY, O. B., K. C. M. G.,
MINISTER OF FINANCE, OTTAWA:

Sir:—Having been associated with yourself for five years on the Board of Education of this Province, I venture to bring before you, as Minister of Finance of Canada, the matter of Industrial Art Education,—a subject, in my judgment, of great moment to the people of all our Provinces, and of interest to all especially concerned in promoting the industrial well-being of this Dominion.

The influence of International Exhibitions upon the manufacturing and other industries of the world, from the first in London in 1851 to the most recent in Paris in 1878, has been most marked, tending directly towards their elevation and increased value. This has been observable most distinctly among the intelligent and progressive nations. In all cases where great improvement in manufactures has followed one of these Exhibitions it has been through the influence upon, and changes made in, the Educational system of the countries affected. Thus the first Exhibition in London in 1851, which disclosed national deficiencies in taste and design in England as compared with some other countries, was immediately followed by the adoption of instruction in Drawing as an element in Education in the National Schools, by the organization of a Museum of Industrial Art (the South Kensington Museum), and the establishment of a Normal Art Training School in connection with the Museum, for the education of competent teachers in Art.

The progress made by England in the development of national taste, and the increase in value of her manufactures, was so prominent a feature in the next Exhibition in 1862, that a French Commissioner, empowered to examine into the causes of this extraordinary advance, attributed it mainly to the teaching of drawing in the public schools and the provision of trained teachers of Art in the Normal Art School. Such a school had not previously existed in France, but was then at once established at Clugny, near Paris. The Commissioner also reported:—"Among all the branches of instruction which in different degrees, from the highest to the lowest grade, can contribute to the technical education of either sex, drawing in all its forms and applications has been unanimously regarded as the one it is most important to make common"—*Com. report, 1863*. Later on, a similar commission sent by the French Government to examine and report upon the Educational Section of the United States Centennial Exhibition in Philadelphia, in 1876, after especial attention given to the display of courses and systems of Industrial Art Education, reported that Massachusetts had, under the guidance of Walter Smith, marvellously well solved the problem of industrial art education for the masses of the people, and in view of the progress made, suggested to the French Government that "France must defend that pre-eminence in Art which has heretofore been uncontested. She has enormous resources which ought to be developed by well-planned primary instruction. With us, as elsewhere, it is not enough to have excellent special teachers of drawing, it is not enough to have good courses and good special schools; but all teachers, male and female, must be able to give the first instruction in drawing, in daily classes, to all scholars. France, which has gone to work energetically after her misfortunes, ought to devote herself to the study of drawing, with no less ardor, and reinvigorate her productive powers at the very sources of art."—*Report, 1876*.

After this report had been duly considered a large number of Inspectors of Drawing in the Public Schools were appointed, and a more scientific treatment of the subject required in the instruction,

changes which had already borne fruit when the Exhibition was held in Paris in 1878, and were there displayed in the Educational Section.

It has been observed that the wealthiest and most successful manufacturing countries in the world are those in which the greatest encouragement is given to technical education as a continuation of general education in Public Schools,—a logical result of infusing the elements of taste and skill into the products of the factory and the workshop, which, without such elements, lack the attractiveness that finds a ready market for them in all civilized and refined communities.

A judicious and reasonable expenditure, therefore, upon the development of the values of manufacturing industries by the Government, who alone are sufficiently broadly interested in their elevation to take action in the premises, is really an economical investment. This is a necessary, surely, in Canada, with its constructive and manufacturing industries to be sustained and developed, and new ones created, as in the older countries which have all the advantages of historical art treasures, organized and matured systems of industrial and professional education to strengthen and invigorate their productive powers, and boundless wealth to fertilize them. Indeed it is only reasonable to infer that in the unavoidable absence of some of these advantages, the attainable element of a well-organized and thorough scheme of education in Art becomes all important.

A neighboring and kindred nation in the United States has felt the truth of this view, and has acted upon its convictions. Unable, as we have been, to produce its own art teachers, the leading educational and manufacturing State of Massachusetts secured for the initiation and organization of its industrial art scheme an educator from the mother country, who from the period of the inception of this art element in public education in England had been an active participator in the important work there developed. Under his direction, and in the short period of six years, so great a progress had been made in 1876 that, as already quoted, the French Commissioners, representative of the most artistic nation in the world, recognized the significance of the progress by remarking, after the examination of the evidences of that progress at Philadelphia, "France must defend that pre-eminence in art which has been heretofore uncontested." The results which have since transpired have justified the language of the Commissioners. Already the effects of this general education in the elements of art of a whole people are becoming apparent in the development of new home industries, the elevation of public taste, and the economic utilization of the hitherto undeveloped but undoubted genius of the people in the direction of the most artistic and most profitable industries.

This enfranchisement of a people with the suffrage of the beautiful can only be accomplished through the general diffusion of taste and skill by means of education in art. Besides being the direct way, it is obviously the only one possible for us, a new country without the accumulation of historic treasures and unlimited wealth to assist us in our path upward and onward.

I regard this matter as being to-day the most important of social questions, for in it are contained, 1st. the economical problem of fructifying our resources and industries and protecting them from the aggression of superior skill from without, and 2nd. the educational responsibility of providing a practical education for our country which shall fit it for the inevitable competition with the world that is in store for all countries, young and old, becoming keener and more general day by day, and for which we cannot be too soon prepared.

During my examination of the schools of Great Britain and Ireland in 1870, I was deeply impressed by what I everywhere saw done in the schools in the elements of drawing and design. On my return, I addressed the Alumni of Acadia College, urging the establishing of a chair in the College for study of the elements of graphic art. On assuming the responsible duties of my present office in 1871, I determined as early as practicable, to introduce the elements of drawing and design into the schools of this Province as a factor in our common school education. In 1874, drawing was made a subject of study in all the schools of Fredericton, and almost immediately thereafter, in all the schools of St. John. Through the work done in the Normal School this branch of education rapidly found a place in the schools of the more important districts of the Province, and, in November 1879, the Board of Education provided that the elements of drawing and design should be a constituent part of the course of instruction in all the schools of the Province. I am aware that considerable has been done in the same direction in Ontario and Quebec, more especially during the last two years in the schools of

Toronto, Montreal, and other cities. The educational authorities of Nova Scotia have provided some instruction in the subject in the Normal School at Truro, and are now about to require that the schools of that Province shall generally teach the elements of drawing.

Hitherto we in this Province (and the same is equally true of each and all of the other Provinces), have indirectly received inspiration and help from the mother country by the adoption of the early stages of the scheme devised by Professor Walter Smith, (an Englishman), for the United States. But the time has arrived, I am confident, when we require more direct influences to guide and guard us in the complete development of this new branch of Education, than can be secured through the use of text-books. If we are to succeed we require the advice, council, and stimulus of an experienced and thorough master of the subject who shall reproduce for us and adapt to our circumstances and secure for all grades of our schools the good which has resulted to England by the Establishment of the National Scheme of Art Education there, and that is being now accomplished under our eyes for the United States.

To secure the progress already made and ensure its future development on the lines of the best experience, I am certain that each Province must require, at the earliest day, the services of such a master as Walter Smith—a requisition which none of the Provinces, except perhaps Ontario and Quebec, can at all afford to meet, and which under any circumstances but one could secure.

I therefore would most respectfully suggest that the Dominion Government should, if it be possible, secure his services, or those of some equally eminent man, if that be possible, for our country, in the common interests of Industrial and Educational progress.

As a preliminary step, I would deem it of supreme value that such an Adviser in Industrial Art Education should be commissioned
 1st. To consider the relationship of Industrial Art Education to the development of manufactures and other constructive industries.
 2nd. To enquire into the means whereby this new element in Education, so generally adopted in recent times by other progressive countries, may be rendered auxiliary in developing these industries in the Dominion of Canada.

3rd. To enquire into the progress already made in the pursuit of Industrial Art Education in the Public Schools and higher Institutions of learning in the Dominion of Canada, comparing it with the recent experience of other countries in the same direction, particularly that of England, France, and the United States.

4th. To report the finding under each of the foregoing, and to offer detailed suggestions concerning the means by which, in an economical manner and for the purpose of sustaining and elevating the manufacturing and other industries of this country by the increase of taste and skill, the elements of the practical arts and sciences might be conveniently studied in the Public Schools, and more advanced instruction be made available in special and other Schools and Institutions.

I have the honor to be,
 Your obedient servant,

Fredericton, N.B., July 26, 1881. THEODORE H. RAND.

Examination Questions.

KNOX COLLEGE CLOSING EXAMINATIONS.

SESSION 1881-82.

ELOCUTION.

1. Describe the methods of breathing best adapted for voice culture and public speaking.
2. What precautions should be observed in public speaking to prevent waste of breath and tendency to clerical sore throat?
3. Describe the modes of practice for acquiring Force, and the Pure and Orotund qualities of voice.
4. Describe the conditions for securing distinct utterance of speech, and state what parts of words need special attention.
5. Give the principal rules for rhetorical pauses. Mark these pauses with a vertical dash in Isaiah 4 : 12, 13.
6. Describe the action of the voice in giving the rising and falling, and the rising circumflex and falling circumflex inflections, and state the general principles for the use of these inflections.
7. Give the rules of inflections for interrogations and exclamations.
8. Mark the inflections on the proper words in the following pas-

sages : Heb. 7 : 1, 2, 3 ; I. Cor. 1 : 13 ; Heb. 8 : 38, 39 ; Matt. 23 : 37 ; and give your reasons.

9. Give the rules for the treatment of the parenthetical clause, and show how they are applied in Ps. 49 : 7, 8, 9 ; Ephesians 2 : 5, 6 ; and 4 : 3, 4, 5.

10. Give rules for the treatment of the simile and the metaphor, and show how they are applied to distinguish the figurative from the literal in Ps. 1 : 3 and 4 ; Isaiah 1 : 18 ; and in these passages—

"He woke to die midst flame and smoke,
 And death shots falling thick and fast
 As lightning from the mountain cloud."

"I have ventur'd,
 Like little wanton boys that swim on bladders,
 This many summers in a sea of glory."

"And all went merry as a marriage bell—
 But hush ! hark ! a deep sound strikes like a rising knoll."

11. Define emphasis generally, and distinguish the emphasis of sense and feeling. What principle must guide us in selecting the emphatic words of a passage ?

COUNTY OF WELLINGTON PROMOTION EXAMINATION.

THURSDAY, APRIL 6TH, 1882.

[INSTRUCTIONS TO PRESIDING EXAMINERS.

1. Candidates in the same Class are to be seated at least five feet (or two desks) apart, and, whenever space will admit, no two candidates of any Classes are to be seated together. Whispering and copying are to be strictly prohibited, and in every case noted and reported by Examiner.

2. All books are to be taken from seats, and maps from the walls. Teachers cannot be permitted to hold the Examination at any other time than Thursday, 6th April, 1882.

3. Please follow the Rules and Regulations in each and every respect. The Time Table below is to be strictly followed.

J. J. CRAIG,
 DAVID P. CLAPP, } Inspectors.

TIME TABLE.

- 8:30 A.M.—Open sealed parcel and read instructions.
- 8:40 A.M.—Seat pupils.

	PROMOTION FROM II. TO III. BOOK.	PROMOTION FROM III. TO IV. B'K.	PROMOTION FROM IV. TO V. B'K.
8:45 A.M.	10:45 A.M.	Arithmetic	Arithmetic
10:45 "	12:15 P.M.	Geography & Writ'g	Grammar
1:15 P.M.	2:15 "	Literature & Dictat'n	History
2:15 "	2:45 "	Reading	Dictation
2:45 "	3:15 "	Composition	Dictation
3:15 "	4:15 "	Geography	Geography
4:15 "	5:00 "	Literature	Literature
5:00 "	"	Reading	Reading

First Class—Promotion to Second.

FRIDAY, MARCH 24TH, 1882.

READING.

Time—1 hour.

First Book, Part II, page 69:—"She was neat and clean—on his arm." Value, 30 marks.

WRITING.

Time— $\frac{1}{2}$ hour.

Copy on slates in script (not printing), page 70:—"I am a very little child—a better child to be." Value, 30 marks.

DICTIONATION.

Time—30 Minutes.

Pupils will take separate seats with slates. To be conducted in writing.

"They all four had grand romps in the fields, and in the barn, where they now had a good swing." "Here you see Florence at her tasks for next day's school." "Boys, who do not know how to steer their sleighs well, ought not to ride down steep hills." "Wicked

boys, who rob birds' nests, do not think of all the pain they give the old birds." Guard, creature, grass, please, scorn, tease and rough.

The above is to be written neatly. Value, 22 marks, with 2 marks off for each error.

ARITHMETIC.
Time—2 hours.

Separate seats with slates.

1. Write in figures seven hundred and nine, five hundred and thirty-seven, one hundred and seventy three, four hundred and ten, eighty.
2. Express in words 306, 698, 101, XLIX, XC, IX, XL.
3. Find value of $68379 + 9634 + 867 + 96 + 60489 + 89 + 8$.
4. From 683201234 take 98324625.
5. Find value of $684 - 83 + 457 - 395 + 67 - 39 + 765 - 79$.
6. From one thousand and eleven take nine hundred and forty-five.
7. Find difference between 32506789030 and 6820456732.
8. A drover bought sheep as follows:—Of one man he bought twenty-seven, of another eighteen, of another fifteen, and of another twelve; afterwards he sold nineteen; how many had he left?
9. A lady bought a comb for 37 cents, some tape for 8 cents, some pins for 10 cents, some needles for 6 cents and some thread for 6 cents. She gave 75 cents; how much change should she receive?

ORALLY.

10. 6+8 are how many?
 7+8+9 " "
 9+7+5+4 " "
 1+3+5+7+9 " "
 3+4+5+6+7+8 " "
 0 from 9 " "
 7 " 7 " "
 7 " 16 " "
 4 " 11 " "
 8 " 12 " "
 5 " 15 " "
 6 " 13 " "
 8 " 16 " "
- Value—100 marks—10 each.

LITERATURE.
Time— $\frac{1}{2}$ hour.

Open books and answer orally from page 36. 1. What is a lighthouse? 2. Why is it built on a high rock? 3. Why are lamps set at the top of the house? 4. What is malt? 5. Where do ice, salt and malt sell well? 6. What is a ship? 7. What are meant by "quilt" and "love of self"? 8. Give the meaning of "the masts break off," "the waves whelm the poor man," "were soon drunk," "a young lion's whelp," and "a great lot of rum."
 Value—26 marks; the last is worth 5 and the others 3 marks each.

Entrance to Third Class.

LITERATURE.
Time— $\frac{1}{2}$ hour.

On paper. Candidates to use Second Reader. Open books at pages 115, 116, 117 and 118.

1. Christmas comes on what day of the year? When is Christmas Eve?
 2. For what are chessmen used? What is meant by "some new music? What are "sugarplums?"
 3. Why is Christmas morning very late in coming?
 4. Explain the following: "A little wiggle," "splendid books," "a queer stocking," "the sun never would rise," "a guard chain," "little fur muffler," "red ivory," and "a pin-cushion."
 5. Why is Christmas kept as a holiday?
 6. Explain the meaning of *huddling*, *Christmas boxes*, *neighbor*, and *parasol*.
- Value—72 Marks—1, 12; 2, 12; 3, 6; 4, 24; 5, 6; 6, 12.

GEOGRAPHY.
Time—1 hour.

Answers to be written on paper.

1. Name the four cardinal points of the compass. What point is exactly opposite the south? Half way between the north and east what point have we?

2. Name the four seasons of the year. April is in what season?
3. Bound the Township of Nichol.
4. What is a cape? What is a Peninsula? What is a gulf? What is a valley? What is a volcano?
5. Name all the municipalities in the County of Wellington.
6. Distinguish City, Town and Village, and make a complete list of any Cities, Towns and Villages in Wellington.
7. Name any three rivers in the County.
 Value—72 marks—1, 12; 2, 8; 3, 4; 4, 15; 5, 9; 6, 15; 7, 9.

ARITHMETIC.
Time—2 hours.

On paper—full work required—no marks unless correct and without changes.

1. From the sum of three hundred sixty-eight thousand four hundred fifty-six, one hundred one thousand nine hundred forty-two, five-hundred twenty-three thousand eight hundred sixty-four, seven hundred and twenty-nine thousand six hundred, one hundred twenty-nine thousand and four, take three hundred sixty-eight thousand four hundred fifty-six.
2. Write in Roman numerals 897, 308, 375, 983, 666.
3. Multiply 98765421 by 809.
4. The dividend is 235730444 the quotient 678, the remainder 14, find the divisor?
5. Write in words 630,268, 90370, 201003 and 40523.
6. A man bought a horse for \$70, and paid \$15 for keeping him; he "let" him enough to receive \$24, and then sold him for \$74; did he gain or lose by the bargain, and how much?
7. A man bought 7 barrels of flour for \$63, and gave 5 barrels of it for cloth at \$3 a yard; how many yards did he buy?
8. A man owed \$67; at one time he paid \$16; at another \$9; at another \$11; at last he paid the rest wanting \$8; how much was the last payment?
 Value—1, 12; 2, 12; 3, 12; 4, 12; 5, 12; 6, 12; 7, 14; 8, 14.

DICTATION.

Second Reader, page 192, from "This was so amusing a sight" to "into the bargain."
 Pupils are to be told by Examiner where each sentence begins; capitals to be counted.
 Harvest, luscious, autumn, golden, healthy, affection, remember, spectacles, feathers and future.
 Slates are not to be used, but plenty of time can be given to the candidates to write it once carefully on paper.
 Value—40, with two marks off for each error.

READING.

Second Reader, page 171, from "Next morning" to "all obstacles."
 Value—30 marks.

WRITING.—ON PAPER.

Second Reader, page 202, "Poison drops of care"....."ere they soil the lip."
 Value—30 marks.

Entrance to Fourth Class.

ARITHMETIC.
Time—2 hours.

1. Express in figures ten millions, ten thousand and ten; express in words 13000013 and in Roman notation 1882, 2004, 750, 10999.
2. How often must 807 be added to 119 to make ten thousand six hundred and ten?
3. Express 68932468 square inches in acres, roods, etc.
4. Simplify $\frac{1}{2}$ of $\frac{1}{3} + \frac{1}{4}$ of $\frac{1}{5} + (\frac{1}{7} + \frac{1}{8}$ of 20).
5. Find the G. C. M. of 3013, 2231 and 2047.
6. Find the least number which divided by 6, by 8 and by 9 gives in every case the remainder 5.
7. Divide 480 apples in three heaps, the second heap containing three times as many as the first, and the third four times as many as the second.
8. A house and its furniture cost \$6909; the house is worth six times as much as the furniture. Find value of the house.

9. A man takes 990 steps in walking half a mile, his son takes 1440 in traversing the same distance. How much longer was the father's step than the son's?

10. $\frac{1}{4}$ of a field is planted with carrots, $\frac{2}{3}$ with turnips and the remainder, 6 acres with potatoes. Find how many acres are planted with turnips and carrots respectively.

Values:—1, 6; 2, 8; 3, 10; 4, 10; 5, 8; 6, 10; 7, 12; 8, 12; 9, 12; 10, 12. Total.—100.

GEOGRAPHY.

Time—1 hour.

- (a) Define strait, cape, estuary, river and gulf.
(b) Give states of the Union touching the great lakes.
- Draw an outline map of the Dominion of Canada, giving Provinces and capitals of each, and locating principal rivers.
- Name chief articles exported from Canada. To what countries sent? Also chief articles imported into Canada. From what countries do they come?
- Name the principal islands in the great lakes and river St. Lawrence, locating each.
- What and where are the following:—
Mackenzie, Sable, Charles, Nelson, St. Peter, St. Johns, St. John, Scugog, Nation, and Kempenfeldt?
Value—50. 10 marks each.

COMPOSITION.

Time— $\frac{1}{2}$ hour.

- Enlarge the following sentences by the addition of words or phrases:—

- (1.) —years have passed away—.
- (2.) Have you ever considered the wonderful structure—?
- (3.) The ship set sail —.
- (4.) The enemy began their attack —.

- Construct several simple sentences on each of the following topics:—(1) Sleep, (2) War, (3) Peace, (4) Falsehood, (5) Poverty, (6) Honor, (7) Soldier, (8) Cottage, (9) Iron, (10) Mahogany.

- Write a composition of not less than one hundred and fifty words on either of the following:—

- The Oak.
- New-Year's Day.

Values:—1, 12; 2, 10; 3, 28.

LITERATURE.

Time—1 hour.

Open Third Reader at page 74 and write the answers to the following questions on paper:

- What is a "stockade fort"? What are "renegade white men"?
- Name any Indian wars. Give the names of any Indian Chiefs who took part in them, and explain the cause of these wars.
- Explain the meaning of "a thousand rifles," "cornfields," "garrison," "pioneers," "capacity," and "rescue."
- What is meant by "the heroism of a woman may baffle the address of a warrior"?
- Write one hundred words on the subject of this lesson.
Value—50. 10 marks each.

HISTORY.

Time—1 hour.

- Name the two great French discoverers of Canada.
- Give the dates for the founding of Port Royal, Quebec, and Montreal.
- How were Cartier's people afflicted during the winter of 1535? What happened at his departure from Stadacona in 1536?
- Describe the siege of Quebec by Phipps, in 1690. What was Frontenac's conduct, and how was it recognized?
- Name six of the French Governors of Canada, and write a short account of one of them.
- What were the plans of the English for the campaign of 1759? What was arranged on the side of the French?
Value—1, 5; 2, 5; 3, 8; 4, 12; 5, 10; 6, 10—50.

GRAMMAR.

Time—1 $\frac{1}{2}$ hours.

- Define Noun, Interjection, Pronoun, Case, and Adjective.
- Separate into noun part and verb part:—
(a) Make no rash promises.
(b) The lark has sung his carol in the sky.
(c) Sweet be thy dreams!
(d) In childhood's hour I lingered near
The hallowed seat, with listening ear.
- Tell the parts of speech in the following sentence:
He wrapped her in his seaman's coat
Against the stinging blast.
- Write the past tense of go, come, see, run, takes, are, knows, lays, lies, sells, shines.
- Correct the following:—
Who will go after a pail of water? Her and me.
Them are the books which we wanted.
Ida and me were out.
- Write the possessive, singular and plural of the following nouns:
Cable, tutor, mercy, engineer, princess, ox, sheep, poetess, gardener and sculptor.
Values—1, 10; 2, 12; 3, 22; 4, 22; 5, 9; 6, 25.

READING.

Third Book, page 261, from "One day" to "dead." Value 30, i. e., fluency 20, and expression 10. Two marks to be deducted for every mispronounced word, and one for every other error in fluency, such as hesitation, miscalling, etc., etc.

WRITING.

To be judged from dictation paper.
Value—30.

DICTATION.

Time— $\frac{1}{2}$ hour.

To be written at once on paper and no copy made, capitals and periods to count.

Value—50, with 5 marks off for each error.

Third Reader, page 224, from "The schooner" to "waves." His birth took place in a berth in a vessel. Bury the poor brute and do not bruit about his faults. The teacher bade me to beware of bad men.

The above is not to be written on slates.

Entrance to Fifth Class.

WRITING.

Writing will be judged from Dictation Paper. Slates not to be used.
Value—25.

DICTATION.

Time— $\frac{1}{2}$ hour.

Fourth Book, page 92. From "No river can exhibit" to "and their martyrdom."

Places of worship are named, a church, chapel, grove, temple, synagogue, sanctuary, tabernacle, cathedral, and mosque.

Brilliance, vacancy, flimsy, epilepsy, furzy, prevents, penitence, manoeuvre, catastrophe, auspices.

Value—60. 5 Marks off for each mistake.

READING.

Fourth Book, page 79.—"If I slept then . . . the moment came."
Value—30. Mark as in entrance to Fourth Class.

COMPOSITION.

Time— $\frac{1}{2}$ hour.

The Examiner will write the subjects on the blackboard. Candidates must choose one of the following subjects, and the composition must not be less than 25 lines in length:—

- Value of Time;
- A Journey by Railway;
- Never too late to learn.

Value—30.

GEOGRAPHY.

Time—1 hour.

- (a) Distinguish Physical and Political Geography. (b) Define Axis, Planet, Lunar Eclipse, Basin, Tropics, and Longitude.
 - Name the bodies of water into which the following rivers flow:—Thames, Alabama, Arno, Elbe, Douro, Negro, Parana, Isar, Ticino, Indus.
 - What influences affect the climate of a country?
 - Over what railroad would you pass in going (1) from Collingwood to Ottawa, (2) from Stratford to Hamilton. Name the railroads running into the city of Toronto.
 - State accurately what and where are Ivica, Sark, Leith, Valetta, Neagh, Taranto, Morea, Comorin, Hoogly, Carpentaria.
 - Draw a map of great lakes, giving cities situated on each, with positions.
- Value—1, 10; 2, 10; 3, 5; 4, 9; 5, 10; 6, 6.—50.

ARITHMETIC.

Time—2 hours.

- What will 7 loads of pease cost each containing 50 bush. 50 lbs. at 62½ cents per bushel?
 - Simplify $.035 \times .0045 \div 25$.
 - Add together $\frac{2}{3}$ of $\frac{3}{4}$ of 2 tons 4 cwt., $\frac{1}{2}$ of 3 quarters and 29 of 5 cwt. 2 qrs., and reduce the result to the decimal of 35 tons.
 - Define Factors, Quotient, Measure, Multiple, Remainder, Interest, Ratio and Integer.
 - Find value of $(\frac{1}{2} + \frac{1}{3} - \frac{1}{2} + \frac{1}{2} - \frac{1}{2} + 7)$ of $\frac{1}{5} + \frac{1}{4}$ of \$210.
 - Write out the table of Avoirdupois weight. 144 lbs. Avoirdupois are equal to how many lbs. Troy?
 - A boy has a certain number of apples; he gave 93 to one boy, 3 of the remainder to another, and 428571 of the remainder to a third; he had 736 left. How many had he first?
 - What number added to $\frac{5}{8} + \frac{1}{2}$ will give that number which, when subtracted from $3\frac{1}{2}$ leaves $1\frac{1}{2}$?
 - Find the largest number which will divide 34137 and 67638 leaving for remainder 201 and 102 respectively.
 - I bought goods on credit from a merchant to the amount of \$385.75 on Jan. 15th. If he charges me seven per cent. per annum simple interest and I pay the bill on Aug. 23rd, following; how much must I give him.
- Values—1, 5; 2, 5; 3, 10; 4, 8; 5, 10; 6, 10; 7, 14; 8, 12; 9, 12; 10, 14;—100.

LITERATURE.

Time—½ hour.

- A formidable insurrection in Dalmatia and Pannonia had called Tiberius away from the Rhine and the Elbe to another field of warfare. In his place came Quintilius Varus, who allowed the poor Germans to be oppressed in every imaginable way, extorted money from them, etc.—*Fourth Reader*, page 204.
 - Who were Hermann and Tiberius?
 - What brave deed was done by Hermann?
 - Explain the meaning of "field of warfare," "oppressed," "imaginable way," "extorted money."
 - A host of Roman princes were dragged to the altar of the Germans and sacrificed to Wodin. . . . ; their heads were placed as trophies upon the surrounding trees. . . . But the Germans reserved their most cruel tortures for the Roman advocates and other pettifoggers, etc.
 - Where were the altars of the Germans usually placed?
 - What was Wodin?
 - In what word is this name retained?
 - Explain the meaning of "sacrificed," "trophies," "cruel tortures," "advocates and pettifoggers."
 - Give an account of the conquest of Mexico.
- Fourth Books are not to be used.*
- Values—1 (a) 6, (b) 2, (c) 16; 2 (a) 5, (b) 2, (c) 2, (d) 15—24. Total value 72.

HISTORY.

Time—1 hour.

- Tell what you know about the reign of King Alfred.

- Explain the following terms:—Colonies, Cabinet, Governor-General, Premier.

- When was the Act of Settlement passed? What are its chief provisions?
 - In what reign were the Act of Supremacy and the Act of Conformity passed? What were the results of these Acts?
 - For what event is the year of 1588 famous? Who prepared this expedition, what was its object, and by whom was he assisted?
 - Give a short account of what occurred in 1715 and 1815.
- Value—12 marks each—total 72.

GRAMMAR.

Time—1½ hours.

- Analyze: "Cast thy eyes eastward," said he, "and tell me what thou seest?" "I see," said I, "a huge valley, and a prodigious tide of water rolling through it."
 - Parse: In every quarter of Europe might be seen, on the walls of the towns, the signal of torches waved in tumultuous consternation.
 - How many genders are there, properly so called? What is the meaning of common gender?
 - What do much, few, a few, several, all, another, severally, denote? Illustrate by example.
 - Write down (1) ten irregular verbs; (2) the defective verbs; (3) the auxiliary verbs that are also used as principal verbs.
 - Name all the parts of speech modified by adverbs. Give examples.
 - Correct errors in the following sentences, giving your reasons:
 - I wonder who they have asked to the party.
 - Neither of them bear any sign of case at all.
 - I had wrote to him the day before.
 - Him excepted all were lost.
- Values—1, 7; 2, 36; 3, 8; 4, 12; 5, 12; 6, 5; 7, 20.

Practical Department.

LESSONS IN CHEMISTRY.

(Continued from last month.)

CHAPTER II.

15. The chemical symbols given in the last section are generally taken from the common name, but a few are derived from foreign names, thus Pb. (plumbum), Fe. (ferrum), Ag. (argentum), Hg. (hydrargium), K. (kalium), Na. (natrium), &c.

It is important to remember that each symbol is not only a contraction for the name, but also stands for one atomic weight of the substance. Two or more atoms are denoted by subscript figures as O_2, H_2, C_4, P_3 , &c. meaning two, three & atoms of oxygen, hydrogen &c.

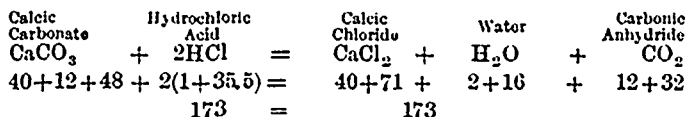
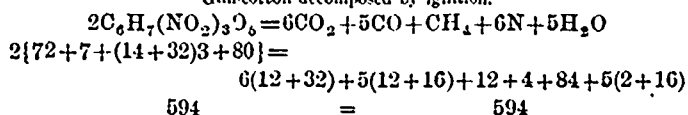
The sign +, is used in the sense of "together with." The sign = is used in the sense of "produces," or "yields" It means "equal to" only in special reference to the weight which must be the same on both sides, since we can no more destroy matter than we can create it. Thus the union of two atoms of hydrogen with one atom of oxygen to form water is expressed $H_2 + O = H_2O$. If the atomic weights, otherwise called combining numbers, are written we see that $1 \times 2 + 16 = 2 + 16$ in the arithmetical sense. No weight being lost or gained by the chemical action. The gain spoken of in experiment 16 is due to the additional weight of oxygen absorbed from the air. A numeral placed before any symbol or symbols is like a coefficient in algebra and multiplies the expression as far as the next + or period, thus four atomic weights of sulphuric acid are written. $4H_2SO_4$.

The bracket is used to denote that the symbols enclosed are to be considered to represent one molecule, thus $3(NH_4)_2SO_4$ means three equivalents, or atomic weights of sulphate of ammonium. It also means that each molecule of this sulphate consists of three simpler

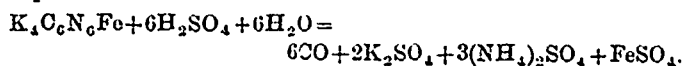
molecules, viz. two molecules of ammonium, NH_4 , and one molecule of the composition SO_4 .

The following chemical equations or chemical formulas express the chemical reactions or changes which happen when the ingredients are brought together with proper precautions.

Gun-cotton decomposed by ignition.



The reaction which occurs when $(\text{K}_4\text{C}_6\text{N}_6\text{Fe})$, potassium ferrocyanide is heated with strong sulphuric acid H_2SO_4 , and water H_2O is expressed :-



The products are carbonic oxide, potassic sulphate, ammonium sulphate, and iron sulphate.

We can easily calculate the weight of any element in a given weight of a compound if we know its chemical formula. Thus Chlorate of potash, or potassic chlorate is KClO_3 . The 39 parts of potassium, 35.5 parts of chlorine, and 48 parts of oxygen give 122.5 parts of chlorate. Hence the potassium is $\frac{39}{122.5}$, the chlorine $\frac{35.5}{122.5}$ and the oxygen the $\frac{48}{122.5}$ of the whole chlorate. Therefore in any given weight of chlorate these fractions of the whole weight will give the weights of the ingredients present. Similarly, the potassium is $\frac{39}{122.5}$ of the chlorine and $\frac{39}{48}$ of the oxygen. Hence 100lbs of potassium require $\frac{3900}{35.5}$ lbs of chlorine, and $\frac{3900}{48}$ lbs of oxygen to form potassic chlorate. And the percentage composition is $\text{K}=31.8$, $\text{Cl}=29$, $\text{O}=39.2$ Similarly 594 oz of gun cotton yield 84 of nitrogen, that is the nitrogen is always the $\frac{84}{594}$ of the gun cotton, and the gun cotton is the $\frac{594}{84}$ of the nitrogen produced. Hence to produce a given quantity of nitrogen we must take $\frac{594}{84}$ as much gun cotton by weight, and conversely if a given quantity of gun-cotton be used then $\frac{84}{594}$ as much nitrogen by weight will be generated.

It will be observed that the atomic weight of a compound is always equal to the sum of the atomic weights of its constituents.

16 Chemical nomenclature is the spoken language of chemistry, just as the notation or symbolic characters are the written language. The principle followed in inorganic chemistry is that the name of the compound shall signify the nature of its elementary constituents, but in organic chemistry, that is the chemistry of the carbon compounds, this principle has to be abandoned on account of the immense number of similar substances, and names are given which shall suggest the origin of the bodies. The modern system was begun about the beginning of this century. Old common names have generally been retained, but all elements and compounds of more recent discovery have received more or less systematic appellations. Metals and bodies resembling metals have names ending in *ium* as calcium, sodium. Elements like chlorine have names terminated in *-ine*. Another group ends in *-on*, carbon, silicon, boron. When two simple elements unite the compound ends in *-ide*, thus we have hydrides, chlorides, bromides, iodides, fluorides, oxides, sulphides, etc., compounds of hydrogen, chlorine, bromine etc. with one other element. In case two elements form several distinct compounds prefixes are used to denote the proportions, thus the monoxide, dioxide, trioxide, tetroxide, pentoxide, of any substance contain 1, 2, 3, 4, or 5 parts by weight of oxygen, N_2O , N_2O_2 , N_2O_3 , N_2O_4 , N_2O_5 .

The prefixes *di-*, *tri-*, *tetra-*, *penta-*, &c., are used in this way. The prefix *per* or *hyper* and suffix *-ic* denote that the compounds contain more of an element resembling oxygen than compounds beginning with *hypo* and ending in *-ous* respectively. Thus hypochlorous acid HClO , chlorous acid HClO_2 , chloric acid HClO_3 , perchloric acid HClO_4 ; mercurous chloride HgCl , mercuric chloride HgCl_2 .

Similarly *-ite* denotes less than *-ate*. Both are applied to the compounds of bodies whose names end in *-ous* and *-ic* respectively. Thus chlorous acid combines to produce chlorites, chloric acid to produce chlorates, hypochlorous acid gives hypochlorites, perchloric acid yields perchlorates, permanganic forms permanganates.

17 It is found that when compounds are decomposed by the electric current, some elements appear at the positive, others at the negative pole. Those which appear at the positive pole are called *basylous* or *electro-negative* those at the negative pole, *chlorous* or *electro-positive*. The difference is one of degree only, thus mercury is negative to sodium, and positive to iodine. But the following eight, fluorine, chlorine, bromine, iodine, oxygen, sulphur, selenium and tellurium are negative or chlorous towards the remaining elements. The name of the positive element is placed first with the adjective termination *-ic*, the name of the negative element last with the ending *-ide*:—thus, mercuric chloride HgCl , argentic bromide AgBr , potassic iodide KI , ferric sulphide FeS , sodic oxide Na_2O . The adjectival ending *-ic* is not used by all writers. Some prefer silver bromide, potassium iodide, sodium oxide &c. The student must be prepared to hear the same thing called by different names as chemical nomenclature is at present in a transitional state.

(To be continued)

NOTES ON HYGIENE.

BY J. A. WISMER, PRINCIPAL OF PARKDALE PUBLIC SCHOOLS.

(Continued from last month.)

Never crack nuts with your teeth; leave that practice to squirrels and monkeys, to whom nature has been more generous in sharp pointed, easily repaired enamel than to the human race. Very hot or very cold substances should not be brought in contact with the teeth; do not drink either ice water or very hot tea for the sake of the enamel of the teeth, if for no other reason. Too much sweet or too much acid likewise injures the teeth and causes them to decay; do not eat too many candies or very sour substances such as lemons, and for the sake of decency do not chew gum or tobacco. Tobacco smoke permanently discolors the teeth and has other bad effects such as increasing nervousness, and impairing digestion. Certain medicines, particularly many of the preparations of iron, will also discolor the teeth. Parents should watch their children's teeth and, as soon as decay sets in, consult a regular qualified dentist. Many a tooth, if filled in time, will last a life time, but, if neglected may have to be extracted in a very few months. A few sound teeth in the upper and lower jaws are worth more to the person interested, than all the teeth that can be made by the dentist's art. Take particular care of your teeth therefore; remember, that when once extracted, they cannot be replaced. Use only gold filling, it is the best for many reasons. For real, old-fashioned, jumping tooth-ache, extraction is the only cure. I may say however that as a rule you need not fear tooth ache, if you take proper care of your teeth. Sound teeth secure the thorough division of the food we eat, and go a long way in preserving good health. Bad breath is caused either by bad, ill cleaned, neglected teeth, or by a disordered

stomach. Both combined produce breath most foul and offensive. The same result is attained by the use of tobacco and alcoholic stimulants. My dear boys and girls, never use either, shun the latter particularly, not only for the *body's* sake, but for that of the *soul*. A sweet breath is something to be thankful for, and is a sure indication of good health. If you keep your teeth all right, your stomach all right, breathe pure air only, and do not smoke or drink, I will answer for it your breath will be as sweet as the flowers of May.

We will next take up that "window to the human soul"—the eye. Look at the bony arches which protect it, the eye-brows and eye-lashes which intercept the dust and floating particles of matter in the air; see the eye-lids with their thousands of little moistening glands; study the beautiful blending of colors in the iris and pupil; think of the vast number of contrivances necessary to enable the eye to flash in almost any direction with the rapidity of lightning controlled wholly by the human will; then prove to me, if you can, that this grand mechanism is simply the result of chance, or the product of evolution, or a mere freak of nature. No you cannot. Nothing within the power of puny humanity could fashion anything even approaching it; for a designer then we must look beyond nature to nature's God. The rays of light, or pictures of what we see, are received on the inner concave surface of the eye called the retina. This impression is transmitted to the brain through the optic nerve. Exactly in the centre of the retina is a round yellow spot the use of which is as yet unknown. The retina is enclosed by what is called Jacob's membrane so called from its discoverer. The rays of light are absorbed by a black cellular substance called the choroid which surrounds Jacob's membrane. In front we have a convex lens, called the cornea, behind which is a watery substance called the aqueous humor. There is a thin partition of membrane in the aqueous humor called the iris in the centre of which is the pupil. Behind these is the crystalline lens which is the most important refracting structure in the eye. The remaining portion of the eye-ball is composed of a jelly-like substance called the vitreous humor, the whole being enclosed in a dense fibrous membrane called the sclerotic to which the muscles which move the eye are attached. Care should be taken not over-tax this delicate and wonderfully constructed organ. If there is any class of people on earth which calls for our best and kindest sympathies it is the hopelessly blind, shut out from God's sunlight, unable to see the kindly glances of father or mother or friends, living ever in total darkness. Be kind to the blind man therefore should you ever meet him, and if you have a quarter in your pocket give it to him, if he is in want. Never read small print by fire or gas light if possible to avoid it, and have a shade over the lamp or gas so as not to strain the eyes. Do not for any length of time gaze intently at any single object especially if small and at a distance. Do not stare at the sun, or the fire if close to it. In fact, do not stare at anything, it is bad manners, to say the least. If a gnator any small substance as coal dust gets into the eye, keep cool and do not rub it, which is about the first thing you will feel impelled to do. This will simply set up inflammation and increase the pain. If under the upper lid it may generally be got rid of by drawing the lid outward and down over the lower lid the eye-lashes of which may take it up. Either lid may be easily everted over the handle of a teaspoon when a friend can remove any ordinary foreign substance with a silk handkerchief. Then bathe the eye carefully with tepid water mixed with a little salt, keep it from the light for a short time, and it will be all right. Of course for any serious injury consult a physician at once.

(To be continued)

DISCIPLINE OF THE SCHOOL.

The great business of the teacher is to discipline his pupils. He cannot "add to their stature one cubit," nor to their mental nor moral capacity one new power; but he can bring them under such a process of training as will subdue their wild and untamed impulses, develop the latent energies of body, mind, and soul, and direct them to a course of right action; so that the future citizen and law-giver may be fitted for his great work and high destiny.

The object to be secured is two-fold, viz.: school vices must be prevented or cured, and school virtue must be cultivated. Among school vices, as they have been classified, are idleness, whispering, disorderly movements in the school-room, injury to property, and rudeness of speech or act in the intercourse of every day life. The school virtues to be cultivated are suggested as the opposites of these, viz.: regularity of attendance, promptness, obedience, truthfulness, earnestness, diligence, kindness, neatness, and thoroughness in the preparation and recitation of lessons.

Thorough organization and classification.—I have seen the school in operation so perfectly systematized, all its arrangements so complete, and its departments so perfectly adjusted that the workings of its machinery not only produced no friction, but created order, interest and zeal, such as secured the desired object. I have seen these arrangements so perfect as not only to prevent general disorder, but to punish wrong without the aid of the teacher. Organization is the first business of the school-room, and nothing else should be attempted until this is accomplished. The object in view is that systematic arrangement and uniformity which will secure good order and promote studiousness. To this end the pupils should be so seated that they will appear uniform, and not disturb each other in the necessary movements of the day. The rogues should be separated, and every temptation to idleness and mischief removed. A complete division of time into periods for study, recitation, and play is also necessary. A time for disorder is, however, just as necessary as a time for study; hence the teacher must provide not only regular recesses for freedom in the open air, but also occasional recesses from study (say two minutes) for the purpose of opening the safety valve of mischief and giving opportunity to whisper, ask questions, leave seats, and attend to all other necessary irregularities not allowed at other times.

All school laws must be based upon authority.—It must be distinctly understood that persuasion may never take the place of authority in school management. When, however, the right to maintain authority is not questioned by the pupil, or after he has been subdued to obedience, we may persuade, invite, and win. But kindness cannot take the place of authority. Obedience is not a voluntary compliance with a request, but a hearty response to acknowledged authority—an implicit yielding to command. Such obedience, prompt and unreserved, is the duty of every pupil.

Another important agency in school discipline is work.—Both the master and his pupils must work. Indolence in him begets idleness and recklessness in them. Life, energy, and industry manifested in him will be at once reproduced in them. The teacher must work to fit himself for his high calling and to elevate his profession. He must work for his school, to interest and benefit his patrons, to rouse and inspire his pupils, and to prepare himself for his daily teaching. Indeed, the true teacher is always reading, thinking, or acting for his school.

Still another moulding and controlling power in the school-room is public opinion.—This must be created and directed by the master, or he is powerless. And first of all he must create a favorable opinion of himself; that is, must gain the confidence of his patrons and pupils. To this end he must form an intimate acquaintance

with both parents and pupils; he must interest himself in what interests them, and adapt himself to their varying tastes and peculiarities. On terms of friendship and in full sympathy with all, he is prepared to secure their co-operation, and thus carry out his plans and purposes for the welfare of his school.

Mental and physical recreation are important disciplinary agencies.—The mind and body are inseparably connected. Hence mental culture cannot be successfully carried on without physical culture. Both mind and body must have recreation more than the ordinary recesses and holidays afford, and, as every teacher knows, there are certain hours and days when the fiend disorder seems to reign in the school-room. He cannot assign any reason, but the very atmosphere is pregnant with anarchy and confusion. And what can the teacher do to overcome the evil? Let an unexpected change divert the attention of the pupils; let some general theme be introduced in a familiar lecture or exciting narrative; or, if nothing better is at hand, let us say the multiplication table, or sing "Old Hundred," and the work is accomplished. The room is ventilated of its restless contagion and the furies are fled. Now add to this mental the physical recreation of school gymnastics, and the remedy is still more sure. Gymnastics are useful and important not only as a means for physical development, but also of school government.

The discipline of punishment.—The circumstances connected with the offence must be carefully studied, and a distinction always made between wilful and unintentional wrong. The isolated act of transgression does not indicate the degree of guilt incurred nor the kind of punishment to be inflicted; the presence or absence of palliating circumstances, the motives which generated the act, the present views and feelings of the offended pupil, must all be taken into the account. The master should never, therefore, threaten a specific punishment for anticipated offences. No two cases of transgression will be exactly alike, and hence the kind and degree of punishment should be varied as the case demands. Moral influence and kindness should attend every act of severity. Never let the sun go down upon the wrath of a chastised pupil. See him alone, bring to bear upon him every moral power, treat him now with kindness and confidence, and thus restore him to duty and favor. One example to illustrate: A gold dollar had disappeared from the teacher's table while she stepped to a neighboring room. Two school girls, who were the only persons present, had disappeared. It was Saturday, and in the evening the young ladies were assembled in the public parlor for family worship. The principal, who was conducting the exercises, commenced describing the effects and consequences of having, by accident, deposited a gold dollar upon the human lungs. It would corrode and poison, produce inflammation, disease, and death if it could not be removed. He then transferred the gold dollar from the lungs to the conscience, and portrayed the consequent guilt, remorse, anguish, and moral death resulting from such a crime, if not repented of. He presumed the young lady would gladly restore the money and save herself from the disgrace and suffering which must follow. He told her where she could leave the dollar, and that the fact of restoring it would be proof of her penitence, and would save her from exposure. In her desperation she had already thrown the dollar down the register; but she did borrow the amount of her teacher, confidentially, to be paid from her spending money, and deposited it as suggested. And so the whole matter was settled, and the most satisfactory results followed. The parents of the young lady never knew that anything of the kind had occurred.

The discipline of study.—Study is mental gymnastics, systematic thinking, and the end in view is development and culture. One great object of the school is to induce and direct this mental exercise. Study is of the first importance, and hence must have the first attention of every practical teacher. He teaches his pupils how to study. He shows them it is not the number of hours spent with books in hand, but close application that secures thorough discipline and good lessons, and that self-application is the only condition of sound learning.

The discipline of recitation.—Recitation is the exercise of expression, and, like study, belongs wholly to the scholar. Study and recitation are the principal means of gaining mental power and practical ability.

The discipline of instruction.—School instruction serves to render acquired knowledge more definite and conceptions more vivid, and cultivates the power and habit of expression. And all these exercises—study, recitation and instruction—have one common end to accomplish, viz.: discipline.

There are three methods of instruction. The more common is by *questioning*. Many teachers know of no other way, and some have so little knowledge of the subjects taught that they demand to have questions prepared for themselves as well as for their pupils. And bookmakers, quick to observe the condition of the market, often line the margin of their books with leading questions to be used in study and recitation. This is all wrong and one of the indications of the superficiality of the age. The tendency in all departments of learning is to skim the surface and remove the necessity of thoroughness. Questioning is not the best method of instruction, nor can it be safely adopted as the only method. Yet the method has its place, and may be useful: first, to direct the attention of the pupil to special topics or thoughts which have been overlooked or omitted in the recitation; secondly, it is useful in conducting reviews and examinations.

Written answers have the advantage over verbal that they bring the scholar under rigid examination in other departments of primary instruction. A written answer exposes his penmanship, orthography, use of capitals, punctuation, and forms of expression. Hence, this method of examination should be practiced as often as time and circumstances will allow.

Lecturing is another method of instruction which has its uses and abuses. A lecture by the teacher should never be substituted for a recitation by the class. Many teachers suppose that the measure of their ability as instructors is the power they have to explain and talk before the class, and hence they spend the most of the hour assigned to recitation in the display of their own gift of speech. But in the recitation room the good teacher has but little to say.

Study and recitation are the principal agencies to be employed in the process of training. Instruction is useful and important only so far as it secures, directs, and controls earnest study and careful recitation. Any system of instruction, therefore, which weakens the motive or removes the necessity of laborious thinking and independent expression is false in theory and ruinous in practice. The recitations should be made standing, that the pupil may be brought out prominently before the class and acquire the habit of thinking and speaking in that exposed position. This will give him confidence and self-control. But some thoughts cannot be expressed in words, these must be drawn out in figures, diagrams, and maps.

The discipline of good manners.—The manners of people surely indicate their morals; but human society itself exists only so long as the moral sense of the community is preserved. Of manners and morals it may, then, be affirmed that the one is but the complement of the other, and that they cannot be separated.—HIRAM ORCUTT, in circular issued by Bureau of Education, Washington.

The following is from a recent teachers' examination held in Wayne County, Iowa:

- Q. What is a fraction? A. A part of a whole.
- Q. What use do you make of a word the meaning of which you do not understand? A. You don't make much use of it, and when you do, not very much.
- Q. Give a synonym of annals. A. Yearly.
- Q. Give a synonym for celebrate. A. Thankingful.
- Q. Does it injure a pupil to have him learn to spell and pronounce words that he does not understand? A. I think it is.
- Q. Give the meaning of the word disjoin. A. To join apart.
- Q. How are the expenses of the U. S. Government defrayed? A. By Licentious fees for selling Liquors.
- Q. Who were the puritans—why so called? A. The Puritans were a religious sect so called by England.
- Q. Who were the Quakers? A. The Quakers founded Pennsylvania, led by William Tell.
- Q. Write an application for a school. A. Corydon, Iowa, Aug. 24, 1881. Mr.—If you are willing to give me your school I am willing to take it. Yours—

—Iowa Normal Monthly.

CLASS CONVERSATIONS.

BY JAMES L. HUGHES.

The most practical way of teaching children to speak correctly is to let them speak. There are other things besides grammatical accuracy that are essentials in good speaking. The manner of speaking; the tone of voice; the rate of utterance; the pronunciation and articulation of words; the position of the pupil's body, especially as to general erectness, the feet, the hands and the eye; all these should receive the closest attention on the part of the teacher. It will be of little avail, however, to give theoretical rules relating to grammatical construction or any other of the elements of good speaking. "Children learn by doing," and they can only learn to speak by speaking. Correct speaking must become a habit induced by long and frequent practice. To speak well a man must be conscious only of the *thought* he is expressing; he must not be hampered by the consideration of his method of expression. His grammatical accuracy, his pronunciation, his impressive elocution, and his appropriate dramatic action should be certain, but they must be spontaneous. There is only one way to make them so; extensive practice when young.

This practice develops readiness in speaking, and it enables the teacher to correct errors of all kinds made by the pupils.

There are many teachers who allow their pupils a few minutes for conversation at the end of each hour between lessons. It is generally much better to relieve pupils after an hour's hard study, by lively physical exercises, but a conversation once in the forenoon and once in the afternoon is quite an appropriate way of resting a class. The conversations are much more instructive, and more interesting to the pupils if they are class conversations instead of mere talks between the couples in adjoining seats.

The following are suggested as appropriate methods of conducting class conversations.

1. Let the pupils report the inaccuracies of speech both in pronunciation and grammar which they have heard since leaving school on the previous day.

2. Let them relate any items of interest that they have read or heard during the past twenty-four hours.

In the first exercise the pupils should say, "I heard a boy say, 'I seen a elephant', he should have said, 'I saw an elephant.'" etc.; stating the error first and then making the correction.

In both cases the pupil speaking should stand up and speak in complete sentences.

If any errors are made, by a pupil in expressing his thoughts they should be corrected by the other pupils under the guidance of the teacher.

In the higher classes the criticisms may be extended to include a wide range of word analysis and sentence making.

THOUGHTS AND SUGGESTIONS ON EDUCATION.

BY PROF. W. H. VENABLE.

I. It is not easy to learn to think; nor is it easy to think after learning how. The big-brained Carlyle says: "True effort, in fact, as of a captive struggling to free himself: that is Thought!" We are bound down by many cords of usage and ropes of authority; and it takes force and courage to break the bonds—to think in regard to Education.

II. Many regard the speculative philosophy of Education as mere fog and delusion. There is much fog and delusion brooding over the subject; but the solid land of True Science must be somewhere beyond the mist.

III. Before we can safely run the train of Right Method along

the track of Practice, the head light of Theory must shine into the opening way.

IV. Doctor Harris, the Great American Philosopher of Education, has benefited the system more by his lectures and writings than any twelve mere unthinking, practical superintendents.

V. The teacher can not teach anything: the pupil *must learn*. You can no more think for your pupil than you can digest food for him. The mind is solitary in its real achievements. We must work out our intellectual salvation, alone. Teachers can order the "environment" but not do the vital work of another spirit.

VI. Not the studies, but the study, makes the scholar.

VII. Education is the Science of Life, and conduct is its cognate art.

VIII. I do not believe in fitting boys for college, if that fitting unfits them for life. The one fitting should be the other.

IX. You are all your ancestors, including the Old Adam. Judge your pupil in the light of his heredity.

X. The perfect work of Education can not be accomplished except in the individual who comes of a stock cultivated for generations. Training your pupil, you may be training his great grandson. Infinites are the reaches of the schoolmaster.

XI. Stupidity, stolidity, inaptitude for special studies, vicious tendencies, are to be regarded as chronic disease—the pupil may slowly be cured.

XII. Many teachers of morality destroy the good effects of judicious counsel by too much talk, as a chemical precipitate is redissolved in an excess of the precipitating agent.

XIII. The best teacher has in view not his own education, but that of his pupils. They are his study; not the subject he teaches.

XIV. Take care of the blockheads and the heads will take care of themselves.

XV. All schooling in school should be supplemented and tested by schooling out of school.

XVI. The school must recognize its constant vital connection with the world around. Every teacher's desk should be in sight of the great facts of the times in which we live. Boys are men, girls are women, *to-morrow*.

XVII. Like the ancients, we must teach virtue as well as smartness. No good education can be based on mere intellectuality.

XVIII. Bain is wrong in assuming that affection can play but a small part in teaching. Human love and sympathy play the greatest part in early training. They play the greatest part even in a class in mental arithmetic.

XIX. We should have a "Science of Education" written by a Platonist. The best works we now have are based on the Materialistic Philosophy. Let us see both sides.

XX. We neglect political education in our schools. Every boy and girl should be taught the elements of politics and economics; and especially, in these times, should the young be inspired with a pure patriotism and a religious devotion to the duties of citizenship.

XXI. Educational theory and practice should proceed from the faith that there is a God at the center of the Universe, and a soul at the center of Man.—*The Normal Teacher*.

LESSON IN NUMBERS.

Mine is a class of about thirty-eight young pupils, and they know but little about numbers; in fact, but one or two could read. These were the first lessons given after counting, etc. I taught by means of sticks, saying: "One stick", "two sticks", etc. Then each pupil had a box of sticks, and he counted them singly at first, and then in concert with the rest. I taught them to write figures by saying 1 stick, and have a pupil at the blackboard write 1, and all the others write the same on their slates. Then I took up two sticks, having them look at me, and the pupil at the board write 2, and all the rest the same on their slates. So 5, 3, 8, 7, 2, etc., were written, until they became perfectly familiar with the relation of the character to the number. It was done over and over. I gave them straws (because they were plentier than sticks), and they counted to ten; then I took away one straw at a time, saying 10 straws, 9 straws, etc.

Then we went up to 20, then up to 30, and so up to 100 by slow degrees. I did not have them go backward except from 10 down. They could count quite rapidly from one up to one hundred. Then I let them tie up the straws into bundles of 10 each. Telling them to put up things by tens was quite common. Each pupil had ten bundles and a box of straws besides. I said: I have here one bundle and one straw. I write on the board thus: 11; the left hand

one means 1 ten. This I made plain by calling attention to its being at the left of the other 1. It was a different 1 from the other.

I piled up my bundles on the table, with the ends toward the pupils. I had a pen box in which I made nine holes. I put down one bundle by the box and put in the holes two straws, and asked the pupils to write the the figures on the board.

1 bundle and 2 straws—12
1 bundle and 3 straws—13
1 bundle and 5 straws—15

Then I repeated it over and over. Then I reversed the operation. I wrote 15 on the board, and then asked them to lay out the straws the 15 represented, and so on. Then, by slow stages, I went on to lay out two bundles and three straws. They caught the idea, and so we went on happily and brightly.

Every number up to one hundred was written and represented. I will confess that, although I had taught children for six years, I never had so much pleasure before in writing numbers—never, it was perpetual pleasure.

Then I wrote seven on the board, and they took up 7 straws; then I wrote six and they took up 6 straws. How many in all? They said 13. But I want them in tens when it is possible, I said. So they took up a bundle in one hand and three sticks in the other.

So we went into addition. Thus we took up 14 and 17, 36 and 42, 37 and 45, etc. Take this last case. They laid out 3 bundles and 7 straws, and then 4 bundles and 5 straws. How many have you? 7 bundles and 13 straws. But I want them in 10s. They then said 8 bundles and 3 straws. Then we took up subtraction. I gave them one bundle and four straws, and said take away one bundle and three straws, etc. They did this with ease. The figures were put on the board in every case. Then I wrote the figures and they did the concrete work. Then I would call on a pupil to give a problem, and I would solve it with bundles and single straws stuck in the box. Now, I gave them this to do correctly: John has 24 straws (they laid out two bundles and four straws on their desks) and he gave me one 1 bundle and 8 straws. This puzzled them for a minute, but they soon solved it by untying one of their bundles. Then I gave them more, until the plan was firmly fixed. Then I wrote on the board 24—18. A pupil said: I take one of the two 10s and untie it, and so have fourteen; taking 8 leaves 6. What must I put under the line? 6 was the answer. Then I gave them other concrete examples, and had them represented on the board.

I feel that my class have clear ideas as far as they have gone. It dispenses with borrowing. I say I have not enough straws, so I take one of the bundles and open it—remember there is one less bundle.

The only objection I see is that it takes time.—Miss A. W. S., in the Teachers' Institute, New York.

Notes and News.

ONTARIO.

Mr. Tilley, the energetic public school inspector for Durham, has devised a system of promotion examinations, which on its first trial recently proved a perfect success. The method adopted was as follows:—The questions, prepared by the inspector, were printed, and the required number of copies were sent to one trustee in each section. Each teacher presided on examination day at a school that was not his own, and the parcels of questions were not opened till they were brought to the presiding teacher in each section by the trustee who had them in charge. The examinations were held on Friday, and by Tuesday the answers, properly classified, were all in the hands of the inspector. Not a single parcel of questions went astray and there was only one slight mistake made in the whole county. The number of candidates was 650 and the number of those who passed in the various divisions was over 400.

Out of 120 students who went up for examination in Queen's College this year seventy-eight were plucked.

The Synod of the Presbyterian Church in Canada for the Hamilton and London district resolved with apparent unanimity to memorialize the Ontario Government and Legislature with a view to securing a different footing for the Bible in the public schools of the Province. At present the Bible may be read as a devotional exercise, the pupils of those parents who object to their being present being allowed to absent themselves. What the body above referred to want is to get the Bible introduced in all schools as a

class book leaving it open to the dissatisfied minority in any locality to protest against its use. Since the adoption of the resolution to memorialize the Government one member of the Synod has written a public letter in which he admits that he did not approve of the motion but refrained from voting against it through fear of being misunderstood. It would be interesting to know how many others were averse to allowing the resolution to pass. At all events the confession of even one member very greatly weakens the force of the movement and detracts from the weight to which a memorial from such a body would otherwise be entitled. Simple as the change proposed may seem, it is really very important, and it is not likely to be assented to by the Legislature without further agitation of the question.

The representation of the Greek tragedy, "Antigone," at University College a few days ago was a great success in almost every respect. The management of the affair fell very largely into the hands of Professors Hutton, Pike, and Ramsay Wright, and of Mr. Vines the assistant to Prof. Hutton. The extemporized stage and "properties" suited the play admirably, and the various actors rendered their roles well, some of them displaying a good deal of histrionic ability. The music, to which Mendelssohn has set the play, was well executed by Mr. Torrington's orchestra, the adaptation of the score to the Greek text having been skillfully accomplished by Prof. Ramsay Wright. The audiences were large and appreciative on both nights of the representation, and those who wished to understand something of what was said by the different characters had an opportunity of gratifying their curiosity by purchasing, as a libretto, Campbell's admirable translation of "Antigone" in English verse. There is good reason to believe that the Toronto attempt to reproduce a genuine Greek play was even more successful than the one made some time ago at Harvard.

On Saturday, April 29, the Minister of Education presented the prizes to the successful competitors amongst the students in the Ontario School of Art, for the session of 1881-2. The prize list is as follows:—I. Drawing from the antique: 1. John D. Kelly, Dartmouth, Ontario—Gold Medal, given by the Education Department; 2. Donald McNab, York Township—Silver Medal, given by President of the Ontario Society of Artists; 3. Diploma to Arthur Alexander, Toronto; 4. Diploma to George Reid, Wingham; 5. Diploma to G. W. Atkinson, Oshawa; 6. F. C. V. Ede, Markham. II.—Shaded Drawing from the Flat, diplomas to: 1. G. Bridgman, Toronto; 2. D. McNab, York; 3. Miss Elizabeth Delaporte, Toronto; 4. Miss F. G. Lambo, Toronto; 5. Miss M. Grundy, Yorkville; 6. Samuel Wright, Toronto. III.—Design, diplomas to: 1. Henry Blatchley, Toronto; 2. Miss A. Grundy; 3. Miss F. G. Lambo; 4. Miss Ida Banting, Summerhill, Ontario. IV.—Mechanical, diplomas to: (1) J. S. Phillips, for architecture, and (2) R. F. Nie, for machine drawing. Diplomas were also awarded to a number of students for proficiency in more elementary work.

The last number of the *College Times*, published by the "Boys" of Upper Canada College, contains a pleasantly written sketch of the Hon. Adam Crooks, the first of a series of sketches of "Our Old Boys." The *Times* is well got up and neatly printed.

The contract has been let for the erection of a new wing to the Milton Model School. Accommodation will be provided for three additional departments.

Mr. A. M. Taylor who for about four years was first assistant in the Clinton model school, has been appointed head master of Ingersoll model school. Mr. Taylor is a very young man for the position, but his success as a scholar and a teacher has been such as to justify the appointment. He holds a first-class, and is an under graduate of Toronto University. He is spoken of in the highest terms as a teacher by the local press, and much regret has been expressed at his departure from Clinton.

Mr. S. F. Passmore, late assistant in Orangeville high school, has been appointed head master of Port Dover high school.

NOVA SCOTIA.

The Annual Convocation of Dalhousie College for the conferring of degrees &c., was held in the Legislative Assembly Room on the 26th ult.

It is announced that the Council of Public Instruction has authorized the establishment of County Academies (on the usual conditions) at Windsor for the County of Hants, at Kentville for the County of Kings, and at Port Hawkesbury for the County of Inverness.

The annual meeting of the Teachers' Association for Inspectoral District No. 4 (Counties of Annapolis and Digby) was held at Annapolis on Thursday and Friday, 27th and 28th ult. Papers were read as follows: "Needed Reforms in our Public Schools," Mr. J. A. Balcom; "the Successful Teacher," Mr. Wm. E. Reade; "the best Method of teaching Geography," Mr. Jas. P. Nowlan; "Improved Methods of Teaching since 1848," Mr. Phineas Whitman; "The Teacher's opportunities and how to improve them," Mr. N. E. Butler. Oral lessons: on Decimals Fractions, Mr. Henry Munro; on Analysis, Mr. A. D. Brown; on Subtraction, Miss. Bonyman. The Association was ably presided over by the inspector of the district, L. S. Morso, A.M. The Superintendent of Education was present and addressed a crowded public meeting on the evening of the 27th.

The death is announced of the Rev. Dr. Hannan, Archbishop of Halifax. Before his elevation to the Archbishopial see Dr. Hannan was for many years, both before and after the passing of the Free School Act, member of the Board of School Commissioners for the City of Halifax, and as such rendered good service to the cause of education. The deceased prelate was in his 61st year and died after a very short illness. As head of the Roman Catholic Church in the ecclesiastical Province comprised of the dioceses of Halifax, Arichat, St. John, Chatham, Charlottetown, St. Johns (Newfld.) and Harbor Grace, he was widely known and highly esteemed.

An Association under the name of the "Acadian Science Club," for the prosecution of Scientific Studies and investigations, has been formed by some of the teachers of Inspectoral District No. 5 (Counties of Kings and Hants). The Club has been organized with especial reference to the Science-teaching outlined in the new Course of Study. The programme of the Club contemplates courses of lectures, summer meetings for excursions and field work, correspondence between members &c., &c. The following are the officers of the "Acadian Science Club":—President, Albert Coldwell, A. M., Instructor in Natural Science, Acadia College. Directors, C. W. Roscoe, Inspector of Schools; A. J. Denton, A.B.; J. F. Godfrey, W. P. Shafner, A.B.; W. W. Saunders. Secretary and Treasurer, A. J. Pineo, A.B.

MANITOBA.

At an adjourned meeting of the Protestant section of the Board of Education recently held, the resolutions relating to the Normal School Department that were introduced by the Superintendent at a previous meeting were taken into consideration. On motion of the Superintendent, seconded by Mr. Hall, they were unanimously adopted in the following shape, and the Superintendent was instructed to send a copy of them to the Board of Protestant School Trustees for their concurrence, and to ask His Honor the Lieutenant Governor-in-Council for the necessary legislation to enable the Board to take action upon them, after which the meeting adjourned:—

1. That a Normal School Department be established in connection with the Protestant public schools of the City of Winnipeg, and that this Department be opened at the commencement of the next term of the school year.

2. That the two terms of this Department shall correspond to the terms of the school year; and the professional course shall be completed in one term.

3. That an annual grant of two thousand dollars be made by the Protestant section of the Board of Education to the Board of Protestant School Trustees of the city of Winnipeg for the maintenance of the same.

4. That the Inspector of Protestant schools for the city of Winnipeg shall direct the teacher of the Department as to his duties and the subjects to be taught, and generally supervise the Department under the direction of the Superintendent of Education.

5. That a teacher be appointed for this Department by the Protestant section of the Board of Education with the concurrence of the Board of Protestant School Trustees.

6. That the Board of Protestant School Trustees shall provide suitable class rooms for the Normal School, and make provision for the practice of teaching by its students in the various schools under their jurisdiction.

7. That applicants for admission to the Normal School department be required to make application to the Superintendent of Education at least one month before the commencement of term; and that in the admission of candidates the interests of all parts of the Province shall be carefully guarded.

8. That in order to be admitted to the Normal school the candidates must be, if males, eighteen; if females, sixteen years of age, and of good moral character; and possess literary qualifications corresponding to the requirements for promotion in standard IX of the programme of studies for use in cities and towns.

9. That all the classes of the city schools shall be open to the students of the Normal School, as the Inspector may determine, without payment of fees.

10. That the Superintendent of Education may require any of the students in training to do duty as occasional teachers, in supplying the places of such of the regular staff as may be temporarily absent.

11. That in addition to literary subjects which they are able to take, students shall receive instructions in the science of education and art of teaching, and in such other subjects as may from time to time be prescribed by the Protestant section of the Board of Education.

12. That students shall board in such places only as the Superintendent of Education may approve of, and they shall be under the supervision of a clergyman in pastoral charge in the city, whose certificate shall be a condition of graduation.

13. That at the close of the term the Superintendent of Education shall pay every successful candidate whose home is not in Winnipeg his actual travelling expenses incurred in travelling from his home in the province to Winnipeg and back again, together with \$2 per week for the Normal School term.

14. That every student shall declare his intention to teach for at least two years, as a condition of receiving a training in the Normal School Department.

QUEEN'S COLLEGE, KINGSTON—CLOSE OF SESSION.

The proceedings in connection with the close of the late session of Queen's College took place on Tuesday and Wednesday, April 25 and 26. A meeting of the University Council—for Queen's is a College with University powers—was held on Tuesday afternoon. This body consists of a Chancellor, the trustees, the members of Senate, and 33 graduates elected by the whole body of graduates. At this meeting the chair was filled by principal Grant, and there were present, besides him Hon. A. Morris, Rev. Dr. Wardrope, Guelph; Rev. Dr. Bell, Walkerton; Rev. Dr. Jardine, Brockville; Rev. Dr. Smitn, Kingston; Dr. McCammon, Dr. Saunders, Geo. M. McDonnell, M.A., John A. Moodie, B.A., Rev. Mr. Rogers, B.A., A. S. Drummond, B.A., LL.D., Dr. Fenwick, Rev. Mr. Carmichael, of King; Dr. Dupuis, and others.

After routine proceedings the following new members were introduced. John M. Machar, M.A.; A. T. Drummond, LL.B.; W. B. Curran, M. A., and A. B. McCallum, B.A.

It was agreed that the time of matriculation should be changed from October to June, and a committee was appointed to formulate a plan for working out the change one object being to have the examinations conducted at several local centres.

When the finances of the College came up for consideration Principal Grant stated that there had been for some years a deficit of \$100 per annum, that serious losses had been sustained which caused a diminution of income, and that additional equipment was absolutely necessary, at least two more professors being required. In all \$6,900 were needed in addition to the present revenue, and if the college was to be equipped as it should be, it would be necessary to raise that sum. There were four ways of getting out of the difficulty:—First, by eating into the capital; second, to raise \$120,000; third to be content with imperfect equipment; and fourth, to raise \$7000 per year for five years, which would give them a breathing spell. Ultimately a committee was appointed to consider the matter and bring it before the trustees.

A. P. Knight, M.A., was unanimously re-elected Registrar, and to fill the vacancies in the Council the following gentlemen were chosen:—A. McKillop, M. A., of Pembroke High School, James Bergir, M.A., of Sydenham High School, and Rev. J. B. Mullan, B. A., of Fergus.

PRINCIPAL GRANT'S LECTURE.

On Tuesday evening the Rev. Dr. Grant delivered a stirring public lecture, taking for his subject, "Our Political Duties." He took the ground that every man in order to be a good citizen must be a "politician," that is must endeavour to make the laws, the institutions, and the practice of the nation better. He may vote if he thinks it worth while, but he must do a great deal more if he is to do his whole duty. He should teach men what to vote for, he should set before them aims worthy of attainment, he should keep an ideal before his own eyes and the eyes of others. The first duty of the citizen to the state is to be loyal to the state, and true loyalty will be a safe regulating principle. Dr. Grant went on to describe Parliament as a kind of incarnation of the people's will and to put on record the very favourable opinion of the present Dominion Parliament he had formed during his intercourse with its members in connection with the Presbyterian Church Temporalities Bill. The

great drawback to its excellence was the system of Government by party which led to "blinding of the intellect, twisting of the conscience, lowering of high ideals, and gradual destruction of self-respect." Parliament is a deliberative assembly only in name, for every member is committed either to or against every proposition before discussion commences. Government by party, Dr. Grant contended, is not necessary and it is pernicious. He did not know whether a remedy was possible but thought that agitation of the question would do good. The appearance of even a few really independent men in the political arena would be a great boon and so would the establishment of some independent organs of public opinion. Meanwhile it is the duty of every man to be loyal to Canada, to be in no hurry to attach himself to any political party, to preserve a calm, unbiassed judgment with reference to all political questions, to be willing to do without the bribes that party offers to its hacks, and to count it an honour to be called on to make sacrifices for his country.

Principal Grant was frequently applauded during the delivery of his lecture. The chair was filled by Mr. Sandford Fleming, Chancellor of the University.

CONVOCATION.

On Wednesday the proceedings in connection with Convocation were held in the College Hall, the Chancellor presiding:—

After the opening services the prizes competed for during the session were distributed, each student being cheered lustily as he stepped forward to receive the awards. There was great applause as Prof. Dupuis handed the prize in chemistry to a lady, the first time such a thing had happened during his fifteen years' connection with the University. He alluded to the nature of the contest for the prize, remarking that it was "manfully" won, an observation which caused renewed cheers, continued during the time Miss Maggie M. Spooner advanced to receive the reward of her labour. In tendering the Governor-General's prize to Mr. John Hay, of Pinkerton, the Chancellor announced that His Excellency would continue in the same manner to encourage education in Queen's College. The winner of the Prince of Wales's prize was Mr. C. J. Cameron of Lachute. Mr. W. Hartly presented the gold medal donated by himself for proficiency in political economy, and promised to give similar prize in future every third year. The Chancellor's medal was given to Mr. R. Fuguson.

After the ceremony of conferring M.A., and M.D., degrees had been performed the Chancellor delivered a suggestive and practical address to the graduating class. Mr. J. R. O'Riely was elected to deliver the valedictory of the year and acquitted himself with credit.

The honorary degree of D.D., was then conferred upon the Rev. James P. Sheraton, President of the Protestant Episcopal Divinity School of Toronto, and the degree of LL.D., on George Paxton Young, M.A., who fills the chair of Mental and Moral Philosophy in University College Toronto. Dr. Williamson in presenting these two gentlemen to the Chancellor dwelt at some length on the educational work each had accomplished and the grounds on which the honour was conferred. His eulogium on Prof. Young was a very high one and that gentleman made an admirable response, incidentally avowing his opposition to university consolidation as it would tend to make examining, instead of teaching the all in all of a university education.

Principal Grant, who had been referred to by Prof. Young as in favour of consolidation, explained his position on the question, stating his belief that consolidation of colleges would be a mistake.

CONVERSAZIONE.

The evening entertainment on Wednesday was the most successful of the kind in the history of the College. The proceedings consisted of a reception by the Chancellor and Principal with Mrs. Fleming and Mrs. Grant, a musical and literary entertainment varied by addresses, and chemical and physical experiments conducted by Prof. Dupuis of Queen's and Dr. Bayne of the Royal Military College.

One of the most interesting incidents of the whole closing proceedings was a presentation to Dr. Williamson on his retirement from the chair of Physics and Mathematics which he has filled for many years. The presentation was in the form of a cheque for \$1000 subscribed by the Alumni of the University. The address accompanying it was read by James MacLennan, Q.C., and in response Prof. Williamson made a suitable reply.

TRUSTEES' MEETING.

On Thursday morning the Board of Trustees of the College held a business meeting, with the Hon. Alex. Morris in the chair. After

hearing the deputation appointed by the Council to wait upon them in connection with the raising of additional revenue, it was unanimously resolved to endeavor to raise \$7,500 a year by subscriptions payable annually during the next five years, and a Committee was appointed to carry out the Scheme. This Central Committee, composed of Principal Grant, A. Gunn, M. P., G. M. Macdonnell, and R. V. Rogers, will appoint local committees and organize the movement. The trustees accepted Dr. Williamson's resignation and assigned him the position of astronomer to the University with a salary of \$500 a year. Rev. D. Ross, B.D., of Lachine, was appointed lecturer on apologetics, and Rev. R. Campbell, of Montreal, on political economy, for the next session. The question of selecting a successor to Dr. Williamson was referred to a committee with power to deal with the matter.

Readings and Recitations.

VIA SOLITARIA.

AN UNPUBLISHED POEM, BY HENRY W. LONGFELLOW.

(From the Independent.)

Now that our best and sweetest poet has left us, reading by his departure the veil of that sanctuary—his inmost life and feeling—it may not be unlawful to publish what would have been sacrilege before, the above touching poem, not written for the public eye, but simply to give utterance to heart felt crushing sorrow after the death of his wife in 1861. It was sent to me by a friend in Boston some years ago after my own great affliction, and has, therefore, a double sacredness to all who have passed through a similar sorrow. It will be read by many with tearful eyes, when they remember how long and patiently, with what brave and uncomplaining heart, he has waited at the "station," till now at last, "the parted" are "one."

H. M. GOODWIN.

Olivet College, Mich.

Alone I walk the peopled city
Where each seems happy with his own;
Oh! friends, I ask not for your pity—
I walk alone.

No more for me yon lake rejoices,
Though moved by loving airs of June,
Oh! birds, your sweet and piping voices
Are out of tune.

In vain for me the elm tree arches
Its plumes in many a feathery spray;
In vain the evening's starry marches
And sunlit day.

In vain your beauty, summer flowers,
Ye cannot greet these cordial eyes;
They gaze on other fields than ours—
On other skies.

The gold is rifled from the coffer,
The blade is stolen from the sheath;
Life has but one more boon to offer,
And that is—Death.

Yet well I know the voice of duty,
And, therefore, life and death must crave,
Though she who gave the world its beauty
Is in her grave.

I live, O lost one, for the living
Who drew their earliest life from thee,
And wait, until with glad thanksgiving
I shall be free.

For life to me is as a station
Wherein apart a traveller stands—
One absent long from home and nation,
In other lands.

And I, as he who stands and listens,
Amid the twilight's chill and gloom,
To hear approaching in the distance,
The train for home.

For death shall bring another mating
Beyond the shadows of the tomb,
On yonder shore a bride is waiting
Until I come.

In yonder fields are children playing,
And there—Oh, vision of delight!—
I see the child and mother straying,
In robes of white.

Thou then, the longing heart that breaketh,
Stealing the treasures one by one,
I'll call thee blessed when thou maketh
The parted—one.

Sept. 18, 1863.

Teachers' Associations.

The publishers of the JOURNAL will be obliged to Inspectors and Secretaries of Teachers' Associations if they will send for publication programmes of meetings to be held, and brief accounts of meetings held.

CONVENTIONS FOR MAY.

COUNTY OR DISTRICT.	PLACE OF MEETING.	DATE.
Chatham	Chatham	May 4 and 5
E. Northumb. land	Brighton	" 4 " 5
Prince Edward	Pictou	" 12 " 13
N. Hastings	Madoc	" 13 " 14
Lennox and Addington	Napanee	" 18 " 19
N. Wellington	Mount Forest	" 19 " 20
Russell	Clarence Creek	" 22 " 23
E. Grey	Meaford	" 27 " 28
S. Grey	Flesherton	" 25 " 26
N. Huron	Brussels	" 25 " 26
Lincoln	St. Catharines	" 25 " 26
W. Middlesex	Strathroy	" 25 " 26
E. Victoria	Lindsay	" 25 " 26
Dufferin	Shelburne	" 25 " 26
N. York	Newmarket	" 26 " 27

MANITOBA.—The Sixth Convention of the Manitoba Teachers' Association opened in the Central School, Winnipeg, on the forenoon of March 10th, with the President, Rev. W. C. Pinkham, Supt. of Education, in the chair. There were present Mr. Berier, Supt. of Education for the Catholic Schools of the Province; Rev. Mr. Cochrane Indian Missionary at Pequis; Rev. Mr. Douglas of Morris, Inspector of Schools for Provencher; Mr. J. B. Somerset I. P. S. Winnipeg, together with about forty teachers from all parts of the Province. That such a great number should be present, considering the difficulties of travelling, shows how deep an interest is taken in the work of the Association. The minutes of the last meeting being read and approved the regular business of the Association was then proceeded with. Mrs. Hawksett having resigned her position as Treasurer, Miss S. L. Harvey was chosen in her stead. The Secy. reported that having communicated with the Publishers of the CANADA SCHOOL JOURNAL he had obtained from them a promise to grant to members of the Association, the paper at the rate of sixty-five cents per year, and strongly urged all the teachers present to subscribe. The President explained that the Committee appointed at a preceding meeting to draft a programme of study for the schools of the Province, had completed their work as far as pertained to the cities and towns, and hoped to be able to bring in a report relative to Country Schools before the meeting closed. The report which was principally the work of Messrs. Stewart and Somerset was then read, and after some discussion was referred back to the Committee to have it completed and printed. Mr. Somerset explained that the programme presented was not a permanent one, but issued only on trial and thought that in another six months, when the teachers were prepared to give their opinion concerning the practical working of it, something could be adopted that would have very few faults. The object of having such a programme was to enable the teachers throughout the whole Province to work together, and to make the work in schools as systematic as possible. He went on to explain how the programme could be extended to cover the work done in High Schools, and said that it was the intention of the Committee to add two standards to the ten already established in the cities and towns, to take up the work done in High Schools. He hoped that the teachers of the Province at the next meeting of the Association would be ready to suggest changes in the programme which would make it better suited to the work done in the schools. The president supplemented the remarks of Mr. Somerset, showing that the idea of issuing a programme of this kind was very important as it made the work of the Common School lead to the work of the High School, and there the pupil was trained for the University. He considered that the three should be inseparably connected, and that the work done in one should be just a continuation of the work done in another. He thought that the plan of uniting the High and Common Schools, was a good one as being more economical than any other: and

for some years yet, the people here would have to practise economy as the money grant for educational purposes is very small. It being noon the meeting adjourned till 1.30 pm. *Second Session.*—In the afternoon Rev. Mr. Douglas of Morris read an excellent paper on the "Object of a Common School Education." He commenced by pointing out the difference between the man of trained mind, and the man whose mind was uncultivated. The object of our Common School Education was to furnish the pupils with well regulated minds. They should be taught industry, attention, and how to concentrate their minds on one point. They should be taught to use the reason, and here is the most difficult part of the teacher's work: children are accustomed to reason from what they perceive through their senses, they must be taught to reason in the abstract; they must be taught to be moral. An education which has no moral back-bone in it, will starve the intellect and impoverish the heart. To obtain information is another object in going to school. Let our Common Schools make it their chief object to edify, to build up a force of thought which can be turned to good in seeking to advance the interests of our race and country. The reading of this paper was followed by an interesting and profitable discussion in which the intellectual and physical training were considered. Mr. Springer, Winnipeg, then read a paper on Reading: showing how he would introduce it into school, and how he would teach it to all the higher classes. He held that there is not sufficient attention paid to distinct pronunciation and proper expression, and gave his plan for overcoming such difficulties. Recitations are necessary in order to make good readers. The discussion following the reading of this essay took a very practical turn, and many good methods of securing interest, and having the children read intelligently and naturally, were given. *Third Session.*—At the forenoon session on Friday, Mr. Blakely introduced the subject of Arithmetic explaining his method of teaching the four simple rules. He formed a class from some of those present, and by writing on the board a table which he used in teaching addition and subtraction went through an exercise with the class. The system of teaching gave every satisfaction and it was decided that the table should be printed for the use of the teachers throughout the Province. The discussion which followed elicited many good remarks from those present. Mr. J. H. Stewart, First Vice President of the Association, then read a paper on "The Literary value of English Grammar." He pointed out that the study of the subject as taken up in our schools is, notwithstanding the expressions of many learned men to the contrary, of great practical use in after life. He mentioned Gray and Macaulay as examples of men whose works are great because they are pure, and contended that even the writings of the sage of Chelsea would have been better had he paid more attention to the rules of grammar. The common text books are not at all suitable to the work done in Common Schools, they are too full on some points and contain nothing on others, there is too much notice given to names, and composition (which should be inseparably connected with grammar) is almost neglected. He did not believe in pupils being able to name the figures of speech without being able to use them. Definitions are good things, but grammar should not be all definitions: elegance of expression is overlooked in most of our works and to obtain this is perhaps the great object in studying the subject. A discussion followed the reading of Mr. Stewart's paper, bearing principally upon analysis. In the afternoon Mr. Somerset I. P. S. Winnipeg introduced the subject of composition, and explained how he would set about teaching it, placing on the blackboard a division of his subject as follows:—First step: order of presentation; subject and predicate; modifications of subject and predicate; connection of isolated statements, subjects or themes; complex sentences; punctuation marks; quotation, exclamations, interrogation marks; paragraphs; direct and indirect statement; rhetorical and grammatical arrangement. He then explained how grammar and composition could and should be taught together until the child had reached as far as the third book, and then the subject need not be divorced. Children should be taught to build rather than to dissect. They will, by adding words to sentences already formed, see their connection at once and will learn analysis unconsciously. The important thing is to give the idea,—the definition is of secondary importance. Having gone through most of the subject obtaining from the teachers their ideas, the speaker finished his paper by promising to resume the subject on a future occasion as this was the wish of the Association. Mr. S. R. Eaton of Winnipeg Business College, then introduced the subject of teaching book-keeping to junior classes. He said that book-keeping should be taught earlier in school, children of ten and eleven could take up the subject to advantage, and not leave the work of four years to be done in quarter of the time. He then gave what he considered should be the first lessons in Book keeping, and showed how these could be followed up by more advanced work. In every exercise he would demand neatness of work, and never permit a pupil to write anything without first understanding it. Votes of thanks having been passed to those who had read papers before the Association, to the Press for so fully reporting the proceedings, and to the President for his deep interest in the work and the able manner in which he discharged the duties of his office, the meeting, which has undoubtedly been the most successful of the kind ever held in Manitoba, adjourned, the President pronouncing the benediction.

WEST GREY.—This Association held its semi-annual meeting in the High School, Owen Sound, 24th and 25th. March. The attendance was small at the first forenoon session, but at subsequent meetings it was largely increased, several of the High School students and friends from the town being also present. The proceedings were opened by Mr. J. Armstrong, B. A., and the minutes of previous meeting were read by the secretary, Mr. J. A. Greig, and adopted. The auditors report showed a balance of \$115 in the hands of the treasurer, which was made up chiefly by two half-yearly government grants. The president suggested the purchase of books for a library as the trustees had given a room for the purpose. In the afternoon Mr. J. H. McCassey, read an essay on "The Responsibilities of Teachers" which was well received. Mr. John Elliott took a fourth class in Literature, and made the selections they read extremely intelligible. His plan of teaching the subject is one calculated to develop thought and cultivate taste. He concluded the lesson with a few words of earnest, good advice to the children. Mr. A. Miller, B. A., Owen Sound High School, next gave a few well pointed and sound remarks on "Reading." The study of this subject he said, was neglected in the High Schools on the supposition that it was completely taught in the public schools. He would approve of the "Word method" which was the most natural and common sense plan. He then proceeded to give some excellent hints on several points connected with teaching the subject, and to exemplify his meaning he read, with excellent effect, "The Passage of the Red Sea." The reader was warmly applauded. The following committee was, on the motion of Mr. Walmsley, appointed on nomination of officers: Messrs McCassey and Balfour, Messrs Henry and Smith. Mr. J. L. Robertson, of the publishing house of W. J. Gage & Co, was called on to explain the merits of the New Canadian Series of Readers published by that firm, and he submitted a set of the books for approval of the Association. Mr. Boyle of the Canadian Publishing Company was also called upon, and after criticising Gage's series in a flippant manner, especially Longfellow's exquisite poem, "The Arrow and the Song," in the Second Reader, which he stated would take a "long-headed fellow to know what it meant," he exhibited a set of blank books, or dummies, for the approbation of the meeting. A committee was, on Mr. Greig's motion, appointed to examine Gage's Readers, consisting of Messrs. Elliott, Walmsley, Shaw, Campbell, and McEachern, to bring in a report next day. *Second Day.* The committee on nomination presented their report which was adopted, the following being the officers for the ensuing year: President Mr. J. Armstrong, B. A.; first vice-pres., Mr. A. Miller, B. A.; second, Miss H. Moffatt; secretary, Mr. J. A. Greig; treasurer, Mr. G. W. Campbell; exec. committee, Miss M. Spragge, Messrs. J. Elliott, and T. K. Walmsley, with the elected officers. The committee on Text Books asked leave to defer their report till the Fall meeting to give time to examine the Readers more critically; granted, and Mr. Slater was added to the committee. On motion of Mr. Greig seconded by Mr. Neelands it was resolved that only one series of readers ought to be authorized, and that a copy of the resolution be forwarded to the Minister of Education. The president then introduced Mr. J. L. Hughes, I. P. S., Toronto, who was received with much enthusiasm. He took up the subject of "Kindergarten Training and work," and during the course of his address cited many marks of the approval of the members. From the interesting manner in which the subject was treated and the practical benefit which he showed the introduction of a Kindergarten system of teaching would be to the country it was unanimously resolved "That it is highly desirable that a Kindergarten should be organized in connection with the Provincial Model School," also "That a copy of the resolution be transmitted to the Minister of Education." Mr. J. A. Greig proposed a cordial vote of thanks to Mr. Hughes for his highly instructive lecture, and Mr. Miller in seconding it said he was sorry that trustees and others interested in education were not present to hear the admirable address. He remarked that many teachers were able to solve difficult problems in algebra, and otherwise creditably acquit themselves, but were quite ignorant of those first principles of teaching which Mr. Hughes had so forcibly and attractively brought under their notice. The vote was given by acclamation. In the afternoon, Messrs Elliott and Greig were appointed auditors. Mr. J. Hughes, by request, gave a most practical address on "The Art of Questioning," a subject which it is needless to mention was well treated and highly appreciated. On the motion of Mr. Walmsley, seconded by Mr. Elliott, a hearty vote of thanks was passed to Mr. Hughes for his able assistance, and after some further business was transacted the association adjourned.

EAST BRUCE. The sixteenth semi-annual meeting of the East Bruce Teachers' Association assembled in the Model School building, Walkerton, on the 24th of February, 1882, at 9 a.m. About fifty teachers were in attendance. Mr. W. S. Clendenning, P. S. I., was elected president, *pro tem.*, and then opened the meeting by prayer. Moved by Mr. Telford, seconded by Mr. King, and carried, that Mr. A. McIntosh be elected secretary, *pro tem.* The minutes of the last meeting of the Association, as read, were adopted. An essay, entitled "Be what you seem," was well read by Miss Sang; it was full of excellent advice. Mr. Leyes read an excellent essay on "Reading." His remarks were eminently practical. The essay was well discussed by Messrs. Telford, Robb,

Reilly, Clendenning, and others. "Teachers' Associations," by Mr. Munro, was a good essay and highly suggestive. On motion of Mr. King, seconded by Mr. Munro, it was resolved, that a committee be appointed to prepare a programme for the next meeting of the Association. Moved by Mr. Morgan, seconded by Mr. Hunter, and carried, that Miss Ross, Miss Robertson, Messrs. Telford, Munro, Burgess, and Reddon be a committee to arrange a programme for the next sitting of the Association, and give in their report on Saturday morning. Mr. Reddon gave an excellent reading, named "The Earth and Man." He read it well. Grammatical Analysis was next in order. It was taken up by Mr. Morgan, B. A., Principal of the High School, Walkerton, and handled in an able and masterly manner. Mr. Morgan stated that analysis should precede parsing. Messrs. McKay, McCool, Clendenning, Robb, and Telford took an active part in the discussion of proper methods of teaching analysis. Mr. Hunter took as the subject of his essay, "A Teacher's Leisure Hours." They should be profitably spent. The teacher should be vigorous, have good health. A healthy mind and a healthy body should go together. Miss Davidson gave a reading which was full of practical suggestions. It was excellently rendered. Mr. McKay, of the Walkerton High School, handled his subject, "Arithmetic," in an able and lucid manner. He is master of his subject. He was cross-questioned by Messrs. Burgess, Leyes, and Telford. On motion of Mr. McCall, seconded by Mr. Adolph, it was carried, that Messrs. Morgan, King, McKay, and Clendenning be a committee to answer the questions in the "Question Drawer," on grammar, school discipline, arithmetic, and school law, respectively. Mr. McKechnie introduced the next subject, namely, "Desirable Changes in Public School Programme." He complained of too many subjects, and pointed out their defects. It was an excellent essay. At 8 p.m., Friday, an entertainment under the auspices of the Association, was given in the Town Hall. *Second Day's Proceedings.*—The morning session was opened at twenty-five minutes past nine, the president engaging in prayer. On the motion of Mr. McKay, seconded by Mr. King, it was resolved, that the Treasurer's Report be adopted. The next was the reading of the Librarian's Report, after which the subject of "Writing" was handled by Mr. Richardson, who makes writing a speciality. He uses the Beatty system of writing. He maintained that those in the 1st and 2nd parts should use slates instead of copies. Messrs. Telford and King took part in the discussion on New Readers. The amendment of Mr. McKay, seconded by Mr. Munro, was adopted, "Resolved, by the East Bruce Teachers' Association, that no series of Reading Books should be authorized by the Minister of Education until the opinion of the teachers has been obtained through their local and provincial associations." The following officers were elected:—President, Mr. Telford; Vice-President, Mr. Munro; Secretary, Mr. Morgan, B. A.; Treasurer, Mr. Clendenning. The ballot box was used in this election of officers. Moved by Mr. McKay, seconded by Mr. McKechnie, and carried, that Paisley be the next place of meeting. On motion of Mr. Clendenning, seconded by Mr. Adolph, that Messrs. Robertson and Sang, and Messrs. Leyes, McIntosh, and King be directors. On motion of Mr. Morgan, seconded by Mr. Munro, it was resolved, that Messrs. Clendenning and Telford be delegates from this Association to the Provincial Convention. Moved by Mr. McArthur, seconded by Mr. Butchart, and adopted, that the report of committee, in reference to the programme for the next meeting of the Association be adopted. The report on next programme was adopted with the following suggestions:—"It is recommended that outside assistance be obtained, and we beg to suggest either of the following names: Mr. Hughes, Mr. Scott, or Miss Lewis. "We further recommend that the teachers of the town where the Association be held make arrangements for providing a few pieces of music to be given before the Association." "One person to introduce each subject, two to be critics and carry on the discussion." On motion of Mr. Burgess, seconded by Mr. Hunter, it was carried, that the next meeting be held in the month of September, as early as possible in said month. "Geography of Canada," an essay, was given by Mr. McCall. He held the opinion that home Geography should be taught first, proceeding from the known to the unknown, that is, explaining the unknown by the known. It was highly practical. Messrs. McKay, Telford, Clendenning, Burgess, Munro, and Butchart discussed the methods of teaching that subject. Mr. Butchart gave a reading, called "Essay on Canada." He read it clearly and forcibly. The following resolution, moved by Mr. Morgan, B. A., seconded by Mr. Clendenning, P. S. I., was passed by the East Bruce Teachers' Association:—"Whereas, in the Providence of the Almighty God, there has been removed from our midst, in the person of the Rev. Dr. Ryerson, one who has spent a life of great activity and usefulness in establishing and perfecting our Educational System, and who, during a long life, has been the teachers' most faithful friend and adviser, and in whom they have suffered an irreparable loss; the teachers of East Bruce Association hereby express their deep sympathy with the bereaved family in their great affliction." The following resolution of condolence, moved by Mr. McKay, seconded by Mr. Burgess, was passed by the East Bruce Teachers' Association:—"We, the members of the East Bruce School Teachers' Association, having heard of the recent death of Mr. S. A. Marling, M. A., High School Inspector, avail ourselves of this opportunity to express our deep sense of regret

at the loss that the educational staff of the province has sustained; and, also, hereby tender to his widow our heartfelt sympathy in these days of her sadness and sorrow, and we fail not to pray that God may grant her all the consolations of His grace." The Association then adjourned to meet again in September.

HALDIMAND. The regular semi-annual meeting was held in the school building, Hagersville, on Friday and Saturday, March 17th and 18th, 1892. The President, Miss Dalton, ably filled the chair. The minutes of the last meeting were read by the Secretary, and, on motion of Mr. A. J. Hewson, seconded by Mr. Saunders, were adopted as read. The Treasurer gave a financial statement of the Association, which showed a balance on hand of \$114.24. A communication was read from the Secretary of the Northumberland Teachers' Association, respecting the advisability of having a competent person appointed to conduct Teachers' Institutes in the various Inspectorates of the Province. Also one from Dr. McLellan, expressing regret at his inability to be present. The following committees were appointed to select officers for the ensuing year: Messrs. Hind, Pugsley, Duff, Miss Hiseler and Miss Urmay; to draft a programme for the next meeting of the Association: Messrs. Hewson, Davidson, Coghill, Miss Goodyear and Miss Buchanan; on condolence Messrs. Kemp, Cole, Park, and Miss Dalton. Mr. Robertson, who represents Messrs. Gage & Co., of Toronto, being present addressed the Association on the proposed change in the school readers, and exhibited a set of readers published by Messrs. Gage & Co., and suitable for use in Canadian Schools. He stated that they were based on one of the best series of readers published in England, prepared by Professor Meiklejohn, of St. Andrew's University and edited by Canadian educators of the highest ability, and practical experience. The following committee was then appointed to examine the readers, and report to the Association in the afternoon: Messrs. Hind, Hill, Hewson, Moses, Miss Kirkland and Miss Buchanan. The next item taken up was how to make the promotion examinations more successful. After a somewhat lengthy discussion by Messrs. Moses, Hind, Hewson, Hill, Shields, Morgan, Davidson and Miss Buchanan, it was resolved that it would not be advisable to make any changes for the present. On assembling in the afternoon Mr. Hind took up the subject of school punishments. He stated that the beautiful theories advanced by some on the subject could not be carried out in practice. He dwelt for some time on the various kinds of punishments usually resorted to by teachers, pointing out those that were objectionable. He advised teachers to master themselves before attempting to govern the pupils. He pointed out offences for which corporal punishment could not be resorted to. He advocated the idea that teachers, when administering corporal punishment, should make the child feel that it was for its own good. The paper was full of practical hints, such as could only be given by a practical and successful teacher. At the conclusion of this paper a lively discussion followed, participated in by Messrs. Robertson, Hill, Moses and Hind. L. G. Morgan, B.A., next addressed the Association on Hygiene. He introduced the subject by showing what an important being the Creator intended man to be. He then enumerated the chemical constituents that enter into the composition of man, and pointed out the most nutritious kinds of food to eat in order to build up the system. He explained the necessity of all being familiar with the laws of health, which are plain and simple. The address was very practical, and was listened to throughout with wrapt attention. Mr. Robertson next explained Gould's Arithmetical Frame, which he described as a time saving piece of apparatus of great utility. The Committee on Text Books handed in the following report:—"We, your committee, appointed to consider and report on the subject of Text Books, beg leave to submit the following: Having examined the Meiklejohn series of readers, published by Messrs. Gage & Co., we consider them much superior, both as to literary merit and mechanical execution, to the readers now in use in the Province of Ontario." On motion of Mr. Moses, seconded by Mr. Hill, the report as read was adopted. On Friday evening a lecture was delivered in the Methodist Church under the auspices of the Teacher's Association by the Rev. Mr. Laidlaw, of Hamilton, to a large and appreciative audience on the subject "Our Successors." The subject was treated in such a manner as to call forth the hearty and repeated applause of the audience as the lecturer graphically reviewed some of the features of the past, rapidly indicating the causes of many of the great social changes of the present century, and brilliantly placing in contrast the greater future of the "coming race." *Second Day.* The Committee to nominate officers for the ensuing year reported with the following result:—President, H. E. Kennedy, B.A.; Vice-President, Miss Minnie Brown; Secretary-Treasurer, C. Moses. Committee of Management—Wm. Egbert, David Duff, A. J. Hewson, Miss Black and Miss Buchanan. Auditors—R. Hill, A. B. Davidson, B.A. The next subject taken up was Map Drawing, by Mr. Egbert. He showed how maps of all the continents could be drawn by means of diagrams, and illustrated his mode of teaching the subject by drawing on the blackboard the maps of Asia and Europe. The practical hints thrown out by Mr. Egbert cannot fail to be of great benefit to the teachers who had the pleasure of listening to him. Miss Brown next showed her method of teaching the Simple Rules of Arithmetic. Her method of presenting this subject before the minds of young

pupils was much admired by all present. In fact it was the best lesson in Arithmetic ever given before the Haldimand Teachers' Association. On resuming her seat she was greeted with rounds of applause. At this stage of the proceedings Miss Hiseler gave a Reading in a clear and effective manner. On resuming in the afternoon Mr. A. Cole, B.A., took up the subject of Algebra. He first explained the points of difference between Algebra and Arithmetic. Then he gave a variety of solutions to a number of type problems, pointing out the advantage of one solution over another. He concluded a very instructive lesson by showing how to find out the day of the week of any particular event, the date being given. The Question Drawer, which proved a very interesting and instructive feature of the programme, was next taken up. The Questions on School Law were answered by Mr. Moses, on School Discipline by R. Hill and W. Hind, and on English Grammar by A. B. Davidson, B.A., and H. E. Kennedy, B.A., principals of the Caledonia and Cayuga High Schools respectively. The Committee on the programme for the next Association handed in their report, which read as follows:—"Report of Committee to prepare a programme for the next meeting of the H. Teachers' Association:—Teaching a lesson on Third Class Literature, Mr. Clark and Mr. John Catherwood; Physical Geography, Mr. Hill; Book-Keeping, Mr. Murphy and Mr. Saunders; Junior English Grammar, Miss Dalton and Miss Urmay; Fourth Form History, Miss Buchanan; a Reading, Miss Sumner: the Teacher and his School, Mr. Moses; Singing, Mr. Pugsley; Drawing, Miss Davis; Geometry, Mr. Nugent; Arithmetic, Mr. Cole; Natural Philosophy, Mr. Hallman; a Lesson on Arithmetic, Mr. Cavanaugh; a Reading, Miss Fawell; a practical lesson on teaching composition to junior pupils, Miss Flowers." On motion of Mr. Davidson, seconded by Mr. Hewson, it was adopted as read. The Committee on Condolence next reported as follows:—"We, the teachers of the H. T. A., take this earliest opportunity of expressing our deep regret at the sudden demise of the late Chief Superintendent of Education, Rev. Egerton Ryerson, D.D., LL.D., who so long and worthily fulfilled the duties of that honorable and responsible position, and we cannot fail to recognize the valuable services he rendered in advancing the educational interests of the youth of our land in initiating an Educational System second to none, and we feel that his name must always occupy a prominent position in the history of our country in its earlier struggles for intellectual advancement. We hereby express our deepest sympathy with the family of the deceased, and instruct the Secretary to forward to the family a copy of the foregoing resolution." "We, the teachers of the Haldimand Teachers' Association, take this earliest opportunity of expressing our deep regret at the loss sustained by the Province of Ontario in the removal by death of S. Arthur Marling, M.A., and appreciating the valuable services rendered by him to the cause of education, desire to express our unqualified approbation of the manner in which he so efficiently discharged all the duties pertaining to his difficult and arduous position and to tender to the bereaved family our heart-felt sympathy in their deep affliction." On motion of Mr. Kemp, seconded by Mr. Cole, it was adopted as read. It was then moved by C. Moses, seconded by A. J. Shields, that the next meeting of this Association be held at Caledonia in the month of October. It was moved in amendment by Mr. Kennedy, seconded by Mr. Murphy, that it be held at Cayuga. Original motion carried. It was moved by Mr. Davidson, seconded by Mr. Hill, that the thanks of the Association be tendered to the teachers of the Hagersville Public School, and to the ladies of the village of Hagersville, who so kindly entertained the lady teachers while in attendance at the Association. The Association then adjourned to meet in Caledonia in October next.

REVIEWS.

We have received from Messrs. S. R. Winchell & Co. Publishers, of Chicago, Part 1st, of a series of School Songs, by H. W. Fairbank. They supply a want long felt in our schools, and as far as the primary grades are concerned, (for which alone the 1st Part is issued), they fill it satisfactorily. The importance of constant musical exercises on Public School system cannot be over estimated, whether they be considered in the light of recreation, of an educational aid, or as the best cure for weariness, lassitude, or disorder. The main difficulties have been the choice of suitable selections for singing, and the price usually charged for such collections of music. When we say that the selections in the little book before us are uncommonly good, and that in large quantities they can be supplied at five cents a piece, we believe that no further endorsement is necessary. We should like to see them used everywhere.

The same publishers have also on trial a very cheap little work on language lessons, by Principal Richardson, of Milwaukee. Among the many publications of a similar sort that are being issued everywhere, it is pleasant to find one which takes an entirely new departure in its mode of treating the subject. Apparently very simple and elementary, it is, as far as it goes, really very thorough and cannot fail to be a valuable assistant to every teacher who will make a conscientious use of it. The distinguishing characteristics are, 1. Perfect simplicity combined with thoroughness, 2. Making the pupil do the work himself, 3. The constant indirect repetition of every principle enunciated. The work is evidently the result of long experience combined with a keen insight into the true principles underlying education.

"Selections from the Latin Poets," is the title of a neat volume containing selections from the Ciceronian poets Catullus and Lucretius, the Elegiac writers of the Augustan age, and the Epic poet Lucan, edited by E. P. Crowell, Prof. of Latin in Amherst College, and published by Ginn, Heath & Co., Boston. It contains an "Introduction" to each of the poets and English Notes on the text. The selections are well chosen, the introductions brief but comprehensive and the notes evidently the work of a thorough scholar and an experienced teacher.

MAGAZINES.

THE ATLANTIC MONTHLY for May is a decidedly valuable and interesting number. The department of pure fiction is very strong. It contains chapter VIII and IX of *The Home of a Merchant Prince*, by William Henry Bishop; chapters III and V of *Doctor Zoy*, a very good story by Elizabeth Stuart Phelps *Auntie Lane*, one of those good short stories completed in one number, which form a marked feature of this magazine, and the first four chapters of *Two on a Tower*, by the English novelist, Thomas Hardy, who, in our opinion, is not only in the first rank of living writers of fiction but has some claim to the first place in that rank. The poetical contributions on *The Divine Right of Kings*, by Mary W. Plummer, *Sage or Poet*, by Edith M. Thomas and *Mad River in the White Mountains*, by Henry Wadsworth Longfellow. This poem, the last written by its author, may be briefly described as Tennyson's *Brook Americanized*. It is remarkable as showing how little the lapse of three quarters of a century had impaired Longfellow's powers. *The Arrival of Man in Europe*, by John Fiske is a very readable popular summary of the results of the investigations of Professor Dawkins and others with regard to prehistoric men. In *Old Port Chartres*, Mr. Edward G. Mason deals with a subject which belongs as much to the history of Canada as to that of the United States, the stronghold in question having been established by the French in Illinois in 1718 as a link in the chain of defensive places that was to secure to them forever the valleys of the St. Lawrence and the Mississippi. Mr. Hilgard continues his discussion of *Progress in Agriculture by Education and Government Aid*, Elizabeth Robins writes on the *Evolution of Magic*, and J. Lawrence Laughlin furnishes a financial article on *The French Panic*. The admirable *Studies of the South* is continued, a series of papers which no one should fail to read who wishes to understand American politics whether in the wide or narrow sense of the term. A review of *Renan's Marcus Aurelius*, *The Contributor's Club*, the valuable classified list of *Books of the Month*, by means of which one can at a glance ascertain whether anything of interest in any department for which he cares has been published in the United States; and a brief notice of Longfellow, who contributed to the first number of *The Atlantic*, and like so many other great names in American literature has from time to time assisted in filling its columns, concludes the number.

Official Announcements.

Instructions as to the July Examinations, 1882, FOR CERTIFICATES TO PUBLIC SCHOOL TEACHERS.

In accordance with the Statute and the General Regulations, the July Examination of Candidates for the year 1882, will be held as follows:—

FOR FIRST CLASS (Grade C, Non-Professional)—At the Normal School TORONTO, to begin on MONDAY, July 10th, at 2 p.m.

FOR INTERMEDIATE EXAMINATION—At the County Towns and High Schools, to begin on MONDAY, July 5th, at 2 p.m.

The Professional Examination for First-Class Certificates will begin after the conclusion of the Non-Professional Examination.

The Examination for First Class Certificates, Grades A and B, will begin after the conclusion of the Professional Examination.

It is indispensable that Candidates, whether from a County or a City, as the case may be, should notify the presiding County Inspector, not later than the 1st of JUNE, of their intention to present themselves for examination. All notices to the Department of intending Candidates must be sent through the presiding County Inspector.

Forms of the notice to be given by each Candidate previously can be obtained on application to any County Inspector.

ADAM CROOKS,

Minister of Education.

EDUCATION DEPARTMENT, TORONTO, March, 1882.

EXAMINATIONS FOR TEACHERS' CERTIFICATES, 1883.

NON-PROFESSIONAL SUBJECTS.

The Examinations will be upon the same subjects as in 1882, with the following exceptions:—

FOR INTERMEDIATE EXAMINATION.

In ENGLISH LITERATURE the works prescribed for 1883 are Scott's "Marmion, with special reference to Cantos V and VI. Reflections on the Revolution in France, Bohn's edition of Burke's Works, Vol. II., from "I find a preacher of the Gospel," p. 239, to "austere discipline of the Early Church," p. 375. In LATIN, the portions of authors to be read are Cæsar, *Bellum Britannicum* (R. G. B. v. c. 20-36, B. v. c. 23), Cicero, *pro Archia*, Virgil, *Æneid*, B. V. v. 1-361.

In GERMAN, in addition to the Reader, the author to be read is—Schiller, *Belagerung von Antwerpen*, Der Taucher.

In FRENCH, in addition to the Reader, the author to be read is—*Émile de Bonnehoeur*, *Lazzaro Hoche*.

The subjects in Literature prescribed for the First Class Grade C examination in 1883 are:—

- Richard II.—Shakespeare.
- Marmion with special reference to Cantos V. and VI.—Scott.
- Reflections on the Revolution in France, from the beginning to "austere discipline of the Early Church," p. 370, vol. II. Bohn's edition of Burke's Works.—Burke.
- Dumont's Recollections of Mirabeau.—Macaulay.

No particular editions of these texts are prescribed, but the following good ones are mentioned in order to aid candidates:

The edition of Richard the Second in the Clarendon Press series or Hudson's Richard the Second.

Payno's edition of Burke's Recollections (Clarendon Press series).

The following are prescribed for 1883, for First Class, Grades A and B:

CHAUCCER.—The Prologue to the Canterbury Tales.

The Nonne Prestes Tale.

SHAKESPEARE.—Antony and Cleopatra. Candidates are recommended to consult some such work as Dowden's *Mind and Art of Shakespeare*, or Gervinus's *Commentaries*.

POPE.—Prologue to the Satires.

ADDISON.—The Selections from Addison's Contributions to the Spectator, made by J. Arnold, under the headings (1) Manners, Fashions, and Humours; and (2) Tales and Allegories (Clarendon Press series).

WORDSWORTH.—Sonnets.

MACAULAY.—Life and Writings of Addison.

N. B.—Candidates who take other departments will be required to show by passing an examination in "Antony and Cleopatra" for 1883, that they have read the play carefully and that they are in the habit of writing the English language correctly.

No particular editions of these texts are prescribed, but the following good ones are mentioned in order to assist candidates:

Morris's edition of Chaucer's Prologue to the Canterbury Tales and the Nonne Prestes Tale, in the Clarendon Press series.

The edition of Pope's Satires and Epistles, in the Clarendon Press series.

INSTRUCTIONS FOR THE

GUIDANCE OF PUBLIC SCHOOL INSPECTORS,

As to the duration, renewal and endorsement of Third Class Public School Teacher's Certificates and their extension, also as to the granting of Third Class District Certificates and of Temporary Certificates.

1. The changes made in the School Act of last Session with respect to Third Class County Board Certificates and Third Class District Certificates, render some modification of the Instructions to Public School Inspectors in the Compendium, at page 241, Appendix D, necessary.

2. It will be seen that under the first section of this Act, the holder of a Third Class County Board Certificate (when awarded by the Board after passing through the County Model School) becomes entitled to be employed as a duly qualified Public School Teacher in any County of the Province, without being required to obtain the endorsement of the Public School Inspector thereof.

3. The effect of this section is therefore to dispense with the necessity of obtaining the endorsement of the Public School Inspector of the County, when School Trustees therein desire to engage as their Teacher the holder of such Third Class Certificate so granted by the Board of another County.

4. The result of this amendment will therefore be to give greater value to such class of Certificates, which, owing to the uniform examination questions and values assigned through the Central Committee on the results of the non-professional examination and by the County Boards as to the professional examination, have since July, 1881, become nearly equal value throughout the Province. There is the further advantage in the liberty given to Public School Trustees to engage such Teachers, and thus affording to each Teacher better chances of employment, as well as to better adjust the supply of Teachers relatively to the demands therefor.

5. It will also be seen that under the second section of the Act the respective powers of Public School Inspectors and of the Minister of Education in granting an extension of a Third Class County Board Certificate are defined as to their exercise in each case, being now made dependent upon the fitness, aptness, and success in teaching of each Teacher applying, according to the separate and independent reports of the School Trustees employing him, and of the Inspector, to be made to the Education Department by the 1st June in each year. The Teacher is thereupon entitled at the expiration of the term of his Third Class Certificate to apply for an extension, and for such period as the circumstances of his case may justify.

6. In reference to the former Regulations and Instructions to Inspectors, as to the extension of Third Class Certificates, it was provided that extensions should only be granted in two classes of cases:—

- (1) To enable the candidate to qualify for a Second Class Certificate and to attend the Normal School, but not to exceed two years.
- (2) In the case of a Third Class Teacher, who had many years' experience, and was of proved ability as a Teacher, or of special fitness for the school in which he was engaged, his Certificate might be made permanent, or extended for such a period as the Minister might deem advisable.

The recommendation of the County Inspector in both class of cases was necessary, and also his judgment as to the ability, qualifications, and efficiency of the applicant; also certificates as to satisfactory teaching from Trustees; while the Regulations reserved to the Minister full liberty to form his own judgment upon these recommendations.

7. The object of this amendment is to furnish the Minister with more information of the actual teaching record in each year of each applicant for extension, but it does not alter in any particular the conditions on which extensions can only be granted, under the Regulations, which are still in force in their integrity, and which apply to the two classes of cases above mentioned, and require the special recommendation of the Inspector with every application before the Minister is in a position even to consider it; but with the additional information to be supplied under this amendment, he will be better enabled to deal with each application on its merits, and, if an extension is granted or refused, the record on which the conclusion is based is open for the information of the Teacher and the public.

8. Under the third section of the Act, Third Class District Certificates may be granted, subject to the Regulations of the Education Department, but only valid for the territorial and remote districts named in the third section, and in the northern parts of the Counties of Victoria, Peterborough, Hastings, Frontenac, Lennox and Addington, and Kent. These certificates will take the place of the Temporary Certificates authorized under the present Regulations, and will be confined to districts so poor in resources that the Trustees are not able to employ County Third Class Certificated Teachers. This change will do away with a large proportion of Temporary Certificates, which were sanctioned owing to the poverty of such sections. A Board of Examiners is to be constituted for each district, and the result should to secure more efficient teachers in such districts than are now found.

9. The former Regulations as to the granting by Inspectors of Temporary Certificates with the sanction of the Minister continue in full force, and govern each application.

10. It will be seen from the foregoing that the powers of County Boards in granting Third Class Certificates, and in renewing the same, have not been altered or affected by any of the provisions of the School Act of last Session.

EDUCATION DEPARTMENT (Ontario), TORONTO, 24th April, 1882.

ADAM CROOKS, Minister of Education.