Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

L'Institut a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- ☐ Coloured covers / Couverture de couleur
- ☐ Covers damaged / Couverture endommagée
- ☐ Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- ☐ Cover title missing / Le titre de couverture manque
- ☐ Coloured maps / Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- ☑ Bound with other material / Relié avec d'autres documents
- ☐ Only edition available / Seule édition disponible
- ☑ Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.

- ☐ Coloured pages / Pages de couleur
- ☐ Pages damaged / Pages endommagées
- ☐ Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- ☑ Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- ☐ Pages detached / Pages détachées
- ☑ Showthrough / Transparence
- ☑ Quality of print varies / Qualité inégale de l'impression
- ☐ Includes supplementary materials / Comprend du matériel supplémentaire
- ☐ Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from scanning / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été numérisées.

☑ Additional comments / Commentaires supplémentaires: Continuous pagination.

JOURNAL OF EDUCATION,

Province of Ontario.

VOL. XXVII. TORONTO, FEBRUARY, 1874. No. 2.

CONTENTS OF THIS NUMBER.

ADMINISTRATION OF THE SCHOOL LAW.

In the recent able and interesting debate in the House of Assembly on the School Bill some points relating to the administration of the School Law were incidentally touched upon. The principles laid down in these incidental references to the subject were quite in harmony with those which have governed the Education Department since the School Law of 1850 was passed.

It was especially gratifying to notice the absence of party feeling in the discussion. It was felt in the House to be a subject on which all parties should unite as Canadians, and not by making it a party or political question to imperil an interest so vitally important as that of our schools.

In circulars to Local School authorities and in the letters from the Chief Superintendent the doctrine laid down, or the counsel given, has invariably been that, in carrying out the law and regulations, great judgment and discretion were necessary:—That the great purpose of the Department was not to seek to control but to assist trustees, inspectors and others in their efforts to improve the character and condition of the Schools; to build up and render still more effective the educational system of our country, and to aid them in every practicable way, through themselves, in attaining these very desirable objects.

Of course, no one objects to a law under which Schools shall be regulated; and no one objects to the necessary regulations, programmes and course of studies designed to carry that law into effect; nor does any one object that that law and those regulations should be distinct and definite in themselves. The objection urged was either that the regulations were too rigid, that they were not flexible enough to meet particular and special cases, or that Inspectors, supposed to be acting under instructions, were neither disposed to relax the letter of the regulations, nor to take into account peculiar cases or the necessities of particular Schools. Other minor objections were urged founded on individual cases, but these were the principal ones stated.

We were glad to have been able thus to learn the views of members, and to know what was the general feeling on the subject which they represented. The statements made by some of the members were a matter of surprise and regret, especially as great care had been taken to counsel moderation and leniency in carrying out the law. Thus in regard to School-house accommodation the following extract from Department notices on the subject was published in this *Journal* from time to time:—

"In many School sections the School-house has been allowed to remain in the same state for fifteen or twenty years and longer, often on a bare open space, or on the road-side unenclosed, without a tree or shrub near by to shade it, or any provision being made by the Trustees for the convenience or health of the pupils, or even for their observance of the decencies of life. The Legislature has wisely decided that this state of things shall not continue, but that, as soon as possible, a remedy shall be applied, where necessary. *A reasonable time should, of course, be allowed to Trustees in all cases to set things right;* but in the meantime Inspectors will, we trust, not fail to urge upon Trustees the necessity of complying, as soon as possible, with the provisions of the law on this subject." Again, subsequently:

"The regulations, which define what 'adequate School Accommodations' are, suggest a medium or minimum amount of School Accommodation to be provided, as compared with the law and regulations on the subject in other countries. Although the *law is imperative, yet Inspectors will exercise a judicious discrimination in enforcing.*"

The Department is not aware of any cases in which Inspectors have withheld an apportionment from the Trustees of Schools, in consequence of their non compliance with the regulations; but they have, so far as we know, in every case sought counsel and advice

from the Chief Superintendent in regard to any special case of necessity which may have arisen. We can thus bear testimony to the anxiety of the Inspectors generally to avoid any arbitrary exercise of power, and their desire to take into account the special circumstance of each case as it arose. We think, however, that a good deal of the difficulty and misapprehension in the matter has arisen from undue agitation on the subject, and from a feeling that the law itself was unnecessary. Experience has shown, however, that it was a wise and judicious enactment; but that, in its administration, it required great kindness, patience and judicious treatment of individual cases.

In regard to the programme of studies, no new subject was introduced into the programme except those authorized and required by the School Law. Even those were so arranged in that programme that they could not interfere, for the first three years at least, with the essential subjects of reading, writing, arithmetic and grammar.

Inspectors have often explained to the Department the great difficulty they have experienced in introducing any thing like classification in the Schools or a sufficient attention to elementary studies. This was owing chiefly to the desire, on the part of a few parents, to have their children advanced faster than their acquirements or previous studies rendered in any way desirable or at all beneficial to the children. But, even in these cases the necessary changes were not made until the second or third visit of the Inspector when the further knowledge and experience of both teacher and inspector rendered classification a necessity in the interests of the Schools.

The discussion in the House will do good for there should be no desire on the part of any one concerned to administer any portion of the law and regulations except "in harmony with the well understood wishes of the people," as interpreted by the Legislature.

II. The Question of Public Education.

1. HOW EDUCATION CAN ELEVATE THE CHARACTER OF A NATION.

The Hon. Mr. Eaton, U. S. Commissioner, in his last report thus reports a conversation with the late Professor Louis Agassiz, who expressed opinions in the course of a conversation in his office, which he had his permission to publish :—

The question is how to manage education so as to elevate the character of the nation.

There are three elements in which you are equally interested. One is to bring out this class of States, where there is a practically ignorant population; though I am not as much interested in that class of efforts, I see that no effort in the higher walks of knowledge can be really sustained unless we can remove entirely this dead load by dragging the low stratum to a higher level. We must not allow such a distinction to become permanent, of States where schools are nothing, and those where they are well provided for.

Another element is to take care of the public schools. I am telling my friends in Massachusetts a very bitter thing, and I have become bolder and bolder in saying that I am under the impression that the whole system of popular education is superannuated; that what is taught is no longer the food which the rising generation really wants most; and that the very knowledge that is taught is not the best. So that I would change both the substance and the methods of our popular schools.

And then, thirdly, our higher institutions of learning are utterly inadequate to give our young men that kind of instruction which will place them on the highest level of culture, and enable those that have not the means to go abroad to get an equally good education at home. We should never be satisfied until our institutions have attained such a superiority that European students shall find it necessary to come here.

* * * * * * * *

Again, among teachers there are two classes of men, those who know what they are teaching just as well as anybody else, but who have not the natural disposition or qualification to increase the knowledge of mankind, and those who devote their lives to the production of new knowledge, and who are at the same time able to teach.

But many of the most productive thinkers are not teachers at all; they are a class of men whom the country does not recognize; they are men of original research who are not born teachers, but find they must assume the duties of instruction in order to obtain recognition. We should learn the conditions of success; and a condition of success in this matter is not to put a man with power to do that which requires another power.

* * * * * * * *

Professor Henry says the resources of the Smithsonian Institution are too small for the work to be done. Some gentlemen think the income of the Institution ample. I thoroughly agree with Professor Henry, that its resources are entirely inadequate. For one solitary department at our museum of zoology we spend annually more than the sum total of the income of the Smithsonian Institution, which is to cover publications, the scientific, archæological, and zoological departments, and which is to provide for the museum, the preservation of the collection, and the printing of the investigations as submitted.

We deal with one solitary subject, zoology, and for that department, for the last five years, we have spent annually sixty-five thousand dollars.

And the sum total of the income of the Smithsonian Institution, is forty-five thousand dollars.

We have only $10,500 annually derived from the income, the rest is the result of my begging from private individuals, and the legislature, and all around. * * * * *

Improve the characters of the teachers, and let the teachers have a little more to do with teaching than simply hearing recitations, so that the teacher shall be a teacher, and not a mere machine to hear recitations.

The following opinions of Professor John Tyndall, furnished by himself at my request, are quite harmonious with those expressed by Professor Agassiz :—

This is the core of the whole matter, as regards science. It must be cultivated for its own sake, for the pure love of truth, rather than for the applause or profit that it brings. And now, though my occupation is gone, still I will bespeak your tolerance for a few concluding remarks in reference to the men who have bequeathed to us the vast knowledge of which I have sought to give you some faint idea in these lectures. What was the motive that spurred them on? What the prize of their high calling for which they struggled so assiduously? What urged them to those battles and those victories over reticent nature, which have become the heritage of the human race? It is never to be forgotten that not one of those great investigators, from Aristotle down to Stokes and Kirchoff, had any practical end in view, according to the ordinary definition of the word "practical." They did not propose to themselves money as the end, and knowledge as a means of obtaining it. For the most part they nobly reversed this process—made knowledge their end, and such money as they possessed the means of obtaining it. * *

To many of their contemporaries it would have appeared simply ridiculous to see men, whose names are now stars in the firmament of science, straining their attention to observe an effect of an experiment almost too minute for detection.

That scientific discovery *may* put not only dollars into pockets of individuals, but millions into the exchequers of nations, the history of science amply proves, but the hope of its doing so is not the motive-power of the investigator. It never can be his motive-power. I know that I run some risk in speaking thus before practical men; I know what De Tocqueville says of you. "The man of the north," he says, "has not only experience but knowledge. He, however, does not care for science as a pleasure, and only embraces it with avidity when it leads to useful applications." * * *

Surely no two terms were ever so much distorted and misapplied with reference to man in his higher relations than these terms useful and practical. * * * * * *

People sometimes speak as if steam had not been studied before James Watt, or electricity before Wheatstone and Morse; whereas, in point of fact, Watt, Wheatstone and Morse, with all their practicality, were the mere outcomes of antecedent forces, which acted without reference to practical ends. * * * *

Strip a strong arm and regard the knotted muscles when the hand is clenched and the arm bent. Is this exhibition of energy the work of the muscles alone? By no means, the muscle is the channel of an influence without which it would be as powerless as a lump of plastic dough. At the present time there is a cry in England for technical education, and it is the expression of a true national want, but there is no outcry for original investigation, still, without this, as surely as the stream dwindles when the spring dries, so surely will their technical education lose all force of growth, all power of reproduction.

To keep society as regards science in healthy play, three classes of workers are necessary: First—the investigators of natural truth, whose vocation is to pursue that truth, and extend the field of discovery for the truth's own sake, and without any reference to practical ends; secondly—the teacher of natural truth, whose vocation is to give public diffusion to the knowledge already won by the discoverer; thirdly—the applier of natural truth, whose vocation is to make scientific knowledge available for the needs, comforts, and luxuries of life. These three classes ought to co-exist and interact. Now the popular notion of science, both in this country and in England, often relates, not to science strictly so called, but to the ap-

plication of science. Such applications, especially on this continent, are so astounding, they spread themselves so largely and umbrageously before the public eye, as to shut out from view those workers who are engaged in the profounder business of discovery.

Take the electric telegraph as an example, which has been repeatedly forced upon my attention of late. I am not here to attenuate in the slightest degree the services of those who, in England and America, have given the telegraph a form so wonderfully fitted for public use. Assuredly they earned a great reward, and assuredly they have received it. But I should be untrue to you and to myself if I failed to tell you that, however high in particular respects their claims and qualities may be, practical men did not discover the electric telegraph. The discovery of the electric telegraph implies the discovery of electricity itself, and the development of its laws and phenomena. Such discoveries were not made by practical men, and they never will be made by them, because their minds are beset by ideas which, though of the highest value from one point of view, are not those which stimulate the original discoverer. The ancients discovered the electricity of amber; and Gilbert in the year 1600 extended the force to other bodies. Then followed other inquirers, your own Franklin among the number. But this form of electricity though tried, did not come into use for telegraphic purposes. Then appeared the great Italian, Volta, who discovered the source of electricity, which bears his name, and applied the most profound insight and the most delicate experimental skill to its development. Then arose the man who added to the powers of his intellect all the graces of the human heart, Michael Faraday, the discoverer of the great domain of magneto-electricity. Oersted discovered the defection of the magnetic needle, and Arago and Sturgeon the magnetization of iron by the electric current. The voltaic circuit finally found its theoretic Newton in Ohm; while, at Princeton, Henry pushed forward the course of experimental inquiry. Here you have all the materials employed at this hour in all the forms of the electric telegraph. Nay, more, Gauss, the celebrated astronomer, and Weber, the celebrated natural philosopher, both professors in the University of Gottingen, wishing to establish a rapid mode of communication between the observatory and the physical cabinet of the University, did this by means of an electric telegraph. The force, in short, had been discovered, its laws investigated and made sure, the most complete mastery of its phenomena had been attained, nay its applicability to telegraphic purposes demonstrated, by men whose sole reward for their labours was the noble joy of discovery, and before your practical men appeared at all upon the scene.

Are we to ignore all this? We do so at our peril. For I say it again, behind all your practical applications there is a region of intellectual action to which practical men have rarely contributed, but from which they draw all their supplies. Cut them off from this region and they become eventually helpless. * *

De Tocqueville evidently doubts the capacity of a democracy to foster genius as it was fostered in the ancient aristocracies. "The future," he says, "will prove whether the passion for profound knowledge, so rare and so fruitful, can be born and developed so readily in democratic societies as in aristocracies. * *"

It rests with you to prove whether these things are necessarily so; whether the highest scientific genius cannot find in the midst of you a tranquil home. I should be loath to gainsay so keen an observer, and so profound a political writer, but since my arrival in this country I have been unable to see anything in the constitution of society to prevent any student with the root of matter in him, from bestowing the most steadfast devotion on pure science. If great scientific results are not achieved in America, it is not to the small agitations of society that I should be disposed to ascribe the defect, but to the fact that the men among you who possess the genius for scientific inquiry are laden with duties of administration or tuition, so heavy as to be utterly incompatible with the continuous and tranquil meditation which original investigation demands. I do not think this state of things likely to last. I have seen in America a willingness on the part of individuals to devote their fortunes in the matter of education, to the service of the commonwealth, for which I can not find a parallel elsewhere.

This willingness of men to devote private fortunes to public purposes, requires but wise direction to enable you to render null and void the prediction of De Tocqueville. Your most difficult problem will not be to build institutions, but to make men; not to form the body, but to find the spiritual embers which shall kindle within that body a living soul. You have scientific genius among you; not sown broad cast, believe me, but still scattered here and there. Take all unnecessary impediments out of its way. *

* Professor Tyndall sought practically to carry out his own suggestion, and set apart the net proceeds of his lectures in this country, delivered at Boston, Philadelphia, Baltimore, Washington, Brooklyn, New Haven, and New York, amounting to $13,000, and conveyed the same in trust to a committee, composed of Professor Joseph Henry, General Hector Tendall, and Professor E. L. Youmans, who may expend the income in aid of students who devote themselves in original research.

2. THE AMERICAN NATIONAL EDUCATIONAL ASSOCIATION.

WASHINGTON, January 30th.—The Department of Superintendence of the National Education Association met to-day with an increased attendance. The Chair read a communication from the Secretary of the Vermont State Teachers' Association, inclosing a resolution recently adopted by the Association, indorsing the plan of giving the proceeds of the sale of public lands for educational purposes.

Gen. Eaton, from the Committee on the Centennial, recommended that each State, Territory, and city be invited to prepare a representation of its educational condition and a history of its educational progress for exhibition at the Centennial; that a census be taken in 1875; that the prominent educators of the country be invited to co-operate in the matter of the Centennial; and that the International Educational Congress be held in connection with the Centennial. The report was adopted.

Mr. Ruffner, of Virginia, of the Committee of National Aid to to Education, made a report. The first resolution strongly approves of the policy of the Government in leaving to each State and locality the conduct of its own educational affairs; the second recognizes the wisdom of the Government in establishing the Bureau of Education; the third indorses the proposition before Congress, setting apart the lands for the purpose of free education in the several States, on the basis of a division of illiteracy existing in the different States from the age of ten years and upward.

When the reading of the resolutions had proceeded thus far, the President entered the hall and was received standing. He was conducted to the platform and was introduced as "The President of the United States, whom it need not be said is our friend, theoretically and practically." The President took a seat beside Mr. Binford on the platform, and Mr. Ruffner continued the reading of his report.

The fourth resolution favours such united action on the part of the special friends of primary, and of agricultural and other industrial education respectively, as would allow the various State and Territorial Legislatures to employ, at discretion, specified proportions of such donated funds for either or both of those forms of education. A few minutes later the President left the hall, the audience rising as he passed out. A moment after, Governor Shepherd entered the hall and, having been formally introduced, delivered a short address.

The resolutions were then taken up and the first two adopted. The third elicited considerable discussion, during which Gen. Eaton stated that Gen. Hawley, President of the Centennial Commission, and Judge Kelley, Chairman of the House Centennial Committee, were present, and suggested that the discussion be suspended until these gentlemen could be heard.

Representatives Hawley (Conn.) and Kelly (Penn.) were introduced, and delivered speeches on the subject of the Centennial, maintaining that it would be educational in its tendency. Resolutions were adopted declaring it to be the duty of Congress to aid education in the District of Columbia.

After further proceedings, the Convention adjourned until August next, when another meeting of the Department will be held at Detroit.

---

3. MR. GOLDWIN SMITH ON ENGLISH EDUCATION.

A large meeting was held on the 21st ult., in the Free Trade Hall, Manchester, which had been convened "to support the Bill of Mr. George Dixon, M. P., for the establishment of School Boards, and the enforcement of compulsion everywhere." Mr. Goldwin Smith said: "With the general object of the meeting, as I always sympathised, so I cordially sympathise now, and my sympathies are strengthened by convictions derived from experience abroad. That the nation must be educated all are agreed. Leave the people uneducated, and with political power in their hands, and they will wreck themselves and England. National education there must be, and, for reasons well stated already, that education must be unsectarian. Sectarian education would deprive you of the excellent influence the common school education would have in promoting the unity and, therefore, the greatness of the nation. Sectarian education is condemned by its fruits. What are its fruits in England? Masses of dangerous ignorance. It is condemned on another ground; while you have an Established Church, sectarian education, aided by the nation, must throw immense and unfair power into the hands of the clergy of the Church, and observe I impeach no man's convictions. Let a man be a Catholic; let a man be a Ritualist, if he pleases; I have not a word to say; but observe the position, and what the tendencies now are of the Church, into which recent legislation has thrown such immense additional power. It is a Church nominally under the control of the nation, and of the law.

It is a Church receiving, on that understanding, vast sums of national money and an immense amount of national influence; nominally, it is under the control of the law, but, really, it has shown you in its struggles with the Ecclesiastical Courts, that the law is a dead letter, and that a Church nominally Protestant, contrary to the wishes of the nation, in defiance of the spirit of the law, is now changing the national religion from Protestant to Roman Catholic. A Protestant nation put the enormous power of national education into the hands of a Church, which undoubtedly whether it be—religiously speaking—right or wrong, is leading the people with all its influence from Protestantism to Rome. It has been truly said that secular does not mean irreligious. A secular school here is different from a religious school, but not opposed to it. What branch of education in the common schools has any tendency to corrupt the children's moral sense? I am not a blind worshipper of the Americans or their institutions, but I tell you that the influence of their common schools is good, morally as well as intellectually. Though there are bad things and bad men in America, the influence of these schools is good. and they tend in the main to produce not 'clever devils,' but a law loving and God fearing nation. And if you ask about manners, I tell you I have been in the United States in the midst of exciting political contests, when the struggle has been going on between North and South, and I saw meetings of both parties and torchlight processions on both sides of the streets, and not on the one side or the other did I observe the slightest discourteous interruption to the proceedings of their opponents. We have the same system, or, perhaps, rather a better system in Canada, and there the effects are the same. I say those schools will not do everything then, for I know very well that a moral and religious teacher must exert his influence in order to train the character of the child; but the effect of these schools, upon the whole, is to produce a moral as well as an intelligent population, and if the morality and intelligence of the nation are promoted by their common school system so is their wealth. Depend upon it that we attribute a great deal too much to formal enactments about religion and morality. Take away the formal mode of religion, and the religious influences and moral influences of society will still remain. I was once connected as Professor with Oxford, a University deemed eminently religious; we had tests upon tests, compulsory chapels, lectures and a whole apparatus of theology. At Cornell we have a secular system, and are pointed at by the enemies of the system as a secular University. Nevertheless, though I love Oxford as well as any of her sons, let me say, I fully believe that Cornell is ju t as religious as Oxford. The British nation is a great nation, but is liable to protracted delusions. It holds on to things which are really of no consequence as if they were absolutely vital. It fancies that if it gives up some enactment or another it will lapse into chaos and confusion. There is a story which has more than once occurred to me as illustrating the conduct of the British nation in this respect. There was in the Isle of Wight, I believe, a man who had incurred the hatred of the smugglers by informing against them. He was seized by the smugglers, and he was blindfolded and hung over a precipice by a rope to which he was left to cling. Imagining that he was a great height from a safe footing, he clung on till his sinews cracked, when, resigning himself to his fate, he let go, and found he had been hanging six inches from the solid ground." The resolution was passed and a memorial to Mr. Gladstone was adopted.

4. A GREAT ERROR IN MODERN EDUCATION

Nor, indeed, am I supposing that there is any great danger, at least in this day, of over education; the danger is on the other side. I will tell you, gentlemen, what has been the practical error of the last twenty years,—not to load the memory of the student with a mass of undigested knowledge, but to force upon him so much that he has rejected all. It has been the error of distracting and enfeebling the mind by an unmeaning profusion of subjects; of implying that a smattering in a dozen branches of study is not shallowness, which it really is, but enlargement, which it is not; of considering an acquaintance with the learned names of things and persons, and the possession of clever duodecimos, and attendance on eloquent lectures, and membership with scientific institutions, and the sight of the experiments of a platform, and the specimens of a museum—that all this was not dissipation of mind, but progress. All things now are to be learned at once, not first one thing then another; not one well, but many badly. Learning is to be without exertion, without attention, without toil, without grounding, without advance, without finishing. There is to be nothing individual in it; and this, forsooth, is the wonder of the age. What the steam engine does with matter, the printing press is to do with mind; it is to act mechanically, and the population is to be passively, almost unconsciously, enlightened by the mere multiplication and dissemination of volumes. Whether it be the schoolboy, or the schoolgirl, or the youth at college, or the mechanic in the town, or the politician in the senate—all have been the victims in one way or other of this most preposterous and pernicious of delusions. Wise men have lifted up their voices in vain, and at length, lest their own institutions should be outshone and should disappear in the folly of the hour, they have been obliged, so far as they could with a good conscience, to humour a spirit which they could not withstand, and make temporizing concessions at which they could not but inwardly smile.—*Dr. Newman.*

5. CLAIMS OF SCIENCE TO PUBLIC AID.

Science has a title to the public aid of this and every other civilized community. A very large proportion of the comforts, enjoyments and defences of our daily life are plainly traceable to science; and not merely to what is sometimes called distinctively "practical science," that is the intellectual labours of men engaged in the application of scientific conclusions to remunerative arts and manufactures—but to "pure science," or the pursuit of scientific knowledge for the mere love of truth. "Nearly all great modern scientific discoveries," says a writer in the *Westminster Review*, "have been made by teachers of science and others who spent a large portion of their lives in experimental investigation, searching for new truths; not by persons who have hit upon them by accident. The greatest discoveries in physics and chemistry in modern times were made chiefly by such men as Newton, Cavendish, Scheele, Priestley, Oersted, Volta, Davy, and Faraday, all great workers in science." And even when unexpected accidents have suddenly presented great truths before unknown; it has been due to the long scientific labours of the observers that such "accidents" have been turned to account. Thus "the contraction of a frog's leg in the experiments of Galvani, and the movement of a magnetic needle in those of Oersted, have already led to the expenditure of many millions of pounds in laying telegraph wires over many parts of the earth, and to the immense extension of international intercourse. . . . About the year 1815, Oersted, a Danish philosopher, after fifteen years of experiment, to ascertain the relation of electricity to magnetism, discovered that if a freely suspended magnetic needle was supported parallel to a wire, and an electric current then passed through the wire, the needle moved and placed itself at right angles to the current. This discovery coupled with the previous one, of the electric conductivity of metals, formed the indispensible foundation of our present electric telegraphs." Scientific discovery has been the basis of useful invention. And the inventions which tended most to increase the wealth of nations, and to improve the material condition of human life, have been the result of the scientific researches of men whose absorbing motives were the thirst for knowledge, the love of truth. "Watt himself stated in his pamphlet, entitled, 'A plain story,' that he could not have perfected his steam engine had not Dr. Black and others previously discovered what amount of heat was rendered latent by the conversion of water into steam." The inventors of improvements in various manufactures have all, or nearly all, derived the knowledge that enabled them to plan their inventions from some of those scientific books into which every newly discovered truth speedily finds its way. And without the researches of those who devote their lives to the pursuit of science, practical inventions would be limited to a very narrow range. Yet, for the most part, men of science receive scant acknowledgment from those to whose wealth and enjoyment they are perpetually ministering. "The great pecuniary benefits arising from the applications of science are generally reaped, in the first instance, by great manufacturers, agriculturists, merchants, and capitalists. Countless fortunes have been made by processes and manufactures based on scientific discovery. The pecuniary profits of the great manufacturers of cotton, copper, iron, pottery, beer, sugar, glass, spirits, vinegar, gutta-percha, india-rubber, gun-cotton, the various metals, machinery, electroplate, washing soda, German silver, brass, phosphorus, manures, the common acids, the various chemicals, and a great multitude of other substances and articles have been extremely great. The pecuniary advantages of the use of the electric telegraph and railways, to merchants; the gains of capitalists by money invested in railways, telegraphs, steamships, gasworks, iron ship-building, engineering and other great applications of science, have been enormous." And yet, to those who freely give to mankind the discoveries out of which all this wealth has grown, the smallest fraction of remuneration has been generally accorded.

One result of the prevailing indifference of the English nation to the advancement of science is startling. The race of scientific men in Britain is falling off. Faraday, Graham, Matthiesen, and Miller, have died within the last few years; and there are none able to supply their places. Here is an ominous fact:—"The Journal of

the Chemical Society, which was formerly filled with original researches, made by British chemists, is now almost entirely occupied with the abstracts only of researches made elsewhere; and, according to Dr. Frankland, the number of published scientific researches in the year 1866, was in Germany, 777; in France, 245; in Great Britain 127." And here is one practical result of the recent slackness of England in the prosecution of scientific researches: "England produces immense quantities of Benzine, the greater part of which goes to Germany, there to be converted into analine dyes, a considerable quantity of which goes back to England." And this passing over of profitable industrial work from England to Germany, is traced to the fact that "the Germans are availing themselves of the great fountain of knowledge to a much greater extent than ourselves."

III. Papers on Education in Various Countries.

1. SCHOOL-HOUSES AT THE VIENNA EXPOSITION.

Among the first objects of interest were the National school-houses, of which there were four, the Swedish, Austrian, Portuguese, and American. The Swedish edifice was truly a thing of beauty; it was entered for a prize, not as a school house, but as a specimen of carpentry,—a trade in which, perhaps, the Swedes have no superiors. It was designed as a model rural school-room and a dwelling under the same roof for the family of the teacher, and it is difficult to see how it could be improved, either as respects workmanship or design. The natural beauty of the wood, an admirable pine, was nowhere covered up by paint. I procured plans and views of this structure, and of the Austrian school-house, for insertion in my report to the Legislature. I wish I could convey to my readers an idea of the completeness and perfection of the fittings, apparatus, and appliances with which the Swedish school-room was supplied. They were the admiration of every spectator; they were observed and studied by school-men with intense interest; often I went and took my seat in the teacher's chair to enjoy the charming spectacle; and as Bishop Fraser said of one of our own schools, I often wished that by some magic power I could put this exquisite edifice, with its precious contents, under a glass case, and transport it to our shores, for the inspection of every lover of the common school. But what were those contents? The list would be too long for this article, and yet there was no crowded appearance. There were blackboards of the most perfect pattern and material; there were the best maps, mounted in the best way for beauty, use, and durability; there were charts for history, charts for reading, tablets illustrating natural history, beautiful cases filled with sets of specimens for teaching natural history, physical apparatus, herbariums, globes and geometrical forms, an ingenious reckoning machine, boys' muskets and uniforms for military drill; and in a small side-room an admirable folks' library for the inhabitants of the school district. The furniture for pupils consisted of single desks and seats made wholly of wood, the idea of which was carried from the Quincy School in Boston, to Sweden, more than twenty years ago, by Silgistrom, a distinguished educator, who wrote an admirable book on American education.

The Austrian school-house was erected under the direction and at the expense of an association of gentlemen formed for the purpose. It was a substantial, comely structure, two stories high, built of brick and covered with mastic. On the lower floor was the dwelling for the schoolmaster, and a good-sized room containing a great variety of illustrative apparatus, such as weights and measures, sets of specimens of natural history, beautifully arranged, and minature models of mechanical and agricultural utensils. Here, also, was a small room furnished with three or four desks for the occupancy of pupils who might be sent from the school-room for misconduct. On the second floor was the well-proportioned school-room, furnished with double desks, which, with all the other internal wood-work, were stained with a colour resembling black walnut, yet so as to leave visible, to a certain extent, the grain of the wood, thus producing a very pleasing effect. Foot-rests were provided for the pupils, an improvement which I observed also in the newer school-houses in the various German cities. Besides excellent wardrobes, there was adjacent to the school-room a commodious apartment for the use of the girls while engaged in their needle-work.

Near the school-house was a one-story building, seventy or eighty feet long, one end of which was divided into apartments for the schoolmaster's cow, pig, and poultry, and for storing fuel; the other end was devoted to a gymnasium for the use in the winter season and during inclement weather, and for a boys' workshop which was supplied with a variety of tools for different kinds of wood work. Near this building was an apiary furnished with several hives of "busy bees," which were probably intended as an appropriate example of industry for the pupils, and at the same time as a means of increasing the revenue of the schoolmaster. Various appropriate mottoes were handsomely inscribed both upon the outside and inside of the school-house and gymnasium. The grounds about the building, comprising perhaps half an acre, were handsomely laid out, the part in front of the gymnasium being appropriated to gymnastic exercises and play while the rest was mostly devoted to the purposes of a minature botanical garden and experimental farm and forestry. The ruling idea in designing this establishment was to show how to combine good taste and convenience with the strictest *economy* in building a rural school-house; and from this point of view it was certainly a marvellous success, and well deserving of a high honour.

The Portuguese school-house was very different from those described, and not at all equal to them; and yet it was highly creditable to the Portuguese nation.

In the American school-house our country gained no laurels; there was not the first sign of anything which could be called taste about it either within or without. A German pedagogist on inspecting it would not be long in concluding that the edifice with its fittings and furnishings was the product of minds which had not yet quite exhausted the whole subject of education. When the job was finished by the contractor and turned over to the commissioner, he felt at once that he had an elephant on his hands. It would be assumed of course by visitors that it was the embodiment of the American idea of a model school-house. This would never do while such a thing as the admirable Swedish school-house stood within a few rods. What was be done? After much puzzlement, it was finally decided to put up a sign to tell all the world that this was not the best thing we could do in the way of building a school-house. But how should the announcement be worded? Here was a problem to exercise Yankee ingenuity. Finally it was determined to christen it the "*American* RURAL *School-house.*" So the important information was pasted over the door on a tablet, which looked as if it had been gotten up by robbing some American school-house of the most rural type of its oblong wooden blackboard, and chalking upon it in Roman capitals the important words.

In external appearance it had a general resemblance to some of the district school-houses of a somewhat modern date which one might find in some of the most educationally backward country-towns of Massachusetts. It was clapboarded and painted a light gray colour. It contained a school-room, a smaller apartment, and two entries. To its credit it should be said that the school-room was of fair size and proportion; and I believe this is the only thing that can be said with truth in its favour. It was badly lighted, having windows on the three sides instead of one, or at most two; the windows were absurdly narrow; to show that we Americans do not forget ventilation, two very diminutive iron ventilation registers were placed in the wall, one at the top and the other at the bottom, which reminded me of a rural school-house in a New England State of which I knew, the ventilation of which was attempted by means of an inch-and-half lead pipe, leading from the ceiling to the roof. These registers opened into *no ventiduct*, although there was a dummy ventilating cap on the ridge-pole of the building. The walls and ceiling were covered with canvas instead of plaster, and this was papered with a somewhat showy wall paper; portions of this paper on the wall being painted black to represent blackboards. Some maps and charts were hung on the walls without regard to system or completeness, and some miscellaneous school-books were scattered about on the table and desks. The platform was covered with a Brussels carpet, which was not remarkably congruous with the notion of a rural school. The rest of the description of this school-room would consist mainly of an enumeration of the desirable things which it did not contain. Owing to its favourable location and the remarkable sign over the door, it naturally had many visitors, but it is doubtful whether it will be much copied either at home or abroad.—*J. D. Philbrick, in Mass. Teacher.*

2. NORMAL SCHOOLS.

Every State of the Union has normal schools except Texas and Nevada. Massachusetts has one normal school for every 208,193 of her population; Illinois ranks next, having one normal school for every 254,941; Ohio has one for 296,140; and New York has the greatest number of normal schools, yet only one for every 398,412 of her population. The whole number of normal institutions in the United States is 114, which are 51 State schools, 16 city schools, 27 connected with colleges and universities, and the remainder supported in various ways. There are 10,922 pupils in these schools, and 445 teachers. Nearly one-tenth of all the normal pupils in the country belong to the Female Normal College of New York City. During the three years that the college has been in existence, not a single student has been expelled, not one suspend-

ed, and not more than half a dozen cases for discipline have been reported to the president, and these were but for trivial offences.—*Appleton's Journal.*

THE N. Y. State Governor's Message contains the following facts in regard to the common school interests of the State :

Amount paid for teachers' wages, $7,400,000. For school improvements, $2,000,000. Value of school property, $27,000,000. Entire number of school-houses 11,735. Number of teachers employed at the same time, 18,268. Number of teachers during the year, 29,491. Entire number of children attending public, private, and normal schools, 1,166,994. Number of persons in the State between the ages of *five* and *twenty-one*, 1,545,260. The State has 40 colleges, of which 22 are literary, 13 medical and 5 law. The number of academies and academical departments of union schools under the visitation of the regents is 210. The number of pupils who have passed the regent's examination has increased during the last year about twenty per cent. There is also an increase of about thirty per cent. in the number of persons who are preparing for teaching.

---

3. INEFFICIENT TEACHERS.

At the recent meeting of the Michigan Teachers' Association, Superintendent A. B. Curtis, of Michigan, said that in 1872, 74 per cent. of Michigan teachers were women, receiving 35 per cent. of all the wages, while 26 per cent. were men, receiving 65 per cent. of the wages. Over a third of rural teachers and no small portion of city teachers are mere boys and girls under 20, without experience or training, who ought to be studying at school. While numerous institutions are established for the higher education of young men, young women are left too much to private schools, which, being undertaken as a money-making business, are often deficient in apparatus and nothing thoroughly done. It is a mistaken idea that persons of limited acquirements are competent to teach children. The primary teachers should possess well-trained intellects, models for unconscious imitation. With a magnetic power to mould the youthful mind, too many teachers lack special training. It is an anomalous fact that not half of them ever read a book on the subject of teaching ; not over a fifth ever take an educational journal, and with nine-tenths of them it is not made a profession at all but a makeshift taken up without preparation and soon abandoned, the average service of teachers being not over three years. This is especially true of principals while studying for another profession, whose best energies are not given to the business, overstocking the supply, which being greater than the demand depresses wages, and drives the best talent from the field.

---

4. INDUSTRIAL SCHOOLS.

The following from the New York *School Journal* is in the line of much that has appeared in this journal within the last year or two :

We have read with peculiar interest a paper laid before the late meeting of the Evangelical Alliance in this city, by the Rev. E. Robin, of Paris, on the subject of Industrial Schools as preventives of crime. Imperfect experiments in this direction have been made in the United States ; better trials have taken place in England ; but in France the results have been eminently satisfactory. What these results are, Mr. Robin tells us in his essay. After showing that the French establishments for correctional education, otherwise called agricultural colleges, were created solely to supply the want which was felt of making a first separation in the prisons between the adults and the young prisoners, and that they laid the foundation of a first progress, of which France may justly claim the honour, Mr. Robin went on to say that "France had her excellent law of 1869 in relation to young prisoners, our special houses for children, provisional liberation and patronage, when in England the children were still mixed in the prisons with criminal adults. It was only in 1854 that the separation was made in that country, and the English have acknowledged that the adoption of the practice by them was owing to our example, and that their reformatories were founded in imitation of our Penitentiary Colonies. But having once entered on this course after us, they have made a step in advance. They soon perceived the necessity of a new separation between the children profoundly versed in evil courses and those whose errors were caused by want of a good education, including in that term religious as well as secular instruction. Three years after having separated the children from the adults, they separated these neglected children from the young criminals, by instituting for them industrial schools. In England, during the past ten years, the number of reformatories—which had previously been increasing each year—has remained stationary, the number being then, as now, 65, whereas the industrial schools have, during that period, multiplied rapidly. In 1860 there were 40 of these, 50 in 1865, 91 in 1870, and at the end of 1872, the number had reached 100."

Mr. Robin contends, in regard to the organization of industrial schools, that they should be put on exactly the same footing as the primary schools ; and that the state would thus insure all the advantages of a complete primary education to the children, who would have their share in the benefit of obligatory instruction. In short, they should be really schools, and not penitentiary establishments. This would be the first part of their education. To primary education should be added industrial teaching. A child's education is not complete until he has been made fit to provide for himself, by learning a trade or business. The apprentice school thus becomes the complement of the primary school. The city of Paris has recently instituted an apprentice school, and has thus begun to make practical, the idea that general instruction must be completed by industrial teaching. Various establishments, similar in kind, exist already both in Paris, and in the departments, known under the name of professional schools. The industrial school founded for a special object, would unite the two classes of the establishments, *i. e.*, the primary and professional schools.

---

5. INDUSTRIAL OR TECHNICAL EDUCATION.

Prof. Ball, of the Sheffield Scientific School at Yale College, writes : Why is it that a majority of our apprentices are of foreign parentage ? Why is it that American boys are growing too proud to "learn a trade ?" Is not the cause found in the fact that our whole system of education has quite ignored an industrial life ? The only legitimate result of our educational system will be the production of lawyers and doctors, or at least, clerks and school teachers. In consequence of this defect, children receive the impression that education has no bearing upon mechanics ; that a trade is only manual drudgery. The result is, that our boys select the most effeminate employment in preference to manly mechanical work. When our educational system furnishes our youth with some intelligent preparation for the prosecution of industrial labour, the trades will be filled by a more cultivated class of young men, and our boys will blush to be found selling pins and needles ; but they will not be ashamed to be seen using the hammer and chisel.

Prof. Ball is a strong advocate of the introduction of Drawing as a branch of instruction in our public schools. This he thinks would serve as a basis for industrial training.

The last annual report of the U. S. Bureau of Education shows that $9,957,494 were given for educational purposes in 1872. In Connecticut, Trinity College received benefactions to the amount $65,000, Wesleyan University, $7,750, and Yale College, $196,284. In Massachusetts, Amherst College received $82,100 ; Harvard University, $158,075 ; Mount Holyoke Seminary, $8,500 ; Tufts College, $86,000, and Williams College, $13,635. In New York, Cornell University received $185,000 ; Ingham University, $8,500 ; Madison University, $80,000 ; St. Lawrence University, $15,960 ; Union College, $97,500 ; Vassar College, $6,000, and Wells College for Women, $100,000. In New Jersey, the College of New Jersey received $386,000, and Rutgers College, $78,607.

In the Eastern and Middle States, $1,767,800 were devoted to the construction of new College buildings, and $863,000 for the same purpose in the Western and Southern States. Twenty-seven Colleges during the same time added new departments, showing that the advance in intellectual equipment keeps pace with architectural accommodations. The twenty-seven new departments embrace law, medicine, journalism, meteorology, telegraphy, chemistry, and theology. Twenty-six Colleges have added thirty-two new professorships.

There are other indications of progress peculiar to the times. Thus, it appears that of the 4493 degrees conferred in course during the year 1873, embracing thirty-five different kinds, one hundred and ninety-one were conferred upon ladies, who are called, in different institutions, " Mistresses," " Maids" and "Sisters" of Arts and " Mistresses" of English Literature. The West would seem to be ahead of the East in this particular line of educational progress, for we observe that Illinois has thirteen colleges in which women have the same, or equal, facilities with men, Ohio has ten, and Indiana nine, while New York and Pennsylvania each has seven. The statistics indicate that the standard of college education, though differing exceedingly in various sections of the Union, is everywhere advancing in the amount of attainments acquired and the thoroughness of study and discipline. The whole record, therefore, is highly encouraging to those who have at heart the true development and success of this nation.

The effect of the large cast-iron stoves with which our school-rooms are heated must be exceedingly prejudicial to the health of teacher and pupil, especially when as is often the case, the metal is red hot. The carbonic acid and carbonic oxide gasses which then leak out rapidly through the pores of the iron, soon render the atmosphere of the school-room absolutely deadly. A paper was recently read before the French Academy in which this subject was very forcibly treated. The author said that in a certain epidemic which raged in Savoy, those only were attacked who had cast-iron stoves then recently introduced.

A CHINESE SCHOOL-ROOM.—Hon. Wm. H. Seward says in his "Travels Round the World:" "We were particularly interested in the school-room (Canton), where the boys are educated; the girls are not educated at all. With its arrangements of tables, desks, blackboard, books and slates, the apartment might be mistaken for a school-room at home. All the pupils read the lessons of every sort aloud, and all at once, and commit them to memory. The pedagogue differs but little, except in dress, from the schoolmaster the world over. The master in this present school is an ingenious as well as a spirited man. The instrument of his discipline lay on his desk, and he did not hesitate to admit that he frequently employs it, believing probably in Solomon's instruction, "he that spareth the rod hateth the son." The Chinese boys have all the manner and modesty of well-bred children. One bright-eyed little lad of eight years, with great reverence, asked Mr. Seward's "honourable age."

There are at present 400 students at Vassar College.

Photography is to be taught in the Girl's High School in Boston.

Ten Iowa counties have elected women school superintendents for the present year.

The New Jersey Senate has passed a bill making women eligible to the office of school trustee.

Union College has received notice of a new endowment of $100,000, from a gentleman whose name is for the present withheld.

The School Committee of Chelsea, Mass., has ordered that no teacher shall inflict punishment upon a pupil until after consulting with the sub-committee for his school.

In Scotland, one young man in every thousand of the population goes to College; in Germany one to every 2,600; in England, one to every 5,800.

The nomination of several ladies for membership on the Boston School Committee has been received if not with enthusiam, yet with a great deal of favour.

A Japanese paper says that three hundred and eighty-two Japanese students are studying in Europe, America and China—of these five are women.

Austria has 59 well trained normal schools, with 581 teachers and 3,500 pupils; Prussia, 62, with 3,614 pupils; Saxony, 18 finely-trained normal schools; Belgium, 30; Wurtemburg, 10; and Bavaria, 10.

6. EDUCATION IN QUEBEC.

The Minister of Public Instruction, for the Province of Quebec in his report for the year 1872, and part of the year 1873, states that the number of schools, and the number of pupils attending them continue to increase, and progress is shown in the efficiency of the instruction imparted therein. He complains, however, that the children do not attend school for such a sufficient length of time, but leave it for labour, at the very time when their developed intelligences would enable them to study with profit. To remedy this, he thinks some means should be devised of compelling children to attend school for a longer time,—they should at least be sent there for several winters, during which season their services are not indispensable. He also thinks it desirable that the school corporations should establish night schools, in the rural centres, which, from the comparative density of the population, would probably be well attended. He urges the necessity for founding public libraries, for the use of each municipality. These libraries should consist of good works on agriculture, horticulture, abridged histories, ancient and modern, travels, treatises on arts and manufactures, &c., and he intends to ask from the Legislative Assembly a grant to aid in the formation of such libraries. He recommends that here, as in Ontario, should be established a depository of school books, &c., which might be circulated at reduced rates. He reiterates the statement of the slow progress made especially in the country schools attributing it to the irregularity in the attendance of the children, which is itself partly due to our rigorous climate, and also frequently results from the fact of the necessity in which their parents are often placed of keeping their children at home to aid them in their labours at certain seasons. The importance of Normal Schools is alluded to, and the necessity for them is insisted upon; for, as has been well said, "in proportion to the ability of the master is the usefulness of the school." The necessity of a School of Science applied to the arts, such as exists in connection with McGill College, and such as the Hon. Mr. Chauveau endeavoured to establish for the French population, is pointed out, and it is announced that such a school will soon be established. It is confessed that hitherto Lower Canada has not sufficiently occupied itself with practical and industrial schools for the mechanical engineer. He saw the small number of young men who are desirous of studying engineering, &c.; though it, and kindred professions requiring practical preliminary knowledge, hold out the most promising, and even brilliant future, in proportion as the different branches are multiplied, and require competent men to carry them on.

IV. Papers on Education in Ontario.

1. PUBLIC SCHOOL TEACHERS' SALARIES.

The programme of examination under the New School Act is doing its work, cleaning the ranks and shutting the doors of the profession against those who have not beennor would not be a benefit to it intellectually, but who only have been and would be a financial clog and a barrier against the raising of the efficient teacher's salary. And now as the amount of teachers is not likely to exceed the demand for some time to come, it remains for the teachers to be united in asking for and insisting on getting something like fair play. It may be asked what is a fair salary for a public school teacher? In answer to this we should say, it should be at least from forty to sixty per cent above their present rates; but it is clear that if the advance be not firmly and unitedly asked for there will be very few of our school trustees to make the advance what it should be. I have no doubt but there are some who would make the advance voluntarily, but they are scarce in the country; on the contrary many of them think they have done their duty if they have succeeded in getting an application from the cheapest teacher in the Province, and then banter him down and engage him for twenty or thirty dollars less than his already very small figure. It is not the teachers alone who suffer by such men being in office, but the chlldren, parents, society at large, and even themselves share the bad effects of their mistaken economy. Their motto is not to advance the interest of their school, but to be foremost in raising the hue and cry "Keep down taxation!" They might add to their illustrious motto "Keep all you can from the teachers, they have no friends!" Such men as this, backed up by others of the same stamp, with plenty of material to back up, have whittled the teachers' salaries down to such insignificance, but these gentlemen need not longer have the whole making of the bargain. Those teachers whose abilities have been sufficient to keep them on the upper side of the examiners' sieve, have more chance of an advance on their salaries than the most sanguine could have dreamed of a few years ago.

If the people were not able to pay the teachers a good fair salary I would not advocate it; but when our farmers are putting their $600 or $1,200 a year in the bank and still grumble about their "enormous taxes" while the teacher only gets enough to buy him potatoes and salt, I can't help calling the teachers' attention to the fact that it is high time, that they should stand by each other, and be more determined in demanding fair remuneration for their services.—*Fair Play : Waterloo Chronicle.*

2. MUSIC IN OUR PUBLIC SCHOOLS.

Giving all due credit to the United Board for the judicious manner in which they have managed the educational affairs of the city, and for the generous sacrifices of time and labour they have made to promote the general interests, the end of the year must be considered a very proper time in which to make a suggestion, or to enquire if all has been done that can be done in the way of improving those useful institutions over which they preside with so much wisdom and prudence. The efforts that are being made to provide proper accommodation for the hundreds of children that seek admission every year into the public schools are deserving of praise. This is a work in which the Board of Trustees may count with certainty upon receiving the sympathy and support of their fellow-citizens. We are happy to note the many signs of wealth, taste and progress that meet the eye at every turn as one walks about the city, and the public improvements that are being made under the direction of the Board of Aldermen, but in no direction might improvements be projected more conducive to the public health, morals, taste and intellectual progress than in that of the style of our school architect-

ure. In the neighbouring Republic, the beauty and convenience of their school edifices are among the first features that catch the eye of the stranger or visitor. Even in places of less note than the City of London, we will find the school buildings erected for the free education of the children of all classes, among the best and most beautiful of their public edifices. The sites are selected with great care; the design, in most cases, is an evidence of architectural taste and the public spirit of the people, while upon the furnishing and internal arrangements nothing has been spared that may conduce to the comfort and convenience of the pupils, cultivate their taste, and promote their progress. We are not yet in a condition to compete with the people of the United States in these matters, but the Board of Trustees might very properly ask themselves: "Has our plan of dealing with school buildings in the past been based upon principles of sound economy? Will our fellow citizens, when a few years more have passed away, pronounce a favourable verdict upon this style of school architecture, and declare them well adapted to the business for which they were designed? Will they approve of that extreme economy in the erection of buildings, the use of which is never likely to be dispensed with? Would it not have been more strictly economic in the erection and designing of these buildings to have had an eye to the prospective wants of the city as well as to the keeping down the school tax at the present?" Looking at what is being done in other parts of Ontario, we are forced to the conclusion that the Board of Trustees, in the erection of public buildings of this kind, have permitted a spirit of too rigorous economy to dictate their course in the past; and, therefore, we hope to see in the future a style of school architecture adopted more in accordance with the taste of the age and with the other public buildings of the city. We feel convinced the people will approve of a superior style in the erection of these houses, and also, that the same praiseworthy efforts, that are now being made to meet the wants of the city, in the matter of class-rooms, should be continued until all the appliances necessary for the children's improvement and the preservation of their health have been secured.

But we had intended to draw the attention of the Trustees to what seems a great want in our system of teaching the youth of the city. We believe we are correct in saying, that there is no organized system by which the pupils may be made acquainted with even the simplest elements of vocal music. We admit that to introduce this branch and have it treated in such a way as to make it productive of good, would cost something, and entail trouble. But the question is simply—would the advantages be at all commensurate with the additional outlay? Would such a course draw out and assist in cultivating a faculty of the mind necessary to its harmonious development? If the opinion of the most distinguished educationists in every part of the world be worth anything, then this branch ought never to be omitted from a well considered system of education. Every skilful teacher bears witness to the softening and humanizing effects of music upon the minds of his pupils, and the power it has in cultivating the gentler feelings of our nature, and in soothing the fiercer and more rugged dispositions. It also forms a delightful relaxation to the students, when their minds become wearied and their powers exhausted by severe and arduous studies. In the junior classes too, when the children get restless through the continued restraints of the class-room, a cheerful song, sung by all together, acts as a species of safety-valve, and they can be brought to resume their work and give their attention again to their teacher with renewed energy and even pleasure. The teacher who knows how to avail himself of this element of control will succeed in the management of a class without so often having recourse to the harsher methods of discipline employed in the government of the ordinary classes of pupils.

We must admit, that more attention has been paid to teaching as a profession, in several of the countries of Europe, than has yet been given to it in Canada. In these States, such as Switzerland, different German States, France and others, where teaching has been treated as a science, and elevated to the dignity of a profession, music, especially the art of singing, receives and has received special attention. In these schools it is never looked upon as a supernumerary, but as an essential and important part of the course, and scarcely a single teacher is to be found who is not competent to lead and instruct his classes in this branch. We hope to see the same plan pursued, and the same views entertained in Ontario, and in the mean time, that the Board will at least adopt such steps as may enable the pupils in all our city schools to obtain instruction in the elementary principles of vocal music—*London Free Press.*

3. COMPULSORY EDUCATION IN LINCOLN.

The County Council have adopted a memorial to the Legislature calling the attention of the Assembly to the fact that, notwithstanding the provision for compelling children to attend school, it was to a great extent inoperative, and asking that body to devise some means of remedying the difficulty. The portion of the memorial which referred to High Schools advised that the High School law should be so altered that no school which had an average attendance of less than thirty should have an assistant teacher.

V. Correspondence.

1. RESIDENT *versus* RATEPAYER.

To the Editor of the Journal of Education.

SIR.—I ask a place in your columns for a few words in advocacy of a change in the wording of a portion of the School-law, which forms the subject of a petition extensively signed in this part of the County of Carleton, the substitution of the word "resident" for "ratepayer" in describing those whose children are entitled to attend the school in each section.

As at present worded the law admits of families not properly belonging to a section, forcing their children in an already over crowded school, by a legal fiction which may enable the parents to appear as "ratepayers" in a section where they have no real place. This is felt as a grievance, and tends to impair the well being of the schools. The use of the term "ratepayer resident in the school-section" would obviate this inconvenience, and I earnestly hope that in order to avoid misunderstanding such alteration may be made.

I am Sir,
Yours respectively,
CHARLES PELHAM MULVARY, M.A.,
Member of Board of Examiners for County Carleton.

Huntly, January 29th, 1874.

2. PRAYER IN SCHOOL.

To the Editor of the Journal of Education.

SIR.—The universal desire of men to be considered good; that prayer is a sign of goodness; the difficulty of proving the contrary, together with the "recommend," possibly contribute to induce some men to depart so far from the plain advice to pray in their shut closets. I would have a far higher opinion of my neighbour's goodness, if I accidentally stumbled on him at his prayers in his own room, than if I went, after a four weeks' announcement in the public papers, to hear him "lead off" at the dedication of a cathedral. On my own part, I heartily thank the Council of Public Instruction for its thoughtfulness in merely *recommending* the rite. Had it made prayer compulsory, I must have chosen resignation or hypocrisy. The "recommend," while it greatly encourages those teachers prayerfully inclined, leaves free those who are more scrupulous about business prayers. As our necessitties and emotions are not only unlike, but do not recur precisely at nine in the morning and four in the afternoon, we cannot conscientiously pray at these times. As words are supposed to represent thoughts and emotions, if these are wanting, prayer is formal, false and hypocritical. To tell a man what to say, and when to say that what to God, needs only to be mentioned to become ridiculous.

Even our Lord's Prayer cannot, in my opinion, be used at all times and by all persons:—"After this manner pray ye," shows that it can be varied to suit conditions. "Give us each day our daily bread" would be absurd after we had just got it; it is a morning prayer. If we pray for the bread of to-morrow, then we are "taking heed" for the things of to-morrow, against which we are cautioned. "Forgive us our trespasses as we forgive those that trespass against us," if we still retain aught against others, we are asking God to retain *our* sin. I have not used this form of prayer in many years, because I still had something against somebody.

JOHN IRELAND,
Teacher,
6, in Pilkington.

VI. Papers on Practical Education.

1. SCHOOL-ROOM ERRORS.

It is easier to find faults than to mend them. The merest rustic may pick a flaw in the laws of Solon or Justinian, and a person laying no claim to saintship may easily show up foibles and frailties in the lives of David and Solomon; and it shall be my *role*, on the present occasion, to portray, as best I may, some of the errors observed in the school-room. The illustrations have been drawn, in

the main, from my own observation. They may be less racy than carefully selected anecdotes, but they possess, at least, the elements of truth and reality, and serve my turn.

First then : *How many teachers instruct their pupils in the practice of deception?* The little mouse who lives in the wall behind the teacher's desk not unfrequently hears talk of this kind, just after the opening exercises : "Children, I expect we will have visitors to-day ; perhaps some members of the School Board will be here, and we must try and make a good impression, if possible. You may recite the same lessons to-day that we had on yesterday, except in reading ; we will read the piece that we drilled on last week. And I shall expect you to have on your good behaviour. If you can't walk straight for one day I'll see about it." Such lessons as this will be remembered and profited by through life. The dullest child at acquiring "book knowledge" will not fail to prove an expert under such tuition,

At the yearly examination of a graded school in Pennsylvania, a class in geography was called. A box was passed, containing slips of paper on which were written the names of the different States of the Union. The teacher explicitly announced that "if anyone in the audience doubted her veracity, they were at liberty to come forward, examine the papers and see that all was right." Each child was to draw from the box, and discuss whatever State he chanced to get. The class came off in triumph, not one failing to describe in detail his State. A lady visitor asked her son, as they went home, if Miss P——had been as particular with all their studies as she had been with geography. Then came the sequel. "Mother," said he, "don't you say anything about it, for we all promised never to tell ; but, you see, she gave each of us his State two weeks ago, and we've been practising on them every day since; so no matter what State we drew out of the box, every fellow was to go on just as if he had drawn the one he had been practising on." The soul of each child in that class had received a stain which his teacher will recognize in eternity.

Too much time is spent in preparing for special occasions. Earnest teachers must feel a degree of anxiety concerning the standing of their classes, and while they desire to conduct a genuine examination, may overdo the matter by way of preparing for it. Children, like older people, never do anything *well* unless they do it naturally ; and my observation is that special preparation for an occasion usually has the same effect on the appearance of a school that a borrowed costume has on the appearance of a person. Young ladies desiring photographs often place a higher estimate upon the *picture* than upon the *likeness*, and accordingly dress in an unnatural, not to say *fantastic*, style ; and the effect, if not hideous, *is* ludicrous.

When daguerrotyping, was quite new among us, a quaint lady went to get her likeness taken. The artist seated her in the candidate's chair in a very uneasy position, then extending her fingers with his own, he placed her hands horizontally across her chest, one directly above the other, drew back her chin, stroked each rebellious hair into right file, then stepping behind her, said : "Now, Miss, try to look *just as natural as you can.*". This is just what teachers often do with their schools when they are anxious that they should make a good appearance.

Many teachers fail to take sufficient interest in their pupils individually. Intermingled with total depravity are many amiable traits, many outcroppings of a kindlier and better nature. It is in these that we must sow the good seed, and they will not refuse to yield fruit to the waiting hand. It is not dangerous to love children. Human nature is pretty general, and we love those who love us. How quickly do we yield our own desires, and our own wills even, to those to whom we are united by the golden chain. I regard the sycophant with feelings of supreme contempt, but I feel that it is not beneath the dignity of the teacher to court the love of his pupils. "God so loved the world that He gave His Son," &c. Loved the world ! Loved those who constantly rebel while they feed upon His bounty. He is not afraid that His love will weaken His authority. He clothes the fields with flowers, illumines the midnight with the starry host, ladens the zephyr with rarest music, and showers His blessings all around us, to draw our hearts to Him before He lays the rod upon us. And we, learning from the open book of Nature, by our smiles and recognitions, by words of sympathy and words of cheer, may win over the hearts of those entrusted to us. "There is something in loving children, in caring for them and in guiding them, that bestows upon the soul the most enriching of its experiences."

Teachers should cultivate a fine sense of justice. The strictest integrity should pervade all their intercourse with their pupils. This is no less imperative in administering discipline than in granting privileges and awarding honours. "A false balance is an abomination to the Lord, but a just weight is his delight." This is no less true in the moral than the physical world. Teachers mould character ; and while all our boys may not be future Presidents or Legislators, many of them certainly will be future Jurors, and will be called upon to decide between man and man. Children when very young have a fine discrimination between right and wrong and it behooves us to be exact with them, more exact with ourselves, and to expect God to be more exact still.—*Mrs. W. L. Parkinson, in Kansas Educational Journal.*

Rev. Chas. Brooks, father of the State Normal Schools in America, was asked by a teacher this question :

"What shall I teach my pupils ?"

He answered—Teach them very thoroughly these five things :

1. To live religiously.
2. To think comprehensively.
3. To reckon mathematically.
4. To converse fluently ; and
5. To write grammatically.

If you successfully teach them these five things, you will nobly have done your duty to your pupils, to their parents, to your country, and to yourself.

Bad Spelling.—In a recent number of the Indiana School Journal, the editor, says that, while attending the State Institute at Vincennes, Ind., he offered a premium to any member who would spell correctly ninety-five per cent of the following words : "Emanate, surcingle, siphon, conferrable, repellent, transcendent, ellipses, resurrection, resistible, salable, incorrigible, refutable, indispensable, discernible, chargeable, ostentatious, caterpillar, tranquillity, admissible, tenet." The test was made, and singular to relate, out of the eighty-nine teachers present, but one was able to perform the feat. Thirty-nine misspelled more than half of the words, and one missed all of them.

LET OUR CHILDREN LOOK AT NATURE.

It is desirable that our schools shall give our children eyes, to see everywhere the million beauties and utilities with which the Creator has surrounded us, ears to hear, and souls to enjoy the harmonies that nature's great orchestra is ever playing, ability to utilize the forces of nature enfolded in which we live, to make the earth bloom with exquisite flowers, and opulent with rich harvests—in fine, it is desirable that our schools shall make a race of men and women, quicker of eye, stronger in mental grasp, and more unflinching in moral purpose than have been any which have preceded us. Or are *we* the ultimatum ? Did our parents give us the measure of our duty to our children in what they did for us ?

Kindergarten Education.—A friend of Kindergarten education thus defines its purpose :

It is to develop the child and all its faculties, while checking all propensities to evil, in a natural manner : "New Education" may be regarded as analogous to the treatment of plants by the gardener's art.

It is to associate children with children, in a pure atmosphere, amid pleasant surroundings, and under special guidance.

It is to afford children all rational enjoyment proper for them, to supply them with toys and games, to sing with them, to play with them—the toys, games, songs and plays being all covert instruments of instruction.

It is to promote children's healthful activity ; later to awaken their imagination gradually to the influence of the beautiful, the true and the good ; to encourage their imitative capacity ; to watch the development of their reason ; and to give those properties free exercise and a right direction ; in other words, to develop children from within, outwards.

It is to prevent any undue strain on children's powers mental or physical—to teach by means of object lessons involved in plays rather than by books.

It is to induce a well-balanced mind, to discern and bring out gently but surely, any latent aptitude for intellectual acquirements or manual skill.

It is to apply the maternal instinct intelligently, to make the conscientious mother in easy circumstances her child's true educator during its tenderest years.

It is to relieve parents of narrow means partially of the charge of their very young children for part of the day, and during that time to train them properly.

It is finally to prepare children for school, to fit them for learning more readily, to sow the first seeds that are to yield adults of a sound mind in a sound body—good citizens and true Christians.

VII. Monthly Report on Meteorology of the Province of Ontario.

1. Abstract of Monthly Meteorological Results, compiled from the Returns of the daily observations at ten High School Stations, for November, 1873.

Observers:—*Pembroke*—R. G. Scott, Esq., M.A.; *Cornwall*—James Smith, Esq., A.M.; *Barrie*—H. B. Spotton, Esq., M.A.; *Peterborough*—J. B. Dixon, Esq., M.A.; *Belleville*—A. Burdon, Esq.; *Goderich*—Hugh J. Strang, Esq., B.A.; *Stratford*—C. J. Macgregor, Esq., M.A.; *Hamilton*—George Dickson, Esq., M.A; *Simcoe*—Dion C. Sullivan, Esq., LL.B.; *Windsor*—J. Johnston, Esq., B.A.

STATION.	North Latitude.a	West Longitude.a	Elevation. a: Above the Lake.	Elevation. a: Above the Sea.	Barometer at temperature of 32° Fahrenheit: Monthly Means. 7 A.M.	1 P.M.	9 P.M.	Mean	Highest. Highest.	Date.	Lowest. Reading.	Date	Range. Monthly.	Greatest in 24 hours.	Date.	Temperature of the air: Monthly Means. 7 A.M.	1 P.M.	9 P.M.	Me'n	Mean Maximum.	Mean Minimum.	Mean Range.	Daily Range. Greatest.	Date.	Least.	Date.	Highest. Reading.	Date.	Lowest. Reading.	Date.	Monthly Range.	Warmest Day. Date.	Mean Temp.	Coldest Day. Date.	Mean Temp.	Tension of Vapour: Monthly Means. A.M.	1 P.M.	9 P.M.	Me'n.
	o	o	Ft.		Inches.											°	°	°	°	°	°	°	°		°		°		°		°		°		°				
*e*Pembroke..	45·50	77·10	....	423	.....	.....	.....	.....	.....	.....	.....	.....	....	....	..	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*f*Cornwall ..	45·0	74·50	137	175	29·6725	29·6429	29·7097	29·6750	30·221	9 p.m.	29	28·819	1 p.m.	18	1·402	·699	23—24	20·59	27·06	23·27	23·64	29·85	14·20	15·65	31·9	4	8·0	24	49·3	23, 31	−6·0	30	55·3	4	41·90	26	9·20	·103	·120	·112	·112
*d*Barrie	44·25	79.45	59	779	28·829	28·796	28·885	28·837	29·476	9 p.m.	29	28·193	1 p.m.	18	1·283	·704	4—5	23·03	30·79	24·56	26·13	41·06	19·94	21·12	33·3	4	8·5	17	54·9	4	−4·2	28	59·1	4	42·53	27	15·03	·125	·145	·126	·132
*k*Peterboro'	44·20	78·25	....	670	29·1257	29·1247	29·1710	29·1404	29·679	9 p.m.	29	28·457	1 p.m.	18	1·222	·522	7—8	23·35	28·39	22·75	24·83	31·59	13·56	18·03	32·6	4	9·1	8, 13	52·6	4	−5.5	27	58·1	4	41·66	26	7.63	·118	·117	·105	·113
*e*Belleville ..	44·10	77·52	72	307	29.5688	29·5414	29·5939	29·5680	30·086	9 p.m.	29	28·889	1 p.m.	18	1·197	·539	7—8	22·70	29·64	25·42	25·92	32·39	18·06	14·33	22·1	5	7·0	13	48·6	4	−1·0	27	49·6	4	44·50	26	7·66	·122	·154	·137	·138
*g*Goderich ..	43·45	81·42	....	715	29.1213	29·1234	29·1430	29·1282	29·716	9 p.m.	29	28·563	1 p.m.	18	1·153	·591	27—28	27·84	32·04	29·18	29·69	34·94	24·75	10·19	21·5	4	3·6	11	49·1	4	14·0	14	35·1	7	43·37	26	20·60	·135	·154	·144	·144
*h*Stratford ..	43·25	80·58	....	1182	28·5931	28·5938	28 6281	28·6050	29·185	9 p.m.	29	28·025	1 p.m.	18	1·160	·590	27—28	24·67	29·74	25·75	26·72	32·39	19·87	12·52	23·4	14	5·9	20	47·0	4	1·0	14	46·0	7	39·57	29	16·70	·124	·130	·124	·126
*h*Hamilton..	43·12	79·50	90	324	29·5326	29·5246	29·5563	29·5378	30·569	7 a.m.	29	28·853	1 p.m.	18	1·716	·779	28—29	28·33	34·6	29·09	30·67	38·67	21·66	17·01	30·3	4	4·5	29	56·3	4	6·7	28	49·6	4	45·26	26	19·26	·135	·165	·144	·148
*i*Simcoe	42·51	80·14	150	716	28·9825	28·9740	28·9527	28·9627	29·505	9 p.m.	29	28·371	7 a.m.	18	1·134	·521	9	27·13	40·01	30·31	32·48	43·79	19·65	24·14	36·0	1	10·0	27	57·8	4	2·0	14	55·8	4	50·93	29	17·66	·126	·209	·144	·160
*m*Windsor..	42·20	83·00	....	620	29·2904	29·2834	29·3134	29·2957	29·924	7 a.m.	29	28·692	7 a.m.	18	1·232	·608	27—28	28·07	35·28	30·53	31·29	37·56	23·52	14·04	25·6	4	5·8	24	57·5	4	2·7	29	54·8	7	46·10	29	13·97	·126	·136	·145	·136

Approximation. *d* On Lake Simcoe. *e* Near Lake Ontario on Bay of Quinte. *f* On St. Lawrence. *g* On Lake Huron. *h* On Lake Ontario. *i* On the Ottawa River. *l* Close to Lake Erie. *m* On the Detroit River. *k* Inland Towns.

STATION.	Humidity of Air. Monthly Means. 7 A.M.	1 P.M.	9 P.M.	Mean	Winds. Number of Observations. Surface Current. North.	North-East.	East.	South-East.	South.	South-West.	West.	North-West.	Calm.	Total.	Motion of Clouds. a North.	North-East.	East.	South-East.	South.	South-West.	West.	North-West.	Impercept.	Clear.	Total.	Estimated b Velocity of Wind. Monthly Means. 7 A.M.	1 P.M.	9 P.M.	Mean	Amount of Cloudiness. Monthly Means. 7 A.M.	1 P.M.	9 P.M.	Mean	Rain. No. of Rainy Days.	Duration in hours.	Depth in inches.	Snow. No. of Snowy Days.	Duration in hours.	Depth in inches.	Total Depth of Rain and Melted Snow.	Auroras. Class I.	Class II.	Class III.	Class IV.	Sky unfavorable, obs. doubtful.	Sky unfavorable, obs. impossible.	Sky favorable, none seen.	
Pembroke	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Cornwall.....	87	79	85	84	4	19	4	7	10	13	11	7	..	75	1	..	..	..	..	..	..	1	7	4	62	..	75	1·6	1·8	1·1	1·5	8·8	8·3	8·2	8·4	2	11·	·8770	19	175·	38·4	4·717	..	..	..	1	..	19	5	10th.
Barrie.....	96	83	92	90	4	8	17	1	1	4	16	10	14	75	2	2	..	..	..	..	1	5	4	59	2	75	1·24	1·28	1·44	1·32	8·92	8·32	5·64	7·63	1	.....	.....	17	.....	24·	2·4	..	..	..	..	..	13	12	
Peterborough	88	72	83	81	1	14	..	1	3	10	21	16	8	74	2	..	..	..	..	1	15	10	38	5	74	1·6	2·6	1·56	1·92	7·04	8·36	5·20	6·86	2	19·30	·3724	15	61·30	7·006	1·0730	..	..	1	1	..	10	13	22nd. III.; 25th, IV.
Belleville.....	93	89	92	91	3	1	11	13	17	8	15	5	2	75	..	..	..	..	1	..	11	3	48	12	75	1·1	1·2	1·2	1·2	6·6	7·2	7·1	6·95	4	16·	·753	13	43·	24·7	3·223	..	..	..	..	..	20	5	
Goderich	87	82	89	85	6	5	2	4	3	9	6	18	22	75	5	4	1	..	..	3	10	11	38	3	75	1·5	1·6	1·9	1 67	9·1	8·4	7·9	8·4	4	2·	·0637	17	49·	34·5	3·5137	..	..	..	4	18	3		
Stratford	90	77	86	84	12	1	6	4	5	9	11	7	20	75	5	..	1	1	2	..	6	7	40	13	75	1·9	2·8	1·7	2·13	7·4	7·6	7·6	7·5	3	14·	·5857	15	76·30	25·2	3·1057	..	..	1	..	..	21	8	25th.
Hamilton.....	82	78	86	83	2	17	..	3	1	19	26	7	..	75	1	5	..	..	1	14	17	3	30	4	75	3·32	3·76	3·12	3·4	6·48	7·04	6·04	6·52	3	.....	.....	10	.....	.....	4·6019	..	..	..	1	..	15	9	
Simcoe.....	79	79	81	79	..	27	..	5	..	1	3	39	..	75	..	1	1	21	..	20	..	3	..	29	75	1·5	1·4	1·5	1·47	6·9	7·1	3·0	5·7	2	20·	·8985	5	36·	14·00	2·2985	..	..	1	..	..	8	16	22nd.
Windsor.....	80	67	83	77	4	4	1	3	7	12	13	13	18	75	..	..	..	..	2	12	2	40	19	75	·96	1·68	1·0	1·21	6·8	6·7	6·9	6·8	4	..	·7145	5	.....	16·5	2·3645	..	..	..	..	..	16	9	

a Where the clouds have contrary motions, the higher current is entered here.
b Velocity is estimated, 0 denoting calm or light air; 10 denoting very heavy hurricane.
c 10 denotes that the sky is covered with clouds; 0 denotes that the sky is quite clear of clouds.
* Record of rain at Peterborough incomplete this month owing to an accident.

REMARKS.

Peterborough.—Wind storms, 3rd, 4th, 25th, 27th. Fog, 8th. Snow, 3rd, 10th, 12th, 13th, 15th—18th, 20th, 21st, 24th, 25th, 27th—29th. Rain, 2nd, 8th. Circle round the moon, 3rd, 6th, 26th. Auroras, 22nd, 25th. Sleighing, 17th.

Barrie.—Snow, 2nd, 3rd, 4th, 8th—11th, 13th, 14th, 17th, 18th, 21st, 23rd, 26th—29th.

Cornwall.—Lunar halo, 5th. First sleighing, 12th. Dry bulb thermometer lower than wet, 20th. Navigation closed, 22nd. Wind storms, 4th, 18th, 24th. Fog, 20th. Snow, 11th—29th. Rain, 3rd, 8th. Winter unusually early and severe.

Belleville.—Snow, 1st, 3rd, 8th, 11th—15th, 21st—24th, 27th. Rain, 2nd, 3rd, 7th, 8th.

Goderich.—Snow, 1st, 9th—14th, 19th, 21st—28th, 30th. Rain, 2nd, 7th, 8th, 16th.

Stratford.—Wind storms, 11th. Fog, 14th. Snow, 1st, 2nd, 8th, 9th, 11th, 16th, 19th—21st, 23rd—28th. Rain, 2nd, 8th, 16th. Mill pond frozen, 7th. Difference of monthly mean temperature from average (November) of 12 years—7°·38.

SIMCOE.—Meteors reported by other persons, but not seen by observer. Snow, 11th, 15th, 18th, 21st, 27th. Rain, 2nd, 8th. Winter set in 14th month very cold. Sky murky.

HAMILTON.—Snow, 1st, 2nd, 11th, 12th, 21st, 23rd—27th. Rain, 2nd, 8th, 23rd.

WINDSOR.—Meteors: one in E. towards N., 3rd; one in S. W. towards H., 12th; three between Auriga and Ursa Major, 13th. Lunar halo, 29th. Snow, 11th, 19th, 23rd, 25th, 26th. Rain, 2nd, 8th, 18th, 23rd.

VIII. Mathematical Department.

EXAMINATION OF PUBLIC SCHOOL TEACHERS FOR FIRST CLASS CERTIFICATES, DECEMBER, 1873.

(Solution of questions in Natural Philosophy, Algebra and Geometry)

NATURAL PHILOSOPHY.

1. Let S be the sp. gr. of the liquid, and s of the body. Then, since the weight of a cubic foot of water is 1,000 oz., the weight of a cub. ft. of the liquid is 1,000 S ounces, and the weight of a cubic ft. of the body is 1,000 s ounces. Let V be the volume of the body in cub. feet; and p the number of cub. ft. immersed, before any pressure is applied. Then, by the conditions of the question, we have

$$1000Sp = 1000sV,$$
$$\text{and, } 1000S\,(V-p) = 1000sV + m.$$
$$\therefore 1000\,SV = 1000V(2s) + m$$
$$\therefore 1000V\,(S-2s) = m.$$
$$\text{But, by the question, } S - 2s = \tfrac{1}{1000}.$$
$$\therefore V = m.$$

[This question, in which there is no difficulty, was solved by none of the candidates. G. P. Y.]

2. It is not necessary to answer the first two parts of this question, (*a*) and (*b*). With respect to the third part (*c*), we have $8 = \frac{1}{2}f$. $\therefore f$ is 16, and consequently one half of g.

3. Resolve the forces in the directions of AE and of a line at right angles to AE. We may take the side of the parallelogram ABCD as unity, in which case $AE = \frac{1}{2}$. The resolved parts in the direction of AE are,

$$\tfrac{1}{2},\ -\tfrac{1}{2} - \frac{\sqrt{3}}{3},\ \tfrac{1}{4} + \frac{\sqrt{3}}{12};$$

and the sum of these is $\frac{1}{4}(1-\sqrt{3})$. The resolved parts in the direction at right angles to AE are,

$$\frac{\sqrt{3}}{2},\ 0,\ -\tfrac{1}{4} - \frac{\sqrt{3}}{4}$$

The sum of these is $-\frac{1}{4}(1-\sqrt{3})$. It thus appears that the given forces are equivalent to two, which are of the same absolute magnitude, one acting in the direction of AC, and the other in a direction at right angles to AC. The resultant of these must necessarily be in the direction of the diagonal of a square described on AC.

4. Let T be the tension of the string, R the reaction at C, and W the weight of the rod. Also let the normal to the plane at C meet AB in F; and let G be the middle point of AC. In order that there may be equilibrium, the directions of the three forces acting on the rod must pass through the same point. Therefore FG is at right angles to AC. Therefore (4 I. E.) AF = FC. But the resolved parts, in a horizontal direction, if T and R must counterbalance one another. That is,

$$T\tfrac{AG}{AF} = R\tfrac{CG}{CF}.$$
$$\text{But AG} = \text{GC, and AF} = \text{FC}\ .\therefore T = R.$$

5. Let C be the centre of gravity of the two particles. Then $\frac{n}{m} = \frac{AC}{BC}$ Suppose that, in a time t, the one particle has moved from A to D, and the other from B to E. Then,

$$AD = \frac{nft^2}{2(m+n)}, \quad \text{and } BE = \frac{mft^2}{2(m+n)}. \quad \text{Therefore}$$
$$\frac{AD}{BE} = \frac{n}{m} = \frac{AC}{BC} = \frac{AC-AD}{BC-BE} = \frac{DC}{EC}.$$

This conclusion, that $\frac{DC}{EC} = \frac{n}{m}$, means that the centre of gravity of the two particles has not altered its position.

6. The portions of the rope, BC and CD, weighing 4 lbs. and 3 lbs. respectively, may be supposed to be collected at the middle points of BC and CD. But, by the law of the inclined plane, a weight of 4 lbs. on BC exactly balances a weight of 3 lbs. on CD. Therefore, since the portion of the rope DE weighs 1 lb. more than the portion BA, a weight of 1 lb. must be attached to A in order that equilibrium may subsist.

7. Since the inclinations of the planes AB and BC are equal, P, which weighs 32 lbs., will counteract 32 lbs. of the weight of W, leaving only 8 lbs. as the weight by which motion is produced. But the weight to be moved is 9 times as much as this; because 40 lbs. are moved along BC, and 32 lbs. along AB, which (since the inclinations of AB and BC are equal) is the same thing as 72 lbs. along BC. Hence the acceleration will only be one-ninth part of what it would be in the case of a body falling down BC by its own weight. Therefore (if f be the acceleration of W descending down BC and dragging P up AB).

$$f = \frac{g}{9} \times \frac{BD}{BC} = \frac{32}{9} \times \frac{9}{16} = 2.$$

Put $f=2$, and $t=1$, in the formula.

$$s = \tfrac{1}{2}ft^2,$$
and we get $s=1$.

ALGEBRA.

1. Let the rates at which the clocks A, B and C, go, be in the proportion of x^2, x, and 1. Then, when C indicates midnight, B has gone $12x$ hours, and A has gone $12x^2$ hours. Therefore, by the question,

$$12 \times 60\,(x^2 - x) = 2\tfrac{1}{180}$$
$$\therefore x = \tfrac{361}{360}$$

Now A's rate exceeds B's (which is the true rate) in the proportion of x to 1, that is, in the proportion of 3610 to 3600. Hence in 3600 seconds, or one hour, true time, A gains 10 seconds. The loss of C (in the last line of the question, by an obvious misprint, B is written for C) is in like manner found to be $9\frac{351}{361}$.

2 [Mr. Jeffers was the only candidate who solved this question correctly. The following solution will, perhaps, be more easily apprehended than that given by Mr. Jeffers.—G. P. Y.]

Let x=the number of leaps by which the hare is ahead of the greyhound.

$\left\{\begin{array}{l} 2y = \text{the length of each of the hare's leaps.} \\ 3y = \text{- - - - - - - greyhound's leaps.} \end{array}\right.$

$\left\{\begin{array}{l} \frac{12}{m} = \text{number of hare's leaps per second.} \\ \frac{9}{m} = \text{number of greyhound's leaps per second.} \end{array}\right.$

$2xy$=original distance between gr. and h.

From these data, it is obvious, that, in one second, the greyhound gains $\frac{3y}{m}$ on the hare. Therefore it takes $\frac{mx}{3}$ seconds to gain xy, or to reduce its distance from the hare to one-half what it was originally.

But, at this point, when the distance of gr. from h. is only xy, the gr. increases its number of leaps per second to $\frac{9n+m}{mn}$. Therefore, in the remaining part of the course, its gain on the hare per second is $\frac{3y\,(m+n)}{mn}$. Hence, it gains xy, or catches the hare, in $\frac{xmn}{3\,(m+n)}$ seconds. This (by the question) is less by t seconds than $\frac{mx}{3}$, the number of seconds in which, at its original speed, it would have gained xy on the hare. That is,

$$\frac{mx}{3} - \frac{mnx}{3(m+n)} = t.$$
$$\therefore x = \frac{3t\,(m+n)}{m^2}.$$

3. The first part of this question is too easy to need to be solved here. It was solved by most of the candidates; none of them were right in the second part. When a is zero, the theorem does *not* hold good. For instance, the equations

$$(m+n)\,pq = p+q,$$
$$(p+q)\,mn = m+n,$$

would, if a were zero, be satisfied by the values, $p=1$, $q=-1$; for, when $a=0$, $m+n=0$; so that the expressions on both sides of each of the equations would vanish. And yet 1 and -1 are not roots of the equation,

$$3x^2 + 2 = 0.$$

How comes it to pass that the theorem fails in this particular case; I leave this question for the consideration of students. A candidate for a First Class Certificate ought certainly to be able to explain,

4. Very easy book-work.

5. Too easy to require solution here. Proceed, in the ordinary method, by substituting vx for y; or, as was elegantly done by some of the candidates, add $\frac{y^2}{4}$ to both sides of the second equation; or, still more elegantly, as was done by some of the candidates, factor the expression on the left hand side of the second equation. And so on.

6. $1-y^2=(1-y)(1+y)=\left(1-\frac{b^2+c^2-a^2}{2bc}\right)\left(1+\frac{b^2+c^2-a^2}{2bc}\right)$

$$=\frac{a^2-(b-c)^2}{2bc}\times\frac{(b+c)^2-a^2}{2bc}.$$

$$=\frac{(a-b+c)(a+b-c)(b+c-a)(b+c+a)}{4b^2c^2}.$$

$$\therefore b^2c^2(1-y^2)=4x(x-a)(x-b)(x-c).$$

7. Too easy to need solution.

8. [The only candidates by whom this question was correctly solved were Miss Catharine Grant and Mr. Jeffers. The following is Miss Grant's solution. The assumption of x^2 to represent the rate of the train leaving Hamilton is judicious. G. P. Y.]

Let x^2=rate of first train between Hamilton and Oakville.

Then $\frac{16x^2}{15}$= - - - - Oakville and P. Credit.

Also $\frac{49x^2}{60}$= distance from H. to Oakville.

$\frac{16x^2}{15}\times\frac{21}{60}=\frac{28x^2}{75}$= distance from O. to P. Credit.

Also $\left(\frac{14x}{15}\right)^2$=rate of second train from T. to P. Credit.

$\frac{\frac{49x^2}{60}+\frac{28x^2}{75}}{20\frac{2}{5}}$ = time going from P. C. to Ham.=$1\frac{25}{60}$.

[a mistake for $1\frac{15}{60}$ G.P.Y.]

$$\therefore\frac{7x^2}{120}=\frac{75}{60}\quad\therefore\ 7x^2=150$$

$$\therefore x^2=\tfrac{150}{7}.$$

$39\frac{1}{2}-\left(\frac{49x^2}{60}+\frac{28x^2}{15}\right)$=Sub. $\frac{150}{7}$ for x^2 = 14 = distance from P. C. to Toronto.

[This is awkwardly put, but, apart from the form of the expression, is correct. G. P. Y.]

$14\div\left(\frac{14x}{15}\right)^2=14\div\frac{56}{3}=\frac{3}{4}$ hr. time from T. to P. Credit.

But train arrived at P. Credit 4.45 $\therefore$ it left Toronto at 4 o'clock, P.M.

[The following are the solutions of the three deductions in the Euclid paper. G. P. Y.]

6. $2AB.\ BF=BD^2+BA^2-AD^2.$

$2CB.\ BE=BD^2+BC^2-CD^2.$

$\therefore 2(AB.\ BF+CB.\ BE)=2BD^2.$

$\therefore (AB.\ BF+CB.\ BE)=BD^2.$

7. Because GADF is a quadrilateral figure described in a circle, the rectangle GB. BA is equal to the rect. FB. BD. In like manner, because FDEC is a quad. inscribed in a circle, FB. BD=CB. BE $\therefore$ GB. BA=CB. BE. But BE=BA $\therefore$ GB.=BC.

8. If x be the perpendicular let fall from C on the straight line drawn through A parallel to BD, x is the sum of the perpendiculars let fall from C and A respectively on BD. Therefore

tri. ABC=tri. CBD+tri. ABD=$\frac{1}{2}x\times$BD.

In like manner, if y be the perp. let fall from C on the straight line drawn through B parallel to AE,

tri. ABC=$\frac{1}{2}y\times$BD.

$\therefore x\times BD=y\times BD$, and $x=y$.

SIR—In the January number of the *Journal*, one of your correspondents, Mr. Sullivan, referring to the 10th problem in the First Class Algebra paper (July, 1873), describes it as a "well-known problem." The Examiner, by whom the paper was prepared, was under the impression that the problem was new. Will your correspondent be kind enough to state, through the columns of the *Journal*, where it has previously appeared?

EXAMINER.

IX. LIST OF CERTIFICATES

Awarded by the Council of Public Instruction, and by the County and City Boards of Examiners at the December Examinations, 1873.

1. *By the Council of Public Instruction.*

MALE.

First Class.

B.

County, &c.	
*Carson, Joseph S.....Simcoe.	*Parlow, Edwin D.....Ottawa.
*Duncan, William A.....Ottawa.	

2. *By the County and City Boards of Examiners.*

MALE.

Second Class.

A.

County, &c.	
*Armstrong, Geo. H. Middlesex.	McLeay, Donald.....Wellington.
*Barr, Robert.....Kent.	Owler, William. ....Haldimand.
*Clark, Harvey.....Ontario.	Pratt, Francis..... Carleton.
Corbett, Lewis C.....Middlesex.	Pyne, Albert R.....York.
Cornell, Daniel.....Lambton.	Rittenhouse, Wm. F....Lincoln.
*Jones, Edgar.....York.	Robinson, Templeton C.....Peel.
Johnson, Hugh D... Wellington.	*Rowat, Isaac S.....Simcoe.
*Lehman, William.....York.	Sharp, James A.....Hamilton.
Lee, Archibald.....Ottawa.	Sheldon, George W.....Kent.
Linton, Adam R.....Durham.	*Shepherd, Richard...Lambton.
Mundell, James M.....Perth.	Squier, Isaac C.....Hastings.
*Murray, Robert.....York.	Stephen, Alexander.....Grey.
McFarlane, David...Wellington.	Tilley, Wm....Lennox & Addington.
McGurn, Joseph S....Hastings.	Woodburne, Thos....Middlesex.

* *Normal School Students.*

B.

Allen, David S.....Wellington.	Kaufman, Jacob.....Waterloo.
Bingeman, Joseph....Waterloo.	Marshall, James... ..Hamilton.
Black, James C.....Elgin.	*Miller, Thomas.....Huron.
*Blackman, Theodore W. Haldimand.	McDonald, Ronald...Lambton.
*Brown, William G.....Ontario.	*McIlmoyle, John D.....York.
Clark, John W.....Oxford.	McIntyre, Alexander...Victoria.
Coleman, Harvey K.....Leeds & Grenville.	*McKellar, James.....Elgin.
Cornell, Warner.....Lambton.	McKenzie, William.....Perth.
*Crawford, Peter.....Kent.	McLaren, Peter.....Wellington.
Davis, James W.....Lanark.	*McRae, Alexander.....York.
Davidson, Wm.....Wentworth.	O'Donnell, Patrick J....Leeds & Grenville.
*Dean, James H.....Norfolk.	Quin, Andrew.....Grey.
*Dorland, Solomon M...Prince Edward.	Robertson, David.....Peterborough.
Dunsmore, Thomas...Lambton.	Robertson, Duncan.....Ottawa.
Eyre, Holmes.....Leeds & Grenville.	*Sinclair, Samuel B.. .... Elgin.
*Fletcher, Wm. M..Wentworth.	Smith, Daniel F. .....Perth.
French, Wm. J.....Ottawa.	Snell, Joseph.....Huron.
Godfrey, Thomas.....Perth.	Staples, Joseph. ..... Durham.
Greig, John.. ....Bruce.	Stewart, George.....Huron.
James, Moses A.....Durham.	Stott, William.....Durham.
Jamieson Wm.....Wellington.	Sutherland Alex. F.....Dundas.
Johnson, Fred. W ....Prince Edward.	Telfer John..... .....Lambton.
	Woodworth, Sandford C..Elgin.

* *Normal School Students.*

FEMALE.

A.

*Belfry, Frances.....York.	*Kahler, Louisa E.....York.
*Carter, Emma.....London.	Weatherston, Mary..Middlesex.
*Cornor, Mary M. L. J....York.	

B.

Barbour, Agnes E.....Perth.	*Lemon, Elizabeth.....Welland.
*Buckle, Hattie.....London.	*Mills, Mary Ann.....York.
Cameron, Catherine...Glengarry.	*Mitchell, Rachel.....Leeds & Grenville.
Coulton, Martha.....Hamilton.	*McCreight, Elizabeth.....York.
*Cooper, Maggie.....Welland.	*McIntyre, Agnes.....York.
*Davidson, Victoria.....York.	*Patterson, Lizzie C. ...Lincoln.
De Witt, Maggie.....Lincoln.	*Pearson, Elizabeth A....York.
*Eyres, Sarah J.....Durham.	Reid, Catherine.....Wellington.
*Hagarty, Sara.....York.	Smith, Louisa.....Carleton.
Harvey, L.....Hamilton.	*Stevenson, Eliza J.....Simcoe.
*Hughes, Caroline.....Durham.	*Vanderburgh, Alice.. Welland.
Kennedy, Jessie.....Hamilton.	
Kirkup, Annie F.....Leeds & Grenville.	

* *Normal School Students.*

X. NUMBER OF CERTIFICATES

Awarded by the Council of Public Instruction, and by the County and City Boards of Examiners, at the December Examinations, 1873.

COUNTIES AND CITIES.	Number who applied for			Total.	Who Received.					Total.
	1st Class.	2nd Class.	3rd Class.		1st Class.	2nd Class.		3rd Class.		
						Male.	Female.	Male.	Female.	
Glengarry	—	1	20	21	—	—	1	1	3	5
Stormont	—	—	13	13	—	—	—	1	7	8
Dundas	—	6	26	32	—	1	—	5	13	19
Prescott and Russell	—	—	19	19	—	—	—	4	3	7
Carleton	—	2	32	34	—	1	1	12	14	28
Leeds and Grenville	—	6	46	52	—	3	2	6	20	31
Lanark	—	1	30	31	—	1	—	4	13	18
Renfrew	—	—	33	33	—	—	—	4	3	7
Frontenac	—	—	25	25	—	—	—	6	7	13
Lennox and Addington	—	1	16	17	—	1	—	4	6	11
Prince Edward	1	6	21	28	—	2	—	11	8	21
Hastings	—	3	53	56	—	2	—	10	9	21
Northumberland	—	—	34	34	—	—	—	9	13	22
Durham	—	7	25	32	—	4	2	4	7	17
Peterborough	—	5	35	40	—	1	—	5	9	15
Victoria	—	3	58	61	—	1	—	21	8	30
Ontario	—	5	36	41	—	2	—	13	20	35
York	—	25	58	83	—	6	9	18	34	67
Peel	—	3	27	30	—	1	—	6	6	13
Simcoe	2	7	57	66	1	1	1	22	25	50
Halton	—	1	19	20	—	—	—	2	6	8
Wentworth	—	2	19	21	—	2	—	7	6	15
Brant	1	2	19	22	—	—	—	3	10	13
Lincoln	—	3	23	26	—	1	2	4	8	15
Welland	—	3	6	9	—	—	3	2	4	9
Haldimand	1	2	22	25	—	2	—	2	11	15
Norfolk	—	2	18	20	—	1	—	5	6	12
Oxford	—	4	33	37	—	1	—	10	15	26
Waterloo	1	3	23	27	—	2	—	5	4	11
Wellington	—	15	68	83	—	6	1	23	21	51
Grey	—	6	69	75	—	2	—	13	24	39
Perth	—	13	47	60	—	4	1	12	16	33
Huron	—	5	62	67	—	3	—	21	22	46
Bruce	—	2	56	58	—	1	—	24	9	34
Middlesex	—	11	90	101	—	3	1	23	29	56
Elgin	—	7	44	51	—	4	—	8	6	18
Kent	—	3	29	32	—	3	—	10	7	20
Lambton	1	7	50	58	—	6	—	12	23	41
Essex	—	4	24	28	—	—	—	8	10	18
Hamilton	—	5	24	29	—	2	3	—	8	13
London	—	5	8	13	—	—	2	—	4	6
Ottawa	2	4	2	8	2	3	—	1	1	7
Total	*9	190	1419	1618	3	73	29	361	478	944

* Eleven candidates applied, but wo of them withdrew after the first day's examination.

XI. Biographical Sketches.

1. E. C. STEWART, ESQ.

Mr. Stewart was born in the year 1837, in the Township of Oro, near Barrie, in the County of Simcoe. At an early age he went to Brantford, where, by his integrity, business ability and energy, he soon became partner with the late H. Racey, Esq., in the Brantford *Expositor*, a leading Reform journal. In 1861 he, together with Mr. Racey, became proprietor of the Hamilton *Times* and the success which has attended our journal is the best proof of Mr. Stewart's business tact and ability. In his business relations he had the full confidence of those with whom he had connection, and as a private citizen enjoyed the esteem and attachment of a large circle of friends—*Hamilton Times.*

2. HON. SAMUEL MILLS.

The late Hon. Samuel Mills was the second son of the late James Mills, one of the earliest settlers in Ontario and the son of a U E loyalist. He was born in Hamilton on December 1st, 1806, and received his education at the Grammar School here. Mr. Mills at an early period of his life was extensively engaged in mercantile transactions, as well as in various enterprises of milling and steamboats, and by prudence and steady persevering industry amassed an independent fortune. The position he at various times, and up to the day of his demise, held in the banking and other public institutions of the city, bespeak not only his affluence, but also the confidence that was reposed in him as a man of shrewdness, sound judgment, and strict integrity. He also filled various offices of public trust. For several years he was Chairman of the Board of Commissioners of the Provincial Lunatic Asylum; he sat in the Legislative Council of Canada as Life Member from January, 1849, until the Union; he was then called to the Senate by Royal Proclamation in 1867 as a Life Member. The fact of his having been selected for a seat in the Legislative Council during the administration of the late Lord Elgin by a Reform Government consisting of the late Robert Baldwin, Sir Francis Hincks, Lafontaine, and others, and by Sir John Macdonald's Cabinet for a seat in the Senate, is a clear indication that he possessed the confidence and approval of both political parties. Within the last year or two Mr. Mills has largely identified himself with the public charities of Hamilton—having deeded to the corporation of the city in trust a piece of land adjoining Dundurn, with a frontage upon York Street of more than two thousand feet for a cemetery—the burial lots to be disposed of by the trustees, and the proceeds of the sale to be applied to charitable purposes under the direction of the City Corporation. His last and crowning act was the erection, at his sole expense, of All Saints' Church, at a cost of about $14,000, for which he furnished the site and also provided a handsome organ, both at his own cost. Thus from first to last the name of the deceased has been associated with this city. Here he was born, here he lived, here he died, here he acquired his wealth, and here he expended it, investing his money in public roads and other enterprises of a local nature which contributed to the opening up on the country, and the growth and prosperity of his native place, and he has left an enduring monument in having erected a church for the edification of the living, and set apart a cemetery for the repose of the dead.—*Hamilton Spectator.*

XI. Schedule of Poor School Apportionments made by the Education Department in 1873.

County.	Section and Township.	Population between 5–16 in Section.	No. of Pupils on the Roll.	Average Attendance at the School.	Teacher's Certificate and Salary.	Raised for School purposes last year.	Assessed Value of Section Property.	Total Receipts of the School in 1872.	Grant made.	Remarks, and reasons for Grant.
Carleton	9 Gower North	70	64	56	Third $200	$266 16	$13,308	$389 74	$40	Erection of a new school-house, and furnishing it.
Grenville	21 Oxford	35	38	12	Special... 84	47 25	9,450	79 21	40	Section very small, and also poor.
Leeds	11 Crosby North	54	32	15 13/25	Third 190	60 00	3,365	96 58	60	School-house burnt, section poor and poorly populated.
	2 Front of Leeds	55	49	15	Third 180	80 00	4,000	116 25	40	Assistance to pay teacher, so that school can be kept open the whole year.
	1 Yonge Front	26	26	18	Third 216	50 00	5,040	63 40	40	Section small, and unable to pay teacher without assistance.
Lanark	U. 15 & 1 Bathurst, &c.	34	28	14	Third 150	105 00	12,350	169 56	40	Ratepayers poor; have commenced to build new school-house.
	1 Darling	22	14	5	Third 134	50 00	5,678	67 25	40	To keep the school open for the present year.
	4 Darling	45	42	13	Third 146	105 00	5,685	131 00	30	Section in poor circumstances; want assistance to build school-house.
	4 Lanark	47	43	18 19 8/213	Third 230	206 14	15,290	249 36	40	Building a new school-house; want the school kept open the whole year.
	2 Sherbrooke North	34	26	8	Special... 140	106 88	10,820	152 88	30	Only six or eight inhabitants that bear the burden of support.
	2 " South	31	27	18	Third 200	100 00	8,400	170 19	40	Help, to pay teacher, and build new school-house.
	4 " "	61	57	21	Second.... 160	100 00	12,648	199 50	40	Old school-house condemned; no funds for new one.
Renfrew	1 Papineau	55	45	32	Resident Priest	—	—	—	40	Majority of settlers poor; a number Indians and Half-breeds.
Frontenac	11 Bedford	30	23	6 1/60	Permit.... 192	57 14	4,395	108 77	30	Section poor; cannot afford to hire a teacher the whole year.
	1 Clarendon	30	32	15 31/122	Special... 192	67 52	5,227	144 52	10	Crops have been very light; people can hardly provide a living.
	2 "	30	26	12	Permit.... 180	57 24	3,457	126 66	20	Section poor; trustees repairing school.
	3 "	17	13	4	Permit.... 180	24 86	5,703	112 81	30	Section poor, and sparsely settled.
	3 Kennebec	49	36	7	Third	—	4,500	—	30	Section poor; trustees building a new school-house.
	7 and 9 Loboro'	27	33	19	Third 180	120 00	11,630	155 07	40	Section small, and land in Section very rough.
	4 Miller	10	12	7 47/120	Permit.... 180	69 37	1,951	137 60	20	Section small, and inhabitants poor.
	2 Oso	25	25	7	Permit.... 114	48 00	2,718	131 10	20	Section small, and inhabitants very poor.
	4 Oso	27	27	14	Second.... 140	62 60	2,100	62 60	30	Want assistance to pay teacher.
	3 Palmerston	45	45	13¼	Special... 180	105 26	8,000	172 91	20	Want assistance to pay teacher.
	13 Storrington	53	44	37	204	360 00	7,500	380 00	40	Have just built a school-house; require furniture.
	14 Storrington	42	51	16 1/20	Third 200	211 00	5,445	316 16	30	Want assistance to pay teacher, and money borrowed.
Lennox and Addington	1 Abinger	13	16	9	174	14 41	2,500	73 92	30	People very poor; not able to pay teacher or taxes.
	2 Abinger	25	27	16	Third 204	63 00	4,300	154 69	40	Section new and poor.
	2 Denbigh. &c.	27	19	11·5	Third 204	101 00	2,300	177 62	40	Section new; population small; people poor.
	5 Denbigh	27	24	12 28/83	Second.... 192	52 86	5,500	144 98	40	Ratepayers poor.
	2 Kaladar	120	104	20	Third 240	90 25	15,710	296 22	30	People poor, owing to barren nature of soil.
	4 Kaladar	12	12	4 3/40	Permit.... 132	47 29	4,500	133 46	40	Country thinly populated; and poor salaries on increase.
	8 Kaladar	10	9	6	Third 120	—	2,000	—	40	Very poor settlement, and very few tax-payers.
	13 Sheffield	45	34	5 1 1/120	Third 144	53 00	2,500	96 39	40	People poor; they find it difficult to keep school open.
	14 Sheffield	20	19	8 1 1/120	Third 144	30 00	1,575	41 62	40	Poor School Section, and thinly populated.
Hastings	2 Carlow and Mayo	50	31	12	Interim... 264	75 00	7,500	122 93	40	Section very poor; will have to close school unless they get some assistance.
	1 Dungannon, &c.	59	56	13†	Third 240	200 00	6,000	107 76	30	Want help to pay teacher; going to build two new school-houses.
	2 Dungannon, &c.	73	21	8 7/12	Third 240	202 55	9,446	307 92	30	Going to build two school-houses; population widely spread.
	4 Hungerford	84	84	35·2	Special... 228	118 19	7,715	189 74	30	People poor, and land not very valuable.
	19 "	50	43	No school.	Special... 168	134 00	7,000	159 00	25	Land poor; took their money to build a new school-house.
	21 "	36	34	12 1 1/120	Third 156	46 17	4,617	136 02	35	School Section very poor and small.
	1 Jones	24	24	15	Third 220	88 00	—	—	66	Large school population, and depending on voluntary subscriptions.
	3 Limerick, &c.	28	28	13	Third 216	60 00	4,890	121 91	30	Help to pay teacher, and build new school-house.
	3 Marmora	60	64	15†	Second.... 264	408 78	11,358	577 73	30	Increase in taxes; want help to get text-books for school.
Northumberland	26 Brighton	27	32	14 7 1/120	Third 240	100 00	6,358	111 00	30	Very poor, and School Section small.
	1 Murray, &c.	80	86	35 to 40	Third 365	60 05	40,000	128 13	No Grant.	Building a new school-house.
	21 "	126	127	75·	Second.... 400	416 90	50,595	549 54	Do.	School large, but receive small amount of tax.
	1 Percy	107	115	68	Second A. 400	550 00	29,000	656 40	30	Application returned imperfect.
Peterboro'	2 Cardiff, &c.	25	14	10	120	45 54	4,259	45 54	40	Section poor; want aid to buy books, &c.
	6 Douro	45	47	9 9 7/120	Third 233⅓	150 00	9,375	192 30	30	Land poor; school rates fall upon a few.
	9 Minden	16	16	9	Second... 192	70 98	5,250	100 48	No Grant	Section not able to pay teacher's salary and other expenses.
	11 "	42	56	—	192	188 00	4,238	—	40	Not able to pay teacher, nor finish school-house.
	8 Smith	—	—	—	Third 200	400 00	19,074	429 46	40	Just building new school-house; people very poor.
Victoria	7 Anson	51	36	24	Third 210	120 00	13,331	167 17	30	Section poor; want to enlarge and fence ground.
	2 Bexley	20	18	8	Third 152	160 00	14,830	229 42	50	Section small, and poor land; not much good.
	Brunel	—	—	—	—	—	—	—	50	New Section; building new school-house.

Victoria—(Continued)..	*7 Carden*	—	*18*	*12*	*Third*	*$480*	*$36 00*	*$10,000*	*$45 00*	*$30*	*Small Section, containing thirteen ratepayers.*
	1 Chaffy, &c.	*50*	*27*	*13*	*Third*	*270*	*33 00*	—	—	*75*	*Hired teacher for six months; depending on voluntary sub. to carry on school.*
	2 " "	32	18	$10\frac{26}{55}$	Third	140	19 00	nev. asd.	19 00	60	Section thinly populated; depending on voluntary subscriptions.
	2 Digby	18	22	10	Third	180	91 00	$4,000	97 00	40	To keep school open the whole year.
	2 Draper	39	37	8	Third	180	205 20	10,670	350 56	50	Help to pay money borrowed, and make improvements around the school.
	4 "	41	19	15	Third	140	163 11	9,315	168 11	40	Have built new school-house; unable to pay for it and teacher.
	5 "	30	23	6	Third	168	70 00	3,500	—	50	New school in a new settlement, and people very poor.
	7 Eldon	30	26	23	Third	156	68 81	11,225	75 40	40	Section small; land poor; school-house burned.
	8 "	80	69	22	Second	200	150 00	20,586	153 00	25	Building new school-house; cost $1,200.
	1 Laxton	28	34	$14\frac{113}{120}$	Third	220	88 60	4,980	134 10	40	People poor; small population; poor land.
	2 Macaulay	31	33	$10\frac{1}{2}$	Third	180	98 62½	6,575	125 89½	40	Section small, and thinly settled.
	3 "	40	28	$12\frac{1}{2}$	Second	220	—	6,000	—	50	Section in the "Free Grant District;" people very poor.
	4 "	26	17	7	Third	180	123 79	6,450	123 97	50	To pay teacher's salary, and keep school open the whole year.
	5 "	31	21	4	Third	160	118 82	5,320	168 82	40	Ratepayers poor; want help to pay for new school-house.
	6 "	35	None	—	—		50 00	44,000	50 00	50	About opening School; Section very poor.
	U. 1 Somerville	60	42	$16\frac{98}{118}$	Third	192	92 00	8,100	190 70	50	Three-fourths of inhabitants unable to pay school tax.
	1 Stephenson	51	7	5	Third	180	6 01	4,900	6 01	40	Very poor; building new school-house.
	2 "	41	29	$11\frac{1}{2}$	Second	180	106 00	6,780	235 93	40	Section in "Free Grant District;" settlers in difficulty.
	2 "	30	26	12	Third	168	65 00	11,000	—	40	Section very poor; want help to pay teacher, &c.
	3 "	35	24	19	Third	180	—	12,668	—	50	Section in "Free Grant District;" want help to keep school open.
	4 "	52	41	$24\frac{16}{52}$	Permit	216	50 00	9,486	80 64	40.25	Trustees about building new school-house; people very poor.
	5 "	60	20	$12\frac{24}{5}$	Third	180	—	7,120	—	50	Help to build new school-house, and pay teacher's salary.
	12 Verulam	46	45	14	Second	200	250 00	7,700	265 96	50	No funds; maps and school furniture required.
Ontario	8 Mara	65	40	$13\frac{5}{6}$	Third	144	265 00	16,000	265 00	40	New Section; people poor.
	6 Scott	111	97	$27\frac{105}{218}$	Third	300	557 75	28,575	864 84	50	Swamp land; $314 in debt for new school-house.
Simcoe	U. 13 Essa, &c.	42	42	$16\frac{1}{2}$	Third	180	111 27	15,000	166 93	35	Small Section; increase in salary.
	1 Medora	35	23	20	6 months	100	—	—	75 00	30	People very poor; School Section not yet defined.
	Township Monck	—	—	—	—		—	—	—	100	
	4 Monck	45	40	$17\frac{71}{118}$	Permit	210	94 61	9,656	251 85	40	Very poor; unable to maintain school without help.
	Township Morrison	—	—	—	—		—	—	—	100	
	Muskoka Mills	37	35	$18\frac{1}{2}$	Second	250	27 90	—	—	60	Children growing up in ignorance; too poor to pay teacher.
	2 Muskoka	26	23	$6\frac{44}{211}$	Second	350	236 70	7,890	376 67	40	A payment of 3 per cent. was necessary on school-house; very poor.
	Township Muskoka	—	—	—	—		—	—	—	100	
	Spence	41	—	—	—		—	—	—	50	No municipal organization; unable to collect taxes.
	1 Watt	35	37	21·8	Third	200	132 73	8,849	133 34	50	Unable to keep school open entire year.
	2 "	42	42	19	First	120	65 69	5,911	110 69	50	No assistance from Public School Fund; cannot get work at home.
	Township Watt	—	—	—	—		—	—	—	100	
Wentworth	4 Saltfleet	70	72	35·87	Third	275	277 70	36,500	400 14	75	Section very small; school in a backward state.
Norfolk	3 Charlotteville	37	37	12	Third		—	1,000	134 00	75	People too poor to raise money for themselves.
	14 "	55	48	$18\frac{37}{100}$	First	240	549 38	3,000.30	715 84	35	New Section, in newly-settled part, with few settlers.
Wellington	16 E. Garafraxa	49	47	24	Third	175	160 00	10,800	232 10	—	Section so small that they are not able to raise teacher's salary.
Grey	6 Artemesia	48	51	11	Third	300	120 00	24,550	188 16½	20	Small Section; increase in teacher's salary, &c.
	U. 2 Bentinck	46	51	21	Second	188	166 53	23,170	196 81	20	Small Section; a number of the ratepayers very poor.
	9 "	21	21	10	Third	200	182 57½	12,205	227 14½	20	Small Section thinly populated; want to enlarge the school.
	6 Glenelg	56	57	$13\frac{58}{120}$	Special	204	150 00	16,800	168 74	20	About ¼ of the lots non-residents; part of the receipts belong to R.C. sep. school.
	7 "	37	51	$17\frac{17}{24}$	Third	160	120 00	13,043	191 66	35	People poor; Section weakened by three separate schools.
	6 Melancthon	63	56	$12\frac{55}{120}$	Third	220	212 00	27,140	249 64	20	Section reduced in size; poor attendance; want to get a library.
	9 "	49	47	$17\frac{1}{2}$	Third	185	235 00	17,979	255 00	20	Help to pay teacher's salary.
	14 Normanby	68	67	$33\frac{111}{120}$	Third	290	117 11	16,030	232 11	35	Small Section; inferior quality of land; increase in teacher's salary.
Perth	12 Blanchard	27	33	17	Second	210	73 00	30,400	106 13	40	Section small; unable to keep school open the whole year.
	10 Downie Gore	45	32	23	Third	200	200 00	33,638	253 73	30	Want help to pay teacher, and debt on new school.
	10 Ellice	28	16	9	Third	200	270 00	13,490	296 50	50	Thinly-settled Section; only ten families go to school.
	15 Mornington	29	32	14	Third	160	114 00	9,760	137 68	50	Have not necessary accommodation.
Bruce	4 Bruce, &c.	80	87	24	Second A.	165	167 00	—	225 68	40	Impossible to engage competent teacher without funds.
	6 "	53	45	$11\frac{61}{100}$	Third	156	130 00	29,750	182 42	40	Section small and poor.
Elgin	9 Bayham	52	52	$9\frac{32}{100}$	Third	192	108 43	22,225	152 58	70	School-house too small; want to build a new one.
Kent	13 Harwich	62	53	42	Third	384	15 84	6,264	15 84	50	Section small, and people in very poor circumstances.
	1 Tilbury E., &c.	103	71	35	First	450	230 91	20,049	320 88	35	People very poor, in consequence of water encroaching on land, and washing
Parry Sound	2 Foley									50	(Letter.) [away fences.
	1 McKellar									44	Section very young, and very poor.
Additional Grant to Co. Bruce										123	
" Hastings										500	Addition to Public School Grant, in consideration of new Townships and poor Townships, in accordance with section 121 of the Consolidated School Act.
" Simcoe										300	
" Renfrew										450	

XIII. Miscellaneous.

1. LORD DERBY'S ADVICE TO BOYS.

One of the most characteristic and excellent addresses ever delivered by Lord Derby was given by his lordship recently to the lads of the Liverpool College, at the distribution of the prizes to that institution. Instead of delivering a learned homily, as the place and the occasion might seem to demand, he contented himself with giving a plain lecture, specially designed for the good of boys who are not very clever, and who don't get the prizes. "Do not mind," he said, "missing the prizes; the race of life wants endurance more than speed"—the start is something, but it is not much against steady, resolute determination to keep on running. "Do not any of you be disheartened," he continued, "because you think yourselves slow or stupid, even though you may really at present appear to have good ground for the belief." It might seem to some people as if he were wilfully indulging in a paradox when he declared his belief that intellectual sharpness is by no means the first qualification for a successful career; but he believed this was the simple truth. "Talent is the edge of the knife that makes it penetrate easily; but whether it penetrates deeply or not depends quite as much on the force applied to it as on the sharpness of the blade." This was indeed a nice Christmas-box for all the dull and true-hearted boys in the College. Lord Derby went on to tell them what are the magic spells of life, and to assure them that these spells are within the reach of the dullest boy. "Training and energy" are the two words that must be kept in mind, The boy must himself, in the first place, learn the thing by which he means to live; and energy may be indefinitely increased by fostering good physical health. Without a normally healthy condition there could, as a rule, be no good work; and this might be secured and preserved, speaking broadly, by living natural, wholesome lives, by preserving mind and body in just and balanced proportions, above all, perhaps, by the avoidance of all undue hurry and nervous excitement. Mental labour hurts nobody, unless it be in excess; what does hurt is fretting and fidgeting over a task. The advantage is with the man who takes things coolly, which, after all, is quite as much a matter of discipline as of nature. Keep yourself well with exercise, remembering that they who have not time for wholesome exercising will sooner or later have to find time for illness. Work in the morning rather than at night, if you have a choice in the matter; have some favourite intellectual pursuit outside the ordinary business of your life; read books, so that if your existence is parochial, they may inspire you with interests of imperial magnitude; and if you are rich and not dependent on any exertion of your own for a livelihood, guard against the peril in which you are placed, for self is the hardest of all masters, and pleasure is a thing which comes most to those who seek it least. Such was the sum of Lord Derby's advice to the boys at Liverpool; and both as to substance and form, his speech might properly be included in a popular reading-book for schools. It was sparingly but effectively lighted up with illustrations. He told the story of two great statesmen, one known to himself, who had both at school been habitual objects of good natured ridicule for their slowness of comprehension; with these he contrasted the Cambridge wranglers and Oxford double firsts who are struggling for bare subsistance, perhaps at wretched literary hackwork, or keeping sheep and jobbing in Australia for an employer, who very probably can neither read nor write. He pointed to the German army, which won its great success, not by the genius of the few, but by the microscopic attention to every detail of duty which has become a tradition in that service. The close of the address was admirable. "Right and wrong, honour duty and country, benevolence towards men, and responsibility towards the unseen Power by which human action is guided and controlled—these are not ideal phrases. In all countries and ages they have retained their meaning. They are realities which correspond with the deepest wants and feelings of our nature; and no man will feel himself utterly cast down who can say in his heart—'Whether I am happy or unhappy is not my chief affair. What most and first concerns me, is to find my work in life, to recognize it, and to do it.'"—*Christian World.*

2. WHAT'S THE USE?

"What's the use?" is the common saying with boys in regard to hard, distasteful studies. They mean to do something in life far different from anything that will require their dull, dry studies to be brought into play. But, leaving out of the question the mental discipline got from them, which is, after all, the main object of study, these very things may be turned to excellent account in after years. "My teacher made me study surveying, twenty-five years ago," said a gentleman, who had lately lost his property; "and now I am glad of it, for I can get a good situation by this means, and a high salary." A certain French king used to regret, with great bitterness, the deficiency of his education, when surrounded by men of learning and the highest culture. He reproached the memory of those who had been so indulgent of his idleness, and said, with bitter sarcasm: "Was there not birch enough in the forests of Fontainebleau?" Better a sharp strict master, who insists upon thoroughness in all you undertake, than a frivolous, superficial one, who permits you to slide over your lessons in an easy way, which you will regret with like bitterness in later years.

ALL right training consults the aptitudes of the mind, favours the natural bent of the genius, and charms the faculties into exercise. In the training of the young it is assumed that the disposition must be a natural growth, not a manufactured product; that every character has its own law of development; that you cannot deal with the lily as you can with the sunflower.

XIV. Departmental Notices.

THE EASTER HOLIDAYS.

In reply to inquiries on this subject, we beg to say that the Easter Holidays commence on the Wednesday next before Easter, and end on the Tuesday next after it, that is, School will close on the afternoon of April 1st, and commence on the forenoon of Tuesday, April 7th.

CORRESPONDENTS OF THE DEPARTMENT.

1. Letters should be addressed to the "Education Office," or "Education Department," and not to the "Normal School," which is a Branch of the Department, having its own letter-box at the Post Office.

2. Application for Maps, Apparatus, Prize or Library Books should (as stated on the face of them) be accompanied with the remittance named in the application. It should not be enclosed in a separate envelope, unless the fact is specially noted on the application. Very often the application (stating that a certain sum *is enclosed*) comes in one envelope and the money in another. This discrepancy should not occur without an explanation being given in the letter. The Post Office authorities do not now allow the form of application filled up to pass through the post as printed matter.

3. The name of the Post Office of the writer, or School Section, should invariably be mentioned in the letter. Frequently letters are received without either the date or post office being given in them.

4. Letters are often posted and registered at one office, while another one is mentioned in the letters themselves. This fact should be noted in the letter by the writer, otherwise the discrepancy causes confusion and inconvenience in the letter registry of money receipts.

CANADIAN SCHOOL MAPS AND APPARATUS.

Sets of the new series of maps of Canadian manufacture are now ready, and can be had, by school authorities, at the Educational Depository, Toronto, either singly, in wall cases, or on rotary stands, embracing Maps of the World, Europe, Asia, Africa, America, the British Isles and Canaan and Palestine. The Map of British North America (too large for cases) is mounted separately on rollers.

Terrestrial and Celestial Globes, of Canadian manufacture, of the following sizes: *three* (hemisphere), *six*, *twelve*, and *eighteen* inches in diameter, and on various kinds of frames.

SHORT ADVERTISEMENTS inserted in the *Journal of Education* for 20 cents per line, which may be remitted in *postage stamps* or otherwise.

TERMS: For a single copy of the *Journal of Education*, $1 12 per annum. Back vols., neatly stitched, supplied on the same terms. All subscriptions to commence with the January Number, and payment in advance must in all cases accompany the order. Single numbers, 12½ cents each.

All communications to be addressed to the Editor, J. GEORGE HODGINS, LL.D., *Education Office, Toronto.*

Printed for the Education Department by HUNTER, ROSE & Co., Toronto.