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JANUARY, 1899

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THE CANADA EDUCATIONAL MONTHLY

EDITOR: ARCHIBALD MACMURCHY, M.A.,
COLL. INSTITUTE, TORONTO.

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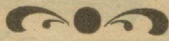
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Official Calendar

OF THE

Education Department



JANUARY:

1. New Year's Day.
2. By-laws for establishing and withdrawal of union of municipalities for High School purposes take effect.
3. High, Public and Separate Schools open.
4. Polling day for trustees in Public and Separate Schools.
First meeting of rural School Trustees.
5. Truant Officers' reports to Department, due.
10. Clerk of Municipality to be notified by Separate School supporters of their withdrawal.
14. Annual Reports of Boards in cities and towns, to Department, due.
Names and addresses of Public School Trustees and Teachers to be sent to Township Clerk and Inspector.
15. Trustees' Annual reports to Inspectors, due.
Application for Legislative apportionment for inspection of Public Schools in cities and towns separated from the county, to Department, due.
Annual Reports of Kindergarten attendance, to Department, due.
Annual Reports of Separate Schools, to Department, due.
16. Appointment of High School Trustees by Municipal Councils.
17. Provincial Normal Schools open.
18. First meeting of Public School Boards in cities, towns and incorporated villages.
Appointment of High School Trustees by Public School Boards.
24. Appointment of High School Trustees by County Councils.

FEBRUARY:

1. First meeting of High School Boards and Boards of Education.

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THE CANADA
EDUCATIONAL MONTHLY

JANUARY, 1899.

MCGILL UNIVERSITY.

BY HOCHELAGA.

THE opening of the McDonald Chemistry and Mining Building at McGill University on the 20th December, by His Excellency the Governor-General, marks the moment opportune for a brief review of the growth of that University and for some remarks upon its present prospects.

The event to which allusion has just been made suggests the reflection that, unique in this respect among Canadian Universities, McGill owes nothing to the State, but everything to the enlightened liberality of private citizens. As one stands on the time-worn steps of the old Arts Building, bearing the name of the first benefactor, the eye falls successively on buildings associated with the names of the merchant princes of Montreal—the Molsons, Redpath, Workman, McDonald, and the present noble Chancellor, Lord Strathcona and Mount Royal. And, as in the old Arts Building and its somewhat irregular extensions and additions we read the record of the University's past struggles, so in the group of stately structures which have sprung up around it, and in their unrivalled equipment, we see the testimony of its achieved prosperity and success and mark the prophecy of a brilliant future.

Founded under the will of the late Hon. James McGill, who bequeathed lands and money to the value of £30,000 for the purpose, the Univer-

sity was incorporated by Royal Charter in 1821. Its existence was threatened from the outset by vexatious and protracted litigation with the heirs of the founder, and it was only in 1829 that the teaching work of the University began. Nor was its safety then assured. The University records for the following thirty years tell a plain, unvarnished tale of crushing financial embarrassments and of almost insuperable administrative difficulties. But the noble efforts of the few undaunted spirits who supported it through these trials were not without effect. In 1855 the citizens of Montreal at last awoke to an appreciation of the value of the institution struggling in their midst, and with the appointment to the Principalship of Dr. Dawson, now Sir J. W. Dawson, C.M.G., F.R.S., the University took new life and vigor, and the history of its progress may be said to have begun. Dangers had yet to be met, innumerable difficulties to be overcome, financial crises to be stemmed and averted; but its resources were carefully nursed; its development, if slow and labored, was sure and in the right direction; and a firm foundation was laid for its future greatness. It is not too much to say—though it may be needless to say it in THE CANADA EDUCATIONAL MONTHLY—that for a period of forty years the name of the revered Emeritus Principal was inseparably connected with every step in the rise of the University, and, indeed with

every advance of Protestant education in the Province of Quebec.

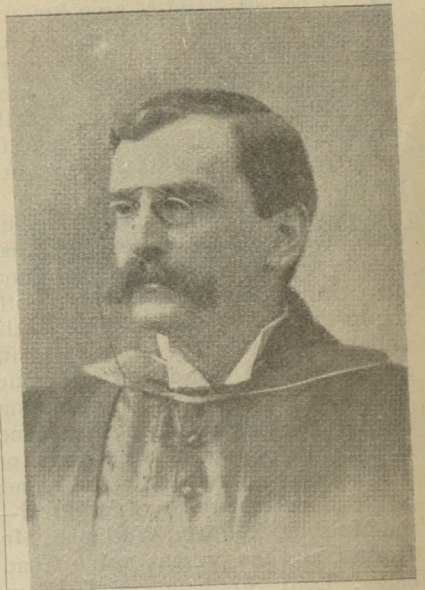
Leaping from 1855 to 1890 without more than noting during that period the firm establishment in 1878, after at least one abortive attempt, of the Faculty of Applied Science; the gift by the late Mr. Peter Redpath of the noble museum which bears his name; and the institution and endowment of the Donalda Foundation for Women by Lord Strathcona, the year 1890 naturally marks another epoch in the history of McGill. In that year the late Mr. Peter Redpath announced his intention of building the fine University library, for the maintenance of which he, and, since his death, his widow, have made generous provision. A bequest of the late Mr. Thomas Workman enabled the University to commence the erection of mechanical workshops. And Mr. W. C. McDonald,* princeliest of benefactors, began the series of remarkable gifts which will make his name revered in the ages yet to come, by commencing the erection of the magnificent Engineering and Physics Buildings, and by the endowment of the Faculty of Law. Other gifts followed apace; Mr. McDonald again, Lord Strathcona, and the late Mr. J. H. R. Molson being only chief among many benefactors. A large number of new chairs were founded and endowed; spacious additions were added to the overcrowded buildings of the Medical Faculty; all the new buildings were superbly equipped; and in every department facilities for teaching and research were offered such as could not have been deemed practically possible a year or two before. Moreover the Board of Governors were fortunate enough to secure as successor to Sir William Dawson, in the principalship, Dr. William Peterson, who had made his mark throughout Europe as one of the first Latin scholars of the time, and

*William C. McDonald is now a knight, and the honour was well bestowed.

had acquired a high reputation as a successful University administrator in the principalship of University College, Dundee.

That these rapid developments have borne fruit may be seen when we find that the number of students, which in 1885 was 564, has risen in 1898 to 1,072.

But it is impossible within these brief limits to do more than merely indicate the immense strides which have marked McGill's progress during



PRINCIPAL PETERSON

the last ten or fifteen years. Let us rather glance at what it is doing to-day.

McGill has long been famous for the excellence of the equipment, and of the curriculum provided in its professional faculties. The number of students in Applied Science has risen by leaps and bounds, and the unsurpassed facilities for research are attracting advanced students, not only from all parts of this continent, but from the Mother Country and from far Australia. In Medicine, with a very large

and ever-increasing school, it can look back on more than half a century of distinguished work. The Faculty of Law, under new conditions, is showing itself capable of filling an honorable position alongside of its older sister, Medicine. And now this new Chemistry and Mining Building, which, like the Physics Building, serves in a way to connect the Faculties of Arts and Applied Science, must be taken as another indication that, whatever the University authorities put their hand to, they endeavor to carry out on the completest scale possible.

The feature of the new building which is of most interest to the country at large is the magnificent Mining equipment, which is without parallel in any University. At a time when the industries of Canada, and especially those relating to Mining and Metallurgy, are believed to be reaching a new period of development, it is important to note the facilities which this department of the work at McGill will place within the reach of all whose inclinations lead them to take up Mining and its kindred pursuits.

The chemical laboratories also are furnished and equipped on the most complete scale possible, and, with the increased staff which has been secured by Mr. McDonald's generous endowment, including an additional chair of Chemistry, it may be confidently predicted that a school of Chemistry will now be developed in Montreal fit to hold its own with similar departments in any other University. Nor will the work of this magnificent building be confined merely to the training of the average undergraduate, the goal of whose ambition is simply the pass degree. McGill realizes the obligations which have been imposed upon it by the exceptional opportunities with which it is now provided, and will make every effort to maintain and extend the high reputation which in some departments it already possesses as a home of original research.

Already in the various branches of Medical study, as well as in Physics, Botany, Geology, Mineralogy, and Engineering, the names of many of its professors are known far beyond the limits of the University itself; and the recent additions to the equipment of other departments will make it possible for it to extend its reputation still further in this direction. The recent equipment of a laboratory devoted to Zoological research, under Prof. McBride, of Cambridge, marks an important stage in the development of the department of Natural Science; while the still more recent gift from Mr. McDonald of \$30,000, to supplement the existing equipment of the Electrical Engineering laboratories, is a sufficient sign of the thoroughness with which that part of the work of the Faculty of Applied Science is to be carried on.

It has been said that the new Chemistry Building, like the Physics, forms a connecting link between the Faculty of Applied Science and the oldest of all the Faculties in the University, the Faculty of Arts. There is an impression that the Faculty of Arts at McGill has not made the same progress as those departments which are, in many cases, offshoots from itself—the Professional Faculties of the University; but, while in point of equipment and accommodation the Faculty of Arts cannot compare with its younger sisters, it should be understood that this does not imply any inferiority as regards its work. It is when compared with the other McGill Faculties that the Arts Faculty may seem to show somewhat at a disadvantage; not when compared with the Arts Faculties of other Universities.

It is true that there is some need for development and that the specialization needed will not be attainable until further endowments are provided to found additional chairs in such departments as Philosophy and Literature; but finality in such a matter as

the work of the Arts Faculty of a University is obtainable only under ideal conditions of endowment and equipment, and, in the meantime, the McGill Faculty of Arts goes confidently forward with the work which lies to its hand. The magnificent building, which has recently been erected by Lord Strathcona, will furnish separate accommodation, including board and residence, for the women students of the University, who will continue, however, to be taught by the McGill professors. It is in contemplation also to erect dormitories for the men students, to meet the wants of the growing class, which is being attracted by the fame of the University, to come up to Montreal from outlying parts of the Dominion. Meanwhile the curriculum has been remodelled in such a way as to combine thoroughness of work on more or less uniform lines during the first two years, with a wide latitude of choice in the third and fourth years of College study. While the work of the Classical department was never more efficient or better appreciated than it is at present, McGill has this year fallen into line with other Universities in not demanding both Latin and Greek from all students who wish to take a College course. Options have been carefully provided both at the Matriculation Examination and in the various years of the curriculum. The increasing work of the Faculty in the department of the Physical and Natural branches of Science has led to the suggestion that a B.Sc. degree be instituted which shall be common to the Faculty of Arts and Applied Science, and this suggestion is likely to be acted upon at an early date.

The work of the Third and Fourth Years of the new curriculum is being revised on lines which will lead to organic connection between the Arts Faculty and the Professional Faculties, which are often entered by students on the completion of their Arts curricu-

lum. Thus a student entering the Faculty of Medicine will have had an opportunity of studying, while yet in Arts, the great sciences which, like Physics, Botany, Zoology, and Chemistry, form the fittest introduction to Medical study; he may even follow the more special courses in Physiology and allied subjects. The student who intends to enter the Faculty of Law will have his attention directed especially to History, including Constitutional History and (so soon as a much-needed additional chair shall have been founded) Economics and Political Science. Even the great subject of Roman Law will find a place inside the Arts curriculum as part of the History and Law group of studies.

While the Faculty of Applied Science will continue to be responsible for Engineering in all its branches, Architecture, and the various applications of Science to practical work, the student who wishes to specialize in Physics and Chemistry, or alternatively in Biology, will find his proper place in the Faculty of Arts, which is in reality the Faculty of Arts and Science.

Some prejudice has lately been excited by the action of our various Canadian Universities in raising the fees of Arts students. In Toronto, and at Queen's College, Kingston, the recent increase brings the sessional fee practically up to \$50, with extras for laboratory work; in McGill they have been raised to \$60, which is an altogether inclusive fee, in return for which the student can avail himself of any teaching, practical or otherwise, that is available in the University.

There is, of course, a more or less obvious reason why tuition fees in the Faculty of Arts should be on a somewhat lower scale than in the other Faculties. The supposition is that in most cases Arts students are pursuing learning for its own sake, whereas their fellows in the Professional Faculties are following a curriculum to

which they look to enable them to make their way in the world.

As President Loudon so well said in his recent Convocation address: "Any movement in the direction of withdrawing the privileges of University education from the poor, and placing them in the power of the rich, is a national mistake. It is surely undesirable to bar the intellectual progress of the talented son of the poor man by the prohibitive fee, it is surely wrong to set up a standard which discriminates against the poor and in favor of the rich, and it is just as surely a national loss if the talents of any man fall short of their legitimate development. . . . Of course it is a rough and ready way of meeting objections to say, 'If people want higher education let them pay for it.' Many of those who use this argument are the very persons who have everything to lose and but little to gain by its application. If education were a possession which a man might acquire and use for himself alone the argument might have some force, though it still would be a mistake and an injustice to bar out the poor man's son; but in education no man liveth to himself, and what he acquires redounds indirectly to the profit of the community and the nation as a whole."

But, when all is said, \$50 or \$60 cannot be regarded as a very high figure to pay for such education as our Universities are now offering. So long as security is taken that the poor student, of adequate capacity or attainments, is not shut out by inability to pay even this comparatively small fee, there is little ground for criticism or complaint against the action which our Universities have recently taken under stress of financial difficulties. In McGill the offer of a considerable number of Entrance exhibitions makes it possible for the student who may not be blessed with much of this world's goods to surmount the pecuniary obstacles to a University course.

It may not be out of place to point out that in one most important respect McGill is at a conspicuous disadvantage relatively to the University of Toronto. The latter finds its constituency ready at hand in the whole population of the Province of Ontario and of the West. An excellent public school system provides an ever-open way which leads from the threshold of the primary school to the doors of the University. On the other hand the home constituency of McGill is practically limited to the Protestant population of the Province of Quebec, or about one-sixth of the total population of the province. But the character of its teaching and the fame of its Professional Faculties exact a large tribute from the country at large. A considerable majority of the men students in the University at the present time have come up from other provinces and the United States, while in the Faculty of Medicine the number of undergraduates who have come up from Ontario alone almost exactly equals the number from the Province of Quebec. In the light of such results it is conceived that McGill may legitimately aspire to be *the national University of Canada*. That aspiration has been made possible in great measure by the devoted services of the Board of Governors, and the open-handed generosity of many of its members. For a long time past the merchant princes and the leaders of the professions in Montreal have accounted it a high honor to be elected to this Board; and, once elected, they have shown their public spirit by untiring devotion to the welfare of the University, by lavish gifts of service, time, and money. None have been more animated by this spirit than the present Board, and the friends of McGill are confident that nothing will be left undone which reasonably can be done to strengthen and improve the high position which it has attained in the rank of Universities.

THE PROFESSION OF CIVIL ENGINEERING.

BY STEPHEN M. DIXON, M.A., A.M.I.C.E.,

Professor of Civil Engineering in the University of New Brunswick.

(Continued from page 373.)

Rankine's definition of the engineer, as "he who by art and science makes the mechanical properties of matter serve the ends of man," indicates that an extensive education is needed for the theoretical training of the engineer, and we will now briefly examine the subjects necessary for the preliminary and non-technical part of this education.

Mathematics must come first. We shall certainly find no one to deny that a knowledge of elementary mathematics is necessary for the engineer. In fact, the first mathematicians were evidently engineers, geometry being studied for land surveying. Then a knowledge of elementary mathematics is also needed for the study of the next subjects to be taken up—physics and chemistry. The engineer must be a physicist as well as have an accurate knowledge of elementary chemistry. Unless he has a clear conception of the properties of matter he can never understand the theories of design; and it is by his knowledge of these theories that he is able to proportion the various parts of a structure so that they will be strong and stiff enough to bear the stresses which come upon them, waste of material on the one hand and failure on the other being thus avoided. The laws of heat and the effects of heat on water form the foundation of the instruction for students who wish to study steam engineering. Chemistry is needed before one can study mineralogy, geology, mining, and metallurgy, and we need a knowledge of it also in the study of cements, bricks, and building stones, in the analysis of drinking water, in the treatment of sewage, and in the manufacture of coal gas. An engineer who has charge

of iron and steel construction should have an accurate knowledge of the metallurgy of these materials, and though, of course, it is to the mining engineer that the study of mineralogy and geology is of the utmost importance, yet an engineer in charge of masonry construction must often call in these sciences to his aid. The study of the mechanics of machinery is needed for machine design and astronomy for surveying. A theoretical knowledge of electricity must precede any practical work in that subject. It would seem now as if we had mentioned all the sciences except two as particularly needed for the engineer's equipment previous to his technical training, and we cannot omit even these. Since the discoveries of the bacteriologists the science of physiology must be studied to show the sanitary engineer how to fight against disease; and, as engineers stand between capital on the one hand and labor on the other, the subject of political economy, a knowledge of which might have saved much trouble in the past, should therefore be added to all engineering courses. But it will not do to neglect the literary side of the engineer's education. The study of English is certainly a necessity, for what can be thought of a man's claims to education who is ignorant of his own language? French and German are also needed, since so much of both theoretical and practical work has been done in recent engineering by French or German philosophers and engineers. When to all these we add the technical subjects which must be studied we see that the course in an engineering college will need much hard work if it is to be carried to a successful conclusion. And we find that engineering

students for the most part readily do work hard. The close relation and interdependence of the many subjects makes the study of each more interesting. The engineering student who sees the practical importance of the Sixth Book of Euclid and of Trigonometry will naturally make more rapid advance in these subjects than the average arts students; and the engineering students of the many hours during which he can be seen to be really working hard both in the drawing-room and in the field, by his earnestness and activity, is found to have a good influence on the non-professional students who may be studying at the same college. Engineering has often been omitted from a list of the learned professions: might it not be urged that it is *The* learned profession?

All this work takes time and in some schools we find that plenty of time is given to it. In the French "Colleges des Arts et Metiers" work begins at 5.30 a.m. and goes on till 9 p.m., with only two and a half hours' intermission for meals and recreation—and there are no holidays! But even if we wish to take life more easily we can always find the necessary time by lengthening the period of the course. This is no disadvantage. The age of those entering in the practice of all the professions might well be raised, as it is found by experience that amongst men who have received the same training the older men do better work all along. And this points us to an object that the whole education of an engineer must aim at forming—good judgment. To the engineer it is of the utmost importance that he should at all times be able to give a clear and satisfactory answer to any question which may be submitted to him. From the first day on which the young engineer begins the practice of his profession totally unexpected problems will be continually presenting them-

selves which will usually demand an immediate answer. This answer, too, will not depend on theory alone; in fact, there will generally be a choice of several answers, each of which to the many theoretical men will seem equally good. A training, therefore, which does not enable the engineer to attack each question in a critical manner will lack one of the essential requisites.

But we should make a mistake if we were to imagine that even the best education that could be devised could in itself make a great engineer. Common sense is absolutely necessary, and education alone will not furnish it. The Scotch have long been noted for their zeal in the cause of education. We find a compulsory education act as early as 1496, and yet more than 250 years later the Presbytery of Edinburgh denounced the repeal of the penal laws against witches as "contrary to the express laws of God." In fact, as was pointed out in a recent address by Sir Benjamin Baker, the burning of witches went hand in hand with education in North Britain. Where was common sense?

Supposing a man has obtained the best training possible, what are his chances of obtaining satisfactory employment? Well, that depends almost entirely on himself. There are many who wish to practise engineering, but in this profession, as in all others, there is always room for the man who has the necessary training, determination, and energy. There has always been much talk about the overcrowding of the profession. In 1841 Mr. James Walker, in his presidential address to the Institution of Civil Engineers, thought it wise to warn the young engineers of that day that in his opinion there was every prospect that the demand for engineers would be likely to decrease, at least in England, where he believed all that was

needed in the way of engineering was then accomplished. Mr. Walker's solemn word of warning does not seem to have had much effect, for the number of members of the institution which in his time was about 400 has since increased over 7,000.

The following brief review of the work done since the beginning of the century will show how utterly groundless Mr. Walker's fears were and at the same time we can form an idea of the amount of work which will be begun at least within the next quarter of a century and which will certainly afford employment for very many engineers.

First with regard to railroads. In Great Britain and Ireland there have been constructed 21,000 miles at a cost of 5,000 million dollars (just ten times as much as was constructed at the time of Mr. Walker's address). The immense importance of these railroads may be learned from the fact that the gross receipts are 410 million dollars each year. The total mileage of Europe is 162,000 and of the United States of America 180,000. We can perhaps realize what this means if we remember that the bridges on the railroads of the United States would reach from New York to Liverpool. Canada has 16,270 miles of railroads all constructed since 1836. It is evident, therefore, on comparing the areas of North America with Great Britain and Ireland that much railroad work still remains to be done on our continent. In Asia we have hardly any railroads yet except some 25,000 miles in India, and in Africa we have only the Cape railways, about 2,000 miles. It will be many years also before we can say that there is no more work for the railroad engineer in South America, Mexico, and Australia.

Canal construction, which has been carried on as we saw from the earliest times, received a great impetus by the construction and subsequent financial success of the Suez Canal. The Kiel

and Manchester ship canals, the latter of which cost over \$77,000,000, will doubtless be followed by several others. Nor must the Canadian canals be forgotten. Constructed at a cost of \$80,000,000 and maintained at a nett loss of \$300,000 per annum, they afford satisfactory evidence that our paternal government can always find work to keep our engineers at home if that is necessary. In the near future too we shall probably see the completion of the Panama Canal, on which already work whose estimated value is \$125,000,000 has been expended and which according to a report of a special commission, which has spent four years investigating its condition, only requires \$100,000,000 for its completion.

The rapid strides which have been made in ship-building make it hard for us to realize that it is only sixty years ago that the first regular trans-Atlantic steamship service was opened by the "Great Western," whose average time between Bristol and New York was fourteen days. But ship-building and the even more prominent electrical engineering would each furnish matter for a much longer address than this; but attention must be called to the large fields of work being opened up to the engineer by the utilization of water power by means of enormous electrical installations and the way in which electrical is replacing steam traction on even some of the larger railroads in the United States. The first Atlantic cable is only forty years old and yet already in British cables alone is invested over \$200,000,000.

Passing over the important work that has been done in the construction of harbors and docks, a hasty glance at Sanitary Engineering must conclude this review. In 1848 the first Public Health Act in the history of the world was passed, and an attempt was made to revive Sanitary Engineering from the state of torpor in which it lay since

the time of the Roman Empire. But little work was done for some years, till the fearful mortality amongst the troops before Sebastopol compelled the British Government to take action. In three months 11,000 men had died out of a total of 32,000, and a Sanitary Commission consisting of an engineer and two doctors was sent to the Crimea. Within nine months, as the result of the Commission's labors, the entire army was in better health than it had ever been at home, whereas, in the French army, which has no Sanitary Engineer, there were over 40,000 men on the sick list. Of course it is in fighting the so-called "filth diseases," such as typhoid, that Sanitary Engineering is seen at its best. In fifteen years the death rate of Paris has been reduced from 26 per 1,000 to 21, of Berlin from 26 to 19, and of New York from 31 to 22. Let us see what this means. Taking the case of New York, we find a reduction of 9 per 1,000, that is, last year Sanitary Science saved the lives of 15,000 persons, and in the whole period of 15 years 120,000 lives were saved. That Sanitary Engineering has a great future before it, especially on this continent, will be seen from the terrible mortality from typhoid in our larger cities. In 1892 the mortality per cent. due to typhoid was 6.7 in Chicago, thirteen times as great as that of London, and fourteen times that of Berlin. Of course this has lately been much reduced by the improvements in the water supply, and will probably be still further reduced on the completion of the Drainage Canal—a gigantic project, now near its completion, and which has cost \$31,000,000.

That there will be work in plenty for the next fifty years must be evident from the above rough sketch, and we may be quite certain that the hundred Engineering Schools on this side of the Atlantic will continue to furnish annually a large and probably increasing

number of Engineers. For the Profession has a peculiar fascination about it which seems to draw men of all kinds of tastes to it. Even Huxley wished to have been an Engineer, as we learn from the following extract from an autobiographic sketch: "As a boy my great desire was to be a Mechanical Engineer; but the fates were against me, and when very young I commenced the study of medicine. But, though the Institution of Engineers would certainly not own me, I am not sure that I have not been all along a sort of Mechanical Engineer *in partibus infidelium*. . . . The only part of my professional course which really and deeply interested me was Physiology, which is the Mechanical Engineering of living machines.

. . . . What I cared for was the Architectural and Engineering part of the business, the working out of a wonderful unity of a plan in thousands and thousands of diverse living constructions, and the modifications of similar apparatuses to serve diverse ends." But we do not find that nearly all who were attracted to the study of Engineering have sufficient energy and patience in the struggle for a place in the profession, and as a consequence the number of those really trying for engineering work is not at all so great as we would expect from the number of students in the engineering schools. And so in regard to overcrowding engineering is no worse off than any other profession or business; and for the young engineer who has received a good training it will be a consolation for him to remember, in his early efforts, that if life is a struggle for existence in this profession certainly the fittest alone survive.

What facilities does our Province offer to those who wish to become Engineers? As will be seen from the Calendar of the Provincial University in connection with the Arts Course is a Department of Civil Engineering

and also one of Electrical Engineering. A four years' course leads to a diploma, and students receive instruction in all the subjects mentioned in the address as necessary for the training of an Engineer, and in addition there are sixteen lectures a week in technical work and each student spends sixteen hours a week during the whole four years at drawing or field work. It is hoped this year to have a Summer Camp for special work in Railroad Surveying. The course in Physics is specially arranged to suit Engineering students of both Departments, and practical work is done in well-equipped physical and chemical laboratories. The laboratories and draughting room are lighted by electricity and the City of Fredericton supplies electric power for experimental purposes. All Engineering students are encouraged to attend special classes in Electricity and electrical measurements. There is a well-equipped observatory where Engineering students make observations for the determination of Time, Latitude, and Azimuth, and the Engineering Department is fully supplied with modern Surveying instruments. The University contains a well selected though, at present, small number of modern technical works.

In conclusion, it might be interesting to note how those who have obtained diplomas in Engineering are at present employed. Since 1892 thirteen

students have completed the full course and obtained diplomas. Nine of them are at present engaged in Engineering work and the remaining four never tried to obtain such work, having immediately on the leaving the University turned their attention to other matters. Of the nine who are at Engineering work, one has recently been appointed Engineer-in-Chief to the Edmonton District Railway, one is a mining engineer in British Columbia, one is employed in canal construction in Ontario, one is employed in the Public Works Department at Fredericton, one is an electrical engineer, and those remaining are engaged in railroad construction. None have any cause to complain at the way things have turned out for them, and all have deserved well any success they may have met.

The secret of success in this profession has been told by Sir Robert Rawlinson. This eminent engineer, like the illustrious Telford, began life as a poor boy and a stonemason. In his presidential address to the Institution of Civil Engineers, 1894, he says that he ascribes whatever success he may have met with through life to the fact that he had always bent himself to his work, and, if he did not do all that was expected of him, it was because he could not do any more. It was impossible that he should have striven more than he had striven.

The teachers in Germany take a more active part in politics than their American colleagues. Several hold municipal offices; other ones even run for State offices and for the Reichstag. With the offensive odors of an Augean stable in our nostrils we might fitly follow their examples! They are all banded together in a strong federal union, have their own sick benefit

funds, fire and life insurance departments, and co-operative institutions. They have a special fund to provide for those teachers who are treated unjustly by their authorities, to provide them, in need, with board, lodging, and to defray court costs. How many decades will it take us here to get so far? Hats off, gentlemen, for this *fin-de-siecle* organization!

WHERE SUMMERS ARE LONG.

A Comparison of Canadian and European Summers.

J. GORDON MOWAT.

Perhaps no country suffers abroad from misconception in regard to its climate as does Canada. Mr. Rudyard Kipling's well meant but unfortunate allusion to the Dominion as "Our Lady of the Snows"—scarcely an appropriate one to a country where in east, west and south at almost any time in winter as large an area as England is bare of snow, and several times that area has but a scanty covering—is but a natural re-echo of the opinions which have been expressed during the centuries since the snowy gateway of the St. Lawrence was first entered by the French. Exaggerated ideas of the cold of Canada are continually being expressed in books and in leading periodicals, and often by generally well-informed men. A prominent member of the British Association, while sailing down Lake Ontario, referred to the scene he supposed the lake would present when *frozen over*. The late General Benjamin Butler, in an article in a leading American review not long ago, said that Canada could easily be invaded in winter by *crossing Lake Ontario on the ice*. A writer in a popular English magazine tells of the mercury being constantly below zero at Quebec for over four months every winter, whereas a period of two days when such is the case, even in that city, is uncommon. McCulloch's Commercial Dictionary of an old date refers to what are now our boundless wheat fields of the North-West as "situated in an inhospitable climate, and worth very little, excepting as hunting grounds"—an opinion happily well dissipated at the present day. Some of the queer misstatements made are, to say the least, amusing. Sir Francis Bond Head, a former governor of Upper Canada, in

a volume on the country, indulging in a little "romancing" about the climate, said, amongst other things, that often in writing his dispatches to the Home Government, in his warm offices in the Government House, Toronto, he has found the ink cease flowing, and on examination discovered a ball of frozen ink formed under his pen. Another writer on settlement in the mild Western peninsula of Ontario gravely tells of horses having to be cut out of the ice formed from the overflowing of the troughs at which they were being watered. And the London *Illustrated News*, on the occasion of Prince Arthur's visit to the lake region, comforts its English readers by the assurance that "Canada has plenty of bearskins and deerskins to clothe her own children and the Queen's son, too." Even the most serious and authoritative of publications make similar singular mistakes. Chambers' Encyclopædia, for example, in its article on North America, says that the basin of the St. Lawrence, *i.e.*, of the Great Lakes and the River, is, in winter, not only relatively, but absolutely, the coldest portion of the continent, its low level constituting a depression into which flows the cold, and, therefore, heavy, air of the interior of the continent. Unfortunately for this theory the basin is in general much milder on the same parallels of latitude than the Mississippi Valley. And, notwithstanding that December, January and February have been known to pass with the water constantly lapping the innermost wharfs of Toronto Bay, "Encyclopædia Britannica," in a tabular statement, unable to conceive the final opening of navigation in the harbor occurring one year so early as January,

sets down the opening as taking place in June! It is refreshing to turn from these arctic pictures to the impressions of America given in one of the great London monthly reviews by an Englishman who at St. Paul is assured that the date palm flourishes in the Red River Valley in Northern Minnesota, so very close to Manitoba, as that former gateway to our prairies, St. Vincent. These wrong ideas prevalent as to the Canadian climate have been exceedingly detrimental to the country, and probably have done more to retard immigration, especially of well-to-do agriculturists, than all other causes combined.

Many Canadians, too, influenced by foreign misconceptions so often expressed, underrate the relative merits of our seasons when compared with those of northern and central Europe. This wrong impression of the comparative length of the summer is aided by the fact that in the most thickly-inhabited portions of old Canada, such as southern and eastern Ontario, fall wheat harvest is generally over in July, and all cereals, excepting maize, are garnered but little if any later. Partly, too, the very considerable and sensible difference in temperature between May and June, and between August and September aids this error, though May in several Canadian localities is as warm as the English June.

Then, too, both at home and abroad, the impression made by a cursory glance at the maps of the two hemispheres tends to the disadvantage of Canada. The Gulf of Mexico, in the minds of most, is associated with the latitudes of the Mediterranean. New Orleans is contemplated as being in about the same latitude as Marseilles or Nice, and Algiers and Morocco as Cuba. The general absence in North America, through occasional severe winter frosts extending as far south as the Gulf of Mexico, of certain characteristic trees of southern latitudes fur-

ther confirms this impression. Hence we have "Far north Canada," and hence, too, even southern Ontario is mentally removed far up into the latitudes of north Germany and the south of England, and prejudged adversely whenever the length and generous warmth of its summers are thought of in relation to those of France, Austria, south Germany, and even of countries somewhat further north.

A little readjustment of mental impressions in regard to relative latitudes will do much to correct ideas in regard to our summer seasons, and also in regard to our winters, though it is always to be borne in mind that our position on the eastern side of a continent makes our winters colder than those of the west of Europe in the same latitudes, just as the winters of China, Korea, and Japan and the east of Asia generally are colder than those of similar latitudes on the Pacific coast of North America.

The Mediterranean, where it laves the delta of the Nile, is further north than New Orleans, while the same south shore of that sea curving past Tunis is as far north as southern Illinois, and only 250 geographical miles farther south than Pelee, in Ontario. The northern part of the Mediterranean is largely in the region of the Great St. Lawrence lakes; its most northern shore, in the Adriatic, corresponds in latitude with the north shore of Lake Huron, leaving Lake Superior the only one of the great lakes wholly north of the Mediterranean. Lake Erie in latitude corresponds with the Mediterranean off Barcelona, in Spain, and reaches south to within a few miles of the latitude of the north coast of the Ægean. Lake Ontario has the latitudes of the Gulfs of Lyons and Genoa washing the south coast of France and the neighboring coast of Italy.

Lake Huron's southernmost parallel is that of the north point of Corsica. The Adriatic nearly corresponds in lati-

tude, general direction and shape with Lake Michigan. Canadian Pelee, in Lake Erie, is a little farther south than Rome and lies in the same latitude as Braganza, Portugal; Valladolid and Saragossa, Spain; Ajaccio, Corsica; Adrianople, Turkey; and Mount Olfar, Asia Minor. Farther north than the southernmost land in Canada (lat. 41° $42'$) lies the whole of France and Austria-Hungary (including Dalmatia), three-fifths of Italy, and all of Turkey-in-Europe (with its Danubian valley) excepting Illyria, southern Macedonia and southern Thrace. Greece is the only country in Europe wholly south of Canada.

London, western Ontario, has the latitude of the Pyrenees, and of Vittoria and Pampeluna, Spain; Hamilton, that of Corunna and Bilboa, in Spain, and Perugia, in central Italy. An east and west line through Toronto passes through the sea slopes of Asturias, Spain, and through Toulouse, in the south of France, and leaves the far-famed Nice and Florence a few miles on its northern side. Ottawa and Montreal correspond in latitude with Milan and Venice, and are farther south than Lyons. Ontarians regard Lake Nipissing as "away up north," but its latitude is that of Poitiers, central France, and of the Lake of Geneva. Lake Temiscamingue on the Upper Ottawa, and Lake Constance, Switzerland, and Buda-Pesth, the capital of Hungary, are in the same latitude. Quebec represents almost exactly the central latitude of France and the northern verge of Italy, though in winter clad with a thick mantle of snow. Victoria, British Columbia, Port Arthur, on Lake Superior, and Chicoutimi, on Lake St. John, at the head of the Saguenay, have the latitude of Brest, and leave Paris farther north, and within fourteen miles of the 49th parallel, the southern boundary of Manitoba and the Northwest Territories. Prague, Bohemia, is a few

miles farther north than Winnipeg, and Brussels, the capital of Belgium, a similar distance north of Regina. The latitudes of sunny France do not fail at Calais and Dunkerque until, going north in Canada, Calgary, on the slopes of the Rockies, in the west, and in the east, Moose Fort on the tidal waters of James' Bay, are reached. London is fifteen miles further north than Moose Fort. Berlin is exactly as far north as Fort Albany at the northern extremity of Ontario. Battleford corresponds very nearly with Berlin and Leicester in latitude, Edmonton with Dublin, Port Simpson, B.C., with Belfast, and Dunvegan, on the Peace River, with Edinburgh.

As a whole, Ontario lies in the same latitude as France and Austria-Hungary, extending a little more to both north and south than either. These European countries cover the latitudes between Lake St. Clair and James' Bay. Switzerland lies in the Lake Nipissing and Temiscamingue latitudes, Germany in those between Temiscamingue and York Factory, Hudson Bay. The Saskatchewan Valley, Manitoba, and the southern and central part of British Columbia are in the latitudes of central and northern Germany. Great Britain stretches over all the parallels of British Columbia, from the latitude of Kamloops and Winnipeg northward. The St. Lawrence basin in Quebec, New Brunswick, and northern Nova Scotia, are in the latitudes of central and northern France.

The position of much of Canada in the most favored latitudes of Europe might well create a presumption that at least its more southerly portions possess a comparatively genial climate. This presumption is well sustained by the examination of the records of both the western and eastern parts of the Dominion. Even allowing for the well-known fact that the eastern side of every continent or large island in the temperate zone is colder in winter

than the western, the narrowness of America, compared with the eastern continent, and the existence of the great lakes as a check on the drift of cold from the interior, makes the St. Lawrence region generally much milder in winter than Chinese territory in the same latitudes. A discussion of the marvellous variety of climates, which, not only the Dominion, but several of its provinces, especially Ontario and British Columbia, and, within these, even very limited districts, present tempting and interesting as it would be, is impracticable within the space of this article. Enough may, however, be shown to prove that in at least a very important portion of Canada, embracing a population of millions, the climate possesses great and substantial merits, even though these are little known and appreciated abroad.

The Canadian area here selected for comparison is that between Lake Erie in the south and Lake Temiscamingue in the north, and from Montreal and the Lower Ottawa Valley in the north-east to Lakes Huron and St. Clair in the west and south-west. From north to south it measures about 450 miles and nearly 600 from north-east to south-west. Though many thousands of square miles of its surface are yet virgin forest, it includes all but a few score thousand of the people of Ontario, and has a population of about 3,000,000, or half the population of Canada. Though including the neighborhood of Montreal and a strip along the Quebec side of the Ottawa, it lies almost wholly in Ontario, and may for climatic comparisons be designated south-eastern Ontario, as one of the regions—south-eastern, north-eastern and western—into which the irregularly triangular province is naturally divided. In the elevation of its meteorological stations above the sea it ranges from nearly 200 feet at Montreal to about 600 feet around Lakes Erie and Huron, 800

to 1,200 in the Muskoka and northern inland districts, and to about 1,600 on the high interior sloping from Lakes Huron and Erie to a culmination on the uplands south of the Georgian Bay.

The comparisons made with Europe are in regard to the average length and heat of summer, a matter of very practical importance in the comfort of the population, and especially in regard to agricultural capability. The mean temperatures given are mostly derived from records of the Canadian and European Meteorological Services, and are for periods of fifteen years or more.

For comparing the duration of summer heat, it is not easy to choose, to the satisfaction of all, a standard of monthly mean temperature lower than which no month may average, and yet be regarded as a summer month. Lord Byron once, ill-naturedly perhaps, remarked that England was a country without a summer, but his remark would apply with equal truth to the British Columbian coast and San Francisco, and a long stretch of coast near the Golden Gate. A British standard seems for obvious reasons to be appropriate for comparisons of British seasons with Canadian, and as Englishmen, Irish or Scotch would resent the suggestion that the June of their respective countries is not a summer month, the June of a south of Scotland town, Lanark, may by way of compromise be selected as a standard. The mean temperature of June at Lanark is 54°. The town is inland and about 600 feet above the sea, or about the same as the Huron and Erie coasts.

The following mean monthly temperatures for the five warmest months at British stations are fairly representative of the climate of Great Britain:*

*Cheadle, in the middle latitudes of England, is about the same elevation as Port Dover on Lake Erie. Braemar is a little lower than Stratford or Guelph in Ontario, and Dartmoor slightly higher. The other stations are comparatively little above sea level.

<i>Scotland.</i>	May.	June.	July.	Aug.	Sept.
Lanark.....	48°	54°	57°	56°	52°
Aberdeen.....	49	54	58	57	53
Edinburgh.....	49	55	58	58	53
Braemar.....	46	52	55	54	50
<i>Ireland.</i>					
Armagh.....	50	56	58	58	54
Belfast.....	51	57	59	59	54
Dublin.....	51	56	59	60	55
Waterford.....	51	57	60	60	55
<i>England.</i>					
Carlisle.....	51	57	60	59	55
Cheadle.....	49	55	59	58	54
Leeds.....	52	58	62	61	56
Leicester.....	51	58	61	61	56
Oxford.....	53	59	62	62	57
London.....	53	58	61	63	59
Dartmoor.....	47	52	55	56	52
Brighton.....	53	59	63	63	59
Exeter.....	53	59	63	63	58

The following are mean monthly temperatures of places in Quebec and Ontario :

	May.	June.	July.	Aug.	Sept.
Montreal.....	55°	64°	69°	67°	59°
Rockliffe.....	52	61	65	61	55
Pembroke.....	54	64	69	67	58
Ottawa.....	55	65	70	65	60
Cornwall.....	55	65	69	67	59
Parry Sound.....	51	62	66	63	57
Gravenhurst.....	53	64	66	65	57
Peterboro.....	58	66	70	68	59
Kingston.....	53	63	68	67	61
Goderich.....	54	66	69	68	61
Durham.....	54	65	69	66	58
Stratford.....	55	63	63	65	58
Woodstock.....	54	65	68	65	59
Toronto.....	52	62	68	66	59
Hamilton.....	56	66	72	71	62
Stony Creek.....	55	67	70	69	61
Brantford.....	55	66	68	67	61
London.....	56	66	70	67	60
Dover.....	54	66	69	68	61
Simcoe.....	57	66	72	69	61
Windsor.....	59	68	73	71	64
Pelee.....	58	69	76	73	66

These figures scarcely require comment. Of the five warmer months, only May and September are as warm in the most southern localities in England as in the coolest Ontario localities south of Lake Nipissing. May in the Ontario region is almost everywhere warmer than the Lanark June, and in Essex, one of the Lake Erie counties, than July in Lanark and Edinburgh. September in much of settled Ontario is warmer than July in Scotland or Ireland, and in the warmest localities than July in London. The three midsummer months south of the Laurentians are warmer—much warmer—everywhere than in Britain; the excess in July over London is eight degrees at Ottawa in the north-east, and

14 degrees at Pelee in the south-west.

Both in duration and heat the summers of the Ontario region, therefore, surpass those of Britain. By the minimum standard of a south of Scotland June, Ontario southward from Lake Nipissing and the Upper Ottawa has very generally five months of summer heat to three in Scotland and four in Ireland and England. By the standard of an English Midland June (Leicester's, 58°) or an Edinburgh July, almost the whole Ontario region has four summer months against one or two in Ireland, Scotland and part of England, and even by the standard of a Leicester July (61°) much of Ontario has four months to none in Ireland or Scotland. If an average south-eastern Ontario June (64°) be selected as the minimum standard of a summer month, no part of Great Britain can be said to have summer at all.

To find parallels to the summers of Ontario, we must go south of the English Channel. All these summers are represented in France and Austro-Hungary; and the cooler ones also in Switzerland and Germany. The following are mean temperatures for places in these countries. The French meteorological stations are arranged according to latitude, proceeding southward.

<i>France.</i>	May.	June.	July.	Aug.	Sept.
Arras.....	55°	61°	64°	65°	57°
Paris.....	55	61	66	65	59
Lamballe.....	54	59	62	63	59
Brest.....	55	60	64	65	61
Epinal.....	55	62	66	64	58
Mirecourt.....	55	62	65	65	59
Orleans.....	58	64	69	67	61
Nantes.....	57	61	66	65	60
Poitiers.....	57	62	66	65	61
Bourges.....	57	64	63	67	61
Limoges.....	57	62	67	66	59
Lyons.....	59	66	71	69	61
Grenoble.....	58	64	67	68	61
Albi.....	60	65	72	73	65
Nice.....	61	69	74	73	68
Toul use.....	59	65	71	70	64
Montpellier.....	62	68	74	74	68
Lescar.....	58	63	68	67	63
Marseilles.....	61	68	72	72	66
Foix.....	56	62	67	67	60
<i>Switzerland.</i>					
Geneva.....	55	62	67	65	59
Berne.....	53	60	65	63	57

<i>Austro-Hungary.</i>					
Hermannstadt.....	57	64	67	66	58
Klagenfurt.....	56	63	67	64	57
Graz.....	59	64	68	66	59
Salzburg.....	54	62	65	63	57
Buda Pesth.....	59	67	71	69	61
Erlau.....	59	67	71	68	59
Vienna.....	57	64	69	66	59
Prague.....	55	63	67	66	59
Cacow.....	53	62	66	63	57
<i>Germany.</i>					
Munich.....	52	59	64	62	55
Bayreuth.....	52	60	63	61	54
Berlin.....	55	63	67	64	59
Hamburg.....	52	60	63	62	57

Comparisons of these European mean temperatures with those of Ontario may surprise the reader, showing, as they do, that Canada has climates which are as warm in summer as many parts of the south of France, and summers as long as in the central departments of that country.

Haileybury, in the Lakes Nipissing-Temiscamingue region, has a mean of about 63° for the three mid-summer months, and 59° for the five warmest. The latter mean is higher than that of Munich or Bayreuth, and the former than that of London or of L'Orient, and about the same as that of Berne and Brest ($62^{\circ}.7$).

Parry Sound, 64° and 60° for the two periods respectively, is as warm in the mid-summer months as Paris, and for the longer period as Epinal, in the famous Moselle Valley, or as Zurich or Salzburg. Gravenhurst, on Muskoka lake, one degree warmer than Parry Sound in both periods, corresponds very nearly, in summer heat and duration, with Geneva on Lake Lemman and Basel on Lake Constance.

Ottawa and Vienna (about $66^{\circ}.6$ and 63°), Montreal and Besancon, about ($66^{\circ}.6$ and $62^{\circ}.5$), Orleans in the Loire Valley, and Grenoble in south-eastern France, correspond very closely in the mean summer heat for either three or five months, and have the summer climate of very many of the Ontario counties.

Peterborough, in the eastern midlands of Ontario and farther north than Toronto, has a higher tempera-

ture (68° and 64°), differing but very little from that of Lyons on the Rhone, Toulouse near the Mediterranean, or Lisbon, Portugal, for the three mid-summer months, and being a little higher for both three and five months than Belluno, in north-eastern Italy.

Toronto is cooled in summer, especially in May and June, by the deep lake to the south, but the mean of a fifteen-year period of observation in the two cities shows it to be over 2 degrees warmer than Paris in the three mid-summer months, and over one degree warmer for the five warmer months of the year. It nearly corresponds in summer heat with Nancy, Poitiers, Limoges, and Foix, scattered from north eastern France to the base of the Pyrenees.

Hamilton may be considered hot in summer. It is as warm in September as Toulouse, and warmer in June, July and August. Its July (72°) is as warm as that of Marseilles, and only two degrees cooler than that of Jerusalem, and five cooler than that of Alexandria, Egypt. The mean temperature for the five warmest months ($65^{\circ}.4$) is that of Toulouse and Lyons; the mean of June, July and August ($69^{\circ}.6$) is about that of Albi, southern France, and Como, Italy, and falls short only one degree of that of Marseilles. Hamilton's summer fairly represents the summers of the famous Niagara peach district.

London, in the West Midlands counties, averages $67^{\circ}.5$ for the three mid-summer months and $63^{\circ}.7$ for the five months of summer. It is warmer than Vienna, and while the same for the five warmer months as Grenoble, about 100 feet lower in elevation above the sea, is a degree warmer for the mid-summer trio.

Foix, in the extreme south of France, and in the same latitude as London, Ont., and Durham, 80 miles farther north in latitude, are, respectively,

about 1,400 and probably about 1,500 feet above sea level. The mean temperature for the June, July and August period is $65^{\circ}.2$ at Foix and $65^{\circ}.7$ at Durham, while for the five warmer months of the year the means are, respectively, $62^{\circ}.4$ and $61^{\circ}.6$. Durham, it is worthy of notice, is warmer for latitude and elevation than one place in France.

Windsor (lat. $42^{\circ} 19'$), at the north-western angle of Essex county, which lies in latitude $41^{\circ} 42'$ to $42^{\circ} 20'$, between the shallow, readily-heated west end of Lake Erie and the equally shallow St. Clair. It is farther south than any point in France. Its mean temperature for the five warmest months of the year (67°) is that of Albi (70 miles from the Mediterranean and at the same elevation above the sea—600 ft.—as Windsor), and is half a degree higher than that of Lisbon, Portugal, and not half a degree lower than that of Marseilles. For the three mid-summer months its mean ($70^{\circ}.7$) is that of Marseilles; for July it is half a degree higher than that French city, which, though a degree of latitude farther north, is hundreds of feet lower in elevation.

Pelee Island, the southernmost township of Canada, may be said to have for six months of the year the heat of southern France; for May there is as warm as at Grenoble, and October ($54^{\circ}.1$) as at Albi, or as at Perugia, in southern Italy. October is warmer in Pelee than June in Lanark, Scotland, and May than Lanark in July, September than July in London, Berne or Brest, and June than July in Vienna, and August than July in Marseilles. Pelee in July ($75^{\circ}.7$) is warmer than Marseilles (72°), Nice and Turin ($73^{\circ}.8$), Constantinople ($73^{\circ}.9$), Jerusalem ($74^{\circ}.1$), and Tangier, Morocco ($74^{\circ}.8$); not one degree cooler than Naples ($76^{\circ}.5$), Rome and Algiers ($76^{\circ}.6$), not two degrees than Alexandria ($77^{\circ}.5$), nor five degrees than

Bombay ($80^{\circ}.8$), and is only about seven degrees cooler than Calcutta ($82^{\circ}.8$)*. It has the same mean temperature in July as Modena, Italy, and Kandy, Ceylon. Pelee is as warm as Marseilles in September, but is warmer in June, July and August. Its June is that of Nice, but Pelee is hotter there also in July and August. The mean of Pelee for the five warmest months of the year is $68^{\circ}.1$, which is higher than that of Marseilles ($67^{\circ}.8$), and a little lower than that of Nice ($68^{\circ}.8$). For the three mid-summer months the mean temperature of Pelee ($72^{\circ}.5$) is higher than that of Marseilles ($70^{\circ}.7$), Turin ($71^{\circ}.4$), or Nice ($71^{\circ}.7$), and is about the same as that of Constantinople ($72^{\circ}.6$).

It is France, probably more than any other country in Europe, that the agriculturally-occupied portion of Ontario resembles in summer heat. A longer summer season than much of the Ontario region has is, in France, to be found almost wholly in the south, and there only at comparatively low elevation above sea level. The resemblances are not merely in the mean heat and duration of summer, but also, generally, in the daily and seasonal ranges of temperature, the degree of variability of weather from day to day, or week to week, the large amount of brilliant sunshine, and very largely, too, in rainfall, and its distribution in short but tropical downpours, accompanied generally by heavy thunder and lightning. The average daily range of the thermometer in both countries varies much in localities; in some places, especially inland, exceeding 25 degrees; in others, along the coasts, being below 20, or even 15 degrees. The average daily maximum in July in the

*The following are North American mean temperatures for July, obtained from varying periods of years: San Francisco, $53^{\circ}.1$; San Diego, 67° and Los Angeles, Cal., $68^{\circ}.5$; Sandusky, $74^{\circ}.1$; Toledo, Ohio, $74^{\circ}.4$; New York, $73^{\circ}.6$; Philadelphia, $76^{\circ}.1$; Washington, $78^{\circ}.7$; Pittsburg, $74^{\circ}.6$; St. Louis, $79^{\circ}.6$; Chicago, $72^{\circ}.2$; Bermuda, $78^{\circ}.7$; New Orleans, $82^{\circ}.6$; Havana, $83^{\circ}.7$.

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Ontario region varies from about 78° , as at Toronto, to 85° as at Hamilton, and this in large measure irrespective of latitude. The average monthly maximum for the five warmest months, exceeds 90° ; the sea at Toronto is 91° , at and in the Ottawa Valley about 95° , or about the same as the valley of the Rhone. Occasionally, 90° is exceeded in April and even in October, and all the intervening summer months have exceeded, at times, 100° in the shade. The highest registered at Hamilton is 106° , which is higher than is reached at New Orleans. Intensely hot weather rarely lasts more than a few days at a time; though, occasionally, it is prolonged for weeks. Nor are very warm nights common in the cooler lake borders. Even in the warmest localities during the hottest weather the mercury rarely fails to fall to 75° before sunrise.

The rainfall on the Mediterranean coast is much lighter in summer than in Ontario. Elsewhere, inland, on ordinary elevations above the sea, it is about the same as in Ontario. Ontario has no mistrals, chilly mountain winds, or siroccos; and strong gales are rare before September or October, and in the midsummer months chilly winds are very rare, and in most years are unknown. Tornados are rare, and are not so destructive as in the Mississippi Valley. Liability to summer frosts varies greatly; at Pelee the continuous exemption covers seven months. Generally they are less frequent than in most of England, and occur as rarely as in inland Northern and Central France. Drought is as in France; sometimes the meadows of Ontario are parched by drought and heat till they become yellow as a puma's skin, but failure of crops from this cause has not been known within sixty years. The pleasantness of the season is greatly enhanced by the brilliant sunshine experienced day after day for weeks

together, and the glorious skies and sunsets—beautiful in variety of tint and cloud form—which have been justly regarded as equal to those of Italy.

With its long, France-like summers, Ontario grows luxuriantly many of the vegetables associated in the British mind with the warmer climates of the world. The egg-plant yields well almost everywhere; the pea-nut grows; cotton without special fertilizers has been grown in Pelee for many years; the sweet potato grows in very many counties, and reaches a weight of several pounds; while the watermelon flourishes as in the tropics, and the tomato, as a great field crop, is a not inconsiderable source of revenue to farmers. The tomato grows on the highest lands of the province. Sorghum is a successful crop. Maize, which is grown on 200,000 acres, and in every county, gives a higher average yield per acre than any western or southern state of the American Union, excepting Missouri. It and the tomato flourish luxuriantly at elevations above sea level which in Britain would not allow wheat to ripen.

That the fig and the almond, with scarcely any protection against severe winter frosts, succeed at a few places as orchard trees, and the apricot and nectarine are grown in orchards in several counties, is rather an indication of not very severe winters than of summer warmth. But the peach is grown on the Georgian Bay, over 200 miles farther north than the southern limit of Ontario, and inland at an elevation of over 1,000 feet above the sea. From the heights of Grimsby on Lake Ontario many scores of thousands of peach trees are seen at one glance, or a larger number than may thus be seen anywhere else in the world. In quality the fruit surpasses that of California. The area in Ontario adapted for peach culture exceeds nine thousand square miles. The wild vine trails over the

river-side trees almost everywhere. Many species of the grape, including the European *vinus vinifera*, are cultivated in large vineyards, which are found in the Ottawa valley as well as on the Lake Erie slopes. The yield of wine per acre is greater than in California, and twice as large as in France; the area suitable for viticulture embraces over 25,000 square miles.

Amongst forest trees indications of the climate are found in the success of the tulip tree in much of the province. The pseudo-papaw, with its banana-like fruit, is a forest tree in the Niagara

peninsula, although not found as such north or west of a line from the west end of Lake Erie to western Texas. In southern Ontario can be grown five out of the seven known species of magnolia, including one of the largest, a species having flowers ten inches in breadth.

In view of the facts here presented it must be admitted that the climate of Canada has, in parts at least, much to commend it to the intelligent, capable fruit growers and country gentlemen of Britain and Europe.—*The Canadian Magazine*.

SOME THOUGHTS ON ENGLISH IN SECONDARY SCHOOLS.

IDA M. STREET, MILWAUKEE, WIS.

DURING the last twenty-five years we have passed rapidly through several phases of what may be called the renaissance of English. First was the detailed study in college of the English masterpieces rather than a history of the literature. Then the study of the language received an impetus from the study of Anglo-Saxon. These changes in college curricula called for changes in the secondary schools; such as, a more careful and thorough reading of classics, accompanied by study of the diction, especially the derivation of words; and better power of written expression. The increased interest in philology and what was called the laboratory method of studying literature had its influence upon the method of study in the schools. The aim was to send to college students whose knowledge of the diction, allusions and figures of speech in the books read was almost complete. This attention to details has been carried so far that we are again in danger of laying too much stress upon the information side of the study of literature; this time, however, it is not information about the books, but infor-

mation more or less connected with their form.

Just at present the colleges are strenuously insisting that written expression shall be better. It seems to me that there are two ways to accomplish this end; a broader grasp of the thought of the masterpiece, a deeper insight into its artistic and philosophical meaning will give more force and clearness of expression, and the habit of writing out his knowledge of any and all subjects will give the pupil facility in the use of language. It is to accomplish this last that the Harvard committee on preparatory English request all teachers in secondary schools, no matter in what department, to give one written exercise a week. In other words the demand at present is for a more practical knowledge of English. This practical knowledge, in my opinion, is inseparably bound up with the transmuting of information into culture.

Culture is not, as some people suppose, wholly intellectual; on the contrary it is pre-eminently spiritual and grows with character. It has an ethical as well as æsthetical value, and is

the undefined spiritual atmosphere that attends a man who has a well-arranged system of ideals fitted to any condition of life. These ideals are formed from literature and other arts, and from intercourse with other people of high ideals. The man who never acts in accordance with his ideals is sentimental; he who does has a beautiful character. Culture, then, is information assimilated; not so much with a view to its present utility as to its general effect upon the personality. The chief difference between the practical man and the cultured man lies in the aim of each: the first gathers his knowledge for some immediate and specific use; the second for the general broadening of his mind; both assimilate facts, as distinct from the pedant, who only accumulates them.

Youth is the plastic period during which ideals can best be formed. They are the result of an act of the imagination aroused by pictures, which may be presented to it by any art, but are usually presented by literature. Every literary masterpiece presents some ideal of life, either active or static; in the description of nature we have static life, in the delineation of emotion and of character, dynamic. The problem for the teacher is, what method will best enable the student to form his own ideals from those of the author? In this process there are two general divisions; first, the pupil must comprehend the author's presentation; second, he must take interest enough in it to make it his own. In practice, these divisions will not be separable, but in each step of the process they will be two essential elements.

Our High School English courses usually cover from three to four years with daily recitations. The Committee of Ten does not designate the order in which the books it recommends should be read, leaving methods and arrangement to the judgment of each teacher. Since there is no central authority and

but poorly defined courses of study, our English departments are in a very chaotic state. The object of this paper is the statement of a few general principles, by whose guidance a curriculum may be made out. Although I believe that the best curriculum could be made out by considering what reading the grade schools have furnished, rather than what the colleges want, yet, since the college requirements are definite and the grade work diverse and undefined, I have taken from the college list the illustrations for my theoretical curriculum. I shall not, however, confine myself to the classics named by the Committee of Ten, nor use all that are in the present requirements; as I do not understand why some of them are put into secondary work at all.

As stated before, the two main powers to be cultivated are those of comprehension and assimilation, and to both of these interest is necessary. Since life is the most interesting study in the world to every boy and girl, the teacher should be able to make literature, which is a representation of life, of interest to his pupils. The problem is to find the exact point of immediate interest from which to start. If classes were small enough for the tastes and reading of each pupil to be known by the teacher, and if they could be made to include those of similar tastes and advancement, then the problem would be greatly simplified. With the present crowded state of our high schools, however, and the present inadequate classifications in English, it is impossible to interest every student in the class with the books read. The utmost we can hope to get under the present conditions is a curriculum that will appeal to the majority.

In order to meet the comprehension, an object must be somewhat familiar; in order to arouse interest, it must have some novelty. Now in every piece of literature there are the uni-

versal and the local elements. The universal are those ideas and principles that are good for all time; as, in the *Iliad*, the pride of Achilles, the arrogance of Agamemnon, the garrulousness and wisdom from experience of Nestor. Whatever pertains only to a certain time or place is the local element; as, the Greek customs. Universals become familiar to us by repetition under various local guises, or by thought upon the experiences of our own lives we abstract them. It is the duty of the teacher of literature to lead the child's mind to the discovery of these universals; not to drag him to them but to incite him to find them for himself. This cannot be done, however, unless the pupil's imagination pictures the local setting clearly enough to give life and vivacity to the whole scene. To aid the imaging power, pictures, maps and comparisons with familiar objects should be used. That he may choose the book best fitted to the student's comprehension and most likely to arouse interest, the instructor must know with how great a variety of local conditions the reader is familiar and the number of universal ideas he has accumulated. With his interest aroused, imaging power strengthened and his ideals enriched his knowledge is unconsciously transmuted into culture. The study has been for him reconstructive, bringing out of his previous limited mental equipment broader knowledge and loftier ideals.

Though we may not be able to make out a course of reading that will be reconstructive for every individual, there are certain general classes of books that are stimulating at certain stages of any child's development. Pure adventure with but little emotion and fairy stories appeal to the child in his active state, before the deeper emotions and reason have been fully developed. The fairy story or fantasy begins to seem foolish to the child whose reason

has begun to develop; older persons, when they enjoy fantasies, deliberately lay aside their logic. As the child approaches adolescence, and the emotions become a part of his conscious self, the lyrical expression of those emotions appeals to him; later a study of people, their motives and character becomes of intense interest to him. At the age when his logical faculties are having their most vigorous development he can be interested in essays and debates.

The child's development must not be thought of as a straight line and these stages definitely marked off sections. It is rather a spiral, of which these stages are arcs in each round. In the lower parts of the spiral, near his infancy, the story arc is much larger than either of the others. As he increases in years the lyric and dramatic taste increases, and the mere story dwindles in interest for him. When children reach the High School they should have passed the mere story of adventure stage, represented, say, by *Robinson Crusoe*, but owing to their unequal culture many of them have not. So for the most of them the story must be accompanied by some study of character and some lyric. Their emotions are growing stronger; but they are so self-conscious in regard to them that the class reading of the lyrics must be conducted with much tact. There are some interests, however, that may be depended on in High School pupils; they desire to know the motives of actions, and are curious about the meaning of life. They love to study character in novels and drama, and after the first year they have an irresistible impulse to plunge into deep philosophical discussions on free-will and predestination, on eternal punishment and free grace. They do not like to be preached to on these subjects, yet they like to investigate them for themselves, and are glad of guidance in the investigation. Let us consider for a

moment the round of the spiral through which a child passes in his High School course.

The first year may be safely counted a story stage, with a slight mixture of latent emotion needing lyric expression, and some tendencies to logic or analysis. The stories which might be read are Cooper's "Last of the Mohicans," Scott's "Ivanhoe," William Morris' "Jason" or selections from "Sigurd," translations of Homer's "Iliad" or "Odyssey," Longfellow's "Tales of a Wayside Inn," and selected stories from Irving. Not more than five of these could probably be read by any one class. The students should form a vivid idea of the local setting in each story read. This, while necessary to the comprehension of the story, is often slighted by the student. They are always ready to enjoy the dynamic element—action, as a result of emotion; but they are not always ready to enjoy the static element—description. This is probably because their perception of natural objects has not been careful and their imaginations are sluggish. The reading of lyrics should be incidental, and such as, in the opinion of the teacher, the individuals of the class would most easily assimilate. The

analytical and logical tendency could be gratified and cultivated by some inquiry into character; as, why Achilles was so slow to be reconciled with Agamemnon, why Ulysses was called crafty. The power of analysis could also be increased by a study of paragraphs to determine the grouping of their ideas, and of sentences as a whole to determine the relation and articulation of their parts. In this the use of phrases and clauses rather than the forms of words would be most important. The paragraph and the sentence as a whole should be kept well before the student's mind. Since self-consciousness is usually at this time too great to admit of easy self-expression, written expression should be largely reproduction, with perhaps one-fourth of the amount, the expression of original ideas. This could be the reproduction of some incident or scene in the book read, accompanied by some original comment, or a comparison with well-known scenes or incidents. Sometimes it could be a study of character in as free and original a way as possible. These exercises are a training in judgment, to select the appropriate details and to fit the reproduction to a stated length of time.

(Concluded next month.)

Comparatively few teachers recognize the real value of memory germs, but it is one of the hopeful signs of the times that the demand for them is increasing. A few minutes each day in teaching class or school a brief selection which gives expression to the "deeper things of life," is time profitably spent. It is urged many times that children are unable to grasp the meaning of the selections given, hence, they are of little value. The children comprehend more than we give them credit for, and it is an easy matter for

the teacher to explain the more difficult passages. Many of the great masters speak in very simple and direct language and are easily understood by all. The newer reading books are meeting this demand to some extent, but as yet there is no classification of subjects; and many of the educational journals contain suitable material, but no general plan is followed by any one journal. Every teacher should be well supplied with memory germs and should know how to use them.

EDITORIAL NOTES.

Deliver not the tasks of might
 To weakness, neither hide the ray
 From those, not blind, who wait for day,
 Tho' sitting girt with doubtful light.

"That from Discussion's lips may fall
 With Life, that working strongly, binds—
 Set in all lights by many minds,
 So close the interests of all."

There may appear to be a formality in our sending New Year's greeting to our readers so many days after the first of January, and, late though it be, there is none the less a deep sincerity in our wishes for their success in life. The relationship between editor and reader is in one respect perhaps a far-away one, and yet the common work in which THE CANADA EDUCATIONAL MONTHLY and the teachers of Canada are engaged in seems to make the relationship a very near and dear one. The advancement of our country, through the best matured plans for improving the school training of the present and the future, is surely as ennobling a work as can well be imagined; and surely the most modest worker within the limits of such a sphere of labor can join with the higher grade worker in reciprocal congratulations at this time of the year, if not at all times of the year. The sympathy between the MONTHLY and its readers we feel, from the encouragement given to us during the past year, is deepening and widening, and we trust it will go on to deepen and to widen until all elements of our various educational systems from Nova Scotia to British Columbia will become convinced that we have no end to serve in continuing our work but the further development of these systems for good, and the desire to extend a helping hand in that great work. Again we pass the current courteous expression around while sending greeting to all: "A Happy New Year."

Circulars from the Education Department remind us that the examina-

tions for 1899 are approaching. In these circulars the Minister of Education shows his appreciation of the grave danger connected with these examinations and very emphatically warns masters and all others concerned that the results are not to be used for promotions or classification of schools in any way. No pupil need spend his money on these examinations; they are simply for professional purposes: teaching, law, medicine, etc. The fee for the whole examination to any candidate is not to exceed \$5.00. We think the profession will welcome this change, and that all educators will be glad of the effect produced by the discussions we have had during the past two or three years. In this connection, we do not see why, from the Department's point of view, any part of these examinations should be known as the I. Form examination, or II. Form examination. We think the Department has by this mode of reference to these examinations unfortunately but undesignedly opened the door for wide misunderstanding about the proper function of these yearly examinations. An unfriendly spirit to true growth in learning, fostered by these annual examinations, has obtained a strong footing in our schools, and it can only be driven out by constant watchfulness and unflagging energy on the part of the teacher.

Syracuse is the central city of the State of New York, and is approached from all directions by great railways. It is a beautiful city, and rated in the census as one of the most healthful of

the state; the population is estimated at 120,000. Many conventions meet in it each year. The University of Syracuse is situated on the heights, in the southeastern part of the city, overlooking Onondaga lake and valley. The location is beautiful, and must be healthy. The view from the Fine Art building is not easy to surpass.

The College of Liberal Arts had an undergraduate body last year of 450, and special students 94. Provision is made in the general curriculum of the University for instruction, both theoretical and practical, in pedagogy for those who desire preparation for teaching during their undergraduate course. The State Department of Education recognizes the value of the course in the licensing of teachers for State schools.

The 14th Annual Conference of the Associated Academic Principals of New York State High Schools was held here this year, on the 27th, 28th, and 29th December. Many other teachers and masters besides these were present at the meeting: Chief Superintendent Skinner, of the State of New York; Melvil Dewey, Secretary of the Board of Regents of the University of New York State, and many of the County Superintendents. The total attendance would be between 600 and 700. A new thing it was in the experience of the Editor of *THE CANADA EDUCATIONAL MONTHLY* to be at such a gathering of educationists, and scarcely a lady to be seen. To a member of the Convention this remark was made, and the quick reply came, these are all principals; not quite, we would venture to say, but almost. Secretary Dewey says that the High Schools are becoming most influential, and are virtually the pivot of their educational system. At the Convention young men predominated, but there were many present whose mature appearance indicated years of service, and in the discussion

these took the lead and were listened to with great attention. The Convention fully deserves the commendation: prove all things, hold fast that which is good.

Secretary Dewey (Melvil Dewey, sec. of the University of the State of New York) spoke, first of the American system of teaching institutions as they are, Elementary School, High School, College, University. The College is the only one that is losing ground, as High Schools prepare more generally directly for the university. The old endowed and private academy is also losing ground as the High School increases year by year in influence and breadth of work. The speaker then touched upon libraries, museums, university extension, summer institutes, evening schools, home study clubs—of which there are now 300 registered.

"Of all these agencies" continued Secretary Dewey, "the crown of the educational system for its locality is the High School, whether in a large city or a village. The principal of the school should be a kind of educational bishop for the community. He should have an eye for the Elementary Schools. They deserve all support. But the High School, though it costs much, is worth all it costs. This is an age of specialism. The great men in all lines of endeavor are coming from the laboring classes to-day. We must get those embryo geniuses. We can afford to spend money to reach boys who cannot be reached otherwise when that education produces the men that it has produced in America.

"The time has come when we should spend more on High Schools. New York is spending more and more every year for high schools and we don't spend half enough. We have now 500 of these schools; we need 1,000. It required a long crusade to secure free elementary education. The right to a higher education belongs to every man. The state can afford to pay for it for

purely selfish reasons. Opposed to this notion are self-educated men—not many of them—who think what was good enough for them is good enough for those.

“The High School is the people’s college. It should be conveniently located. The grounds should, however, be adequate. It should not be squeezed in somewhere out of sight. It should be the handsomest building in town. The pride of the citizens should be enlisted to make the High School a beautiful building, well lighted, well ventilated, kept scrupulously clean, well equipped in libraries and in apparatus. We want more teachers, better teachers and better paid teachers. Every pupil has a right to a teacher from a higher school than he is.

“The Normal schools should demand as a requisite for admission graduation from a High School.

In closing Mr. Dewey spoke of the men who try to use the schools for political advancement and their own financial gain. The schools have no use for politics. We must keep the educational system free from politics.
—*Syracuse Standard.*

Our readers will notice in Mr. Dewey’s list of factors in modern education that two are conspicuous by their absence, viz., the parent and the Church. Upon speaking to a member of the Convention on this omission, he, without any hesitation, told us that they (teachers) allowed the two above mentioned to attend to their own affairs, and they looked after the schools. The omission and the answer are equally unaccountable to us. What causes could have produced such an undesirable result?

The subject under discussion by the principals of the Grammar Schools was the enrichment of the school programme for these schools by the introduction of other languages than English, Latin, French, German, etc.

The speaker deprecated, and in this he was warmly supported by those present, the introduction of any language or any subject that would tend to weaken the attention of pupils in their class of schools. Plainly, their motto is do well a few things; those who want many let them go to more advanced schools. We may add that the Grammar Schools correspond with our Public Schools doing the work of the fifth book classes.

Matters relating to High Schools received most of our attention. Generally speaking pupils can enter a High School at any time of the year, and generally the admission is left entirely with the principal. In some cities the admission to the High School is controlled by the Board of Education. The admission is very often based on the report of the Grammar School principal. The Board of Regents of the State University holds examinations in January, March and June in each year for their preliminary examinations, and any pupil who has a certificate of having passed this examination is admitted to a High School without any further test of fitness. At the Regents’ examination the candidate can take as many subjects as he pleases; he may appear in January, March and June, and complete only in June, or take the subjects in any combination that suits him best. Every encouragement and facility is given him to qualify in this way for the High School course. In the High Schools of New York State there are no fees. This the school-men at least, put on the ground of the form of their government. We live, say they, in a republic, you in a monarchy; therefore they are compelled to induce all children to attend all their schools, and it is an aid to charge no fees. One speaker, who had paid special attention to the matter, stated in the convention that the High Schools had only a third of the number of pupils

which they ought to have and only seven per cent. of the pupils of the Grammar Schools ever reached the High School. In conversation with an intelligent and patriotic citizen of Syracuse, one who knows Canada well, on the question of school support by the taxpayer, he had no objection to supporting their schools through the Grammar grade, but no further. "My taxes are quite an item in my annual expenditure, and, what is most discouraging, they are increasing year by year. And," he added, with much emphasis, "Canada is the finest country in the world."

In the sphere of Influence of the High Schools, the officers of the State Superintendent and those of the Regents' Board of the State University meet. The State Superintendent thinks it is necessary for him to know how those reading for certificates as teachers in the Public Schools are prepared in their Academic Courses, and the Board of Regents keeps a watchful eye over the preparation of students for the University Course. Evidently many of the principals feel that they are visited over-much by their friends. In reply to a question, a member remarked, Yes, there is, and has been for some time, slight friction here, and we all have been trying to find a solution for the removal of the difficulty for some years. We have not found it yet, but we will by keeping at it long enough. The editor of THE CANADA EDUCATIONAL MONTHLY salutes the academic principals of the State of New York. It was pleasant and profitable, chiefly profitable, for him to be at their annual Christmas gathering.

The contemplation of the new college to be opened at Khartoum and the primary object of its being established brings us face to face with the dual language difficulties that have beset so many of Britain's colonies,

our own Canada as much as any, through the lack of foresight on the part of her treaty-makers. When we consider how the true patriotism has its foundation lines in the language and literature of the country wherein it is being fostered, and the true loyalty as well, we cannot but see the statesmanship in Lord Kitchener's educational project, just as we cannot but see that the Cubans themselves will eventually thank the United States for decreeing that their island colony shall have but one official language. It would be silly for any one in Canada—at least the politicians say so—to urge a supremacy of the English tongue in all our provinces; but it is surely worse than silly for any educationist or any educational institution in Canada to make more of the teaching of French and German than of English, or to give to any modern language undue prominence in a course of study prepared for the English schools. That such is being done in certain quarters goes without saying; and it is a marvel that English-speaking fathers and mothers will continue to sympathize with the movement in favor of giving their babies lessons in French or German rather than in their mother tongue. There is a question here for the practical teacher as well as for the educationist to discuss, and as such we leave it for the present.

The insufficiency of the Sunday School as a means to an end does not prove the inefficiency of the Common School as a means to the same end—namely the moral education of the pupil. The religious training of a child is so nearly identical with his moral training that few educationists care to distinguish the one process from the other. The moralist and the *religieuse* have had a long-standing quarrel, but we must have none of their quarrels on the school-room floor.

To please them both there has possibly been neglect, but to dwell over the neglect can hardly be the best way to provide a remedy, since such hearty combatants are not always easy to please. The common ground on which all sound educationists are agreed is that the best training for the conscience of a child is a training in the higher moralities, and as everybody is agreed that the Christian morality is the highest of all morality there need be no difficulty in deciding what kind of morality is to be taught in school. The Sunday School has been doing a work which the Common or Public School can not undertake to do. If the studies in the average course of study for Sunday Schools has not been as successfully productive of the looked-for effects as might have been wished, it is cruelty to our Public School teachers and school authorities to claim that the deficiency lies at the door of the Common School; and when we have said this we have said all that need be said for the present. The Sunday School must stand on its own merits, and if it has failed in its work in any way it must bear the blame until the more active elements exercised in favor of the right kind of conduct-development be introduced into its curriculum or organization.

The ill-natured critic, who at times would develop a virtue into a vice for his own purpose, finding a selfish thread in every man's action, may claim that "Montreal has more money than she knows what to do with," as he hears of the munificence of that city's merchant princes towards educational enterprises. But the example is a noble one to imitate, and all our communities would do well to give the ill-natured critic the cold shoulder by telling him to mend his logic by improving his temper. Montreal is surely a city for all the cities of Canada to be proud of; and when it is seen what McGill University has grown to be,

through the liberality of her own citizens, there cannot but be a conveyance of congratulations from all parts of the Dominion, not only towards the institution itself, but to the city, which has nurtured it. The additional million which Lord Strathcona has just given to its new department, the Royal Victoria College for ladies, and the endowment of the Arts Department by Sir W. C. Macdonald shows that the neglected department which was in at the beginning of things for McGill is not to be forgotten in the days of the prosperity of its sister faculties. And, as if to add further relish to the adage that it is more blessed to give than to receive, the enterprise of Lord Kitchener is not to be forgotten, as is to be seen from the liberal donations entered on the subscription list which was opened in Montreal in December last in behalf of the new Khartoum College.

The suggestion which Dr. Harper, of Quebec, makes in our correspondence section, in favor of making the Plains of Abraham into an international park, is well worthy of consideration, however difficult its realization may be. The object lesson which this historic spot affords should not be lost to our children—should not be lost to the children of any of the three communities who might be drawn together by an international project of the kind indicated in Dr. Harper's letter, since the destiny of these nations has been more than once fought out on or near this battle-field. There has, at least, never been a time when such a project had better chances of being realized; and the latest reports from the international commission over the possible results of its labors must give urgency to the desire of those who would commemorate the event of their sitting by some tangible token of the good-will and national sympathy its deliberations have matured.

We have inserted in our present issue a letter which Dr. Hodgins, of the Education Department, sent some time ago to the *Mail and Empire*, a letter which is, perhaps, as strong an argument in favor of the organization of a Central Bureau of Education for Canada as it is possible to have; and to show that Dr. Harper, who first brought this matter to the notice of the readers of the MONTHLY, is not worrying over the preamble of Dr. Hodgins' letter, wherein he seems to think that the tracing of the origination of the scheme is of more importance than the realization of it, we may say that it is Dr. Harper himself who has asked us to publish Dr. Hodgins' letter. THE CANADA EDUCATIONAL MONTHLY has advocated the scheme, not because Dr. Ryerson or Dr. Harper has advocated it, but because such a Bureau would be a great benefit to all of us; and now that it has been told us, according to Dr. Hodgins' own showing, that something like a guarantee was given by the rulers of the country that a Central Bureau of Education would be established, there should be no time lost in bringing the whole question before the authorities at Ottawa. It is said that a committee was appointed at the

Halifax Convention of the Dominion Educational Association to watch this matter, but the time is ripe for more than watching. The time is ripe for action, since the consensus of public opinion has been proved to be favorable to the immediate organization of such a sub-department at Ottawa.

Professor Mahaffy, in the *Nineteenth Century*, ruthlessly dissects the Intermediate Examination system in Ireland. Nineteen years ago, he tells us, when the system was established, he stood alone in proclaiming that the foundations were rotten, and that it would inevitably lead to competition in creeds, not in learning, to increase of cram and decrease of sound learning. And now, being asked by the Special Commission to offer criticisms, he tells them and the public that they must make a clean sweep of all their methods and regulations, and build them again on wholly new lines. With his protest against the inferior limit of age, the multitude of subjects to be taken up, the absence of any oral tests, most educators will agree, though his dicta on English literature, on modern languages, and on music may seem to us arbitrary and in part heretical.

CURRENT EVENTS.

The influence of politics upon education has every now and again a searchlight thrown upon it, and this time the light is handled by a school superintendent of the United States named Preston W. Search. In declaring his intention of resigning at the end of the year, he declares that affairs in the city have reached such a state that he cannot withhold his reasons for taking this step. He says that he hopes the people will rescue the school system

from the political entanglements into which it has fallen, and which threaten its existence as an educational factor. He says that politicians have sought continually to use the schools for personal ends. He charges members of the city government with using corrupt methods in placing school furniture contracts. He says that he has not been able to have the High School laboratory equipped, for as yet there was nothing "in it" for some aldermen.

The new superintendent of the Chicago schools, though appointed by politicians, has determined to have none of the politicians' methods interfering with his plans for a higher school efficiency. He has already taken a stand against "the pull," or what we call in Canada "the pre-arranging process." The Committee of School Management, it seems, ordered the transfer of a teacher without his approval or initiative, and Dr. Andrews has declared against such action, and this is what *The Intelligence*, of that city, says about the matter: "That is the stand which every superintendent ought to take. The evidence is becoming more clear as the weeks pass that the present Board, packed as it was supposed to have been in the interest of reform and improvement, is governed by lower ideals and is more swayed by questionable motives than any Chicago Board for a good many years. This is a pretty severe thing to say, but the truth seems manifest. It is to be feared that one or more good men have got to be sacrificed before the Chicago Board of Education will put its superintendent actually at the head of the department and let expert knowledge run the instruction part of the school system. We hope that Dr. Andrews will not have to be laid upon the altar, but it looks very much as if the men who were so determined to get him to Chicago will soon be as anxious to get him out. We sincerely hope they will not succeed so long as Dr. Andrews stands by his present position. An important principle is involved, and it might better be fought to a finish now than later. If the Board decides to sacrifice Dr. Andrews, the next superintendent will have a strong vantage ground on which to stand. There is no question but that the people of Chicago believe in letting the superintendent run the schools and in stopping all favoritism

and personal control by men of the Board."

We are afraid *The Intelligence* is making a position for somebody which no superintendent would care to occupy. We in Canada have no experience of the absolutism of the White House in our public offices, and perhaps this is the reason why we cannot understand how any man should openly demand so much power as Dr. Andrews' friends would seemingly like him to have. The pull is a very bad thing, but absolutism is hardly an improvement on it.

The Tasmanian Education Department has, we are pleased to notice, initiated a forward movement in agricultural education. One feature is the construction of a table of elementary agricultural work for use in the State school, the teachers of which are to be encouraged to qualify themselves to impart such theoretical and practical instruction; the agricultural experts to co-operate with the Department of Education in this matter and thus provide elementary practical education for the boys who are attending the Public Schools and intend to become agriculturists. For youths who are just leaving school, or, having left, have already begun their work on the land, it is proposed that to any locality which organizes a class of students in the science of agriculture, of a minimum number to be fixed, and provides the necessary material for the work of such a class, together with a teacher capable of imparting the instruction prescribed by the Department's experts, should be offered the services of the experts to inaugurate the class, provide it with a plan of work, supervise the work of the class as much as possible and conduct examinations. The Technical Schools in the cities are also to be utilized for the benefit of town boys and youths intending to become agriculturists. Again, as to

boys and youths who are attending Public or Private Schools and desire to pursue the study of the principles of the science of agriculture, it is proposed to offer scholarships tenable at any institution approved as a place where a sound practical education in the scientific principles of any section of agriculture may be obtained.

The Bishop of London, in addressing a meeting of Board School teachers recently, expressed his regret that there was no organization to advise the children on leaving school at the age of twelve. He thought the system broke down there, and added that there was another danger that the system might be too good, not in itself—that was impossible—but in relation to those to whom it applied. The organization and discipline in the school might be too great and cause a rebound when the children came out into very different and much lower surroundings, and the aim should be to make a distinct connection between the two. A correspondent drew his Lordship's attention to this, and pointed out that a very small number of children, if any, left the Board Schools at the age of twelve unless they passed Standard VI., and, if they had not, they were obliged to attend a night school during the winter months. Concerning the moral welfare of the children on leaving school, the correspondent asked his Lordship whether he did not think that, as a rule, more depended on the home influence exerted on a child than on any which could be exerted from the outside. The following reply has been received:

"Fulham Palace, S.W., Oct. 28.

"My dear Sir,—I am obliged to you for your letter and its information. I quite agree with all the sentiments you express. My idea was that there might be two or three people in connection with each school who made it their business to learn from the head teach-

ers what children were leaving school, and then give them advice about possible means of continuing their education, and be ready to advise them and their parents at any time.

"Yours faithfully,

"M. LONDON."

The organization of a new library in the city of Toronto, which shall be a reference library for the city and province, and have as an adjunct a system of travelling libraries, is likely to be realized at an early date. The committee which has it in hand think the scheme practicable should it be carried out on the following basis:

"The transference to the proposed library of the scientific library of the Canadian Institute and of the reference portions of the Public Library and the Legislative Library on conditions to be afterwards arranged.

"The erection of a building for the proposed library somewhere near the Legislative buildings.

"The cost of the building to be met by the issue, on the part of the library authorities, of debentures bearing a low rate of interest, and guaranteed by the province.

"The maintenance of the proposed library and the provision of a sinking fund to pay off the debentures when mature to be met by annual grants from the province and from the Board of Management of the Toronto Public Library.

"The control of the proposed library to be vested in a Board of library commissioners to be appointed by the province and by the Board of Management of the Toronto Public Library.

"The committee also find that the scheme of travelling libraries is a practicable one, and that it could be carried out successfully at a small annual cost if the management of the same were entrusted to the authorities in charge of the proposed Reference Library."

SCIENCE.

J. B. TURNER, B.A., Editor.

SCIENCE IN EDUCATION.

At the opening of Mason University College, Birmingham, England, on October 4th, Sir Archibald Geikie, D.C.L., F.R.S., delivered an address to the students on the above subject. Space will permit of a reference to only a few of the points touched upon by the distinguished speaker.

The address begins with reference to the influence, on the general educational arrangements of every civilized country, that has been exerted by the rise and progress of science during the present century. The influence has extended in many directions and has resulted in great benefit to the community at large. "Besides the obvious material gains there has been a widening of the whole range and method of our teaching; the old subjects are better, because more scientifically taught, and the new subjects enlist the attention and sympathy of large classes of pupils whom the earlier studies only languidly interested." A word of warning is next given with regard to the danger of the reaction against the dominance of the older education.

It will be a source of gratification to

every true friend of the cause of education to read the plea that is made for the better cultivation of the art of expression among students of science. His broad-mindedness and liberality in this respect are in striking contrast to one-sidedness of some of the exponents of the literary aspect of education. It is possible that this is the distinguished gentleman's method of conveying a hint to the opponents of science that there are two sides to this as to any other question.

The advantages claimed for a study of science are the cultivation of the observation, accuracy and precision in methods of work, thoroughness, breadth, the inculcation of the habit of wide reading and patience. The address, which is given in full in *Nature* for Dec. 1st, is one which will repay careful perusal by everyone engaged in educational work.

The end of education is wholly misconceived unless we consider it as aiming to bring the individual into right relations, at as many points as possible, with the world in which he lives and to place him in as full possession as possible of the varied powers and capacities of his nature
—*Popular Science Monthly*.

ONTARIO NORMAL COLLEGE—MAY EXAMINATIONS, 1898.

METHODS IN SCIENCE.

PRIMARY PHYSICS AND BOTANY.

EXAMINERS: W. Lochhead, B.A., B.Sc.; G. A. Smith, B.A.

I. "In giving new lessons on a subject always go back on what has been already taught, *i.e.*, prepare the mind of the pupil for the lesson."—*Laurie*.

(a) Discuss the pedagogical principle stated above.

(b) Indicate by questions how you would prepare the minds of the pupils for a lesson on Specific Heat.

(c) Teach the lesson, selecting your own apparatus.

(d) How would you satisfy yourself

that the pupil can give a complete and accurate expression of his observations?

2. Your pupils have performed the experiment of a glass ball rolling down an inclined grooved plank, and have obtained suitable numerical results.

(a) Indicate by questions how you would draw from the pupils the inference that "a constant force acting on a constant mass produces a uniform acceleration."

(b) What previous knowledge is necessary on the part of the pupils?

(c) Write a sample page of pupil's note-book filled out to your satisfaction on the experiment outlined above.

(d) "The note-book is often used so as to stand in the way of good work." State clearly how a note-book should be used by a pupil.

3. A class is beginning the study of buds and bud-markings; each pupil is supplied with a horse-chestnut branch, and the teacher gives directions where to find the markings, and describes

their peculiar shape and position. The pupils then make drawings of the branch. The bud is dissected by the pupils under the direction of the teacher, who tells the pupils what to look for, and gives the causes of the markings. The pupils are then asked to write out a full account of all they have seen.

Criticize the method outlined above.

4. (a) Teach a lesson on the classification of plants.

(b) At what stage of the course would you take up this topic? Give reasons.

(c) Sometimes pupils have difficulty in understanding the application of the term carpel, either confounding it with ovary or else failing to determine correctly the number of carpels in a pistil with a unilocular ovary as in the corn-cockle, or with a bilocular ovary as in the catnip.

Develop the subject in a way which would remove the difficulty.

THE HIGH SCHOOL AND UNIVERSITY ANNUAL EXAMINATIONS, 1898.

FORM II.—PHYSICS.

EXAMINERS: E. C. Jeffrey, B.A.; J. C. McLennan, B.A.; W. Nicol, M.A.

1. (a) Explain, with diagram, the principle of a screw wire gauge, or a pair of calipers with vernier attached.

(b) Explain how to fill a capillary tube, open at both ends, with mercury, and describe an exact method of finding the internal diameter of a capillary tube of uniform bore.

2. (a) Define *uniform acceleration*.

(b) Explain how you would apply your definition to determine experimentally whether two given quantities of matter are of equal mass or not.

3. State the *law of buoyancy*. How would you verify it experimentally for (a) liquids, (b) gases?

4. Describe three different experiments which illustrate the capillary action of liquids.

5. Describe two methods of finding the specific gravity of a sample of hydrochloric acid. Give a numerical example in each case.

6. A mass of water at 20°C. is placed in a glass flask surrounded by a mixture of ice and salt. Describe all the changes that may be observed in the temperature of the water and in its volume.

7. Describe a *calorimeter* and explain how you would use it to deter-

mine the latent heat of fusion of ice. | to show that the radiating power of a heated body depends upon the nature of the surface of this body.

8. Describe two distinct experiments | of the surface of this body.

FORM III., 1898.

W. P. MUCKLE, B.A., Toronto.

8. (a) Noticing that $3\sqrt{2}-2\sqrt{5}=(3-\sqrt{6})\sqrt{2}$ we have

$$\frac{3\sqrt{2+3}}{3-\sqrt{6}} - \frac{2\sqrt{3+6}}{3\sqrt{2}-2\sqrt{3}} = \frac{\sqrt{2}(3\sqrt{2+3}) - (2\sqrt{3+6})}{3\sqrt{2}-2\sqrt{3}} = 1.$$

$$(b) \left(\frac{a^x + a^{-x}}{2}\right)^2 + \left(\frac{a^x - a^{-x}}{2\sqrt{-1}}\right)^2 = \frac{a^{2x} + a^{-2x} + 2}{4} + \frac{a^2 + a^{-2x} - 2}{-4} = 1.$$

9. This question admits of a neater solution by arithmetic than by algebra, For an algebraical solution :

(a) Let x = time elapsed when going in the same direction. A goes 1 more lap than B. $\therefore \frac{x}{12} - \frac{x}{14\frac{2}{3}} = 1$, from which $x = 72'$.

(b) In going in opposite directions they go together 1 lap.

$$\therefore \frac{x}{12} + \frac{x}{14\frac{2}{3}} = 1, \text{ or } x = 6\frac{6}{11}'.$$

10. Book-work.

11. $x^2 - 2(a+y)x + ay$ is a complete square if $x^2 - 2(a+y)x + ay = 0$ has equal roots; that is, if $\left\{ -2(a+y) \right\}^2 = 4ay$, and $y^2 + ay + a^2 = 0$.

$$\text{Solving for } y, y = \frac{a}{2} \left\{ \frac{-1 \pm \sqrt{-3}}{2} \right\}$$

12. Let x = one side. Let d = difference of sides. Let e = diagonal.

$$\therefore x^2 + (x+d)^2 = e^2. \quad 2x^2 + 2dx + d^2 = e^2.$$

$$\text{Solving for } x \text{ we have } x = \frac{-d \pm \sqrt{2e^2 - d^2}}{2} \therefore x + d = \frac{d \pm \sqrt{2e^2 - d^2}}{2}$$

$$13. x^4 + x^2y^2 + y^4 = 741 \quad (1) \quad x^2 + xy + y^2 = 39 \quad (2)$$

$$(1) \div (2) \text{ gives } x^2 - xy + y^2 = 19 \quad (3) \quad (2) - (3) \text{ gives } xy = 10$$

$$(4) \quad (2) + (4) \text{ gives } x + y = \pm 7 \quad (3) - (4) \text{ gives } x - y = \pm 3$$

$$\text{From which } \left. \begin{array}{l} x = \pm 5 \text{ or } \pm 2 \\ y = \pm 2 \text{ or } \pm 5 \end{array} \right\}$$

CORRESPONDENCE

Editor of THE CANADA EDUCATIONAL MONTHLY:

SIR,—The moving of the waters, which has drawn the attention of Canadians to the possible disaster of having the Plains of Abraham submerged in the present progressiveness of the city of Quebec, has much or little in it as a public movement according to the standpoint from which it may be viewed. If the intersecting of a portion of the famous battlefield (which has for so many years somewhat erroneously taken to itself the name of the Plains of Abraham), with streets and building lots and the paraphernalia of country residences, is to be taken as a serious disaster, then such a disaster has already befallen the Plains of Abraham, since much of the ground where the shock of the battle and the final rout took place has already been intersected with streets and partly built upon. And as far as calling such an extension of the city of Quebec a desecration, there may be much more serious desecrations than that in some of the gatherings at present tolerated on the grounds referred to, and about which there never has been a word said by clergyman or historian. But disaster or no disaster, desecration or no desecration, any enterprise that would lead to the adornment of this portion of the ancient capital in commemoration of the great quarrel between Great Britain and France—in commemoration of the peace that had for its object the blending of French and English Canadians into one people, one federation, one nation—cannot but be worthy of commendation. An effort was made some years ago to adorn as a city park the large field so long known as the Plains of Abraham, but the undertaking failed to mature, possibly on account of the expense involved; and, as I have said in writing elsewhere about

this matter, unless a wider scope be given to any future enterprise in this direction, it is more than likely that nothing will again come of it. In the hope that something will be done, and that immediately, I would suggest that instead of making the little bit of the Plains of Abraham that has so long usurped a name that rightly belongs to the plateau from the city walls to Wolfe's Cove, instead of making this so-called Plains of Abraham a city park, I would suggest that an international park be arranged for, extending from the Citadel to the steep where Wolfe gained footing on the great area whereon the long-continuing quarrel between the two greatest powers in Europe at the time was to be fought out. Part of this territory, the finest in the world for such a purpose, has already been surveyed by Mr. Taché, the Deputy-Minister of Crown Lands, and, as far as the plans prepared by that gentleman indicate, there can be no difficulty in starting from the Cove fields and extending the great international work along the river, even beyond the field now known as the Plains of Abraham. Such a park would form the finest international undertaking of the kind ever seen, and the reason for doing something in this direction seems to be imminent. Indeed, the time is a fitting one, historically speaking, for the inauguration of any movement that would tend to the unifying of the sympathies between Great Britain, the United States, and Canada, and such a magnificent tribute to the spirit of the times as that I have suggested would become a permanent peace-token—a consummation, possibly, of the labors of the Washington International Commission, whose negotiations were first and auspiciously opened at Quebec last summer. And, when I

urge this as an international movement, I feel that there is not likely to be any difficulty in enlisting the sympathies and pecuniary assistance in favor of the scheme from our brethren, the people of the United States, since their fellow-countryman, Gen. Richard Montgomery, met the death which no true soldier ever refuses to meet near by, at the foot of the rock on which the citadel stands. A desire to build a monument to Montgomery has already been expressed by several Americans who have visited the scene of his death, and I have no doubt that subscription lists opened in London, England, and Montreal or Toronto, to meet the expenses of laying out the proposed park, would be readily supplemented by one opened in Washington or New York. As I have already said, this is a season of international peace-offering and unifying forbearance between two of the greatest nations in the world, and the new international park at Quebec might be made a happily conceived emblem of peace in its commemoration of the disasters of war.

Believe me to be,

Yours very sincerely,

J. M. HARPER.

Quebec, Dec. 17th, 1898.

DOMINION EDUCATION BUREAU.

To the Editor of the Mail and Empire:

SIR,—I see that in a recent editorial you refer to the suggestion of Dr. Harper,* of Quebec, to establish a Dominion Bureau of Education.

This is by no means an original suggestion. It was one made by the late Rev. Dr. Ryerson to Sir John Macdonald at the time when Confederation was being practically con-

*See October number for Dr. Harper's address. This magazine has for several years past directed attention to the need of closer relations, in educational affairs, between the different provinces of the Dominion.

sidered, more with the view of being the means of diffusing information, and, incidentally, of somewhat neutralizing the effect of local political discussion and disagreement on so delicate a subject as education. The arguments in favor of providing a purely provincial system—without a central information bureau—prevailed, with the safeguard then agreed to and embodied in the Confederation Act in regard to education. The Dominion scheme it was thought would follow in due time, as the number of diverse provincial systems of education increased.

In the *Ryerson Memorial Volume*, which I prepared nearly ten years ago, I referred to this deferred Dominion scheme on page 30 of that volume. In giving a summary of the reasons for the establishment of the United States Bureau of Education, I stated in substance that our American neighbors became fully alive years ago to the practical evils of the uncertain and fluctuating character of the prevailing system of local educational administration in vogue amongst them. They saw that, in many of the newer States, unpractised and officially untrained men of merely local experience and limited knowledge were constantly being elected for limited periods to take charge of the administrative department of the schools of a State. Such men were often able educators, but by no means experienced educationists or masters of systems of education. The American people, shrewd and practical as they are, felt the absolute necessity, therefore, of furnishing such men, and the vast army of those under them, or associated with them, with full and accurate information on systems and plans of education all over the world. With this object in view, they established a central Bureau of Education at Washington.

I further stated that it was Dr. Ryerson's ideal that, sooner or later, a

similar Bureau would be established by the Central Government at Ottawa, the object of which would be, not only the supplying of abundant and reliable information to each province on the subject of systems and plans of education elsewhere, but also by intercommunication to secure a general harmony of aim and purpose. And that, further, without attempting any interference in local administration, the Bureau would be the means of keeping up an active, yet friendly, intercolonial rivalry; and thus, on Dominion and national lines, to build up the Confederacy, and to stimulate and encourage the efforts made in each province for the promotion of substantial educational progress, combined with efficiency and economy.

In his "Special Report on Systems of Popular Education in Europe and the United States" of 1868, pages 196-7, Dr. Ryerson referred deprecatingly to the fact that our so-called national system of education in Ontario (which was then administered by him) was without educational identity or unity with that of any other province, and that we have imitated, rather than have been warned by, the example of ancient and modern confederations in this matter. He then quoted the apposite remarks of a number of able American writers who had discussed this subject. The first of whom he

had quoted said: "So long as the education of our children is conducted under the laws of separate States, without any homogeneousness in the methods adopted for their sustenance and management, we shall lack a most important auxiliary to a true nationality."

Under such a disconnected system the writer justly remarked that: "It is quite impossible to secure that uniformity of method, or thoroughness of administration, or strictness of responsibility which a well managed national Bureau might achieve. The whole work is fragmentary and unmethodical. Each State has a different standard, grade, or measure of school culture."

In my fifth letter from England, published in the *Mail and Empire* of the 11th of June, I have shown that the school systems of England, Ireland, Scotland and Wales are practically under one supreme management, with local secretaries. The English Education Department, as I also pointed out in that letter, has recently issued the first of a series of special reports relating to education in Belgium, France, Germany, Denmark, Egypt, etc., similar to those issued by the United States Bureau of Education at Washington.

Yours, etc,

J. GEORGE HODGINS.

Toronto, Oct. 20, 1898.

The whole German people are being educated scientifically in the arts of industrial production. Nowhere in the world does manufacturing become so nearly a profession as in Saxony, for in this small kingdom there are no less than 111 technical institutes.

Prussia has 200 such schools with 12,000 pupils; Hesse, with a population of 1,000,000, has eighty-three schools of design, forty-three of manufacturing industries and many others for artisans of various trades.

MAGAZINE AND BOOK REVIEWS.

Behind a richly-colored cover designed by Tissot the December *Century* has gathered an appropriate and interesting collection of literary value. Jacob A. Riis is peculiarly at ease in striking one of the best notes of any season, the happiness of the poor, deprived but still light of heart. His contribution is entitled *The Passing of Cat Alley*. Uncle Riah's Christmas Eve by Ruth McEnery Stuart is a splendid bit of work. Mention should also be made of the prize poem in the *Century's* College competition. Miss Anna Hempstead Branch was the young lady who obtained the honor. Her poem is called *The Road 'Twi'x Heaven and Hell*, and it certainly is worthy of a place in the *Century* whether as the result of a competition or chosen merely from the outside world.

The *Atlantic Monthly*, for December, contains the first part of Julia Ward Howe's *Reminiscences*. The *Autobiography of a Revolutionist* is also continued, and together these two would be sufficient if one could read nothing else in the magazine. But we also find a most charming descriptive paper by W. D. Howells, *Confessions of a Summer Colonist*, in which he has rendered with fine simplicity the essence of a summer transient. The Contributors' Club is as usual felicitous.

One of the most important articles in *Appleton's Popular Science Monthly* is devoted to the consideration of the *Playgrounds of Rural and Suburban Schools*, by T. G. Oakley. This is a subject in which all educationists are rightly interested. *Superstition and Crime* by Prof. E. P. Evans, and *Brain Weights and Intellectual Capacity* by Joseph Simms, M.D., are both of great interest. The former

paper is extremely painful, but justifies our present methods of civilization to some extent. The latter indicates that there may after all be something in brains that weigh less than so many ounces.

The *Mystery of Mr. Cain*, by Lafayette McLaws, is the continued novel in the January *Lippincott*. It is full of mystery and excitement. Charles G. D. Roberts contributes six lines of charming verse entitled *At the Drinking-Fountain*. There is something of Christmas in this magazine which is sensible since it was issued in the Christmas week.

The Christmas number of the *Publishers' Circular* is as usual a volume of prodigious size, containing charming illustrations from a great number of holiday and other books, and short descriptive notes indicating what one may expect to find in them. The *Publishers' Circular* is a good place to look for advice before buying any addition to a library.

Messrs. Harper & Brothers, New York, have recently issued a book of remarkable interest called *A Study of a Child*, by Louise E. Hogan. The book is written evidently by the child's mother and it is illustrated by the child's own drawings. But the value and the main interest of the book does not lie in the fact as might be expected that the child is extremely remarkable. It is plainly an attempt to benefit the childhood of the race by a scientific accuracy in the record of what one child has done at a certain age. The book aims at recording child life. This will necessarily be of great value to teachers.

Books received from the *American Book Company*, New York:

An *Elementary Course in Analytic Geometry*, by J. H. Tanner and J. Allen.

A complete Latin Grammar, by Albert Harkness.

Elements of the Differential Calculus, by James McMahon and Virgil Snyder.

A Short Latin Grammar, by Albert Harkness.

Ten Selected Orations of Lysias, edited by W. H. Wait.

A Compend of Geology, by Joseph Le Conte.

D. C. Heath & Co., Boston :

Lessons for Beginners in Reading, by Florence Bass.

Auf der Sonnenseite, edited by Wilhelm Bernhardt.

French Review Exercises, by P. B. Marcou.

German Selections for Advanced Sight Translation, compiled by Rose Chamberlin.

Dumas's *La Question D'Argent*, edited by G. N. Henning.

Fridtjof Nansen, by Jacob B. Bull.

Ginn & Co., Boston :

Goethe's "Egmont," together with two of Schiller's Essays, edited by Max Winkler. "The Gate to Vergil," by Clarence E. Gleason; "Heroes of the Middle West," "The French," by Mary Hartwell Catherwood.

C. W. Bardeen, Syracuse :

"Ideals and Programmes," by Jean L. Gowdy.

Cambridge University Press Warehouse :

"The Teaching of Modern Foreign Languages," by Karl Breul.

The Copp, Clark Company, Toronto :

"The Ground Work of Number," by A. S. Rose and S. E. Lang.

Macmillan & Co., London :

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in sudden death; the words, half spoken, choked, upon the lips with clay for ever; or, stranger than all, the whole majesty of humanity raised to its fulness, and every gift and power necessary for a given purpose, at a given moment, centered in one man, and all this perfected blessing permitted to be refused, perverted, crushed, cast aside by those who need it most—the city which is not set on a hill, the candle that giveth light to none that are in the house—these are the heaviest mysteries of this strange world, and, it seems to me, those which mark its curse the most.—*Ruskin's Stones of Venice.*

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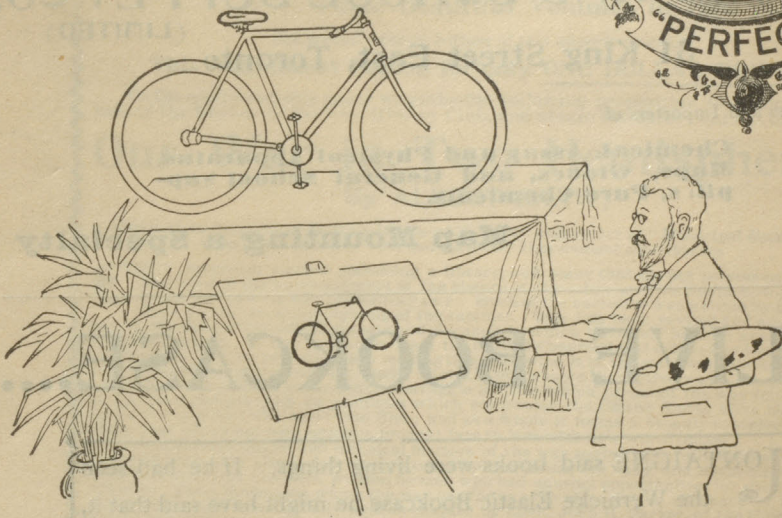
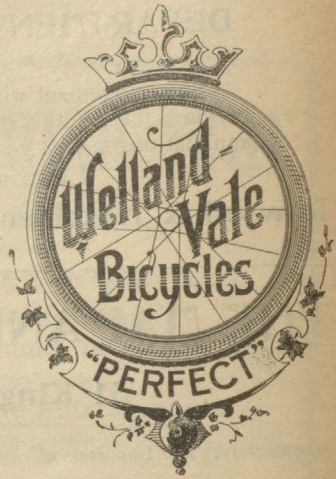
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