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ANNUAL REPORT
OF THE
GOVERNORS, PRINCIPAL AND FELLOWS
OF
MCGILL UNIVERSITY, MONTREAL.
FOR THE YEAR 1888,

*(Published by permission of His Excellency the Governor-General, Visitor
of the University.)*

*To His Excellency the Right Honourable Baron Stanley of
Preston, G.C.B., P.C., Governor-General of Canada.*

MAY IT PLEASE YOUR EXCELLENCY :—

We beg leave respectfully to present to Your Excellency, as Visitor of the University, under its Royal Charter, the following Report of its statistics and history, in the educational year, ending December 31st, 1888.

We have first to report, with regret for our loss, but resignation to the will of God, that it has pleased Him to remove, in the course of the past year, several men who have long occupied prominent and useful places in this University, as well as in the community for which it labours.

The Honourable James Ferrier Senator, Chancellor of the University, and member of the Legislative Council of the Province of Quebec, was appointed a member of the Board of the Royal Institution for the Advancement of Learning in 1845, and was elected President of the Royal Institution in 1846. On the reconstruction of the Board, under the amended Charter in 1852, he voluntarily resigned the Presidency in favour of the Honourable Mr. Justice Day, then recently appointed on the Board, and was re-elected as President and Chancellor, on the decease

of Judge Day, in 1884. He was also for many years a member of the Council of Public Instruction for the Province of Quebec. Throughout the long period of his connection with the McGill University, Mr. Ferrier took an active and influential part in every effort on its behalf, and was always ready to contribute of his pecuniary means and of his time, thought and influence to the furtherance of its interests, as well as those of education in general. At the same time, in addition to his more prominent public duties, he was a leading spirit in many religious and benevolent enterprises. No man has earned a higher title to the gratitude of his countrymen. Mr. Ferrier had attained to the great age of 88 years, but was active in mind and body till within a short time of his death, which occurred on the 30th of May.

The Board of Governors has sustained another loss, in the demise of the Honourable Robert Mackay, Judge of the Court of Queen's Bench, who died on the 23rd of February, at the age of seventy-two years. Judge McKay was appointed a member of the Board of Royal Institution in 1879, and was ever an active and assiduous member, contributing greatly by his high Christian character, culture, refined taste, legal acumen, and educational zeal to its efficiency and success. He manifested a special interest in the Library, and for many years, was an active member of the Library and Museum Committees of the Corporation. He has left a permanent memorial in the gift of his large and valuable Library to the College. It has been well said of him in a recent biographical sketch, "In every position of life he was called to occupy, as citizen, patriot, lawyer and judge, he acquitted himself as became an upright, God-fearing man. He justified his conduct by his conscience, and it can be said of him, that he feared only to do what was wrong. His life was a public example; his death is a general loss."

The vacancies in the Board of Governors have been filled by the appointment of the Honourable L. Ruggles Church, M.D., one of the senior graduates of the University, and an eminent friend both of professional and general education, and by that of Andrew Frederick Gault, Esq., a gentleman distinguished by his liberality and earnestness in the promotion of education,

more especially in connection with one of our Affiliated Colleges.

Another and unexpected loss was experienced in the death after a short illness of the able and accomplished head of the Faculty of Law, Wm. H. Kerr, D.C.L., Q.C. As Professor of International Law and Dean of the Faculty, Dr. Kerr distinguished himself by skill as an instructor, and by the introduction of new and improved methods of tuition and examination, as well as by watchful care of the interests of the Faculty ; and the chaste and beautiful addresses, with which he was wont to dismiss the graduating classes, will long be remembered. Professor Trenholme, M.A., D.C.L., who is the Senior Professor of the Faculty of Law, and has long been one of its leading members, succeeds to the Office of Dean, and to the Chair of International Law, while Professor Hutchinson, D.C.L., takes that of Roman Law, and Archibald McGoun, B.A., B.C.L., has been appointed to the Chair of Civil Procedure.

Professor Charles F. A. Markgraf, M.A., Professor of German Language and Literature, was at the time of his death the Senior Professor in the Faculty of Arts, having been appointed in 1853. He was an earnest and profound student of German Literature, and a solid, painstaking, and conscientious teacher, ever zealous to give prominence and interest to the study of the language and literature which he loved.

Mr. P. Toews, M.A., a graduate of the University of Toronto, and who has studied in Germany and in France, and has had considerable experience as a high school teacher, has been appointed, for the present session, Lecturer in German Language and Literature.

Another serious loss, felt alike by all the Faculties of the University, is the untimely death of our untiring and enthusiastic Instructor in Gymnastics, Mr. Frøderick S. Barnjum, whose earnest and self-denying labours in the cause of Physical Culture, were beyond all praise, and whom it is felt that it will be difficult to replace.

For the present session, Mr. James Naismith, B.A., a pupil of Mr. Barnjum, and the winner of one of the Wicksteed Medals for Physical Culture, has undertaken the instruction of the classes for men with much success, and Miss Barnjum has opened a class for women.

We have also to record the decease early in the present year of Mr. M. Williams Taylor, Library Assistant, a faithful and conscientious man, who continued, though in an infirm state of health, to discharge his somewhat onerous duties in a regular and pains-taking manner, until attacked by his last illness. Mr. Henry Mott has been appointed to the vacant office, which he fills with much efficiency.

Seldom has the University been called to mourn in one year so many leaders in education, and we have also to lament the sudden and untimely death of several of our graduates, men loved and esteemed, and of high promise. The lesson to those who remain is to work while it is day, for the night cometh when no man can work.

At the Convocation of the Faculty of Arts, in May, the University was honoured with the presence of His Excellency the Governor-General and Lady Lansdowne, who had throughout the term of their residence in Canada shewn a warm interest in its welfare. To Lord Lansdowne, we are indebted for a Gold and a Silver Medal annually offered for competition in the Faculties of Arts and Applied Science, and for several visits in which we received from him wise counsel and judicious encouragement in the great work with which the University is charged.

We had the pleasure, in June last, of waiting on your Excellency and Lady Stanley, with an address of welcome on your first visit to Montreal, and have to thank Your Excellency for a kind and cordial reply. It is a cause of much gratification to us that we may hope soon to have the honour of a visit at a time when our work will be in full operation. We have also to thank Your Excellency for your kindness in continuing the Governor-General's Gold and Silver Medals, which we have no doubt will, as heretofore, be a great encouragement to students.

On occasion of the visit of the Lieutenant-Governor of this Province to Montreal, in October last, His Honour was invited to visit the College, and to inspect its appliances for instruction. This he was pleased to do, along with several members of his Government and leading citizens of Montreal.

An invitation was received early in the year, from the ancient University of Bologna, to send a delegate to the celebration of

its eighth Centenary, in June last. Though this proved impracticable, a suitable congratulatory address was prepared and forwarded.

We have had the pleasure of granting the use of our rooms for the annual and ordinary meetings of the Canadian Society of Engineers ; a body which we hail as one representing a very important scientific profession, and one deeply interested in the advancement of technical education.

Certain amendments in the Regulations, for the election of Representative Fellows, came into operation at the election in May last, and will give additional facilities in this important matter.

Arrangements are being made for the publication of a corrected list of Graduates, with their residences, once in three years, instead of the present method of publishing the lists in the Annual Calendar.

In the University Lecture of the present session, the Principal gave a historical sketch of the Constitution of the University, and a summary of its provisions which, while in some respects peculiar, are in the main similar to those of the Universities of the Mother Country, and have been adopted from time to time, as exigency required or opportunity offered ; so that they may be said to have developed themselves in harmony with our environment in this Province, while constructed in such a way as to provide, as far as possible, for future growth and improvements. The lecture has been printed for general information.

Honorary Degrees are rarely given by this University, but at the last Convocation the Honorary degree of LL.D. was conferred on three gentlemen, who have signalized themselves by their devotion to the interests of education and science :—Dr. Richard W. Heneker, Chancellor of Bishop's College ; Dr. Alexander Anderson, Principal of the Prince of Wales College, Charlottetown ; and Dr. William Fream, Professor of Natural History in the Royal Agricultural College, Cirencester.

Our University lists now show, without reckoning those removed by death, 1,440 Professional graduates in course, viz : 945 in Medicine, 381 in Law, and 114 in Applied Science. Of these, at least 133 are Bachelors of Arts, and there is reason to

believe that nearly the whole are usefully employed in their respective professions, and many have attained to eminent positions. The number of graduates in Arts in course is 449.

FACULTIES AND AFFILIATED INSTITUTIONS, &C.

The work of the several Faculties of Law, Medicine, Arts, and Applied Science, in McGill, has been carried on in the present session with its usual success. The Affiliated Colleges in Arts—Morrin College, Quebec, and St. Francis College, Richmond—are in a prosperous condition, and will, we hope, send up several candidates for the University examinations. The four Affiliated Theological Colleges have worked, as heretofore, in perfect harmony with the University, and their privileges as to free tuitions have been augmented, while their number of students has increased to about 160. The McGill Normal School has pursued its eminently useful labours with increased efficiency and public approval, as shown by the large number of its students in attendance from the country districts.

At the close of last session, one hundred and two degrees were granted in Arts, Medicine, Law and Applied Science. Among these were eight to ladies, who constituted our first graduating class from the Donalda Special Course. Eight University Gold Medals were awarded to successful candidates in the examination, including that given in the Faculty of Applied Science by the British Association. Three Medals in Gold, Silver, and Bronze, the gift of Dr. R. J. Wicksteed, of Ottawa, were awarded for Physical Culture.

At the beginning of the present session, eleven exhibitions and scholarships, and three bursaries, in the Faculty of Arts, were awarded to successful competitors, as well as 154 free tuitions, of which 65 were the gift of benefactors and 89 of the Board of Governors, the latter including 54 to students of Affiliated Theological Colleges, and 5 to students of the Normal School in training for higher diplomas as teachers. In the Faculty of Applied Science, the British Association Exhibitions, two Scott Exhibitions, and four prizes, including the Greenshields and Burland Prizes, were awarded.

In the Faculty of Arts, the number of undergraduates is 154, namely :—119 men, 35 women ; there are also 31 men and 21

women matriculated and taking partial courses, and 55 men and 88 women taking only one or two courses of lectures, and reckoned as Occasional students ; the total number being 205 men and 105 women, or 310 in all. Of these, 160 belong to families not resident in Montreal. These numbers do not include the numerous students in Medicine and Applied Science who take classes in Arts.

The Report of Morrin College, Quebec, shows a total of 34 students ; of whom 25 are undergraduates, six of these being in the Fourth Year ; and that of St. Francis College of eleven students. It may be expected that ten at least of these students will come up for the Intermediate Examinations in April and six for the Degree.

On application of Morrin College, Quebec, exemptions have been granted to students in its Divinity Faculty, similar to those accorded to other Theological Colleges.

The question of raising the standard of Matriculation, has been under the consideration of the Faculty of Arts and of the Corporation. The following statistics in this matter, which have been collected by the Dean of the Faculty, may be of interest in relation to this question. They serve at least to show the fallacy of the statements sometimes made in disparagement of the University, to the effect that every student can obtain a degree in Arts, and that its examinations are not sufficiently severe.

It appears from the Records of the Faculty, that no less than 28.6 per cent. of the candidates fail at Matriculation ; and that of the whole number who come up for Matriculation, about 51 per cent. finally pass for the degree of B.A. When it is considered that the candidates for entrance have taken a full course at a preparatory school, and that they have thereafter to study for four years, to attend 1080 lectures, and to pass nine examinations, it can scarcely be said that the degree of B.A. is too easily attained. The statistics, indeed, show how difficult it will be at present to raise the standard of Matriculation, and also that the course of study in Arts is at least adequate to the present requirements of this country. They also show how far a regular College course is above the mere cram for an entrance examination to professional study, as at present required by our Professional Councils.

In this connection it may be observed, that much of the prevalent discussion respecting examinations fails to grasp the true conditions of the problem. When the examination is the sequel of a long and definite course of study, and the questions fairly cover the ground gone over, it is a good and useful test of work done and of education attained. When on the other hand it is dissociated from a regular course of study, and related only to certain prescribed subjects for which the candidates may prepare in such manner as they please, and the examiner has no knowledge of the methods or duration of their preparatory studies, the examination is sure to be on the one side a provocation to cram, and on the other, to arbitrary and uncertain questions of little practical value, and often unfair to the best candidates.

In the Appendix will be found an instructive diagram, prepared by the Dean of the Faculty, showing the growth of the Faculty of Arts for a series of years.

It will be noticed that in the Donalds Special Course for Women the number of regular undergraduates has increased to 35, a very gratifying fact. Besides these, are 69 ranking as Partial and Occasional, of whom some may be able on examination to enter as undergraduates. With respect to these, it is to be observed that many are taking several courses of lectures and passing examinations, and that all with the exception of four are taking the regular class lectures in at least one subject. Ladies thus desiring higher culture in selected subjects, though not taking the regular undergraduate course, must be held to represent a valuable educational work. The graduating class of this year will be small, owing to its having entered in the session of 1885-6, when our classes in all departments were diminished by the epidemic then prevalent. As in previous sessions, the students in the Donalds Course have distinguished themselves in the examinations :—an evidence not only of their capacity and diligence, but also of the advantages which they enjoy under the methods of this University.

As heretofore, we are much indebted to Miss Gairdner, the Lady Superintendent of this Department, for her kindness to the students and attention to their interests.

The Trafalgar Institute for the education of women, recently organized under endowments of the late Donald Ross, Esq., and Miss Scot', with Miss Fairley, a lady educated in the University of Edinburgh, as Principal, and a competent staff of teachers, has been affiliated as a preparatory school, and has already attracted a number of students. It is hoped that it may soon send up women for the Matriculation examinations.

Correspondence has taken place with the Hon. the Minister of Education for Ontario, and with the Protestant Committee of the Council of Public Instruction, respecting the assimilation of University examinations for Matriculation in this Province and Ontario, and it is hoped that satisfactory arrangements have been reached.

In the Faculty of Arts of this University it is to be observed that while certain books in Classics and other languages are prescribed for Matriculation, other books will be received, and it is only the actual amount of knowledge possessed by the candidate that is taken into consideration. It is further to be observed that the examinations for A. A. in June are equivalent to Matriculation in Arts or Applied Science, and that the questions can be sent to any school if applied for in time. The examinations in September are in McGill College and affiliated Colleges (Morrin and St. Francis) only.

In the competition examinations for Exhibitions and Scholarships, it is of course impossible to allow any choice of books, but the subjects have been arranged in such a manner as to suit the courses of study in the preparatory schools not only in Quebec but in other Provinces.

The increase in the number of students in the Faculty of Applied Science testifies to its growing reputation as a practical school. Up to the present session it has been accommodated in the building of the Faculty of Arts; but the increasing number of students in that Faculty having rendered a change necessary, the Faculty of Applied Science has been provided with suitable rooms in the east wing, the upper story of which has been by the addition of a large sky-light converted into a large and commodious drawing-room. The Dean of the Faculty has taken some pains to ascertain the employments of graduates, and has ascertained that nearly all have obtained

useful and remunerative professional employment, while several have risen almost at once into very important positions.

The need of mechanical workshops, referred to in a previous report, has not yet been supplied.

The Summer Session of the Medical Faculty has been continued for a number of years, and is of signal benefit to students. The attendance last summer was large, and the professors and the lecturers employed, as in former years, presented the amount of the fees (\$1023) to the Museum, Library and apparatus of the Faculty. This liberality on their part entitles them to the warmest thanks of the University and of all interested in medical education.

We have to add that in the present year Dr. J. C. Cameron, Professor of Midwifery, has presented to the University his large and valuable collection of models, casts and anatomical preparations.

In the present session the Faculty of Law has been provided with new and commodious rooms in the building of the Fraser Institute, and in connection with this a re-arrangement has been made of the courses of lectures, which it is hoped will be beneficial to the students.

Mr. Naismith reports in the present session a class of 75 students in the University Gymnasium. There is, besides, a class of 17 women under Miss Barnjum. These classes being voluntary, and the Gymnasium not being conveniently situated for the students, the number in attendance is smaller than could be desired.

It is contemplated by the Governors, as soon as possible, to dispose of the present building and lot on University street, and to erect a suitable gymnasium on the College grounds. If this can be done, much greater facilities will be afforded to students, and the building might include accommodation for the Athletic Association and other College societies.

We are happy to state that Dr. R. J. Wicksteed, of Ottawa, has continued his liberal gift of a gold, silver, and bronze medal for Physical Culture, the competition for which is open to students of all the Faculties.

In the present session, notwithstanding the smallness of the classes in the Fourth Year, owing to the epidemic of 1885, and

the diminution of the students in Law, under the influence of the disabilities inflicted on that Faculty, the number of the students is the largest on record. The totals stand as follows :—

In Law.....	13
“ Medicine.....	*257
“ Arts—Men.....	205
—Women.....	105
“ Applied Science.....	76
“ Morrin College.....	34
“ St. Francis College.....	11
Total	695

If we add to these 98 students in the Normal School, not attending classes in the University but in training as teachers, the total number of students will reach 793, exclusive of students in the affiliated Theological Colleges, who are not reckoned, except when taking courses of lectures in the Faculty of Arts.

MCGILL NORMAL SCHOOL.

In the McGill Normal School, the Principal reports 101 students entered in September, of whom 3 are in the Academy Class, 40 in the Model School Class, and 58 in the Elementary School Class. Six are men ; 95 women ; 41 resident in Montreal ; 60 from places outside of Montreal. Owing to failures in examination and other causes, seven have withdrawn, leaving the number in January 94. In the Model Schools there are 321 pupils ; 151 being boys, 170 girls. In these schools there are three departments—a Girls' school, a Boys' school, and a Primary school ; and it is desired as soon as possible to add a Kindergarten. The special object of these schools is to afford means of training for the students of the Normal School ; but, as City schools, the Model Schools have always been very useful and popular.

Dr. McGregor, who was connected with the Normal School, first as head-master of the Boys' Model School and afterwards as professor, from the beginning of the school in 1857, having resigned at the close of last session, Mr. George W. Parmelee

* Including 36 Veterinary students taking lectures in Medicine.

has been promoted to the vacant professorship, and in connection with this a beneficial re-arrangement of the work of instruction has been made by the principal of the school. Mr. Thos. B. Smiley has been placed in charge of the Boys' Model School in place of Mr. Parmelee.

Mr. Dawson, teacher of Tonic Sol Fa, having accepted a position in the United States, Mr. W. H. Smith, a teacher trained in the same school in England, has been engaged in his room.

The transference of the Academy Class to the University, referred to in last Report as in contemplation, has been effected, and it is hoped may produce beneficial results, increasing in importance from year to year.

An addition has been made to the means of instruction in the Model Schools by the erection of a workshop for boys, at a cost of \$1000 defrayed by the funds of the School itself. It is intended not only for the benefit of the boys, but also to give practice to the teachers-in-training in elementary technical instruction.

The Regulations concerning the McGill Normal School have been codified, slightly modified and somewhat enlarged, have been adopted in their new form by the Protestant Committee of the Council of Public Instruction, and, being sanctioned by the Lieutenant-Governor in Council on the 30th ult., are now in force.

By these new Regulations the functions that have been always exercised by the Normal School Committee are definitely recognised; the terms on which pupils of the requisite age who have passed the Departmental examinations of the Model Schools, or the Associate in Arts examinations of the Universities, may enter the Normal School without examination, are defined; and the conditions on which diplomas from the Normal School may be obtained are detailed.

The number of Normal School Diplomas granted in the past session has been as follows:—

For Academies.....	14
“ Model Schools.....	30
“ Elementary Schools.....	46
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Total	90

The total number granted since the institution of the school is 1286; and we have reason to believe that, as heretofore, few of those who have taken diplomas have not fulfilled their pledge to teach for three years, while a large proportion have become permanent teachers.

EXAMINATIONS FOR ASSOCIATES IN ARTS.

In the past summer these examinations were again held under the joint auspices of the Universities and of the Protestant Committee of the Council of Public Instruction, and were extended to all the Academies and High Schools. The result showed a further improvement on that of the previous year, and holds forth a good promise of progressive advancement, though some modifications in details may still be desirable, and it is hoped that this attempt to bring all the institutions of secondary education within the scope of one system of examinations will prove a permanent benefit to education in this Province. Candidates presented themselves from 23 schools. Fifty passed as Associates in Arts, besides 21 who passed the examinations, but were over 18 years of age; and 10 took Junior Certificates, besides 5 who passed but were over age. Thus 86 in all passed in these examinations.

In these examinations the Rev. E. I. Rexford, B.A., Secretary of the Department of Public Instruction, and Dr. Harper, Inspector of Academies, were associated with the University examiners.

It should be added here that these examinations have been carried on for many years by the Universities without any public aid, and that only the long experience of the University examiners and their able secretary, Prof. Chandler, could have secured in a matter so complex and difficult the results so far achieved, however imperfect they may be in the estimation of some critical persons.

LIBRARY, MUSEUM, AND APPARATUS.

The reports of the Library, Peter Redpath Museum, and Observatory are appended to this Report, and show the present condition of these departments of the University.

The number of volumes in the Library is now over 27,800, and this does not include about 11,000 volumes in the library of the Medical Faculty, so that the total number of volumes is about 29,000.

Valuable additions have been made to the Library by donations from Mr. Peter Redpath, from the McGill College Book Club and the Graduates' Society and Her Majesty's Government, as well as from many private donors. The number of readers has also largely increased—a very gratifying fact. Many unbound books and volumes of periodicals have been bound, and additional shelving has been provided for new acquisitions.

The Library Committee, however, anticipates that the increasing number of books and of readers will very soon make a serious demand on the University both for shelf-room and accommodation of students.

The Peter Redpath Museum has acquired many valuable specimens by donation, by exchange and by purchase, and has been aided, as in past years, by funds supplied by Mr. Redpath and Mr. and Mrs. J. H. R. Molson. Mr. Currie has been employed during the year in labelling, arranging and mounting specimens. The issue of MUSEUM NOTES has been commenced by the publication of "Memoirs on Fossil Sponges" and on "Specimens of Eozoon," which will be followed by others, now in progress, on "Pleistocene Fossils" and "Specimens of Trails and Impressions of Aquatic Animals." These publications are at present issued by the Principal without expense to the University.

The special report on the Museum shows that under the care of Prof. Penhallow the Herbarium and Botanical collections have now become the most important in Canada for the study of Canadian Botany, so that this department has attained to the eminence already enjoyed by our collections in Palæontology, Zoology and Mineralogy.

The Peter Redpath Museum and the new Chemical Laboratories, now completed through the liberality of Mr. W. C. McDonald, have enabled the University to extend its work in Practical Science in a manner not previously attainable in this country. In connection with the Faculties of Medicine, Arts and Applied Science, there are classes in Geology, Mineral-

ogy, Zoology and Botany, attended by a large number of students, who are regularly taught in its class-rooms and have access to its specimens and appliances. Laboratory work in Physiological Botany and Histology is carried on by Prof Penhallow, and the new Chemical Laboratories have enabled Dr. Harrington largely to extend the advantages enjoyed by students in Chemistry, Assaying and Metallurgy. The success which has attended these additions, and the immediate demand for instruction which they have developed, shows how much might be done by judicious expenditure in other departments of scientific work.

An important addition to the Physical Apparatus has been made by the acquisition of an Otto gas-engine of the latest pattern, purchased for the University by Mr. J. H. R. Molson, and a dynamo, for which last we are indebted to Mr. A. J. Lawson, agent of the Edison Electric Light System. While this apparatus will afford ample means for electrical experiments, it has also been employed in lighting the Convocation room with incandescent lamps.

Could pecuniary means be found, there is nothing now to prevent the University from extending its scientific teaching in the direction of laboratory work in Physical Science and in Electrical Engineering, the demand for which is rapidly arising.

OBSERVATORY.

The report of the Superintendent refers to the most important matters in connection with the work of last year. Reference is made to the perfection and public importance of the time service, the introduction of observations in solar photography, and the operations carried on in conjunction with Prof. Penhallow and the Natural History Society in the matter of Soil Temperatures, with the aid of a grant from the Elizabeth Thompson Fund, as well as the continuance of the meteorological work in connection with the Dominion Meteorological Office at Toronto. The observatory has also, in consequence of the accurate determination of its longitude some years ago, been enabled to give, in the past year, the data required for the determination of longitudes in the West in connection with the Dominion Surveys in that region.

LEGISLATION RELATING TO PROFESSIONAL EDUCATION.

The relations of the University to the Legislature of the Province of Quebec, were referred to at some length in last Report and in the University Lecture of last session. We are happy to state that the apprehended changes in the Medical Act were not carried out in the last session of the Legislature, so that the Faculty of Medicine is left in the same position as heretofore, which though not without unnecessary legal difficulties, is still of such a character as to permit its continuance and growth in usefulness to the public.

In the matter of the Bar Act and of the privileges sought with reference to the degree of B.A. and the examinations for entry on professional study, we were less fortunate, the bill introduced by the Hon. W. W. Lynch to amend the Bar Act having been thrown out in the Legislative Council, while that to give the privileges existing in other countries to the holders of the Degree of B.A. was rejected in the Legislative Assembly. In these circumstances, another effort will be made in the Local Legislature before prosecuting our appeal to the Dominion Government in vindication of our rights under our Charter and the Confederation Act. We think it proper to repeat in this report the declaration of rights issued by the University last year, referring to our published statements for reasons and details :—

I. *With reference to the examinations preparatory to professional study*, the following facts and principles are stated on behalf of the Protestant minority :

1. The Protestant population possesses, under Legislative sanction and under the control of the Protestant Committee of the Council of Public Instruction and of the Department of Education, a complete course of study, extending from the Elementary Schools to the Universities. In this course, definite and rigorous examinations are conducted in every grade by the best examiners the Province can afford, and it is believed that this system provides an education equal to that exacted in any country for entrance into the study of the learned professions. The Certificates and Degrees based on this course of study and

its examinations are now accepted for the above purpose in the other Provinces of the Dominion, and also in the Medical and Law schools of Great Britain and Ireland.

2. It is held that the Councils of the several professions should content themselves with fixing the stage in the general education provided under the educational law, which may be necessary for entrance into professional study, and should allow the attainment of this to be ascertained by examiners under the two Committees (Roman Catholic and Protestant) of the Council of Public Instruction. Should the professional bodies desire any amendment in the course of study, this can be obtained by application to the educational authorities charged by the law of the Province with this duty.

3. The action of the Professional Councils, in instituting separate examinations, is injurious to education, by exacting requirements not always in accordance with each other, nor with the systems of education in the Province. Such action consequently tends to the frittering away of the time and energies of teachers and pupils, to incomplete courses of study, to the substitution of "cram" for actual education, and to many failures in the examinations.

4. Special injustice is inflicted on the Protestant population, when only one preliminary examination exists, and this based principally on the educational methods of the majority, which are in many respects dissimilar from those of the Protestant schools, even when the names designating the subjects are the same. This is aggravated by a scale of marking attaching great comparative value to subjects such as "Philosophy," as taught in the system of the majority, and to which Protestant educators do not attach so much importance as a part of preparatory education.

5. Whatever opinions may be entertained as to the relative values of the Roman Catholic and Protestant systems of education as existing in this Province, it is certain that both are recognized by law, and that in the Confederation Act guarantees were given to the minority that its system would not be interfered with or rendered invalid for practical purposes. It is believed also that the Protestant system has proved itself at least equal to the other, even under the present disadvantages.

6. The Degree of Bachelor of Arts, as granted by the Protestant Universities, after courses of study and consecutive examinations extending over three or four years beyond the Academy or High School Standard, implies the highest kind of preparation attainable in this Dominion or elsewhere. This degree is accordingly accepted for entrance in the highest professional schools of the Mother Country and of the other Provinces, and the fact that it is not accepted in this Province is a reproach to our country, a disparagement of our Universities and a great discouragement to the higher education.

For the above reasons, it is held by the Protestant Committee of the Council of Public Instruction and by the Protestant Universities :

(1) That the Degree of Bachelor of Arts should be accepted as evidence of qualification to enter on the study of any profession.

(2) That for those not possessing this degree there should be one public Examining Board, acting under the educational authorities of the Province, and providing for entrance into the study of all the professions.

(3) That this Board should be divided into two sections for Protestant and Roman Catholic candidates respectively.

(4) That the action of the Professional Councils in reference to general education should be limited to indicating to the examiners the extent of the examination required for entrance into the several professions, and to securing certificates of the same from the examiners.

II. *With reference to the Examinations for License to Practice*, it is held by the Universities :—

1. That their courses of study should be respected, and should not be interfered with by the Professional Councils, except in case of any grave abuses; since it is not the Councils but the Universities that are recognized by Royal Charters and Legislative enactments as teaching bodies.

2. That the privileges with reference to admission of graduates to practice heretofore enjoyed by the Protestant Universities cannot constitutionally be withdrawn by any action of the Provincial Legislature; and that it is not in the interest of professional education that these privileges should be relinquished in favour of Central Professional Examining Boards distinct from the Universities.

3. That the action of the Professional Councils with reference to the Professional Faculties would be most beneficial if limited to such reasonable oversight, through the Provincial Government or by Assessors or otherwise, as might be agreed on ; and which, while respecting the chartered rights and guaranteed privileges of the Universities, should satisfy the Professional Councils as to the sufficiency and proximate equality of the courses of study pursued and examinations required.

We have much pleasure in stating that the Protestant Committee of the Council of Public Instruction has warmly seconded the efforts of the Universities to obtain relief from the evils affecting the higher professional education, and that there seems to be a united desire on the part of all the Protestant population to have this matter finally and satisfactorily disposed of. We have also had much encouragement and expression of good will from educationists connected with the educational institutions of the majority, who sympathise with us and desire that we should have free scope for the carrying out of our own educational system.

It is hoped that the graduates of the University, and more especially those in Law and Medicine, will move in the matter by procuring the signature of petitions to the Legislature on behalf of the University, and by exerting their influence in the directions above indicated.

In the matter of registration of Medical Degrees in Great Britain, some progress has been made through the kindness of His Excellency the Marquis of Lansdowne, and the Honorable Sir C. Tupper. Our memorial and statement on these subjects having been presented to Her Majesty's Government, despatches were sent to the Dominion Government asking certain reciprocal provisions in the Local Medical Acts. In the Province of Quebec, these provisions were communicated to Dr. Hingston, President of the College of Physicians and Surgeons, and very properly met with the unanimous consent of the members of the college, and it is hoped will speedily be enacted. The arrangements of the British Medical Act are so liberal and so favourable to Canadian graduates that it is hoped that the profession will not, in any of the Provinces, oppose a reciprocity mutually beneficial in the public interest, and tending to the elevation of the Profession and of our Medical Schools.

PUBLIC AIDS TO THE UNIVERSITY.

As it is apparent from certain recent public discussions that the financial position of the University, relatively to the Government, the public and the secondary schools, is not clearly understood, a few short statements on this subject may be desirable.

The total expenditure of the University in support of tuition in the Faculties of Arts and Applied Science was, for the last session, in round numbers, \$47,000, besides about \$3,000 in scholarships, medals and prizes to students. Towards this sum, the Government contributed from the marriage license fees and the grant for superior education, \$4,150; the remainder, or say \$46,000, being derived from the endowments of the University, private benefactions and fees. Assuming this amount to be expended in the education of, say, four hundred persons, the total cost per student to the University will be about \$115 per session for tuition alone, besides the expenses and annual interest on buildings, apparatus, etc.; and to the Province, but \$10.38, which is less than the cost of pupils receiving preparatory instruction in high schools.

On the other hand the fees in no case amount to more than half of the cost of instruction. In most cases, they are very much less than this and, as previously stated, 154 students receive free tuition.

Taking another view of these statements, it may be said that the whole sum received by the University from the Government is devoted to scholarships, exhibitions, free tuitions and other aids to students.

It is further to be observed, that the Faculty of Arts is the main source of qualified teachers for the higher schools and academies, and that the existence and maintenance of these schools is largely dependent on the possibility of advancing to a higher course either in the academical or professional faculties of the University.

From published Legislative papers we observe that the University of Laval has made a very strong appeal to the Provincial Government for pecuniary aid in the prosecution of its work. We observe also that the Laval University bases its claim not on its own statistics but on those of all the pro-

fessional schools of the Province. The sum stated by Laval, as necessary to its wants, is twenty thousand dollars per annum ; certainly a very moderate amount in view of the requirements of a large university organization. While we can sympathize with the appeal of our sister-university, which has hitherto been more amply endowed with reference to its work and expenditure than our own, we feel that similar demands can justly be made on behalf of other universities. Nor should such demands be viewed in relation to the standard of population, but with reference to the appliances of education, corps of instructors, courses of study and number of students in each university. Judged by this standard this university should be entitled to as large an annual amount as Laval, and could this be secured, it is needless to say that it would no longer be necessary that the university should share in the meagre pittance allowed by the population-standard now in force to Protestant superior education.

In the last Report, reference was made at length to many requirements of the University for its further development, and to the financial straits, which in the preceding years had resulted from the diminution in the rate of interest on investments. In the past year no large endowments have been given, but we have to thank many of our friends for seasonable gifts in aid of important objects, more especially the liberality of the Board of Governors in their personal subscriptions of \$6000 for the expenses of the current year. The donations given by three members of the Board to defray the expense of fitting up the new class-rooms in the East Wing, and in procuring a gas-engine for electric lighting, and in maintaining the Peter Redpath Museum, which have already been referred to, and which amount to an additional sum of about \$10,000, increase the obligations of the University to these gentlemen, who freely give not only their time and thought, but their means as well, for the benefit of our students.

Two other gifts deserve special notice, not only with reference to their mournful association with the removal of two of our most esteemed graduates, but as an earnest of the benefactions which in this, as in other universities, will, in process of time, flow in from its alumni. These are the bequests referred

to in the Library report of last year of \$1000 by the late R. A. Ramsay, M. A., for the purchase of books, and that of \$5000 by the late Samuel Greenshields, B. A.

The various objects in relation to foundation, endowment and division of chairs, laboratories and workshops, dining-hall, gymnastic building, lodging-houses, rooms for college meetings and societies, and other additions and improvements referred to in our previous reports, still demand the attention of the friends of education; and though we are not disposed to urge these objects on the attention of the friends who have already so liberally aided the University, we desire them to remember that there is still large scope for their generosity, and that donations made to a growing university, well organized and increasing in its number of students, are sure to be much more fruitful of good than if invested in new and untried educational enterprises.

We have no fear that, with God's blessing and the faithful and diligent labour of its friends and officers, the University will continue to grow and enlarge its usefulness, and we cherish the hope that the means necessary to supply its present more urgent wants will be furnished before those who have borne the burden of its earlier struggles shall be removed from its service.

On behalf of the Corporation,

We have the honour to be,

Your Excellency's obedient servants,

J. H. R. MOLSON,

Acting President.

J. WILLIAM DAWSON, LL.D.,

Principal.

REPORT OF THE LIBRARY COMMITTEE FOR
THE YEAR 1888.

To the Corporation of McGill University.

GENTLEMEN :—

In presenting this Sixth Annual Report, the Committee have much satisfaction in reporting continued improvement in the condition of the Library, and an unprecedented increase both in the number of those using it and in the number of books used.

There has been an addition of 998 vols., among which are to be found books of great value and scarcity ; so that for the practical use of students and graduates, and literary men generally, the library is in a better state of equipment than ever before. The total number of vols. is now 27,802, which does not include many pamphlets and unbound periodicals. It is pleasing to note that the material condition of the books is good, and that no losses have occurred ; nor has it been necessary to impose any fines ;—facts which testify to the care and honour of readers and borrowers.

In the month of December, 1887, Mr. Taylor, owing to serious illness, was compelled to relinquish attendance on his duties as Library Assistant, and your Committee were authorised by the Board of Governors to make such temporary arrangements as they could to fill his place. Mr. Henry Mott was engaged for this service ; and on the death of Mr. Taylor in March last, his temporary appointment was continued, and has since been extended to the end of the current session. Mr. Mott's polite attention to readers and visitors, as also his punctuality and care and diligence in the discharge of his duties, deserve favourable mention in this report.

The Committee have again given careful attention to the matter of reducing, as far as practicable, the number of unbound vols., and especially periodicals, which are in great demand for reference, and therefore need binding. The Board of Governors, in answer to an application therefor, increased their annual grant by \$50, making a grant of \$200, all of which has been expended to the best of their judgment and with economy, by your Committee ; but there still remain some 500 vols. that need binding.

In the last annual report, reference was made to the bequest of \$1000 to the Library by the late Mr. R. A. Ramsay, on the conditions that each book should be substantially bound in leather, and bear some indication of the source from which it came. As Mr. Ramsay was known to take special interest in matters relating to British North America in particular, and to North America in general, it was deemed to be most in consonance with his wishes to expend the amount of his bequest in the purchase of such classes of books. The first purchase made from this bequest amounted to 85 vols. and pamphlets, which cost, including binding, the sum of \$362. Further orders for purchase are being executed in London, Paris, New York and Canada, which, if fully executed, will enhance the value of the bequest. The Committee are careful to see that the conditions of the bequest are complied with, each book being bound in leather, and having a label giving the name of the donor. Mr. Ramsay, besides collecting books on Canadian History, devoted much of his leisure to research in that subject; and at the time of his death he was engaged on a work treating on the History of Canada from 1760-75. The materials for this work, as well as papers already published by him, have been collected and handsomely bound; and by a letter of the 11th instant, his sister, Miss Ramsay, has sent it with the wish that it be placed in the Library. This has been done; and the book will be an appropriate memorial of one whose heart was set on promoting the usefulness and completeness of this department of the University.

A memorial of another benefactor, to whom the Library is largely indebted, is also to be reported. In March last, Mrs. Mackay, widow of the late Mr. Justice Mackay, sent to the Library a tin box with its contents and key, and with the following extract from the will of Judge Mackay:—"The big tin box, with my diaries as a judge hearing causes, I leave to McGill Library, to be placed in my room, with immediate possession, but not to be allowed out."

The other donations during the year have been large and valuable; among which a further consignment of 97 vols. from Mr. Peter Redpath, mostly in English History and Antiquities and Natural Science, deserves special mention.

The cordial thanks of the Corporation are again due to this generous benefactor for the great service he is rendering, not to the University only, but to all literary men in the community, by his well-selected and princely collection. Donations of additional vols. of the "Challenger Reports" have been received, through the Secretary of State, from the Imperial Government; also donations from the Dominion Government, and from the Provincial Government at Quebec. Thanks are due to The Very Rev. Dean Norman for a donation of books on Ancient Music; to the Graduates' Society, for books on Law and on the English language; to Messrs. Macmillan & Co., for copies of Text-books on various subjects; to Sir Wm. Dawson, to Dr. T. Sterry Hunt, to Dr. R. J. Wicksteed, of Ottawa; to the Cobden Club, London; to Mr. Francis McLennan and friends, for a handsome copy of Stephani Thesaurus, in 7 vols.; and to various Societies and Institutes for copies of their Reports or Proceedings.

The pressure for additional shelf-room has been felt more than ever; but your Committee have done their best to meet the difficulty; and, to a certain extent, have succeeded.

The enlargement of the Library for the reception and safe-keeping of the books, is a question that will have to be practically dealt with by the Board of Governors before long, especially as it is closely connected with another question of hardly less importance; viz., that of providing more space and better accommodation for readers, a want which, with the large increase of students, is becoming more pressing every year.

These difficulties, however, though they may cause temporary embarrassment, are yet matter for congratulation, in that they are indications of a growth and improvement which must be gratifying to all who take an interest in the complete efficiency of the University as a centre of light and learning in this community.

All which is respectfully submitted by your Committee.

GEORGE CORNISH, LL.D.,
Hon. Librarian.

MCGILL COLLEGE,
January 22nd, 1889.

 CONSPECTUS OF LIBRARY FOR 1888.

<i>Quarters ending.</i>	<i>Readers.</i>	<i>Visitors.</i>	<i>Books read.</i>	<i>Books lent.</i>
April 23, 1888....	1602	13	508	734
June 25, "	268	29	284	559
Oct. 20, "	864	95	604	547
Jan. 21, 1889....	2159	47	1284	710
	4893	184	2680	2450

Total No. of Vols. in Library.....	27,802
Increase for 1888.....	998

PETER REDPATH MUSEUM—REPORT OF THE
COMMITTEE FOR THE YEAR 1888.

To the Corporation of McGill University.

GENTLEMEN,—The Committee of the Peter Redpath Museum begs leave to report that this department of the University continues to render efficient service in instruction in Natural Science, and to improve in the facilities which it affords for study and instruction.

Many valuable specimens have been presented to the collection, and have been reported from time to time to the Corporation and in the public prints. Some additions have been made by purchase and others by exchange and collection. Additional apparatus has been obtained, more especially for the Botanical laboratory, including means to take microphotographs. Progress has been made in the arrangement and labelling of specimens by Mr. Currie, under the Honorary Curators.

Additional ventilators have been placed in the roof and various repairs attended to, and the insurance on the collections has been increased to keep pace with their addition in value.

The issue of a publication entitled NOTES ON SPECIMENS has been commenced, and it is hoped that this may be continued from time to time, until all the groups of Canadian specimens shall have been provided with descriptive memoirs, rendering them more useful in a scientific point of view and enabling students to refer to them with advantage.

The number of visitors registered for the year is 1500, but this does not include numerous students daily using the Museum, and classes from schools, and parties of strangers who have been freely admitted without recording their names.

Prof. Penhallow has devoted much time to the botanical collections, and reports as follows as to their present condition :—

“The work of preparing and classifying the specimens in the McGill College Herbarium, which has occupied the greater portion of the time that could be spared from regular College duties, for the past five years, may now be considered as essentially completed. The further addition of such specimens as

may be received from time to time will be comparatively simple, inasmuch as they will at once fall into their proper places in the collection without further arrangement.

"The Herbarium, as it now stands, is based chiefly upon collections made by various College students. These, however, necessarily embraced many duplicates and specimens of indifferent value, and in order to render them of value for herbarium purposes, it was found necessary to remount and label them all, discarding in the process whatever proved of minimum value. There remains, however, from this source a considerable amount of duplicate material, which may be available for exchange, or for purposes of practical study.

"There were also collections made by Sir Wm. Dawson, Dr. Kelley, the late George Barnston and Dr. A. F. Holmes, many years ago Professor of Botany in the Medical School. The collection of Mr. Barnston embraces both exotic and indigenous species in large numbers. The collection of Dr. Holmes embraces specimens from Montreal and the immediate vicinity, and is most valuable on account of the age of the specimens and the peculiar localities from which they were collected. This collection has not yet been incorporated with the main collection, although scientific utility requires that this should be done. Finally, the Centennial Collection of Canadian Plants by Prof. Macoun, containing about 3,000 species, forms an essential part of the Herbarium. This collection is on deposit only, being still the property of the Geological Survey, and has been kept entirely distinct. As, however, Prof. Macoun is kindly supplying us with new specimens independently of this collection, it has already acquired only secondary value for our purposes.

"Within the last five years the following additions have been made :

"A collection of Japanese plants from Prof. Penhallow ; California plants from W. S. Lyon ; South African plants from the Natal Botanic Gardens ; Canadian plants from Prof. Macoun, and a very large collection, chiefly mosses, donated by the daughter of the late George Barnston. Prof. Macoun is also at present making selections of specimens from the collections of last summer, which will be forwarded to us in the course of

the winter. These, together with the previous donations and the specimens already on hand, will make our collection the most complete in Canadian species of any college herbarium in the country.

"An enumeration of specimens shows that all the important departments of Phaenograms are well represented, while in Cryptogams there are important collections of ferns and mosses, and also fair collections of marine *Algæ* and the *Characeæ*. We find that the specimens now actually in the cases number 9,676, and allowing 1,000 for duplicates not otherwise accounted for, there are probably 6,362 distinct species. We have yet to add for specimens at present unmounted, and those to be received from Prof. Macoun, fully 700 specimens, so that we may place the total number at about 10,300 specimens from various parts of the world, representing about 6,800 distinct species."

We have to thank Mr. Peter Redpath for the continuance of his annual donation of \$1,000 for maintenance, and Mr. and Mrs. J. H. R. Molson for their kind contributions for the salary of the Assistant Curator and the purchase of specimens.

We mention with deep sorrow the death of the Hon. Judge Mackay, a member of this Committee since its institution, and who attended its meetings regularly and aided zealously in the progress of the Museum. Though devoted more especially to literature and art, he had a keen appreciation of natural objects and took much interest in all the additions to the collections. George Hague, Esq., has been appointed in his room as a member of the Committee.

The Peter Redpath Museum, in its collections, as now so admirably arranged, and in the facilities for laboratory work and class teaching, ranks as the leading school for Natural History and Geology in this country, besides being of essential service to the public generally, and to scientific travellers who may visit our city.

On behalf of the Committee.

B. J. HARRINGTON,

Honorary Curator.

MCGILL COLLEGE,

Montreal, Jan. 23, 1889.

REPORT ON THE MCGILL COLLEGE OBSERVATORY
FOR THE YEAR ENDING DEC. 31st, 1888.

To the Corporation of McGill University.

GENTLEMEN,—I have the honour to present the report on this Observatory for the year now closed, being my fifteenth annual report.

Meteorological Observations. — The “chief station” observations of the pressure, temperature and hygrometric conditions of the air; the velocity and direction of the wind; the percentage of bright sunshine and of cloudiness: the character and amount of precipitation; and the general weather conditions, have been made at every fourth hour (beginning at 3^h) throughout the year. The series of bi-hourly temperatures, commenced in 1884, and being supplementary to the above has also been carried forward without interruption. While the primary object of these observations is to obtain a knowledge of the laws of the diurnal and annual variations of the meteorological elements for this district, they are also of great commercial importance as a record of climate to which authentic reference may be made, as for instance, in connection with loss or damage to property, or as to the varying seasonal effects of climate as regards agriculture. The telegraphic observations forming a part of the Canadian series of observations, upon which the weather predictions are based, have been regularly dispatched at the hours 8, 15 and 22, up to July 1st, and at the hours 8, 15 and 20 since that date, to the Meteorological Office, Toronto. Appended hereto is a summary of the Meteorological Observations of the year. The daily as well as monthly and yearly summaries have been published in the Montreal Gazette.

Time Service.—Determinations of clock errors have been made by the observation of 812 star transits on 139 nights, and by solar transits on six days. A determination of the clock errors is made in the following manner:—A comparison of the sidereal clock, and the mean time clock is obtained on the chronograph. The transits of six stars (one polar star and two equatorial stars, in each of the reverse positions of the

instrument) are then observed and recorded on the chronograph. The inclination of the axis is measured before and after the observations of the stars in each position. The observations being completed, the clocks are again compared. The chronograph sheet is then read and the observations recorded, the instrumental errors deduced, and finally the clock errors are obtained. The error of the sidereal clock is allowed to accumulate, whereas the marking of the mean-time clock is made to correspond to the local meantime of the 75th meridian—known as Eastern standard time. All the signals issuing from the observatory correspond with the marking of this clock.

The noon time-ball, for the use of shipping, has been dropped on week days during the season of navigation, excepting three days when failures occurred. Special signals have been transmitted daily to the fire alarm office for the noon stroke on the alarm bells.

By means of the automatic system of clock signals, which we have used for several years, a knowledge of standard time has been widely distributed. The Corporations and Institutions named below receive these time signals.

The Canadian Pacific Railway Co. transmitting it daily to all stations along their lines to the Pacific Coast.

The Grand Trunk Railway Co., through the G. N. W. Telegraph Co., for all their lines east of Kingston.

The G. N. W. Telegraph Co., transmitting it daily to all the telegraph stations in Eastern Ontario and the Province of Quebec.

The Government of Canada, at Ottawa, through the G.N.W. Telegraph Co., for the noon gun and the regulation of the public clock.

The Harbour Commissioners at Montreal.

The Post Office at Montreal.

A number of jewellers and manufacturing establishments requiring an accurate time standard are also in receipt of these signals, for which they pay annually a small sum, about sufficient to cover the rental of the telegraph line used for the purpose.

Exchanges of clock signals with the Toronto Observatory were made on 18 nights. After correcting for known errors and for personal equation, the average of the differences obtained between the mean-time clocks of the two observatories is $0^{\circ}.29$, and the greatest difference on any one night was $0^{\circ}.72$. The comparisons for the year show that the probable error of the time as given by one observatory at any time, as compared with that given by the other is $0^{\circ}.12$. The exchanges on seven nights were found to be favourable to the measurement of "wave time," and give a mean result of $0^{\circ}.027 \pm 0^{\circ}.002$ for about 335 miles of No. 10 iron wire, under the conditions of an ordinary telegraph line.

Sunspots.—The alterations of the photoheliograph for the production of 4 in. images—as explained in last year's report—were completed in August, but little work has been done with the instrument owing to the present period being one of minimum spots. All the spots visible on the sun during the year, were observed by projection on a screen attached to the Blackman telescope. "Thompson's discs" were employed for the purpose, and the latitude and longitude of each spot read off with approximate accuracy. A summary of the results of these observations is presented herewith.

Soil Temperatures.—The apparatus for the observation of the temperatures of the soil at various depths has been in operation since October. The following is a brief description of the method:—Couples of copper and iron are placed in the ground at the required depths. A wire passes from each couple to a switch-board in the observing room, and there is a return wire common to all the couples, which, in the observing room passes through a delicate galvanometer and a couple similar to those in the ground, to make connection with the other wires at the switch-board. The galvanometer is made to read zero on the circle when the circuit is open. If now the circuit be closed at the switch-board the needle will be found to deflect, but may be brought back by bringing the inside couple to the same temperature as that in the ground. For this purpose the inside couple is immersed in water, or in winter, in a mixture of snow and water. When the balance is established, the temperature of the water is the same as that of

the ground at the depth of the outside couple. These observations are undertaken in conjunction with Prof. Penhallow, representing the Natural History Society of Montreal, and are of great importance in their bearing on agriculture in Canada.

Assistance.—The need of further assistance is much felt. A considerable portion of my time and that of my assistant is now taken up in replying to inquiries on the part of the public. Owing to the situation of the Observatory in a large and growing city, this demand upon our time will of necessity increase.

Longitude.—In the autumn of last year the facilities of the Observatory, at the request of Capt. E. Deville, were granted for the purpose of a longitude determination of some point in the West, with a view to closing the chain of longitudes now being carried across the continent in connection with the Dominion Lands Survey. The longitude of this station, having been determined with great accuracy by direct telegraphic communication with Cambridge, which is the initial point for longitudes in America, is well suited to become the base station for Canadian longitudes.

Educational.—Instruction in Meteorological Observations was given to a class of four undergraduates. Six students in Civil Engineering have attended the course in transit observations. The Blackman relescope has been employed in connection with the astronomical classes in the faculty of Arts.

Respectfully submitted,

C. H. McLEOD,

Superintendent of the Observatory.

MCGILL COLLEGE,

Montreal, December 31st, 1888.

SUNSPOTS DURING THE YEAR 1888, OBSERVED BY PROJECTION ON THOMSON'S DISCS.

Date of Commencement of each rotation of the sun.	No. of days on which observa- tions were made.	Total number of spots observed	No. of Groups.	Average distance from the Equator.	Average No. spots per day.	Spots North of the Equator.		Spots South of the Equator.	
						No.	Average heliographic Latitude.	No.	Average heliographic Latitude.
Jan. 1 to Jan. 22 6	10	5	4	5.3	1.9	0	0	5	5.0
Jan. 22 6.	13	11	5	9.7	1.0	0	0	11	4.7
Feb. 18 9.	9	20	7	2.4	5.9	5	5	15	4.0
Mar 17 3.	9	7	4	2.7	1.3	5	5	2	6.6
April 13 6.	12	9	6	7.7	1.4	1	1	8	8.7
May 10 8.	11	15	7	4.5	2.7	1	1	14	4.6
June 7 0.	12	22	5	6.0	3.5	14	14	8	3.7
July 4 2.	17	20	8	8.8	1.5	1	1	19	9.0
Aug 0 4.	13	11	6	8.4	0.8	6	6	5	8.1
Aug 27 7.	11	16	11	3.9	4.6	3	3	13	4.0
Sept. 23 9.	9	4	3	5.8	0.5	1	1	3	3.6
Oct. 21 2.	10	20	14	4.0	2.1	4	4	16	3.6
Nov. 17 5.	8	4	3	8.0	0.5	0	0	4	8.0
Dec. 14 8 to } Dec. 31 }	5	5	3	5.0	1.6	0	0	5	5.0
Year 1888	149	157	79	5.9	2.1	87	6.7	120	5.5

The dates given in the first column, except January 1 and December 31, correspond with the coincidence of the assumed prime meridian of the sun, with the central meridian as defined in the "Observatory" ephemeris for 1888.

The numbers in the third column give the "new" spots for each rotation, and for the year. The numbers in the sixth column are obtained by dividing the total number of single spot observations in a rotation, by the number of days on which observations were made during the rotation.

APPENDIX.

MCGILL COLLEGE.

NUMBERS OF STUDENTS IN THE FACULTY OF ARTS FROM
1856 TO 1889.

Notes on Diagram. (p. 37.)

The curve for men is continued by itself after 1884, while the curve marked "total" includes both men and women.

Inspection will show that the total number beginning at 38 in 1856 did not reach 100 until 1876 (an interval of twenty years). In 1879, it reached 150 nearly; then dipped downwards for the next three years, and then (in 1882) began a steady and rapid progress upwards (due largely to the establishment of the Donalda Department in 1884), to the present date, reaching 310 in the present month (January, 1889).

The increase in the number of men since 1884 is, it will be seen, 30 per cent.

The following is an extract from the Report of the Dean of the Faculty to corporation, in January, 1889.

The total number of students in the Faculty of Arts is 310,
being an increase over last year of 30,
and do do 1887 of 76.

The increase this year is entirely in the number of men, of whom there are 33 more than last year. The total number of women is about the same as last year, being 105 against 108; but there is among these a very gratifying increase in the number of undergraduates, viz. : 35 as against 26 at the same time in 1888. Ten of these undergraduates are from outside Montreal.

There is also a considerable increase in the number of men undergraduates, 119 as compared with 100 in 1888.

The total number of undergraduates is 154, as against 126 in 1888.

The number of matriculated students is 197, viz., 150 men and 47 women. All students are matriculated who take three or more of the undergraduate courses of lectures.

The total number in the Faculty has doubled in about five years, viz., 310 against 157 in 1884. The number of men has doubled in 14 years, The number in all the Faculties has doubled in about twenty-five years (576 in 1888 against 291 in 1863).

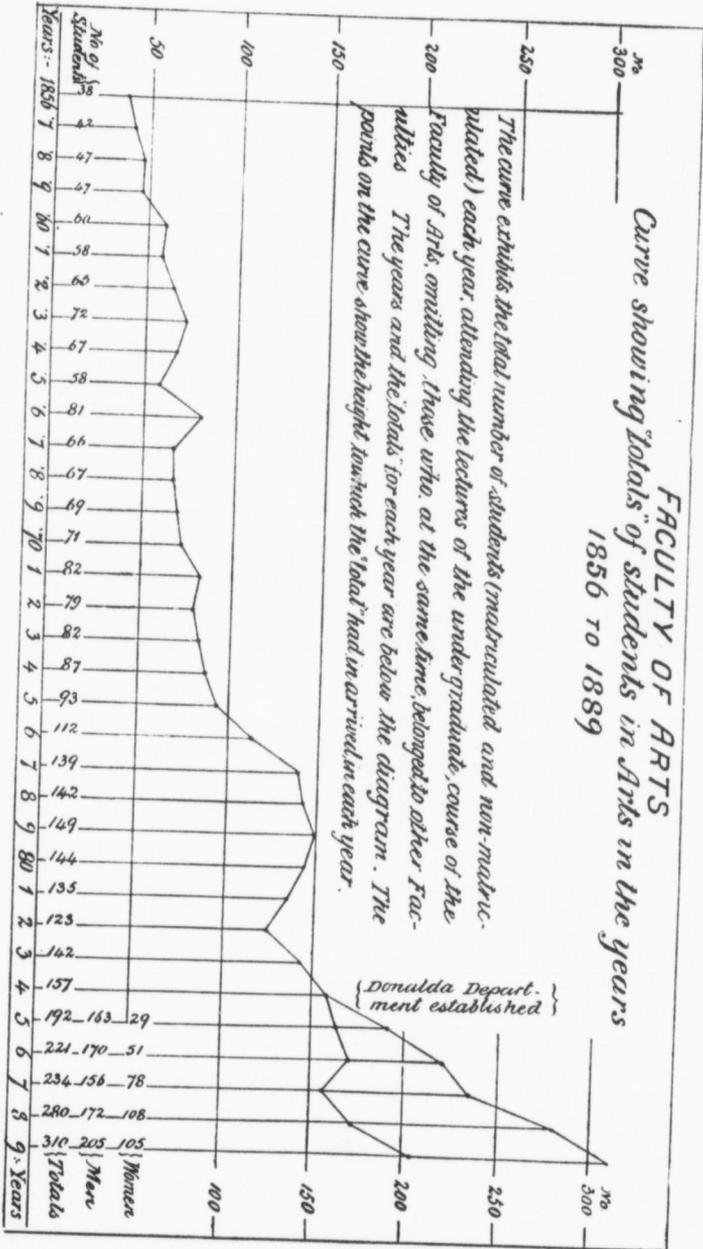
Non-matriculated students are termed "Occasional." They take fewer than *three* of the undergraduate classes.

The above report does not include students of other Faculties, a considerable number of whom attend the lectures of the Professors in Arts; nor does it include students in Arts in the Affiliated Colleges elsewhere in the Province.

A. JOHNSON.

A. Johnson

FACULTY OF ARTS Curve showing "Totals" of students in Arts in the years 1856 to 1889



A. Johnson

*STATEMENT of the RECEIPTS and EXPENDITURE of the
from 1st July, 1887,*

RECEIPTS.

GOVERNMENT GRANTS:—		
Provincial	\$2,500 00	
Superior Education Grant	1,450 00	
Dom Govt. Grant, Observatory, \$500; Observers, \$800	1,300 00	
City of Montreal, to Observatory, \$150; Harbor Com'rs, do., \$250	400 00	
		\$5,850 00
SCHOLASTIC FEES:—		
Faculty of Arts (Ordinary, \$692; Library, \$675)	1,207 00	
Faculty of Applied Science (Ordinary, \$2,977.50; Library, \$248) ..	3,225 50	
Botany and Zoology Fees	307 13	
Registration (Ordinary, \$316; Higher Degrees, \$12)	358 00	
School Examinations	333 75	
Diploma Fees	388 80	
Gymnastic Fees	342 50	
		6,262 68
COLLEGE GROUNDS MAINTENANCE		100 00
MUSEUM MAINTENANCE		44 00
ANNUAL DONATIONS:—		
Scholarships and Exhibitions	246 25	
Medals and Prizes	239 98	
		486 23
LIBRARY ACCOUNT:—		
Donation from Graduates		28 00
SPECIAL DONATIONS:—		
Redpath Museum Maintenance	1 000 00	
Current Expenses	6,000 00	
		7,000 00
INTEREST, ETC., FROM INVESTMENTS:—		
Net Returns—Including Arrears from former years		29,926 81
ELECTION OF FELLOWS		109 50
SUNDRY PETTY RECEIPTS		10 83
		\$49,818 05
RECEIPTS—SPECIAL FUNDS:—		
Chair of Botany	825 00	
Ladies Art Fees, \$1,206; Donalds Interest, \$6,408.85	7,614 85	
Leanehoil and Campbell Funds—Interest	3,735 95	
Gale Chair Fund—Interest	1,229 34	
Molson's Museum Maintenance	1,014 71	
R. A. Ramsay Library Fund	1,000 00	
		15,419 85
INVESTMENT ACCOUNT:—		
Gale Chair—On Account	203 57	
Campbell Memorial Fund—On Account	1,225 00	
		1,428 57
Investments repaid during year		117,235 10
SPECIAL SAVINGS BANK BALANCES on hand 30th June, 1887	1,411 60	
LEANCHOIL AND CAMPBELL FUNDS, BANK BALANCE 30th June, 1887	2,259 40	
DONALDA ENDOWMENT FUND, do. do.	1,486 01	
GENERAL FUND, do. do.	20,424 98	
		25,581 99
		\$209,483 56

(Verified and found correct.)

MACINTOSH & HYDE, Auditors.

ROYAL INSTITUTION for the ADVANCEMENT of LEARNING,
to 30th June, 1888.

EXPENDITURE.

ADMINISTRATION :—			
Salaries (Principal, Secretary and Clerk).....	2,894 00		
Office Expenses	274 58		
Porters and Caretakers.....	1,393 60		
			4,562 18
GENERAL EXPENSES :—			
Fuel Account.....	1,303 50		
Printing, Advertising and Stationery.....	1,802 71		
Charges (Gibson, Mills and Baynes' Annuities).....	2,435 30		
College Repairs, \$478.48; Grounds Maintenance, \$278.20.....	7 6 68		
Law Charges, \$190.75; Principal's Secretary, \$125.....	315 75		
Insurance.....	1,971 94		
			8,585 88
EDUCATION :—			
Faculty of Law.....	1,225 00		
Faculty of Arts.....	19,270 01		
Faculty of Applied Science.....	7,158 18		
Observatory Account.....	1,651 26		
Diploma Account.....	118 76		
Natural Philosophy Class, \$6.90; Chemicals, \$59.25.....	66 16		
Gymnastic Instructor.....	342 50		
School Examinations.....	456 89		
			30,288 76
SCHOLARSHIPS AND EXHIBITIONS.....			
	1,686 00		
MEDALS AND PRIZES			
	827 98		
			2,513 98
LIBRARY, \$187.43; MAINTENANCE, \$1,117.29; BOOKS & BINDING, \$931.85.			
MUSEUM MAINTENANCE			
			2,236 57
ELECTION OF FELLOWS			
			1,512 74
			15 50
			\$49,715 61
TOTAL ORDINARY EXPENDITURE.....			
IMPROVEMENTS AND ADDITIONS :—			
Museum.....	220 05		
Laboratory.....	18 00		
General Fixtures and Furniture.....	1,035 82		
Scientific Apparatus.....	1,965 35		
College Grounds.....	183 65		
			3,422 87
EXPENDITURE SPECIAL FUNDS :—			
Chair of Botany.....	2,000 00		
Ladies Art Classes.....	6,804 99		
Leacholl and Campbell Funds—Interest.....	4,600 00		
Gale Chair Fund—Interest.....	1,178 12		
Special Donation to Museum.....	78 8		
Botany Classes.....	181 00		
R. A. Ramsay Library Fund.....	279 11		
Molson Museum Maintenance.....	540 00		
			15,644 30
INVESTMENT ACCOUNT :—			
Invested during the year.....	117,580 00		
Expended on Properties.....	697 51		
			118,277 51
SPECIAL SAVINGS BANK BALANCES, 30th June, 1888.....			
LEACHOLL AND CAMPBELL FUNDS, BANK BALANCES, 30th June, 1888.....	2,371 09		
DONALDA ENDOWMENT FUND, do. do. do.	2,577 35		
GENERAL FUND, do. do. do.	8,785 12		
	8,289 71		
			22,423 27
			\$29,483 56

Montreal, 15th July, 1888.

J. W. BRAKENRIDGE, Acting Bursar.