

CIHM Microfiche Series (Monographs) ICMH Collection de microfiches (monographies)



Canadian Institute for Historical Microreproductions / Institut canadian de microreproductions historiques



'rechnical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below. L'Institut a microfilmé le meilieur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

| | 12X | 16 X | | 20 X | | 24X | | 28X | | 32 × |
|------|---|---|--------------|------|---------|----------|---------------------------------|---------------------------------|----------|------|
| | | | | | | / | | | | |
| 10 X | 14x | · · · · · · · · · · · · | 18X | TT | 22 X | | 26 X | | 30× | |
| | item is filmed at the re ocument est filmé au ta | | | | | | | | | |
|] | Commentaires supplé | | | | | | | | | |
| | Additional comments | and the second se | | | | | | | | |
| | | | | | | | | diques) de la l | ivraison | |
| | pas été filmées. | | | | |) Masth | ead/ | | | |
| | lors d'une restauratio mais, lorsque cela éta | | | • | | | on of issue/ de départ de | e la livraison | | |
| | Il se peut que certain | es pages blanche | | | | | | | | |
| | within the text. Whe been omitted from fi | | these have | | | | bage of issue le titre de la | | | |
| | Blank leaves added d | uring restoration | n may appea | ır | | Le titr | re de l'en-tê | te provient: | | |
| | distorsion le long de l | | | | | | | ken from:/ | | |
| | along interior margin. La reliure serrée peut | | ore ou de la | | | Comp | rend un (de | s) index | | |
| | ⁺ight binding may ca | | distortion | | | | les index(es | •• | | |
| | Relié avec d'autres do | ocuments | | | L | Pagina | ition contin | ue | | |
| | Bound with other ma | terial/ | | | | Contir | nuous pagin | ation/ | | |
| | Planches et/ou illustra | | Ir | | ~ | | | l'impression | | |
| | Coloured plates and/o | or illustrations/ | | | [|] Qualit | y of print v | aries/ | | |
| | Encre de couleur (i.e. | | | | / | | parence | | | |
| | Coloured ink (i.e. oth | er than blue or | blac(c)/ | | | 1 Show1 | through/ | | | |
| | Cartes géorraphiques | en couleur | | | | - | détachées | | | |
| | Coloured maps/ | | | | | T Pages | detached/ | | | |
| | Le titre de couverture | e manque | | | | | | tachetées ou | | |
| | Cover title missing/ | | | | | T Pages | discoloured | l, stained or fo | a word / | |
| | Covers restored and/c Couverture restaurée | | | | | - | | d/or laminate t/ou pelliculé | | |
| | | | | | | | | | | |
| | Covers damaged/ Couverture endomma | igée | | | | - | damaged/ endommag | ées | | |
| | | | | | | | | | | |
| | Coloured covers/ Couverture de couleu | | | | | | red pages/ de couleur | | | |

qu'il e cet t de vue ge ation jués The copy filmed here has been reproduced thanks to the generosity of:

Department of Rare Books and Special Collections, McGill University, Montreal.

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \longrightarrow (meaning "CON-TINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, chartz, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following dlagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

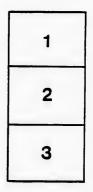
Department of Rare Books and Special Collections, McGill University, Montreal.

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'Impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

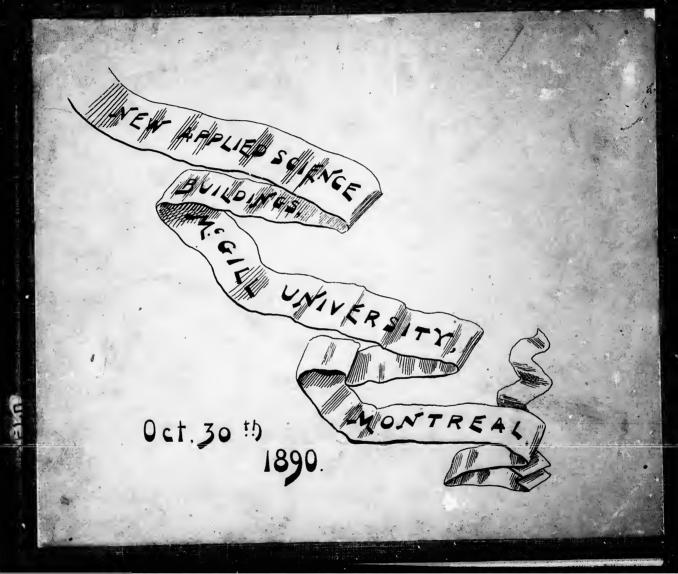
Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole — signifie "A SUIVRE", le symbole ▼ signifie "FIN".

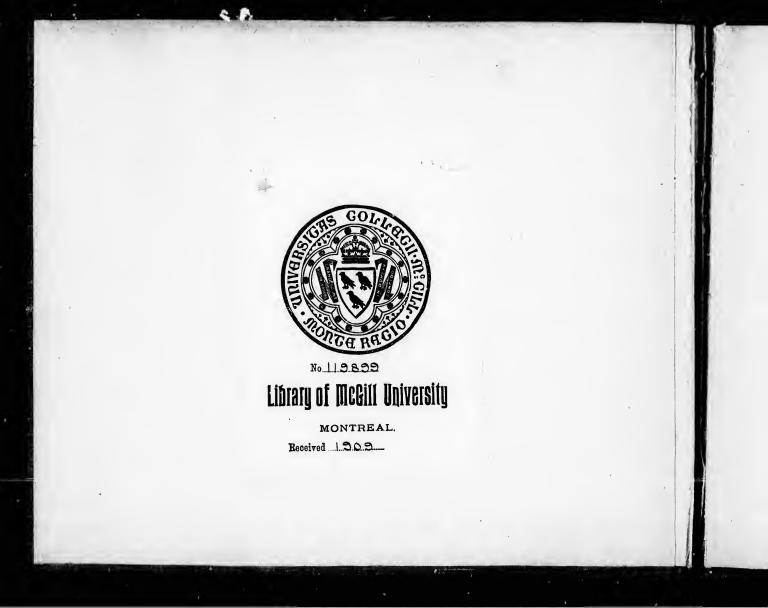
Les cartes, planches, tableaux, etc., peuvent âtre filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

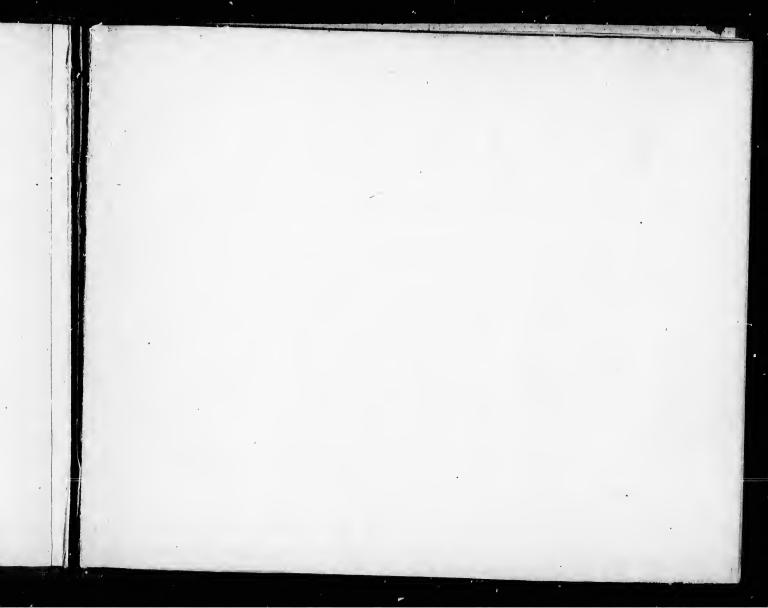


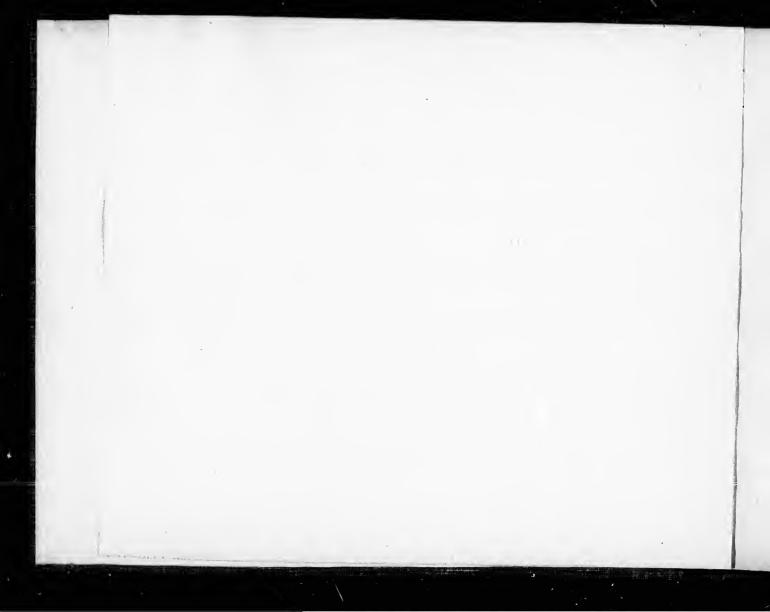
| 1 | 2 | 3 |
|---|---|---|
| 4 | 5 | 6 |

32 X









McGill Aniversity.

APRIL, 1890,

0

FACULTY OF APPLIED SCIENCE.

From the foundation of this Faculty it has been felt that a training which did not include laboratory and workshop practice was necessarily incomplete, but for many years we have been obliged to be content with the practical work which the students were able to do in the summer months. Although the University may well be pleased with the success already attained by its graduates in Applied Science, it is with no small gratification that it can now look forward to the development rendered possible by recent splendid benefactions, which will enable the student of the future to enter upon his professional career with all the advantages offered by modern research and invention. We shall now be able to give those facilities which the student has hitherto had to seek elsewhere, and he will find at home an institution which, in each and all the departments of Civil Engineering, Mining Engineering, Mechanical Engineering, Electrical Engineering and Practical Chemistry, will restar in point of size and equipment, with the foremost of the kind in Europe or America.

THE THOMAS WORKMAN BEQUEST.

In the Autumn of 1889 the public received the news of the late Mr. Workman's bequest of \$120,000, to found a department of mechanical engineering, and to provide the necessary workshops. The stimulus given by this announcement influenced many of our citizens, who are directly or indirectly connected with the industrial arts and trades, still further to aid in extending the work of the Faculty. Numerous subscriptions, an interim list of which is appended, have been received, amounting approximately to upwards of \$25,000.

THE MCDONALD TECHNICAL BUILDING.

Within the last month another benefactor has come forward, and in addition to other noble gifts, Mr. McDonald has signified his wish to erect a technical building, containing thermodynamic, hydraulic and electrical laboratories, laboratories for testing the strength of materials, museum, library, lecture rooms and drawing rooms.

Work on the buildings is to be proceeded with at once, and it is expected that the workshops will be available during the coming winter. The students will then have the opportunity of assisting in the installation of the machinery and the adjustment of the shafting.

WORKSHOPS.

The workshops are to be a three storey building, covering an area of about 9000 square feet.

On the ground floor is to be the machine shop, containing lathes, drills, planer, milling machinery, etc., a special room being set apart for emery grinding. The first and second floors are to be devoted to wood working, turning and pattern making, and are to be furnished with speed-lathes, band and circular saws, etc., etc. At one end of the machine shop are the foundry and smithy, with cupola, furnaces, forges, etc. It is hoped also to add a laboratory equipped with stamps and other appliances for the crushing, dressing, and amalgamation of ores, better provision for the assaying of which will probably soon be provided in connection with the chemical laboratory.

The whole of the machinery in the workshops will be driven by a compound engine presented by Messrs. J. Laurie & Bro.

The time spent in the workshops will be from 400 to 600 hours, and the student will pass regularly from bench work to turning, patternmaking, forging, foundry work, and will finally enter the machine shop. The objects of this course are to familiarize a student with the tools used in wood and metal working, to give him a practical knowledge of the nature of the materials with which he has to deal, and to teach him the most approved methods of constructing machinery.

TECHNICAL BUILDING.

The technical building is to be a structure of five storeys, covering an area of about 9600 square feet. Upon the ground-floor are to be the following laboratories: (a) A steam laboratory $60 \ge 32$ feet, containing a quadruple compound experimental engine, with dynamometers, calorimeter, injectors, graduated tanks and all appliances necessary for the thorough investigation of the properties of steam; (b) a laboratory for testing the strength of materials, $60 \ge 32$ feet,

al w ot H er

m

cip con the est ing

lab stu gen

whi inte men

worl For atori Donald atories.

vailable chinery

etc., a , turnend of oratory ion for

lessrs.

bench of this vledge ucting

on the bound or the feet,

containing a 75 ton Emery Testing machine, presented by Mr. J. H. Burland, B. A. Sc., a graduate of the Faculty; also machines for testing the effects of torsion, repeated bending, etc. ; (c) an hydraulic laboratory, in which experiments will be made on the flow of water through pipes and mouthpieces of various forms and sizes, also upon pipe friction, etc.; (d) a laboratory for tests upon cements; (e) an electrical laboratory in which will be installed the dynamos, etc. Here experiments will be conducted on dynamic electricity, and will form a special feature of the course in electrical engineering. Ample room will also be provided for storage batteries; (f) a laboratory for precise linear and angular measurements containing a comparetor, dividing engine and standard gauges.

Additional laboratories of similar character are also provided on the first floor.

The second floor is to be occupied by lecture rooms, library, students' room, offices, etc.

The thir floor forms the museum, in which will be placed valuable collections illustrating mechanical principles. Through the further munificence of Mr. McDonald, we already know that this museum will contain the most complete and valuable collection of models of mechanical movements on this continent. These are world-famed as the Reuleaux Kinematic collection, and their value to the student and also to the engineer can hardly be overestimated. In time we may hope to possess, through the kindness of other benefactors, models illustrating engineoring structures, and also sectional models shewing the construction of machinery. The whole of the fourth floor is to be devoted to drawing.

LABORATORY PRACTICE.

All the engineering students, civil, mining, mechanical and electrical, will be required to do work in the laboratories in certain departments under the supervision of the professors. The object is to enable the students to study experimentally the sources of energy, prime movers and the strength of materials, and to carry on with intelli-

In connection with the department of mathematics and mechanics, there is to be a laboratory of mechanics, in which the student in the early part of his course will make various kinds of experiments, e. g., will measure small intervals of time, and determine the values of certain important dynamical constants. The science of exact measurement will afterwards be still more thoroughly investigated by the aid of micrometers, comparators and standard gauges.

ELECTRICAL ENGINEERING.

A portion of the course in the department of experimental physics will be attended by all students. Special work, chiefly in the laboratories, will be done by such of the students as may desire to become electrical engineers. For this purpose, in addition to the laboratories in the Physical building, electrical research laboratories, and laboratories for testing dynamos, motors, accumulators, etc., are also to be provided in the Technical building.

SURVEYING AND GEODESY.

The course in surveying is primarily designed to qualify the student for admission to the practice of Provincial and Dominion Land Surveying, and to afford a thoroughly practical as well as theoretical training in field engineering. The work embraces chain surveying, angular surveying, the use and adjustment of the engineer's transit and theodolite, levels, plane-table, and other field instruments, the methods of contour surveying and underground surveying, railway curves and setting out work, hydrographic surveying, the methods and instruments employed in geodetic surveys, and practical astronomy. The large drawing rooms are to be fitted with suitable monatings for the various surveying instruments for the prosecution of triang ulation and other instrumental work. The construction and adjustment of each instrument is made a special study. Provision is made for a course of instruction in transit observations for time, in the astronomical observatory, and also for advanced courses in geodesy and practical astronomy, and for practice in the use of magnetic field instruments, in accordance with the course laid down for the examination for Dominion Land Surveyors. Investigation of the errors of graduated circles and absolute standards of length, will be made in connection with the advanced work in geodesy.

As heretofore, courses of instruction are to be given in free-hand and model drawing, in the various departments of descriptive geometry, and its applications, as in map projection and problems relating to machine design.

Extensive changes are necessarily to be made in the several courses, which will be duly announced at the commencement of the next session.

Also. instead of charging a separate fee for tuition, matriculation, graduation, gymnasium and library, it has been decided to fix the uniform sum of \$100 per annum as the fee to be paid by all Students, which sum will include the cost of the material and the care of the apparatus and machinery in the laboratories and workshops. f Proving in field r's transit erground ployed in gs for the astruction in transit practical n fcr the standards s departesign. d at the

y, it has l include

McGill University, MONTREAL.

A Series of Eight Lectures on the transmission of Power will be delivered in the Applied Mechanics Lecture Room, Engineering Building, from 8 to 9 o'clock, on Friday evenings, commencing Friday, February 12th.

Programme of Lectures.

Lectures 1 to 4-". The transmission of power by compressed air."

By Professor NICOLSON.

-" Thermal storage and the distribution of power by steam." ŝ

3

By Professor DURLEY.

-"" The transmission of power by gas." 9

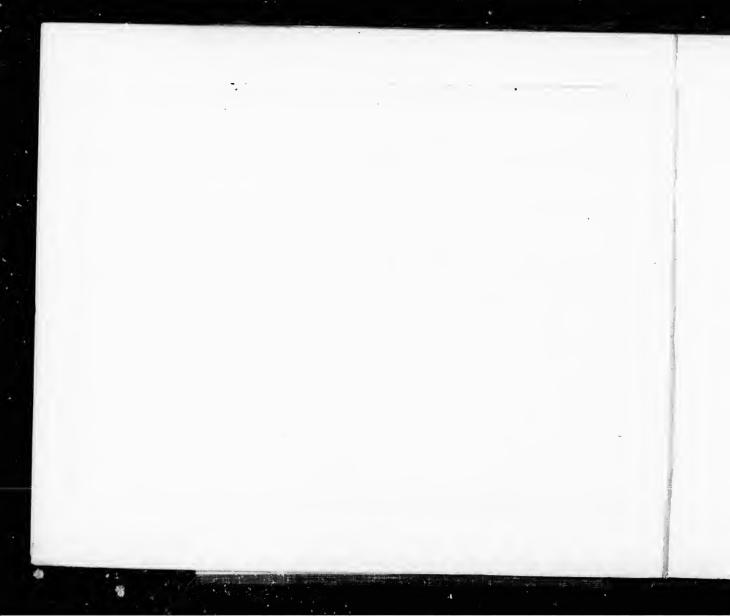
By Professor Nicolson.

7 and 8---". The transmission of power by wire ropes." By Professor DURLEY. 3

These Lectures are coen to the Public, the fee for Tickets may be obtained at the Course being \$1.00. Secretary's Office.

dents have already done in other profes-sions. His Excellency the Governor-General had M.A.; P. Toews, M.A.; Frank D. Adams, M.A. Sc.; C. J. Doherty, Q.C., B.C.L.; N. W.

ÿ



APPLIED SCIENCE.

NEW BUILDINGS.

LAYING THE CORNER STONE OF MCGILL'S LATEST BUILDINGS.

Speeches by the Governor-General, Sir Donald A. Smith, Chancellor of the University, and Prof. Bovey, Dean of the Faculty.

From THE GAZETTE, October 31st, 1890.

Yesterday was a big day for McGill. It consented to lay the stone and he arrived was a day which marked a further advance shortly before three o'clock, being iondiy in the history of the university, and it was cheered by the students as he passed into a day which witnessed a torward step of an the Peter Redpath nuseum, where he was undertaking that must inevitably prove of immense benefit to many of Canada's sons who adopt mechanical engineering and kindred sciences as a profession, and conse- Molson, Hugh McLennan, John Molson, W. quently it was a day in which the whole Do- C. McDonaid andSamuel Finley, governors; the day which saw the corner-stone laid of MacVicar, J. Clark Murray, Professors, the new technical and mechanical Alexander Johnson, H T. Bovev, B. J. Harbuildings that the Governors of the college rington, J. S. Archibald, Robt. Craik, have been enabled to erect through the lib- T. Wesley Mills, Drs. D. McEachran and M. erahty of Mr. W. C. McDonaid and the late C. Baker, fellows; Mr. James Brakenridge, Thomas Workman. The need of such acting secretary; Mr. Samuel R. Burrell, buildings has long been feit, and now that clerk; Messrs. G. P. Girdwood, M.D.; H T. the university has at last obtained them it Bovey, M.A., M. Inst. C E, M I.M E.; C. H. may reasonably be expected that oid Mc-Gill will add new lustre to its name by sending forth men some of whom will make for themselves an honored name in the world in these particular sciences, as some of its students have already done in other professions.

received by the following members of convocation :- The chancellor, Sir Donald A. Smith; Hon J. J C. Abbott, Messre J. H. R. McLeod, Ma E.; L. H. Davidson, QC., MA., D.C.L.; James Stewart, M.D.; D P. Penhallow, B.Sc.; James C Cameron, M.D.; A. J. Eaton, M.A., Ph.D.; John Cox, MA.; Charles A. Carus-Wilson, BA., A.M.IC.E.; Harry Abbott, Q.C., B.C L.; Paul T. Lafleur. M.A.; P. Toews, M.A.; Frank D. Adams, His Excellency the Governor-General had | M.A. Sc.; C. J. Doherty, Q.C., B.C.L.; N. W.

Trenholme, Q.C., M A., D C.L., and Percy N. Evans; Bishop Bond, Chief Justice Sir Francis Johnson, Hon Justice Doherty, Rev. Dr. Shaw, Rev. W. Hail, Mr Geo. Hague and Mr. C. J. Fleet were also present. Notes were received from members of the Dominion and Local Governments, regretting their inability to be present.

THE PROCESSION.

At three o'clock a procession was formed to the site of the new buildings, which was prettily decked with bunting, the acting-secretary leading the way, followed by the Governor-General and Sir Donald A. Smith, behind whom came the other members of convocation, their various colored gowns and noods lending brilliancy to a scene which a leaden sky and sodden ground made particularly sombre, the students bringing up the rear. On the platform, which had been erected around where the corner stone was to be laid, had assembled a number of leading citizens, including Rev. Canon Elle good, Rev. Dr Norton, Rev. Dr. T. G. Witllams, Rev. Dr. Barbour, Rev. M De Sola, Rev. Mr. Friedlander, Rev J. H. Dixon, Mr. Justice Davidson, Mr. Justice Wurtele, Ald. Clendinneng and Shorey, Messrs. J. X. Perrault, Richard White, J. A. U. Baudry, James McShane, Dr. J. Baker Edwards, A. T. Taylor and many others. Lady Stanley, the Donalda students, wearing their caps and gowns, and a number of other ladies occupled seats on the platform.

THE CHANCELLOR'S REMARKS.

The ceremony was commenced with a dedicatory prayer, offered by the Rev. J. Clark Murray, after which the Chancellor spoke of the pleasure which the governors, graduates, under-graduates and all connected with the university felt at the presence of His Excellency on that very interesting occasion. The Governor General,Sir Donald remarked, had just come from a visit to the lower pro-

here, even before McGill, in their bave education to the greatest extent within their power. A large number of them had come from Scotland and had brought with them the desire to have that education which has been so useful not only to Scotchmen going throughout the world, but to all who had gone into the British colonies, and but for which we in Montreal should not to-day have been in the happy position in which we were. It was the desire of all connected with McGill to emulate those who had gone before, and it would be their effort to make McGill, if possible, stand side by side not only with the universities of this country, but with the best universitles of the motherland.

Sir Donald then read the following address to His Excellency :--

To His Excellency the Right Honourable Lord Stauley of Preston. G.C.B., P.C., Governor-General of Canada ;

May it please Your Excellency: The inauguration of the new buildings honored today by Your Excellency's presence may be said to mark the coming of age of our faculty of spplied science.

Commenced as far back as 1857 merely as a chair ot civil engineering and sneedni onurse in the faculty of arts, it was advanced in 1871 is the standing of a department, and in 1877 to life rank of a distinct faculty. Since this time it has made rapid progress and has developed into the departments of civil englueering, mining engineering, mechanical engineering and practical chemistry, and it is to be hoped that in connection with its new buildings and endowments it may soon be able to begin a school of electrical engineering, and that its number of sindents, already larger, will be greatly increased.

the university felt at the presence of Hia Excellency on that very interesting occasion. The Governor General,Sir Donald remarked, had just come from a visit to the lower pro-

mechanical engineering in the faculty of applied science. Part of the capital of this sum was to be expended in buildings and apparatus, and the remainder to constitute an en-dowment for the staff of the department, including a professor of mechanical engineer-ing. Mr. W. C. McDonald feeling that this

A SUITABLE TIME TO GIVE

a permanent habitation to the faculty, followed with his munificent gift of the technical building and its apparatus, which will cost in the whole above \$150,000, and may be considered as further supplemented by his liberal foundation of the chair of experimental physics in the faculty of arts, and the physical building connected therewith.

These noble gifts convey to Your Excellency an indication of the value set by public spirited Canadians on the growth of practical scientific culture as a means of enabling our young men to develop the resources of their country and to promote its standing and consideration in the world.

We feel that for this reason and on account of the practical benefits which this faculty is calculated to confer on the whole Dominion, we may fitty invite Your Excellency, as vis itor of this university, and as representative of Her Most Gracious Majesty, to honor this occasion with your presence, to rejoice with nain this great addition to our means of education, and to express the gratitude of the university and of all friends of education to our liberal benefactors,

Mr. W. C. McDonald then invited His Excellency to lay the corner-stone, and presented him with a silver trowel, having an engraved border of maple leaves, and under the college arms the following inscription : -" McGill university, Montreal. The corner-stone of the W. C. McDonald technical building and the Thomas Workman mechanical building, laid by His Excellency the Governor-Gen ral, October 30, 1890." On the back was engraved :--- "Presented to His Excellency the Right Hon. Lord Stanley of Preston, G.C.B., P.C., visitor of the university."

IT WAS "ALL RIGHT."

posited a box containing an extract from the late Mr. Tho nas Workman's will, extract from a letter from Mr. W. C. McDonald in reference to his donation for the buildings, a list of subscribers to the equipment of the buildings, Professor Bovey's address convocation, the college calead-copies of the city newspapers, at ar, the statutes and regulations of the university, copy of the address to the Governor-General, and photos of Sir Donald A, Smith, Sir William Dawson, the late Mr. Thomas Workman, Mr. W. C. McDonald, Professor Bovey, Dean of the Faculty, and Mr. A. T. Taylor, Architect. Upon completing the laying of the stone, His Excellency declared that It was "well and truly laid," amid the cheers of the students, who were gathered round the front and western end of the building, and also answered by the unanimous declaration-"It's all right."

HIS EXCELLENCY SPEAKS.

The Governor General then delivered an address, in which he pointed out that technical education in these days was assuming an importance far beyond that which it was acknowledged to possess at any time during the past. He did not know whether he should be wrong in saying it, but he belleved it was some forty years ago or thereabouts that this movement began to acquire strength. Prior to that time we can only recognize what difficulties early englueers must have met with. We could now appreciate the labors of Watt, Boulton and many others, and we could see, and, he hoped, appreciate how much they had to contend with in working out each for himself the problems they required to deal with. In the year 1851 a great movement The Governor-General then proceeded to took place in the engineering and mechanilay the stone, which was a plain block of cal world, and he did not think he should be limestone and in a cavity in which was de- far wrong if he said that what was called

"The Great Exhibition," held in London, knowledge, and a young man engaged in a to that awakening of men's minds to seeing force of their own by bringing together from ail parts of the world the latest developments of science and art. It produced a reaction upon the minds of men, and that which in many cases before had been a specialty of a country or an individual firm, became as it were knowledge given to the world at large From then to now many similar occasions had enabled the same process to be repeated, and men had come to know more closely and intimately what was the progress of science and art in other countries than their own. Concurrently with this were, of course, the great ties which have united the world -steam, electricity, etc., but in all these the most important part was played und was likely to be played by the science on behalf of which those new buildings were to be constructed, where the latest developments might be examined and appreciated, where the principles of mechanical science would be explained and worked out, and where progress which in recent years has been men's minds might be brought by a process | made in various branches of applied science, of tuition a long way upon that road which in years gone by was travelled with toil and care, an advantage which only those ing erected students would have an opporfind the road improved for them can fully appreciate. But there was another cause why technical education seemed to have been rendered more prominently necessary. Under the old avatem of apprenticeship, which circumstances had now almost totally destroyed, a boy who took to a trade went through the various branches and learned the general work instruction in these coupled with of the profession. With the greater pace required in the present day, with the introduc- | sary to bring home the principles on which tion of steam and mechanics and the further they were acting. In the course of his redivision of labor which became incident to cent journey in the lower provinces be could

was one of the contributory causes which led large factory found himself by the circumstances obliged to what was being done in other countries than become a specialist in one branch. It became evident not only in mechanical engineering, but in other branches that something more than mere rule of thumb knowledge was necessary. It was found that those who trusted alone to that were falling behind in the world ; and in Europe, America and England it was found necessary more and more to inculcate the principles of science and to show that construction and mechanical engineering should be carried on by the light of the latest discussion. There was too much reliance, perhaps, before in practice, as in contra-distinction to theory, and it was only in late years that it had been found practice and theory must go hand in hand, and that any nation which, in these days of keen commercial rivalry, wished to hold its place in the fore front of the battle, must be educated not only by a practical training, but one which was based on sound principles of theory. Having referred to the great progress which not very long ago was undreamed of, he said that in the buildings betunity during their four years' course of practically learning their work in the foundry and forge and of learning in the metal-working shop the principles of many trades. They would also learn hydraulics and the testing of machinery, electrical science, wood and iron working and many other subjects. They would have practical those theoretical lessons which were necesit, difficulties were increased as to general not but be filled with admiration of the land

in which we lived and of its vast resources only waiting for the hand of man to come and utilize. In all these the science of engineering played a part. There were roads to be constructed, railways to be built, remarked that their friendship was not less rivers to be improved, canals to be made. bridges and tunnels to be constructed ; and when he looked around and saw what had already been done by the skill and energy of residents in this Dominion, he trusted that from the buildings now in course of erection would epring the germs of a scientlfic teaching which would enable ten-fold progress to be made. The mining industries were still in their infancy and in electrical science the world seemed to be all before it. There was one other potent force which he hoped would find a home there, and that was the force of intellect, energy and enterprise, and the same qualities which had planted the union jack and the college flag side by side on the laboratory tower Atthattime I ventured to express the opinion close by, which he hoped would be emblems that we could not do our work efficiently of science and progress in the Dominion, these forces, surmounted by that academical | ed with a laboratory in which we might entraining they were so proud to display, gave in certain branches of original rewould, he believed, be potent factors in the search. Year after year we advanced the future of the Dominion. It was a great same plea, but still no prospect opened out and noble work which had been entered upon, and he hoped it would be blessed in of something like envy when we heard of time to come, and that when in future years the donations towards the advancement of some of its engineers had made a world. applied science in other parts of the world. wide name, they would be glad to say in that Even two years ago we little dreamt of building they learned the first principles what was in store for us and of upon which they afterwards built up their the great development awaiting this fame, and that as alumni of that college department of the university. The bequest of they were proud of their Alma Mater. In the sum of \$120,000 by the late Mr. Thomas conclusion he sincerely congratulated Mr. W. C. McDonald upon the occasion which workshops and to the endowment of a chair had brought them together, and hoped he of mechanical engineering, was a promise might be spared for many happy years to that the work of our faculty was at last to see the result of that good work and to be rest on a sure foundation. Had this been all looked upon as one of the great benefactors we should have been thankful enough, but of the Dominion.

His Excellency then called forward Mr. and the great gifts of nature which were Amos Cowan and, addressing the stulents, said they were old friends, having stood vide by side in the ranks of the army, and, shaking Mr. Cowan warmly by the hand, now than in the days gone by.

THE STORY OF THE PAST.

Professor Bovey then came forward. He said :- Twelve years ago the sole possessions of this faculty of applied science were a valuable collection of mining models, a few surveying instruments and possibly a blackboard. We had not a lecture room to call our own and our classes were held in rooms loaned to us through the courtesy of the Faculty of Arts. To this Faculty, indeed, I might almost say, we owe our very existence, as it would have been impossible to have carried on onr work had not the professors in arts generously come to our aid. and with success, unless we could be providbefore us, and we must confess to a feeling Workman, to be applied to the erection of only a little time elapsed and this splendid

bequest was seconded by another act of!

munificence on the part of our governors, Mr. William McDonald. To express our feelings now is a task almost beyond our powers. That Mr. McDonald is a man who has the best interests of the whole university near at heart can require no stronger proof than his almost unexampled generosity towards the Faculties of law, arts and applied Science. The offer of Mr. McDonald to erect and equip our Applied Science laboratories places the work of our Faculty upon a much broader basis, and if used as they should be they cannot but prove an inestimable boon to the students of the future. It is needless on this occasion to enter into detail as to the possible uses of laboratories. In them we hope to train men quick to perceive, ready to grasp the salient points of an engineering problem, and who shall have acquired, by the carrying out of careful experiments, that confidence in their own powers which is a necessity of success. In the past the engineer has been trained by the trial and error system, as it might be called, and a very costly system it has proved. In fact, he has been obliged to make new trials for blmself under all the disadvantages of isolation and lack of scientific guidance. It will be our aim to supply a remedy for this state of affairs. We conceive that this will not be done by turning out either purely scientifie or purely practical men. I am far from undervaluing the effect produced by the efforts of those great men who spend their lives in abstract research, and who deserve and have our warmest admiration. Their researches, however, though far-reaching, are seldom immediately applicable in the domain of practical utility.

Oh, such a life as he resolved to live. When he had learned it,

when he had gathered all books had to give ! Sooner, he spurned it.

Neither can we look for help to the one "rule of thomb "man, to the man who is guided by his common sense, or too often by his want of common sense. A human machine is no longer sufficient. Our knowledge of different forms of energy has largely increased, new materials of construction are constantly being introduced, and the demand for new effects makes old rules insufficient or useless. Theory and practice have become so interdependent that an absolute union between them is necessary for future advancement. Imege the whole, then execute the parts-

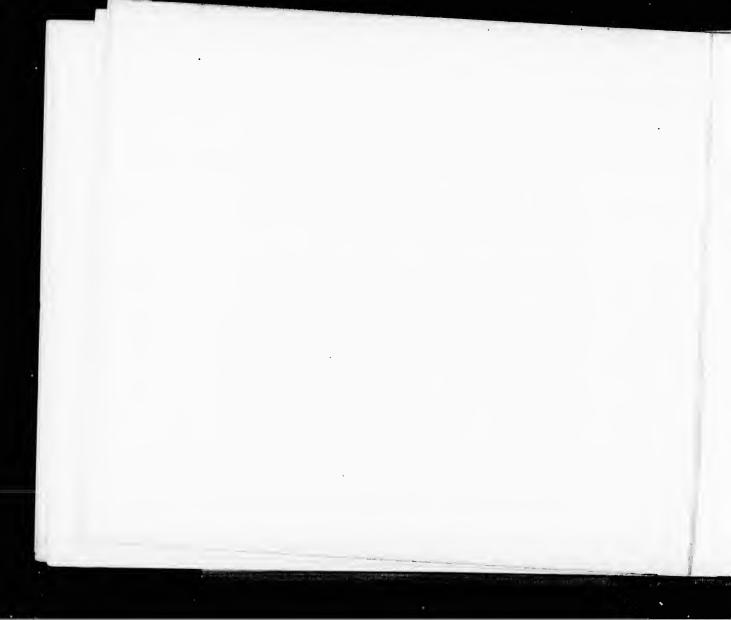
Quite, ere you build, ere steel strike fire from quartz, Ere mortar dab brick !

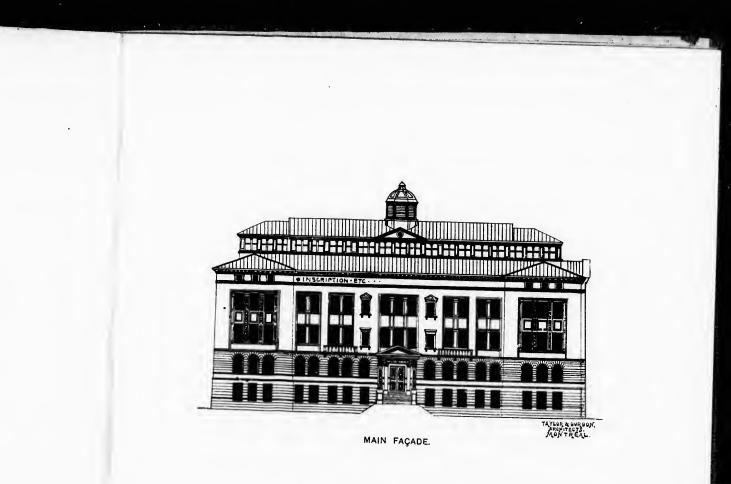
Modern progress in the material world must chiefly depend upon the scientific man who gives attention to practical questions and upon the practical man who does not neglect scientific investigation. These are the men whom we hope to send out from these noble buildings. It would evidently be disastrous to place students in charge of the delicate apparatus of a laboratory some previous knowledge of the use of tools. This the McGill science student will receive in the workshops. The value of manual training as a factor in education is daily becoming more recognized. The work done by the hand is, in as true a sense as is language, an expression of the brain, and hence to educate the hand is to educate the brain. In the workshops, also. the student will learn what good work is, how it should be done and how long it will take to do it, and will therefore be fitted to direct and supervise with intelligence the work of the mechanic. Here, too, he will have the opportunity of becoming familiarized with machinery of the best type, and tor this we are indebted to many citizens of Montreal. To me this is a matter of no small satisfac-

tion, as it emphasizes the fact that this de- | I still believe that a genius is born and canvelopment of our faculty has the sympathy not be made. All cannot be Watts or but natural on an occasion like tinguished modern critic-they can learn to this to look into the future. In have eyes with faith in them. creasing knowledge, as has been said, brings increasing power, and great as have been the triumphs of the present century, we can well believe that they are but a fore- cellency having bowed his acknowledgment taste of what invention and discovery have of the same, Bishop Bond pronounced the in store for mankind. What part in this benediction and the proceedings were at an future is to be played by the men, and shall end. I say women, who are to be educated here?

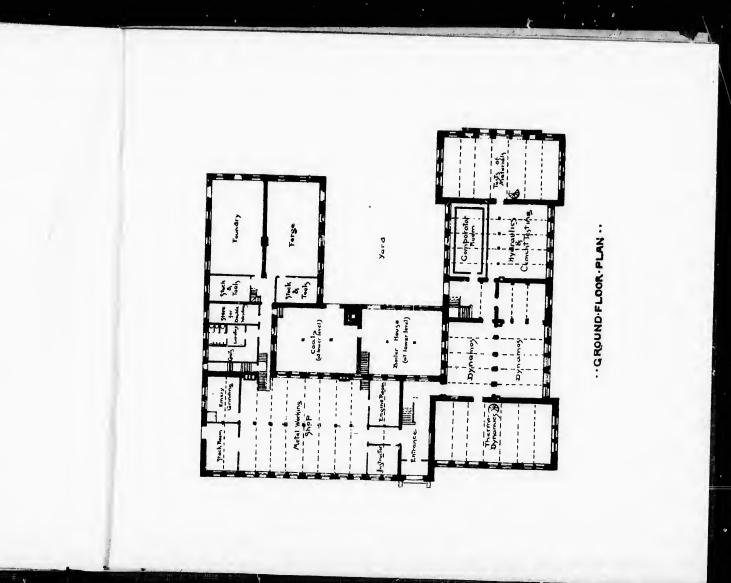
and approbation of our engineers, our Stephensons. But all can, at least, try to merchants and our manufacturers. It is attain that greatness spoken of by a dis-

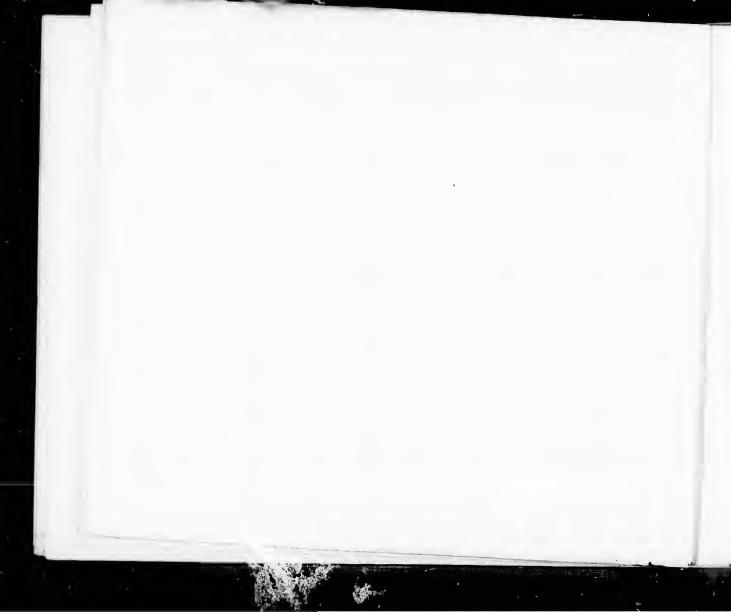
On the motion of Sir William Dawson a vote of thanks was accorded the Governor-General and Lady Stanley, and His Ex-

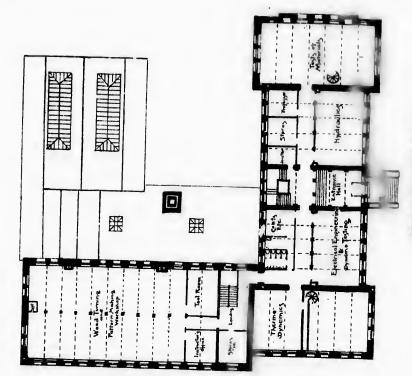




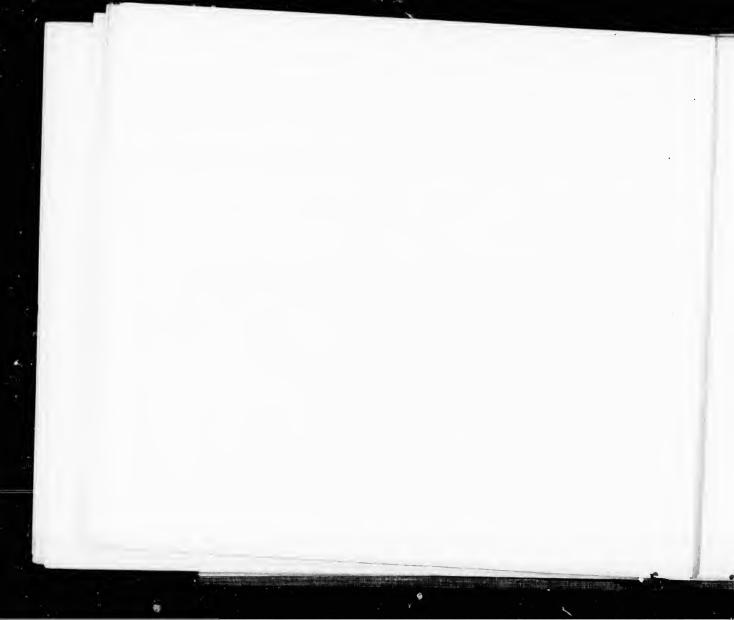


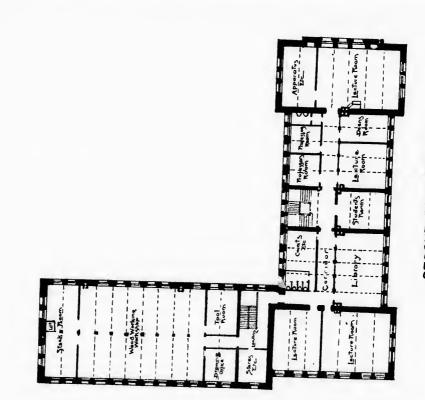




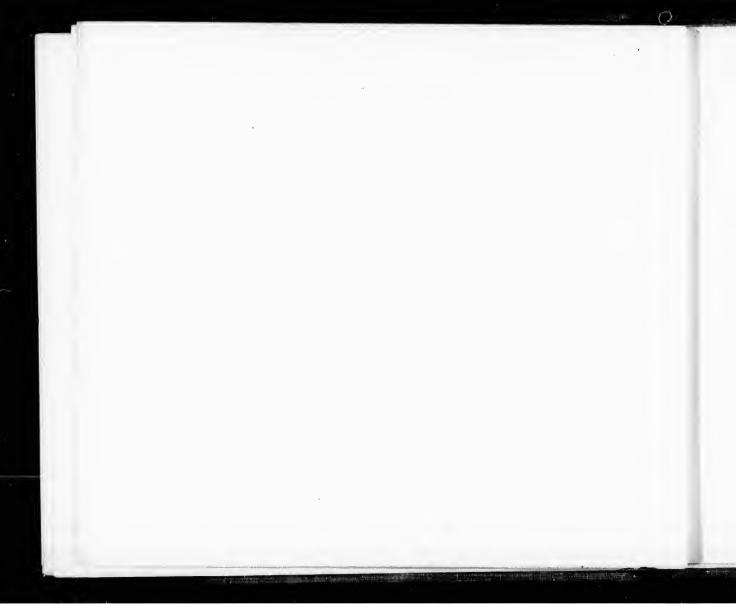


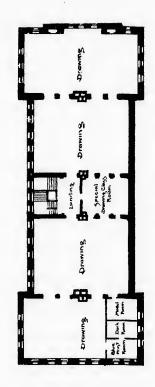
- FIRST-FLOOR-PLAN -





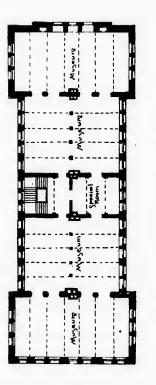
··· SECOND · FLOOR · PLAN ··





 \bigcirc





ALCONTRACTOR



