

**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1996

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

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

- Coloured pages/
Pages de couleur
 - Pages damaged/
Pages endommagées
 - Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
 - Pages discoloured, stained or foxed/
Pages décolorées, tachées ou piquées
 - Pages detached/
Pages détachées
 - Showthrough/
Transparence
 - Quality of print varies/
Qualité inégale de l'impression
 - Continuous pagination/
Pagination continue
 - Includes index(es)/
Comprend un (des) index
- Title on header taken from: /
Le titre de l'en-tête provient:
- Title page of issue/
Page de titre de la livraison
 - Caption of issue/
Titre de départ de la livraison
 - Masthead/
Générique (périodiques) de la livraison

- Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10x	14x	18x	22x	26x	30x
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12x	16x	20x	24x	28x	32x

The copy filmed here has been reproduced thanks to the generosity of:

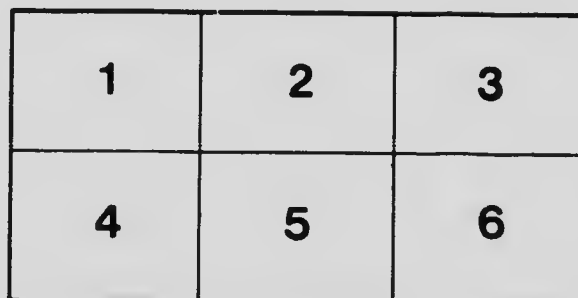
University of Toronto Archives

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 \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, 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 diagrams illustrate the method:



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

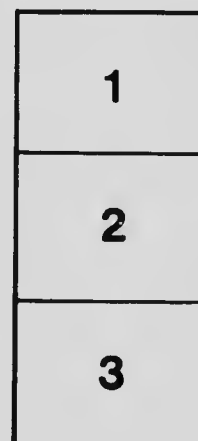
University of Toronto Archives

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 \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

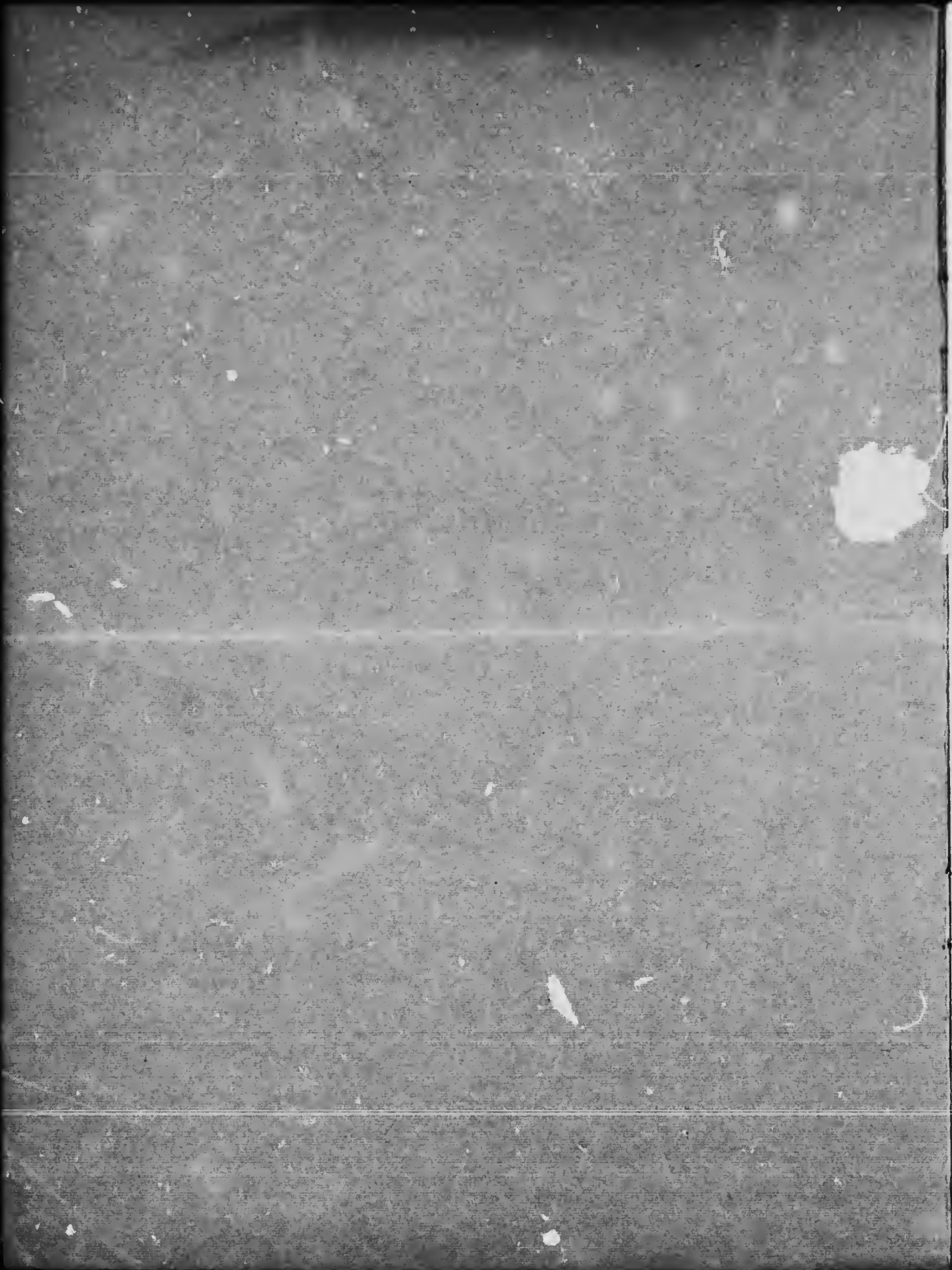
Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les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



THE NEW MEDICAL BUILDINGS OF THE
UNIVERSITY OF TORONTO.

BY
PROFESSOR A. B. MACALLUM.

[Reprinted from SCIENCE, N. S., Vol. XVII., No. 438, Pages 813-817, May 22, 1903.]



[Reprinted from SCIENCE, N. S., Vol. XVII., No. 438, Pages 813-817, May 22, 1903.]

THE NEW MEDICAL BUILDINGS OF THE UNIVERSITY OF TORONTO.

THE new buildings for the department of physiology and pathology of the University of Toronto, which are to be formally opened in October next, are the first to exemplify the unit system of laboratory construction proposed by Professor Minot,* of Harvard University, and consequently an account of them may be acceptable to all who are interested in laboratory administration and construction.

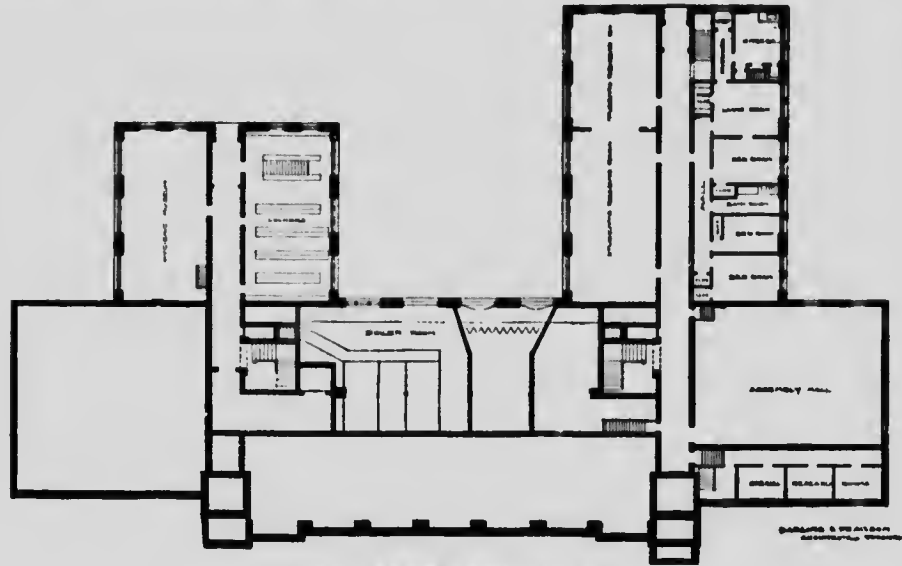
The main features of the unit system, as outlined by Professor Minot, are all comprehended in the character of the laboratory 'unit' room. This must, first of all, be no larger than is required to accommodate readily the maximum number of students whose practical instruction a single demonstrator can efficiently guide and control. It must also be of such dimensions that it can, at need, be made to serve as a museum, a library or reading room, or a small lecture room. The units, further, must be so placed with respect to one another, preferably in pairs or series, that, by the removal of the partitions separating them, rooms of larger dimensions may, when desired, be obtained at a minimum cost and in a short time. The dimensions of such a unit, as determined by Professor Minot, are 23 x 30 feet, and this room will accommodate twenty-four working students, which number, experience shows, is the largest that should be under the supervision of a single class demonstrator.

* *Philadelphia Medical Journal*, Vol. VI., p. 390, 1900; *SCIENCE*, Vol. XIII., p. 409, 1901.

The system, as may be seen, offers the great advantage of elasticity, for a laboratory director may enlarge or contract, at will, or according to the needs of the occasion, the accommodation required for a class, a feature that does not obtain in any other system of laboratory construction. It has also other and not less important advantages. The cost of construction is less than in any other system, it adequately provides for the all-important question of light, and it permits of subsequent extensions and additions without disturbance of the original arrangements. It is also to be noted that the system provides for the formation of smaller rooms through the division of the unit.

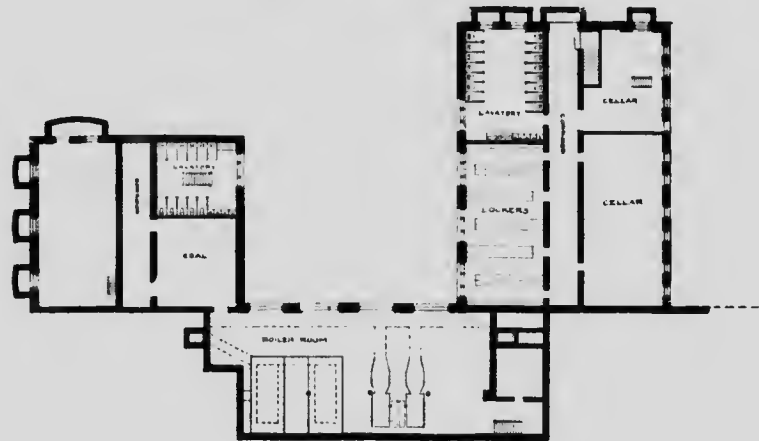
All these points were thoroughly canvassed when, nearly two years ago, the medical faculty of the University of Toronto took up the question of erecting new laboratory quarters for physiology, physiological chemistry, pathology and public health, and discussed the various plans of construction offered. The result was that the faculty unanimously recommended the adoption of the unit system for the proposed laboratories. The university trustees accepted the recommendation, and construction, begun in August last year, has progressed so rapidly that the buildings are completed and the equipment is now being put in. The whole is, therefore, at the moment in such a stage as to permit one to say to what extent the object sought has been attained.

Architecturally, so far as the exterior is concerned, the utmost has been done, con- sidering the difficulties that the enormous window space interposed. The appearance of the buildings, however, is, on the whole, very acceptable. The interior, on the other hand, is very satisfactory. The accommodation it fur-



MEDICAL BUILDING TORONTO UNIVERSITY
BASEMENT PLAN

DRAWING BY W. H. WOODS
ARCHITECT, TORONTO



MEDICAL BUILDING TORONTO UNIVERSITY
SUB-BASEMENT


DRAWING BY W. H. WOODS
ARCHITECT, TORONTO

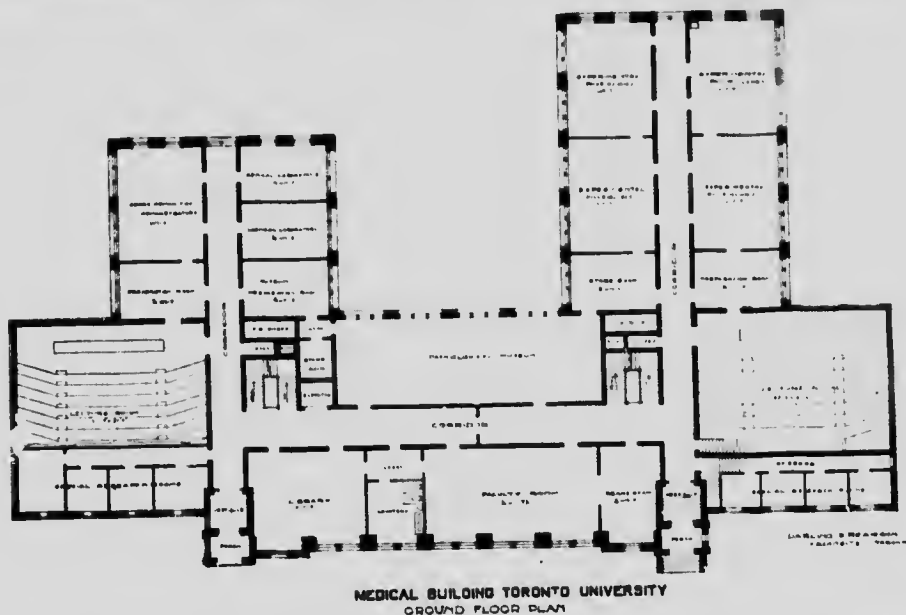
sidering the difficulties that the enormous window space interposed. The appearance of the buildings, however, is, on the whole, very acceptable. The interior, on the other hand, is very satisfactory. The accommodation it fur-

nishes, as well as the conveniences of arrangement it offers, is sufficient to demonstrate the great advantages of the unit system over the common, more or less haphazard, system of laboratory construction everywhere illustrated.

The buildings are to house physiology, physiological chemistry, pathology and public health. The wing to the right, as shown in the accompanying diagrams, accommodates physiology and physiological chemistry and contains, in addition to the lecture theaters, twelve units and eight half

of the units as suggested in Professor Minot's later paper.

What these modifications are may be gathered from examination of the copies of the plans of the various floors of the buildings. The latter are in the form of the figure , the lecture theaters forming wing-like extensions at the angles of the figure. This latter arrangement was adopted in order to permit the lecture rooms to be lighted from their roofs, and at the same time to avoid interfering with the light for the units. An additional ad-



units. The other departments occupy the main portion and the left wing, which contains sixteen units and fourteen half units.

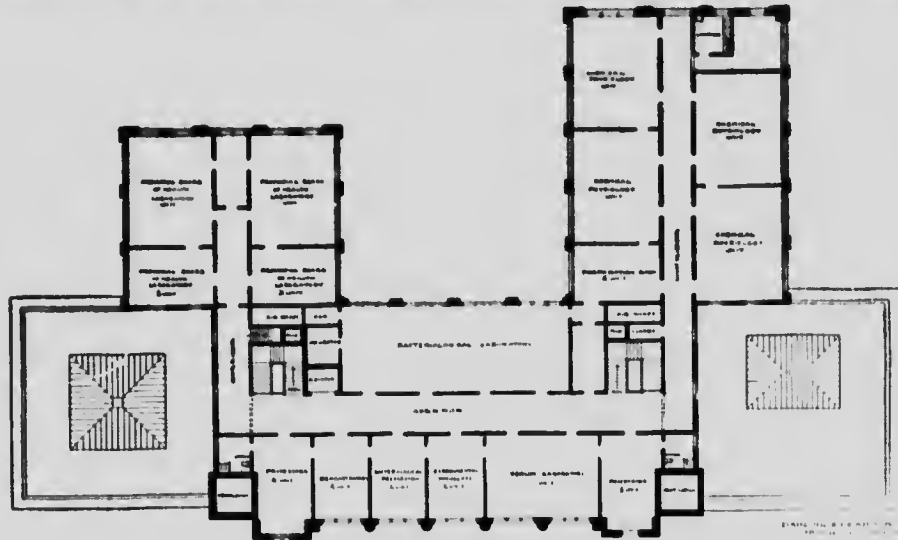
In the construction of these buildings according to the unit system special local conditions had to be considered and, further, the possibility of their extension in a few years was a factor in determining the arrangement as a whole. This necessitated important modifications in the disposition

vantage resulted from the arrangement in that the corridors, which are centrally placed, permit ready access to the lecture theaters and units from the entrances and from the students' quarters.

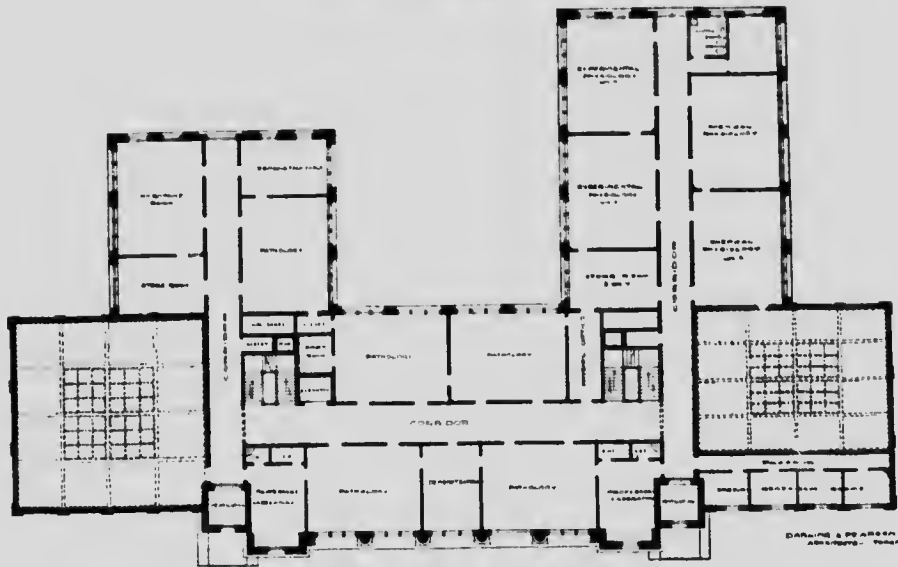
The units are, for the most part, grouped in pairs on each side of the corridors on the various floors. The walls of the corridors are of brick, but those which separate the units from each other are of wood

and plaster only, and they can consequently be removed in a few hours without leaving

Each unit communicates directly with its neighbor by a door, and, further, has two



MEDICAL BUILDING TORONTO UNIVERSITY
SECOND FLOOR PLAN



MEDICAL BUILDING TORONTO UNIVERSITY
FIRST FLOOR PLAN

traces of their disturbance other than those on the line of the fresh plaster added.

doors opening into the corridors. It is thus possible at any time to form two rooms out

of a unit, each of which will communicate directly with the corridor.

The window space devoted to each unit is ample. It is, in fact, as large absolutely as the supporting capacity of the outer wall will safely permit. The window area is 242 square feet, while the outer wall of each unit measures 420 square feet. The window area is, therefore, nearly three fifths that of the outer wall. The terminal units of the wings have additional window space in their second outer wall, and of course in these the lighting is brilliant. In all the other units, however, the lighting is, as already said, ample.

The corridors are lighted from the hall doors, from the large windows at the ends of the wings and from the wells over the stairway. An examination of the building itself shows that this provides sufficient illumination with diffuse daylight, and even on very dull days it is enough for all except, perhaps, the main corridor extending between the two lecture theaters on the ground floor, and then resort may be had to electric lighting.

The two stairways are lighted from the roof, and are so placed as to permit the student reaching any floor directly from the basement, where the reading and writing rooms are situated. The locker rooms and lavatories, on the other hand, are in

the sub-basement and can only be reached from the basement corridor.

The wings are, including the basement and sub-basement, five stories in height. The main portion is only three stories, if we leave out of account the boiler room. This arrangement is due to the fact that the rear part of the building is placed in a shallow ravine. White brick, with stone facings here and there, is the material; the roof is flat and bordered all round with a brick parapet.

The building is heated by hot water forced over heated coils by large fans driven by steam and the ventilation is thus, in part, provided for, and also by the exhaust currents in the ventilation turrets which rise over the entrances.

A feature of special interest is presented by the small research rooms. The half units are intended to be used for various purposes, but chiefly for small groups of students pursuing advanced work or for special lines of research, but each of the fifteen small rooms, shown in the plans as adjacent to the lecture theaters, is reserved for individual workers carrying on selected investigations. These, with the other arrangements described, have been designed with the view of making the buildings a home for research.

A. B. MACALLUM.

