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An Account of
The Darling Building
of the
University of Adelaide

Compiled by

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Architect

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THIS BUILDING, WHICH ACCOMMODATES THE LABORATORIES
NECESSARY FOR INSTRUCTION IN SCIENCES FUNDAMENTAL
TO MEDICINE, OWES ITS ORIGIN TO PRIVATE MUNIFICENCE.
IN THE ENTRANCE LOBBY IS AFFIXED A BRONZE COM-
MEMORATIVE TABLET INSCRIBED AS FOLLOWS:

THE DARLING BUILDING

THIS BUILDING DESIGNED FOR THE USE
OF THE MEDICAL SCHOOL OF
THE UNIVERSITY OF ADELAIDE
IS NAMED IN MEMORY OF
THE LATE JOHN DARLING JUNIOR
WHOSE FAMILY CONTRIBUTED
TOWARDS ITS ERECTION
MCMXXII

P1957

THE BUILDING

PLANNING. Reference to the accompanying plans will show that the arrangement consists of a central portion, containing Administrative Offices and Advanced and Research Laboratories, and of two projecting wings, which are devoted to elementary teaching Laboratories and to the Library. These wings project in a southerly direction, and thereby secure a maximum of the light which is preferable for microscopical work in this hemisphere.

SITE. The locality chosen having a regular fall of about ten feet, a terrace was formed at the level of the intermediate contour to avoid unnecessary outlay in footing walls. The building is thus approached from the front by a flight of steps and a ramp. The complete scheme includes a wall to retain the banks, which may be further improved by planting with grass or with creeping succulents.

MATERIALS AND FINISH. The floors and stairs are of reinforced concrete carried upon a pier and beam system incorporated wherever possible in the curtain walling of sandstock brickwork. The concrete was filled in upon carefully prepared wrought timber forms, and left in its natural finish after these were stripped.

Internal brick walls were flushed up with mortar as the work proceeded, and all internal surfaces above dado height are whitened with binding limewash. The walls of all corridors, stairs, and lavatories are treated with a dado of trowelled cement, and the concrete floors and stairs are finished in the same, covered with heavy grey Ruberoid.

The colour scheme thus ranges from white, through neutral grey, to the intense black finish of the timber fittings, which is a prominent feature of all the rooms. To accord with this, the internal joinery is painted dark grey in all cases, except in the Library, No. 103, where the Kauri woodwork is varnished to preserve its light yellow colour.

With the exception of the Oregon (*Pseudotsuga Douglasii*) used in roofing, and the Baltic Deal (*Picea Excelsa*) used for external sashes, all timbers used are Australasian. Framings and some floors are of Jarrah (*Eucalyptus Marginata*), and internal joinery of "Hoop Pine" (*Araucaria Cunninghamii*) or of Queensland Maple (*Flindersia Chatawaiana*). The bench tops are of New Zealand Kauri (*Agathis Australis*), a wood eminently suited for this purpose on account of its close and even texture, and consequent imperviousness to fluids.

The roof is covered with tiles of local manufacture and ceiled with fibrous plaster. With the exception of a certain amount of steel and timber, most of the ironmongery and piping, and all the glass and glazed sinks, the materials are of local production.

PLUMBING. The equipment comprises 97 sinks, 360 water outlets, and 520 gas outlets, besides 21 compressed air cocks. Branch services to each room, containing six or more points, are controlled by separate stopcocks. All service pipes and wastes are exposed and accessible. Sink wastes are of galvanized wrought iron pipe, with cast gunmetal fittings and lead traps.

ELECTRIC INSTALLATION. This consists of 166 direct or semi-indirect pendants, 75 light plugs, and 54 power plugs for bench work. The service is 150 amp, 3 wire, 400 volt direct current, delivering 200 volt service to the pendants and plugs.

There is also provision for a motor service of 10 h.p., and a single phase alternating current service for special instruments.

STATISTICS.

DATES. The original contract was entered into on March 2, 1920, and the building occupied and available for scientific work, March 2, 1922.

AREA. Each floor contains approximately 10,000 square feet nett floor area.

CONTENT. The entire content of the whole structure is approximately 556,000 cubic feet.

COST. The approximate nett expenditure is as follows: Construction, £25,100; Plumbing, £3,700; Joinery Fittings, £7,450; Refrigerating Plant, £720; Electric Installation, £840. Total, £37,810.

The resultant cost per cubic foot is therefore: For Structure, excluding fittings, 11 pence; and inclusive of same, 16 pence.

THE EQUIPMENT

GENERAL. The work benches are of standard height, 34 inches, but vary in width. The bench tops are of New Zealand Kauri, stained with aniline black and finished with raw linseed oil, followed by a thin coat of a solution of paraffin in petrol. Wherever shelves are provided against the wall in the rear of work benches they are five in number, the underside of the bottom shelf being 16 inches above the top of the bench, and the remaining shelves successively 9, 8, 6, and 6 inches apart. The width of these shelves is six inches, excepting the top shelf, which is $7\frac{1}{2}$ inches wide, thus permitting syphons descending from large bottles placed upon the top shelf to clear the shelves below.

Water points are very numerous, but sinks are provided only in chosen localities, where washing of glassware, etc., is to be carried out. The water is discharged from a goose-neck, provided with a side elbow and bib-cock, and delivers directly over the orifice, 1 inch in diameter, leading into the nearest sink trap. This orifice is in the centre of a lead-lined dish 12 inches in diameter, to catch drips and splashes. The height of the outlet of the goose-neck above the table, with a reducing nozzle affixed, is 8 inches, while that of the elbow outlet stands $3\frac{1}{2}$ inches above the table. The advantage of this method of distributing water resides in the fact that expensive sinks are dispensed with, and the majority of purposes for which water is required are served equally well without them.

At sinks, two such elbow taps are provided, and the outlet of the goose-neck, with reducing nozzle attached, stands 20 inches above the floor of "large" sinks, and 16 inches above the floor of "small" sinks. Every outlet is threaded to take either of two attachments, namely (1) a nozzle which reduces the outlet from $\frac{7}{16}$ inch to $\frac{1}{4}$ inch, and at the same time provides a nipple to enable rubber tubing to fit snugly, and (2) a bunsen pump. This latter, when fitted to the goose-neck, discharges directly into the waste-pipe.

Gas jets, either double or single, and power and light plugs are distributed along the benches at suitable intervals, and are further provided in situations where they may be required for special purposes. In private offices and the Library special plugs are provided for electric heaters.

Electric lighting is carried out with a view to securing general illumination by the semi-indirect method, with local points where more intense lighting over a restricted area may be desired. Simple pendants with white opalized reflectors are employed in passages. Over office tables and in laboratories devoted to advanced work or research, counterpoised pendants, provided with green glass shades, are employed, so that a local area of intense illumination may be secured, while the worker's eyes are shielded from the light.

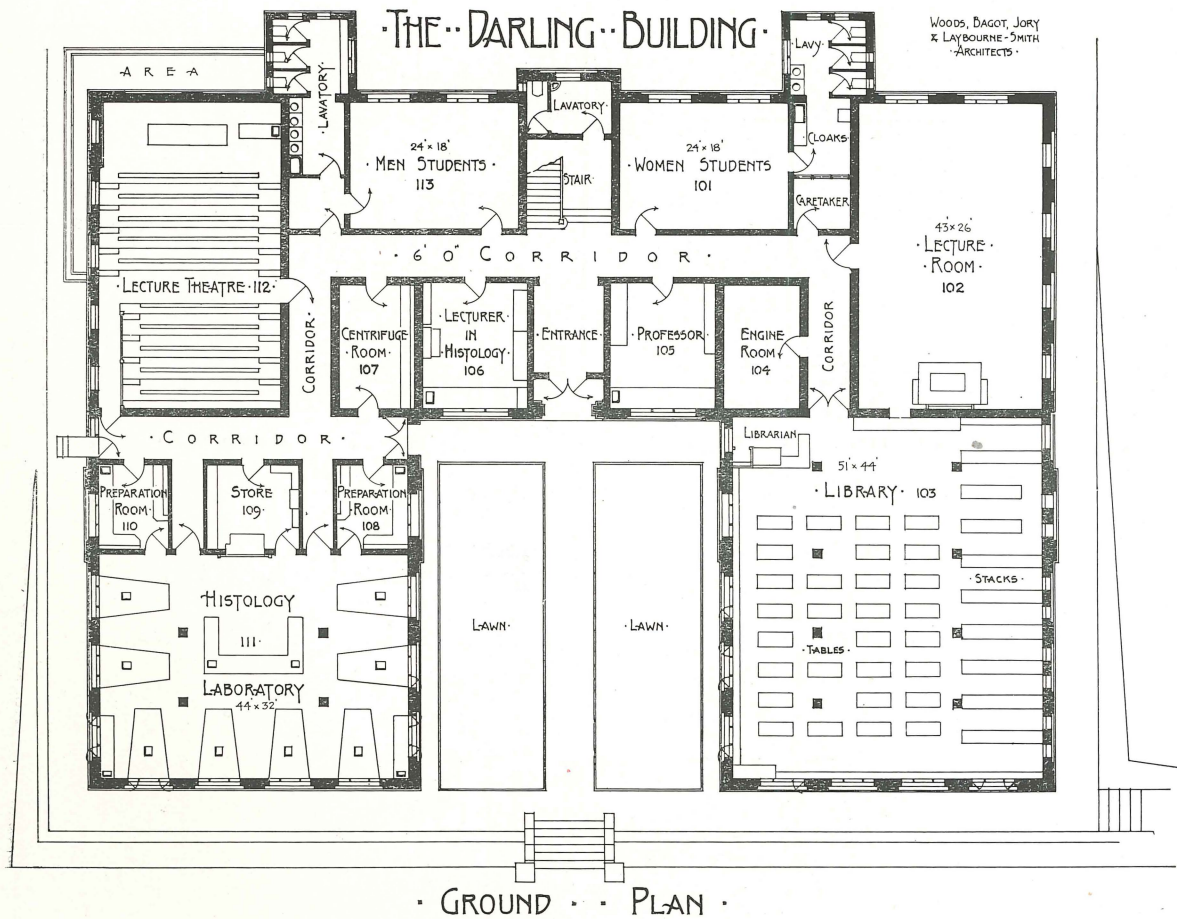
The windows in the majority of rooms on the ground-floor are 6 feet wide by 9 feet high, divided into 3 lights, the centre fixed and the side ones opening outwards, being provided with special adjustable fasteners. The centre fanlight opens outward above a transome. This design is adopted to permit opening of the window from whatever quarter the wind may be blowing without creating a direct draught upon the work benches. In the second and third storeys the windows diminish in height, but are otherwise similarly constructed. In the elementary teaching laboratories the window glass is semi-opaque "rough cast" plate, so as to diffuse the light for microscopical work. The doors leading into the private offices and advanced laboratories are also glazed with similar glass in the upper half, so as to increase the lighting of the passages.

In special situations, as in the Library, other forms of window are employed. In the Library, between the stacks, the windows are of a tall and narrow form, and this arrangement is repeated in room 102, which is intended ultimately to become a stack-room for the Library.

Telephones are provided in rooms 103, 201, 219, 309, and 316. A switchboard in the Library, operated by the secretary-librarian, establishes connection of the desired telephone with Central. An inter-departmental telephone, connecting with other departments of the University, will also be provided.

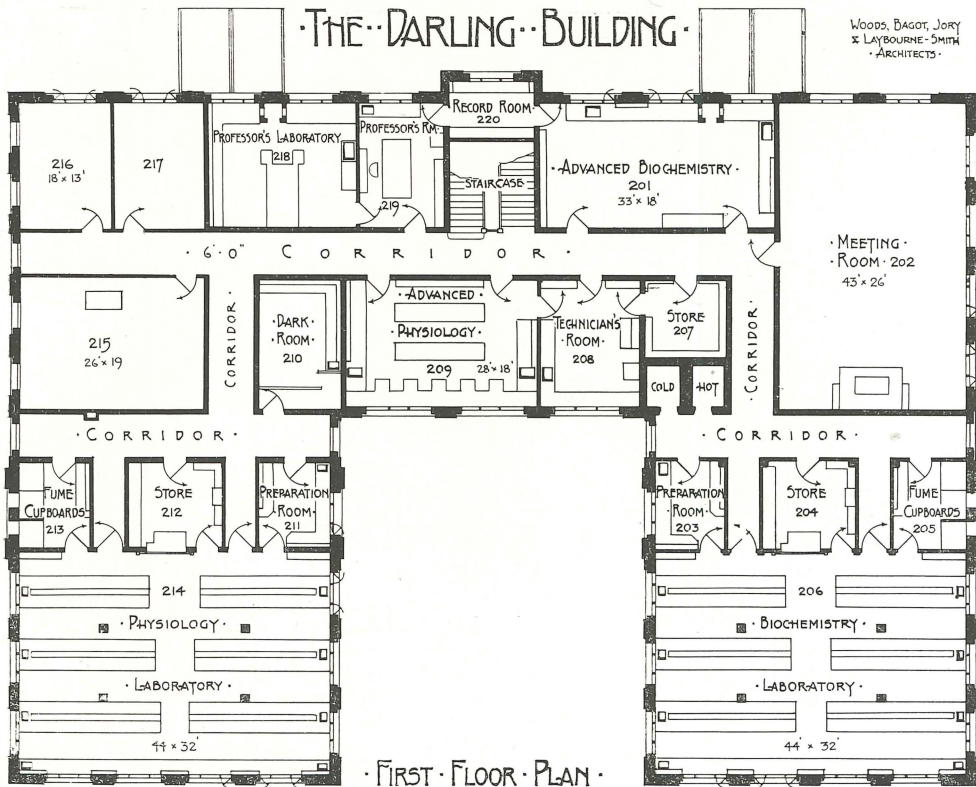
ROOM 102, LECTURE ROOM. The special equipment in this room consists merely of a table and platform for the lecturer, a blackboard of trowelled cement mixed with vegetable black, which extends across the south wall from the eastern extremity to the door leading into the Library, and a lifting blackboard of heavy dark-green linoleum, placed in front of the cement blackboard and directly over the lecturer's platform. Special lights, shielded from the audience, are provided for illumination of the blackboard for evening lectures.

ROOM 103, LIBRARY. The general plan of the room will be evident from the accompanying photograph. This room, which has a capacity of 24,000 volumes, accommodates the library of the South Australian Branch of the British Medical Association, as well as the Medical Library of the University. It contains at present some 12,000 volumes. When the available shelf-space has been exhausted, a gallery may be built above the stacks, and the additional stack-space thus rendered available would accommodate another 12,000 volumes. When this space is also exhausted, the library may overflow into room 102, which will provide a stack capacity, without tables for readers, approximately



THE DARLING BUILDING

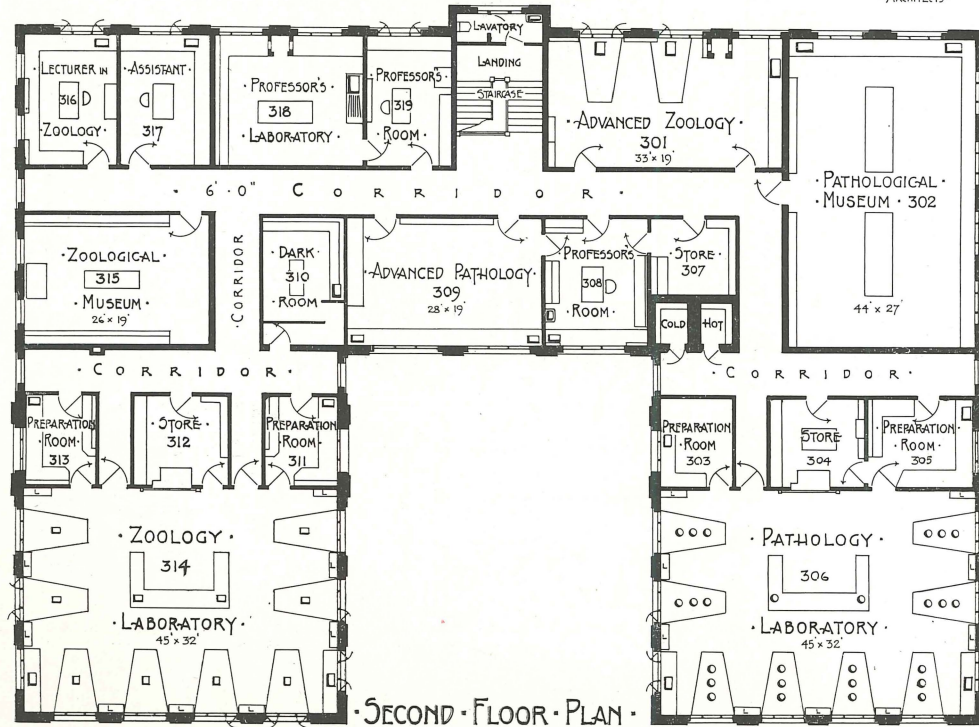
WOODS, BAGOT, JORY
& LAYBOURNE-SMITH
ARCHITECTS



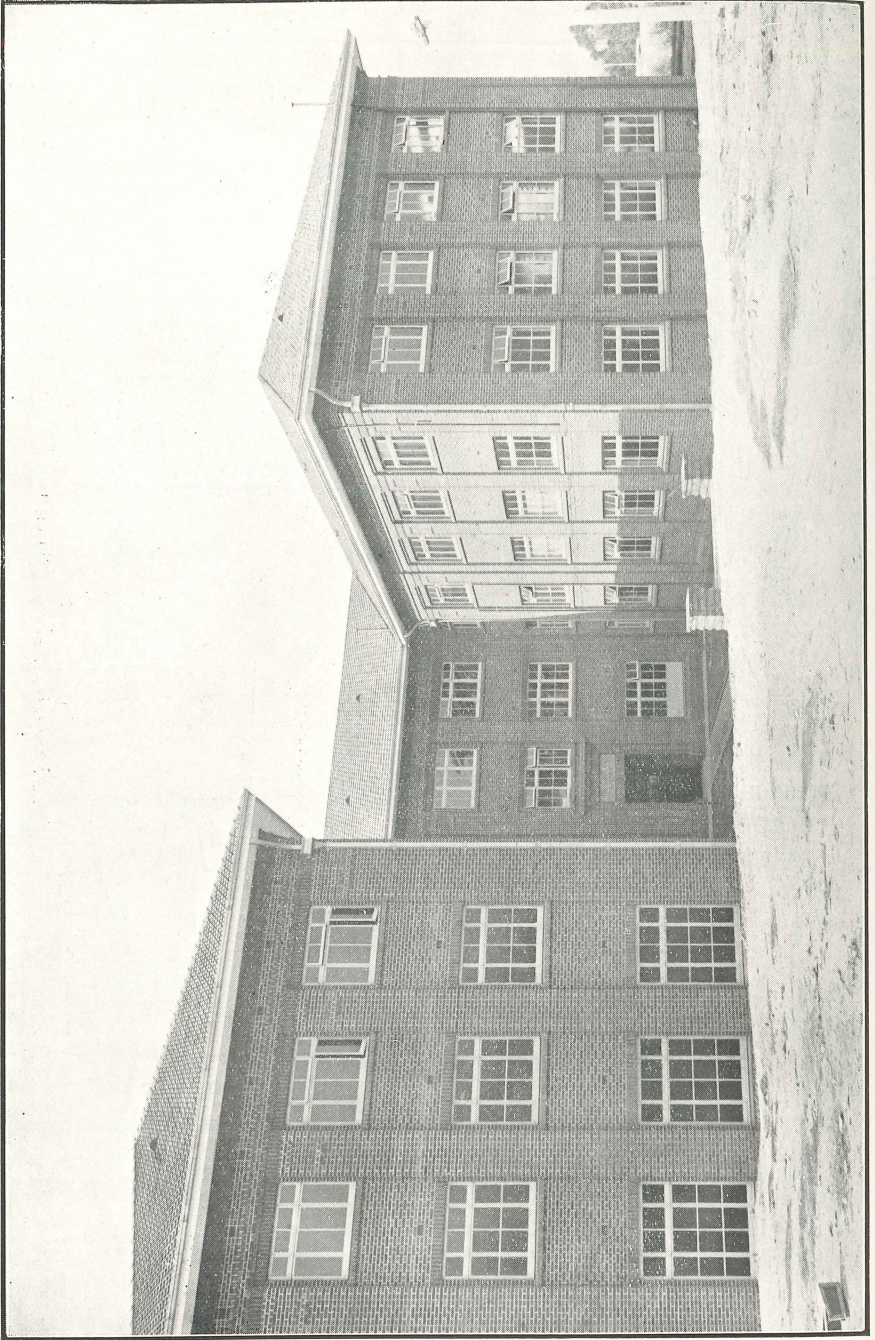
FIRST FLOOR PLAN

THE DARLING BUILDING

WOODS, BAGOT, JOEY
& LAYBOURNE-SMITH
ARCHITECTS



SECOND FLOOR PLAN



SOUTH ELEVATION

equal to that of the library room itself. The ultimate storage capacity for books is therefore about 70,000 volumes, or six times our present possession.

Against the north wall of the Library is placed a cabinet of 42 drawers for the vertical filing of pamphlets and reprints. These drawers measure $10\frac{1}{2}$ inches wide, 14 inches deep, and 18 inches long (inside measure), and will accommodate any customary size of pamphlet. The drawers are provided with extensions, so that they may be pulled out to their full length without falling forward.

A special desk, commanding a full view of the room is provided for the librarian, who also performs secretarial duties for the departments which occupy the building. A telephone booth is provided, so that telephone conversations are inaudible to readers in the library.

ROOM 104, ENGINE ROOM. In this room is placed a Werner vertical type refrigerating engine, having a capacity of $\frac{3}{4}$ ton of ice per diem, and operated by a 3 h.p. motor. A large brine reservoir, with a centrifugal circulation pump and a 2 h.p. motor, are also provided, so that it is possible to maintain low temperatures during periods when the engine is not in operation. This brine is circulated through systems of pipes carried round the walls of two small "cold rooms" on the second and third storeys respectively and directly above the engine room. Pipes are also supplied to small ice chests in rooms 105, 206, and 208.

Piping for compressed air is also laid on from this room to the various laboratories, and floor space has been reserved for the installation of a compressor.

With the doors closed, the noise of the engine during operation is only faintly audible in the Library.

ROOM 105, PRIVATE LABORATORY. This room, which is fitted up to become the private laboratory and office of a lecturer, is not yet assigned to any definite purpose. It may ultimately become the private office and laboratory of a lecturer in clinical physiology. It is provided with work-benches, a sink, bookcase, lockers, a writing desk, and an ice-chest cooled from the refrigerating engine.

ROOM 106, LECTURER IN HISTOLOGY. This room is the private office and laboratory of the Lecturer in Histology. The large window, 9 feet square and facing south, affords excellent light for this type of work. Special equipment includes work-bench and sink, a small glass tank with overflow for frogs, shelving for slide cabinets, special cabinets for specimens and apparatus, and a writing desk and bookshelves.

ROOM 107, CENTRIFUGE ROOM. This room contains a powerful direct-drive International Instrument Co. Centrifuge No. 2, having a carrying capacity of 1 litre (2 lbs.) of liquid at 2,400 revolutions per minute. Two "heads" are provided, one carrying four 250 c.c. tubes and the other eight 100 c.c. or smaller tubes. Along the wall a desk is furnished, which is provided with drawers specially designed to store centrifuge glassware. Various departments using the instrument will have private stocks of glassware, which will be kept in drawers assigned to their sole use.

Space is reserved in this room, and the necessary electric wiring installed, for an electro-cardiograph which, it is hoped, the University may ultimately acquire. It is proposed to connect the electro-cardiograph by cable with the Adelaide Hospital, 400 yards distant, so that

records may be taken of the heart-beat of patients in the wards and forwarded to the physicians in charge for diagnosis.

ROOM 108, PREPARATION ROOM. Here the various specimens are prepared for employment in the teaching of Histology. Special equipment, in addition to the usual benches and sink, includes two Cambridge Rocking Microtomes for cutting microscopic sections, one sliding Microtome for cutting sections of material embedded in celloidin, and the necessary ovens for paraffin imbedding.

ROOM 109, STORE ROOM. Access to this room may be gained either from the passage at the rear or from the teaching laboratory. Communication with the teaching laboratory is further established by means of a lifting blackboard, which forms a shutter 5 by 8 feet, which when thrown open, as in the accompanying photograph, exposes a counter, behind which a cadet is seated during teaching hours, and over which he hands to students apparatus and materials as they require them, and for which they provide receipts.

The store room is provided with open, unpainted shelves, and also with a large cabinet with glass doors for the storage of apparatus which must not be exposed to dust. The corners of shelves are boxed in and the outer angle of the box cut away. A glass plate is inserted in the lower half of this exposed section, and a wooden lid suspended from hinges covers the upper half. A series of small boxes are thus provided for storage of small articles, such as corks, etc., and the glass plate permits visibility of the articles thus stored.

All of the equipment is stored here which is required for the teaching of the class in Histology. Among the equipment may be enumerated microscopes of the following makes: Zeiss, Leitz, Bausch, and Lomb and Watson, a binocular Zeiss microscope, an extensive equipment of optical accessories, including a complete set of Zeiss apochromatic objectives, and a large variety of dyes for staining microscopical sections.

ROOM 110, PREPARATION ROOM. This is an accessory preparation room, which will become of great value if the increase in student enrolment should ultimately necessitate the use of the teaching laboratory by two teaching departments. For the present it is available for one or two advanced students or others engaged in special work in Histology.

ROOM 111, HISTOLOGY LABORATORY, which measures 32 x 44 feet, is one of the five teaching laboratories of the same dimensions contained in the building. Three of these, numbers 111, 306 and 314, are designed for microscopical work in Histology, Pathology, and Zoology respectively, and two, numbers 206 and 214, are designed for Biochemical and Physiological work. In designing the Microscopical laboratories, specialization of plan for any one single purpose was avoided, and these laboratories are all so similar that should increasing student enrolment ultimately compel it, all three Microscopical laboratories could be used simultaneously for instruction in any of the three subjects which are at present assigned to separate laboratories. The seating capacity of any one of these rooms is 55 students, so that the ultimate capacity for a single class in any one of the microscopical subjects is 150 students. Present classes vary from 40 to 50, so that while none of these laboratories are over large for present requirements, the students may increase to three times their present number

before the necessity for new buildings to accommodate them need arise. This is also the maximum combined capacity of the laboratories for Physiology and Biochemistry, and is the seating capacity of the lecture theatre. The building will, therefore, be utilized to its utmost capacity in all departments of work when the annual enrolment of new students attains 150, or between three and four times the present enrolment.

Each teaching laboratory, of all of which this room may serve as an example, opens by separate doors into a suite of three small rooms. Two of these, in the microscopical laboratories, are rooms for preparing materials for the use of the class, and the middle room is the store room. The lifting shutter, five feet by eight, which exposes the counter in the store room, is also a blackboard, constructed of green linoleum backed by boards. Necessary diagrams or instructions can be placed upon this blackboard before the class meets, and it can then be thrown up to expose the counter for delivery of apparatus. When thrown up, at night, it is illuminated by two specially shielded converging lights. A cement blackboard is also supplied at one side of the same wall.

The usual plan of a microscopical laboratory involves the employment of a straight desk facing windows opposite which students are seated. This necessitates, for a large class, an extremely long and narrow room, which renders the planning of the remainder of the building very difficult, and also results in the voice of the instructor, situated at one end of the room, being inaudible at the other. In this building the tables for microscopical work are shaped like triangles with the apex cut off. At the broad end, nearest the window, these tables are six feet wide, while at the narrow end they are three feet wide. The length down the centre is nine feet. Three students sit at each side of the table, so that six students are accommodated at each window instead of only two, as would have been the case if the usual plan had been adopted. Each student's microscope thus stands about six inches in front of his neighbour's microscope between him and the window. He thus escapes the shadow of the neighbouring student and his microscope, and by turning his mirror sideways obtains unobstructed light.

Behind these tables and between them and the store is a bench, forming three sides of a rectangle, which is employed by the instructor for exhibiting specimens which cannot be separately furnished to the students.

Each student has a numbered drawer and locker, and the same key opens both.

ROOM 112, LECTURE THEATRE, 23 feet high, 44 feet long and 26 feet broad, has seating capacity for 150 students. The students occupy benches in front of which an inclined desk affords support for notebooks. The lecturer has a table 10 feet by 3 feet, and to one side a small bench provided with a sink and gas and water points. A power plug is situated in the floor. Behind the lecturer a cement blackboard extends the whole width of the room, and above it the wall is plastered and whitened to serve as a screen for lantern slides or moving pictures. Above the passage, in the rear of the theatre, is situated a moving picture operator's cabinet, and a fire-proof shutter permits pictures to be thrown through the rear wall on to the area above the blackboard.

The blackboard is illuminated at night by a floodlight situated to one side and shielded from the audience. The lecturer controls the light by a switch below the blackboard.

At the end of the West wall, adjacent to the blackboard, a series of wooden slats united by webbing are provided, which may be elevated or lowered by pulling or releasing a cord. These are for affixing and displaying large wall charts and diagrams.

The benches and desks in this room depart from the colour scheme employed elsewhere. They are of jarrah, in natural colour and finished with oil.

ROOM 201, ADVANCED BIOCHEMISTRY. This room is used by research workers and honours students in Biochemistry. The assistant hospital biochemist also performs in this room the analyses submitted to him through the pathological laboratory of the Hospital. Thus determinations of blood sugar are done here to assist in the diagnosis and prognosis of diabetes.

Special equipment in this room includes an automatic still, which is capable of delivering three gallons of distilled water per hour. A block tin tube conveys this water from the carboy employed as reservoir to the Professor's private laboratory (Room 218). Several Bock-Benedict Colorimeters are provided for the colorimetric estimation of sugar in blood or urine, nitrogen, penols, creatinine, ammonia, and other urinary constituents.

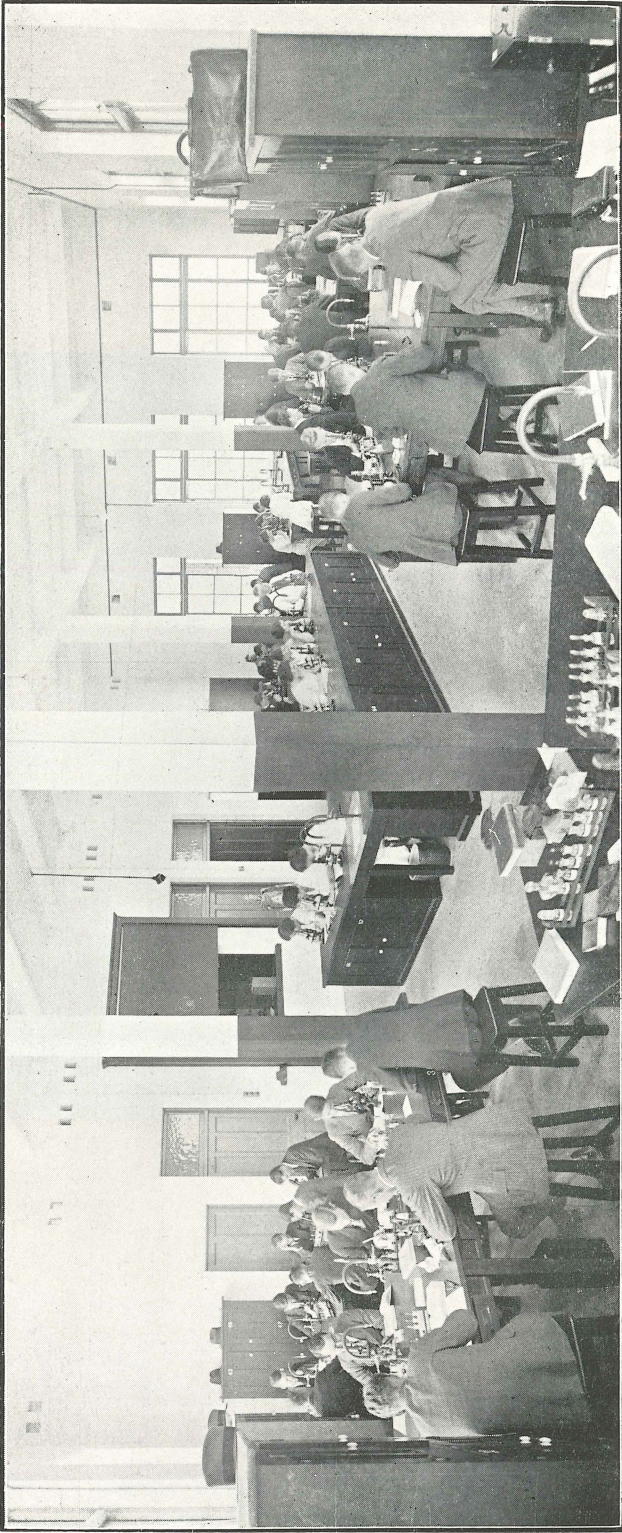
A van Slyke Amino Nitrogen Apparatus, Oertling Chemical Balances, a de Khotinsky waterbath for maintaining constant temperatures to within 1/100 deg. Centigrade, a Daniels adiabatic calorimeter for estimating the heat value of foods, and a small electric centrifuge are also installed in this room. A special desk and set of shelves similar to those employed in room 209 is provided for the accommodation of mice used in nutritional investigations. Special metabolism cages for larger animals, permitting the separate collection of urine and faeces for chemical investigation are also provided.

ROOM 202, MEETING ROOM. This room may be employed for meetings of the medical faculty or medical societies. It is also available for ordinary lecture purposes. It is provided with chairs and small folding tables, a platform and table for the lecturer, a large cement blackboard, and slats united by webbing and elevated or lowered by a cord and pulleys for the exhibition of wall charts.

In this room is also accommodated a drawing table, which can be wheeled into any room in which it may be required. It consists of a drawing-board attached to a double hinge on one side. This may be lifted, and the hinge permits it to drop, forming a flap which covers one side of the table. The removal of the drawing-board in this way reveals a ground glass plate, which may be illuminated from below by electric lights, thus facilitating the tracing of diagrams.

A large Ludwig Kymograph for taking protracted tracings of movements of physiological importance, and a specially designed incubator provided with trays resembling shallow drawers hinged on one side, and designed for work on the development of insects and other lower animals, are also placed in this room.

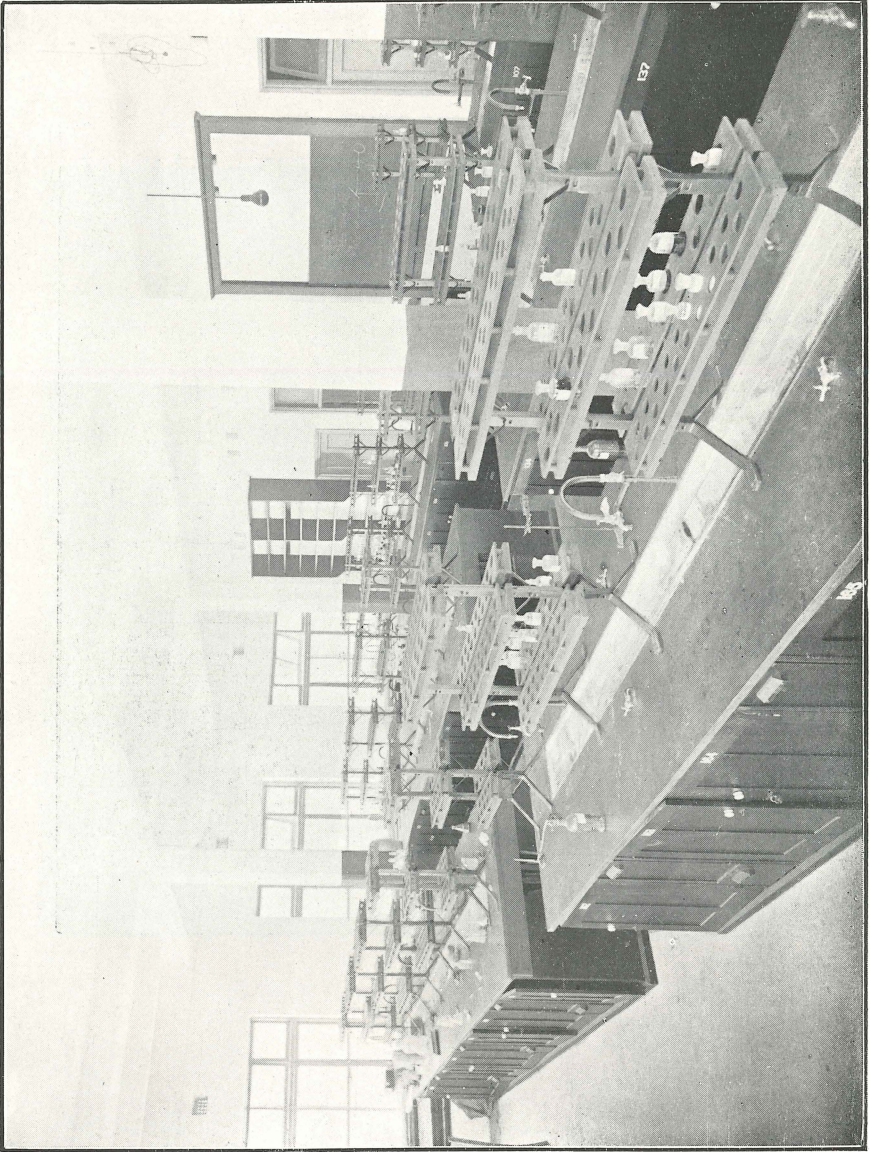
ROOM 203, PREPARATION ROOM. Here are prepared the solutions and reagents used by the class in Biochemistry. An automatic water



No. 111. HISTOLOGY LABORATORY



LIBRARY



No. 206. BIOCHEMISTRY LABORATORY

still capable of delivering three gallons per hour is installed here. Over the sink a water faucet, delivering vertically from a long narrow nozzle is provided, in order to avoid the necessity of alternately filling and emptying during the washing of a large number of bottles. A large Oertling Chemical Balance, with a capacity of one kilogram and a sensitivity of one milligram, is a very useful item of the equipment in the preparation of large volumes of solutions.

ROOM 204, STORE ROOM. The arrangement of this room reproduces that already described in room 109. Special equipment includes several Bock-Benedict colorimeters for the determination, by colour comparisons, of various blood and urinary constituents.

ROOM 205, FUME CUPBOARDS. This room is devoted to cupboards for the evaporation or ignition of substances which give off suffocating or otherwise noxious fumes. The floor of the cupboards is slate, and the back consists of a continuous sheet of glass, which in part covers an opening in the wall, thus affording excellent lighting from the back. The fumes are carried off by flues constructed out of 9-inch glazed earthenware sewer pipes, set in pitch and carried up to the roof. In the immediate vicinity of the exit the roof is protected by a sheet of lead. Each cupboard is provided with a separate flue.

The three cupboards are each provided with seven upright and two horizontal gas jets, the upright jets being affixed to bunsen burners. A water point is also provided in each cupboard. The front of each cupboard is provided with a lifting plate glass shutter in an oxy-welded metal frame, in which a small horizontal sliding panel opens or closes, according to its position, two armholes. Thus it is possible to adjust a burner within the cupboard without lifting the shutter and permitting issuance of fumes into the room. The fume cupboards in rooms 201, 213, 218, 301, and 318 are similarly constructed.

ROOM 206, BIOCHEMISTRY LABORATORY. This room is of the same dimensions as room 111. It is, however, fitted up for work in Biochemistry or Physiology. The difficulty of fitting up a room to serve equally for either of these subjects arises from the fact that a clear table, free from encumbrances, is required for Physiological work, while reagent shelves in front of each pair of students, and sinks or a central drain are required for work in Biochemistry. Accordingly the reagent shelves rest upon iron brackets, from which they can be removed. The shelves are double, the upper shelf of thin wood being perforated to admit the reagent bottles. When desired, these may be removed, without disturbing the arrangement of the bottles, and the reagent shelves can be accommodated upon shelves provided for the purpose on either side of the doors leading into the preparation rooms.

The desks are provided with a central inclined lead-lined drain, which discharges into the waste-pipe from a sink placed at the window end. This drain can be covered, if the room is required for instruction in Physiology, by a series of accurately fitting boards, thus converting the bench into a flat-topped table which, when the reagent shelves are removed, is sufficiently free from encumbrances to permit its employment for Physiological work.

Each student is provided with a locker, and between each pair of lockers a funnel-shaped shoot hung on pivots is provided, the upper end of which may be opened by pulling the front of the shoot forward.

This delivers its contents into a lead-lined drawer lying below it. In this way used filter papers and other solid refuse can be disposed of without choking up or encumbering the drain or the waste-pipe of the sink.

The benches are 4 feet 6 inches wide, and the spaces between them are of like width. They run from side to side of the room parallel to the wall which backs on the preparation room, store room, and fume cupboard room. They are interrupted in the middle, opposite the counter of the store room, to form an alley-way which widens as it approaches the distributing centre of the room, that is, the store counter. The space between the end of the pair of benches furthest from the store is 3 feet 8 inches, between the next pair 5 feet 5 inches, and between the pair nearest the store 7 feet 2 inches.

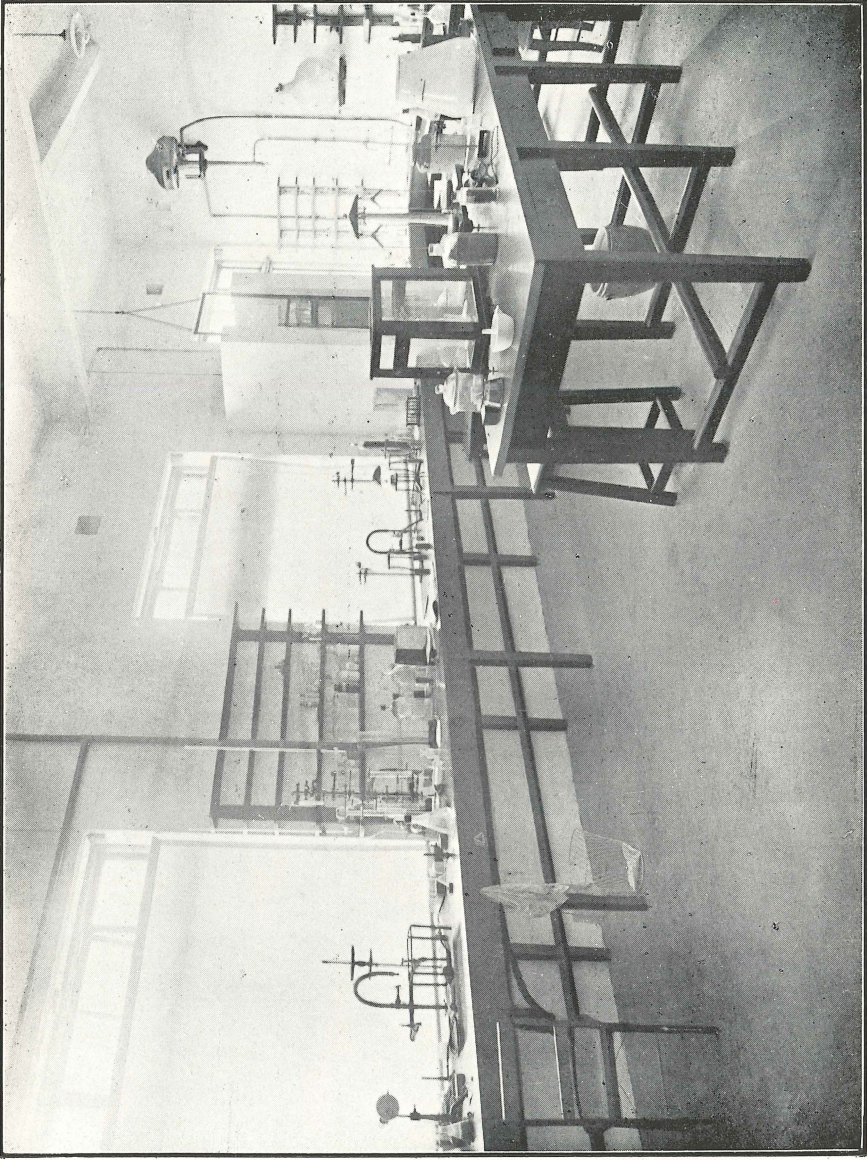
The bench running under the windows, on the wall opposite to the store, is used for colorimeters, microscopes displaying crystals, etc.

For the present this room will be reserved for Biochemistry, while the corresponding room, number 214, in the opposite wing of the building, will be reserved for Physiology. The capacity of each room is about 80 students, being nearly double the present enrolment in any single year. But should students ultimately exceed 80, both rooms, which are fitted up identically, may be devoted to the teaching of either subject. The capacity of each room being about 80 students, their combined capacity is 160, thus equalling the capacity of the building for instruction in microscopical subjects.

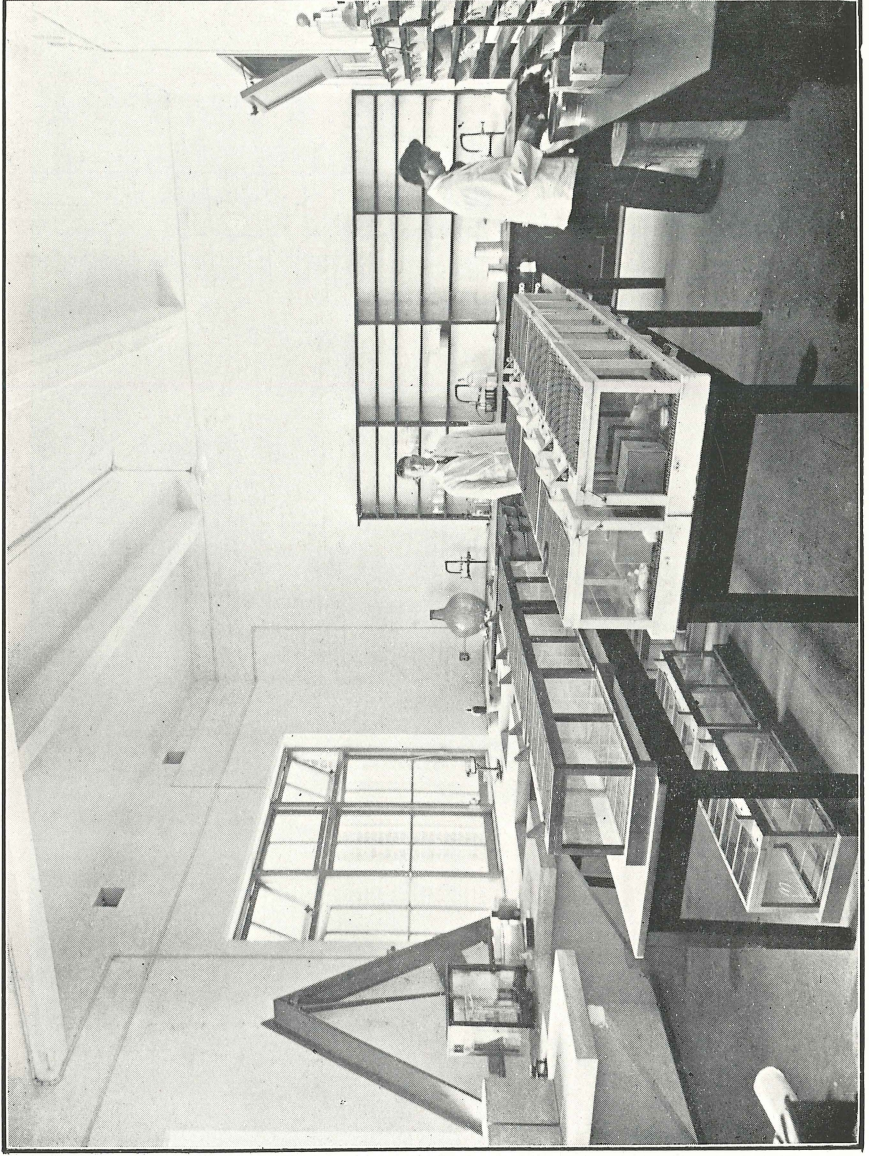
HOT AND COLD ROOMS. Opening off the passage in the rear of the Biochemistry Class Room are two small insulated rooms, 7 feet high, 6 feet deep, and 5 feet wide. One is maintained at a temperature of from 32° to 40° F. by means of coils, in which refrigerated brine is circulated from the engine room. The other is maintained at about 98° F. by an electric radiator. These rooms obviate the necessity of providing numerous incubators and ice chests in the individual laboratories. Students or research workers who are working with perishable materials can store them in the cold room in the intervals between classes, while studies upon artificial digestion, etc., are carried out in the hot room.

ROOM 207, STORE ROOM. This store contains the materials needed for advanced work and research. Since Australia is far from the sources of supply, and needs may arise at any time which cannot wholly be foreseen, it will be necessary to gradually accumulate a large variety of chemicals, so that advanced work need not be hampered or prevented by lack of some reagent procurable only in Europe or America. This store room is therefore devoted to the main to chemicals. A considerable variety of porcelain ware for chemical work is also accommodated here. The shelves are of varying width to accommodate large and small bottles, and the wider shelves are boxed in at the corners and furnished with lifting shutters and glass plates in front for the storage of corks and other small materials. Two Cenco-Nelson vacuum pumps, one water-cooled and the other air-cooled, are among the special items of equipment stored here.

ROOM 208, TECHNICIAN'S ROOM. The technician has charge of the preparation of materials for the use of classes, and he is also, for the present, in charge of the execution of the experiments on growth and



No. 201. ADVANCED BIOCHEMISTRY



No. 209. ADVANCED PHYSIOLOGY

nutrition which are being conducted under the auspices of the Animal Products' Research Foundation. His room opens into the Advanced Store Room (Room 207) on the one side, and into the Advanced Physiology Laboratory, at present occupied by the Animal Products Research Foundation, on the other. The equipment of the room includes apparatus for glass-blowing, an ice chest cooled by pipes supplied from the refrigerating system, apparatus for hardening and imbedding tissues, and a Minot Rotary Microtone for the preparation of sections of pathological tissues, such as cancer, which from time to time occur in the mice employed for the growth investigations.

ROOM 209, ADVANCED PHYSIOLOGY. This room is designed primarily for advanced work in mammalian physiology, but for the present is employed by the Animal Products' Research Foundation for the accommodation of animals which are receiving special dietaries with a view to ascertaining their effect, both upon normal growth and upon spontaneous occurrence of cancer.

Special equipment includes a concrete bench running the full length of the room under the windows, for use in connection with apparatus such as galvanometers, etc., which must stand on a non-vibrating base. This bench is, in its widest parts, 4 feet 6 inches wide, but in order to permit easy access to apparatus situated in the rear or adjustments in the rear of apparatus situated further forward, the bench is cut into bays, each 2 feet deep and 2 feet wide, separated by intervals of 2 feet, thus affording a series of tables, each 2 feet square, projecting forwards from a continuous bench, 2 feet 6 inches wide. In the middle of the wall behind this bench is affixed a large pendulum myograph for the accurate determination of the velocity of transmission of a nervous impulse.

The equipment for the work of the Animal Products' Research Foundation includes a series of cages for mice. These cages are provided with wire screen floors, through which unconsumed food and other debris drop into metal trays, which are emptied at frequent intervals. The walls and partitions consist of glass plates, which fit into grooves and are removable. Nest-boxes of glazed porcelain are provided, so that all the contents of the cage may be readily and thoroughly cleansed. Water is provided by the drop-tube method, so that the animals cannot pollute their water by stepping into it. The animals are weighed weekly or fortnightly on a specially designed balance.

The breeding stock of mice is accommodated in earthenware dishes covered with wire gauze and placed between narrow shelves, which are just far enough apart to admit the dishes with the cover on them. These shelves do not touch the wall, but are supported in such a way as to leave a space between the shelf and the wall, so that when the projecting upper part of the dish touches the wall, the shelf, $4\frac{1}{2}$ inches wide, is underneath the middle of the dish. The width of these dishes at the bottom is 7 inches, at the top 9 inches, and their height is $3\frac{1}{2}$ inches. These shelves stand upon low tables, which serve at once the purpose of elevating the shelves to a convenient height and that of furnishing a surface upon which to place the dishes when they are taken down from the shelves for feeding, cleaning, and so forth.

An Oertling chemical balance and the special balance for weighing mice are also provided in this room.

ROOM 210, DARK ROOM. A large dark room was placed in this position so as to be readily accessible from the teaching laboratory for Physiology (Room 214). It is required for demonstrations to the students in connection with the physiology of the eye. Parties of eight or ten students will be taken into the dark room for these demonstrations, and directly they have received their instruction another party will be admitted. Constant employment of the room for an afternoon would render the room very close, if the ordinary type of dark room with closed door were employed. Accordingly, although a door is provided, the room is so constructed as to permit its use, even for photographic purposes, without closing the door. Two partitions are constructed, which are separated by a distance sufficient to permit the passage of one person at a time, and overlap so as to eliminate direct rays of light. These partitions and the interior walls of the room are painted dead black.

A sink is provided for ordinary photographic work, and the only light which can be turned on from the outside is a photographer's red or amber light situated over the sink.

Special equipment includes a Pulfrich refractometer (now extensively used for the estimation of proteins in the blood), a small polarimeter, and a "Record" enlarging camera for projecting and comparing graphs in connection with the work of the Animal Products Research Foundation on the growth of animals. An ultra-violet lamp will subsequently be installed here also. Power and light plugs are provided for operating stirring machinery or small arcs for illuminating purposes.

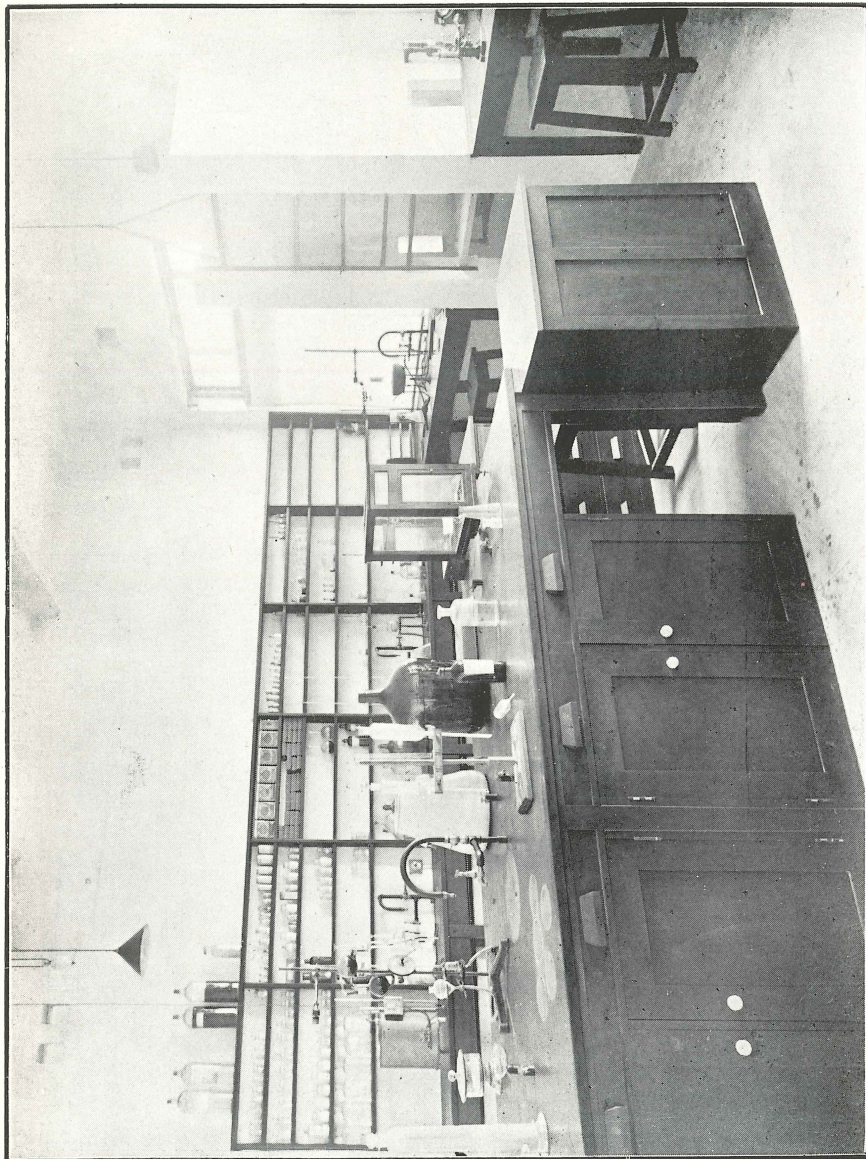
ROOM 211, PREPARATION ROOM, is identical with room 203.

ROOM 212, STORE ROOM. The furnishing of this room is identical with that already described in rooms 109 and 204. Since this store supplies the teaching laboratory for Physiology, the equipment it contains is adapted to this purpose. Special items of equipment include three large Cambridge Inductoria and 25 small Inductoria (Harvard Apparatus Co.); two large Cambridge kymographs, for taking graphic records of muscular movements; one small horizontal kymograph and 25 Harvard Apparatus Co.'s kymographs, with slow and fast clockwork motion; one large circulation model and 10 small ones; one large Mosso Ergograph and 25 Harvard Ergographs; signal magnets, membrane manometers, several hand centrifuges for haematocrit determinations, four anaeroid sphygmomanometers, a MacKenzie Polygraph, one large and several small Ophthalmoscopes, and a number of eye models for studying the laws of refraction, as exemplified in the optical mechanism of the eye.

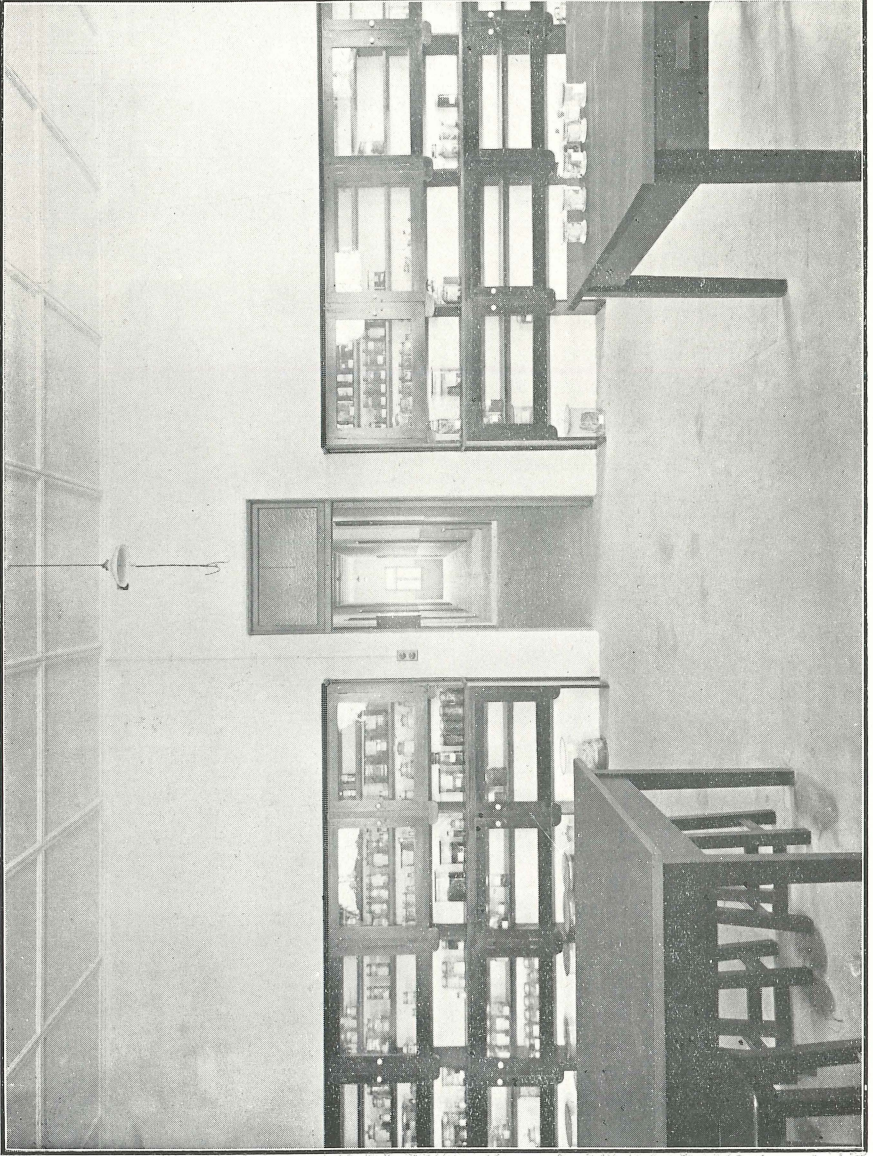
ROOM 213, FUME CUPBOARDS. Identical with room 205.

ROOM 214, PHYSIOLOGY LABORATORY. Reproduces room 206 in all particulars. This room is at present reserved for classes in Physiology, but should increasing enrolment subsequently compel it, it can also be used for instruction in Biochemistry.

ROOM 215. At present not assigned to any definite purpose. A cement blackboard is provided, so that it can be employed as a small lecture room, if necessary.



No. 218. PROFESSOR'S PRIVATE LABORATORY



No. 302. PATHOLOGICAL MUSEUM

Room 216. Not yet assigned to any definite purpose. It could be employed either as an office or as a small private or research laboratory.

Room 217. Not yet assigned to any definite purpose. It could be employed for the same purposes as room 216.

Room 218, PROFESSOR'S PRIVATE LABORATORY. This laboratory is only accessible through the Professor's office, room 219. This arrangement secures the privacy necessary for uninterrupted work. A fume cupboard is provided, and extensive shelving and locker space. Special equipment includes a Van Slyke apparatus for determining amino nitrogen, a de Khotinsky constant temperature bath, providing a temperature constant to within 1/100 of a degree Centigrade, an Oertling chemical balance, and a small water-driven air pump. Seven double water points, seven double gas points, three power plugs, and a light plug are provided in this room.

Room 219, PROFESSOR'S OFFICE, is provided with three doors. One leads into the passage, one into the Professor's private laboratory, and the third leads through the Record Room (room 220) into the Advanced Biochemistry Laboratory (room 201).

The office is furnished with a small working bench, intended for microscopical work, a large table, a file cabinet, a bookcase, and a large cabinet for wall diagrams employed in illustrating lectures.

Room 220, RECORD ROOM. This small room acts as a passage over the stairway into room 201. On the side towards the window a low bench, with cupboards at either end, is provided. The opposite wall projects into the room at its lower part, forming a concrete bench upon which is placed a card filing cabinet of 95 drawers of Queensland maple. These drawers are designed for the various standard sizes of cards, namely, 3 x 5, 4 x 6, 5 x 8, and 8 x 5. The lower two rows of drawers are shallow and divided transversely with spaces for storing kymograph records, a sheet of glass being placed upon the top of each group of records, bearing a label descriptive of their content.

All experimental work performed in the laboratories of Physiology and Biochemistry will be filed here in card index form, and will be accessible from the Professor's office, on the one hand, and from the Advanced Students' Laboratory on the other. Thus students can compare their results at any time with results previously obtained. Here also are filed records of the students' marks, lecture notes, laboratory accounts, inventories of chemicals and apparatus, lists of addresses, and so forth. Drawers containing these are provided with private locks.

Room 301, ADVANCED ZOOLOGY. This is to be used for laboratory work by second and third year Zoology students, of whom, at present, twelve can be accommodated. There is considerable space available for additional working tables should the occasion to use them arise. The working tables are similar in design to those employed in the Histological Laboratory (room 111).

Room 302, PATHOLOGICAL MUSEUM. This is fitted with glass-door cupboards along one wall for the storage of pathological specimens. At one end of the room a cement blackboard is provided, and the two sides, which are lighted by windows, are provided with benches and sinks. In addition, the centre is occupied by two large movable tables

for the inspection of the pathological specimens. The collection contained in this room is purely for teaching purposes, and consists of a suitable series of the commoner pathological lesions met with in the various systems, which are first of all explained to the assembled class and afterwards examined by each individual student. The window benches permit the use of the microscope to supplement the naked-eye inspection. The main pathological collection is contained in the Anatomical Hall, some fifty yards from the Darling Building.

ROOM 303, MEDIA-MAKING ROOM. This room is devoted to the preparation of culture media and other materials for Bacteriological work. It is provided with an Autoclave, a Hot Air Sterilizer, a Steam Sterilizer, and a Serum Inspissator.

ROOM 304, STORE ROOM. The arrangement of this room is similar to that already described in room 109. A special cabinet for holding large quantities of microscopic slides for issue to the students is also provided, and a series of large drawers for wall charts and diagrams.

ROOM 305, TECHNICIAN'S ROOM. This room is rendered somewhat larger than the preparation rooms elsewhere by inclusion of the passage which elsewhere separates the preparation rooms from the store rooms. The room opens through doors into the teaching laboratory (room 306), the store room and the passage in the rear. Equipment of the room includes incubators, a paraffin imbedding oven, and a small electric centrifuge.

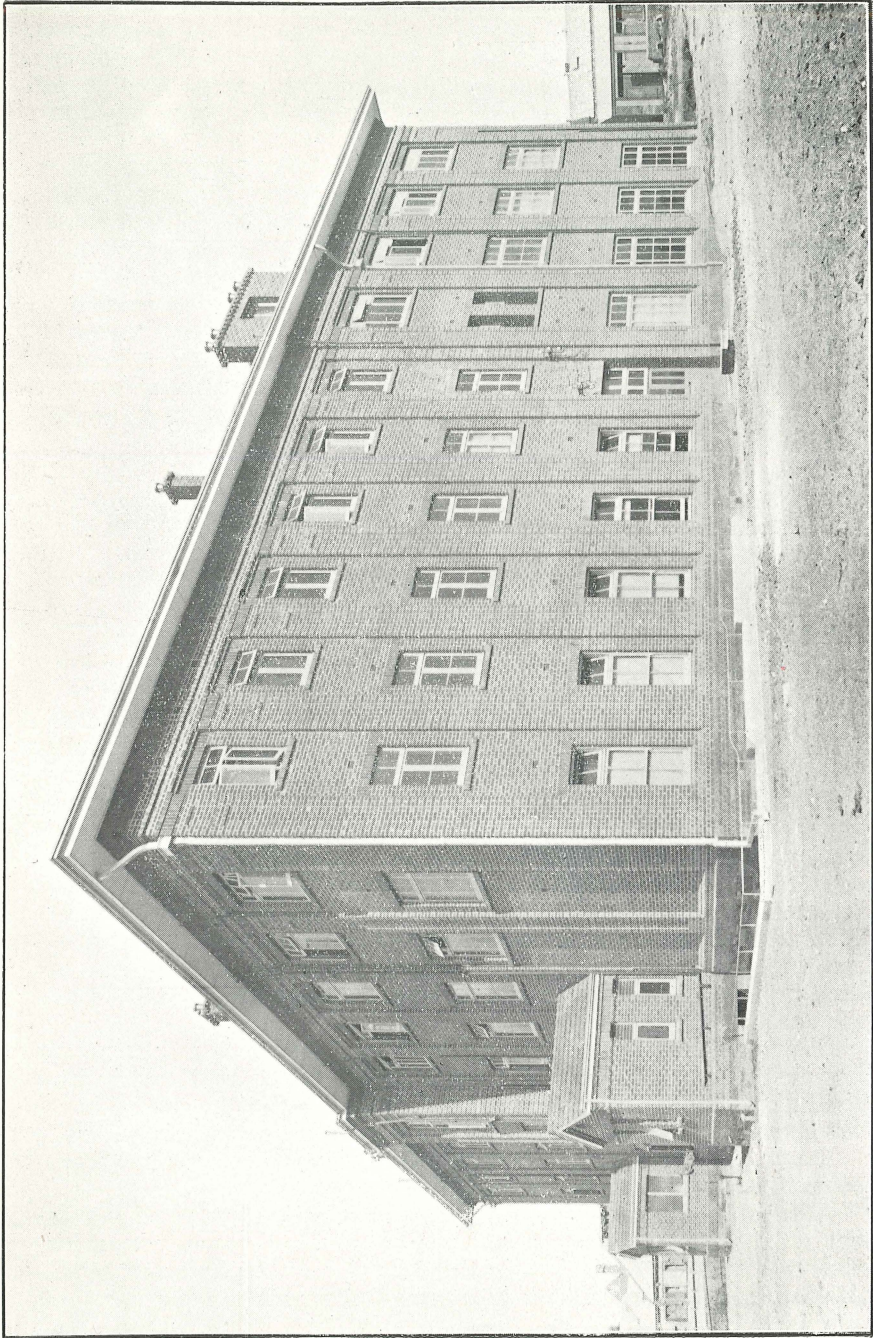
ROOM 306, PATHOLOGY LABORATORY. This room reproduces room 111 in all particulars, excepting that the requirements for the Bacteriological work necessitated the installation of three small circular sinks in each of the triangular tables in place of the single rectangular sink employed in the Histology and Zoology Laboratories. The tables are also grooved near the edges of the sinks to carry glass rods lying across the sinks, for the purpose of supporting microscopic slides in process of being washed under a stream of running water.

HOT AND COLD ROOMS. These rooms reproduce the corresponding rooms in the floor below, and allow, on the one hand the keeping of large numbers of inoculated bacterial cultures at incubator temperature, and on the other of storage in the cold of stock cultures and infective material that requires to be kept cool.

ROOM 307, STORE ROOM. This store is provided with shelving, pigeon-holes, and drawers for the storage of specimens, tissues, paraffin blocks, etc., particularly for advanced and research work. The room opens into the main corridor, and also into the private laboratory of the Professor of Pathology.

ROOM 308, PROFESSOR OF PATHOLOGY. This room, forming the office and private laboratory of the Professor of Pathology, opens on the one hand into the store room (room 307), on the other into the laboratory for advanced pathology (room 309), and also into the main corridor. It is fitted with bench accommodation for private investigational work, library shelves and cupboards, and a large cabinet for microscopic slides.

ROOM 309, ADVANCED PATHOLOGY. This room is employed for research and advanced work in Pathology and Bacteriology, and forms also the laboratory for the demonstrator in Pathology and the Investigator on Gastro-Enteric disorders of childhood.



NORTH AND WEST ELEVATIONS

ROOM 310, DARK ROOM. Reproduces in all essentials the corresponding room (210) on the floor below. When it becomes available, a photo-micrographic apparatus will be installed here.

ROOM 311, PREPARATION ROOM. In this room the specimens and examples for the elementary and advanced classes in Zoology are prepared. Special equipment includes a Cambridge Rocking Microtome, a Leitz Rotary Microtome, and a paraffin bath for embedding tissues for microtome sectioning.

ROOM 312, STORE ROOM. Reproduces room 212 on the floor below. The equipment includes general glassware, dyes for staining tissues, dissecting instruments, microscopes, and stocks of animal specimens for class work. A series of large drawers for wall charts is provided under the counter.

ROOM 313, PREPARATION ROOM. This room is similar to room 311, but is reserved for the preparation of specimens illustrating embryology. A large chicken incubator will be installed here to provide specimens demonstrating the embryological development of the chicken. Other incubators, which may subsequently become available, will also be installed here.

ROOM 314, ZOOLOGICAL LABORATORY. Reproduces the Histology Laboratory on the ground-floor (room 111) in every particular.

ROOM 315, ZOOLOGICAL MUSEUM. Only a small teaching collection will be installed in this room, the very extensive collections of the South Australian Museum, which is only a hundred and fifty yards distant, being available for purposes of reference. The room is provided with a set of Museum cases. A large case in the centre of the room will serve for the exhibition of skeletons and other large objects. Show-cases arranged along the sides of the room have been constructed to permit the exhibition of smaller specimens in Museum jars above, while the roomier cases below will lodge the skeletons of smaller vertebrates and, where necessary, the entire animals.

ROOM 316, LECTURER'S ROOM. This room is fitted with bookcases and working benches, and is exceedingly well lighted for microscopic work. Special equipment includes a Leitz microscope, especially adapted for photographic work and a Baker binocular microscope.

ROOM 317, RESEARCH ROOM. This room will be employed in the future for the accommodation of research workers, probably students working for the Honours degree. No special appliances have as yet been provided, as the room will not be assigned to its proper purposes for one or two years to come.

ROOM 318, PROFESSOR'S LABORATORY. Admission to this room can only be gained through the Professor's office (room 319). It is fitted similarly to room 218 on the floor below, except that the central bench for chemical work is replaced by a series of tables for dissections.

ROOM 319, PROFESSOR'S OFFICE. Reproduces in every particular room 219 on the floor below.

ANIMAL ACCOMMODATION. A small room and a cemented runway are provided for animals in the basement area. A narrow branch of the same area, extending along the west side of the building, is subdivided into a series of five cement frog tanks, with sloping floors and provision for a continuous inflow and overflow of fresh water. Each tank will accommodate fifty frogs.