

The Rockefeller Institute for Medical Research : history, organization, and equipment.

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Royal College of Surgeons of England

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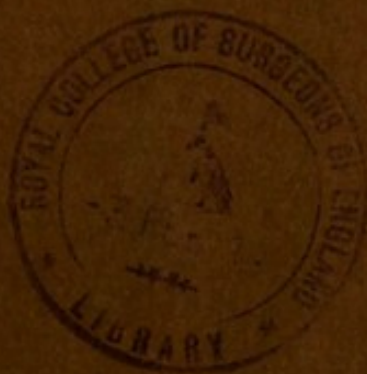
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THE ROCKEFELLER INSTITUTE
FOR MEDICAL RESEARCH



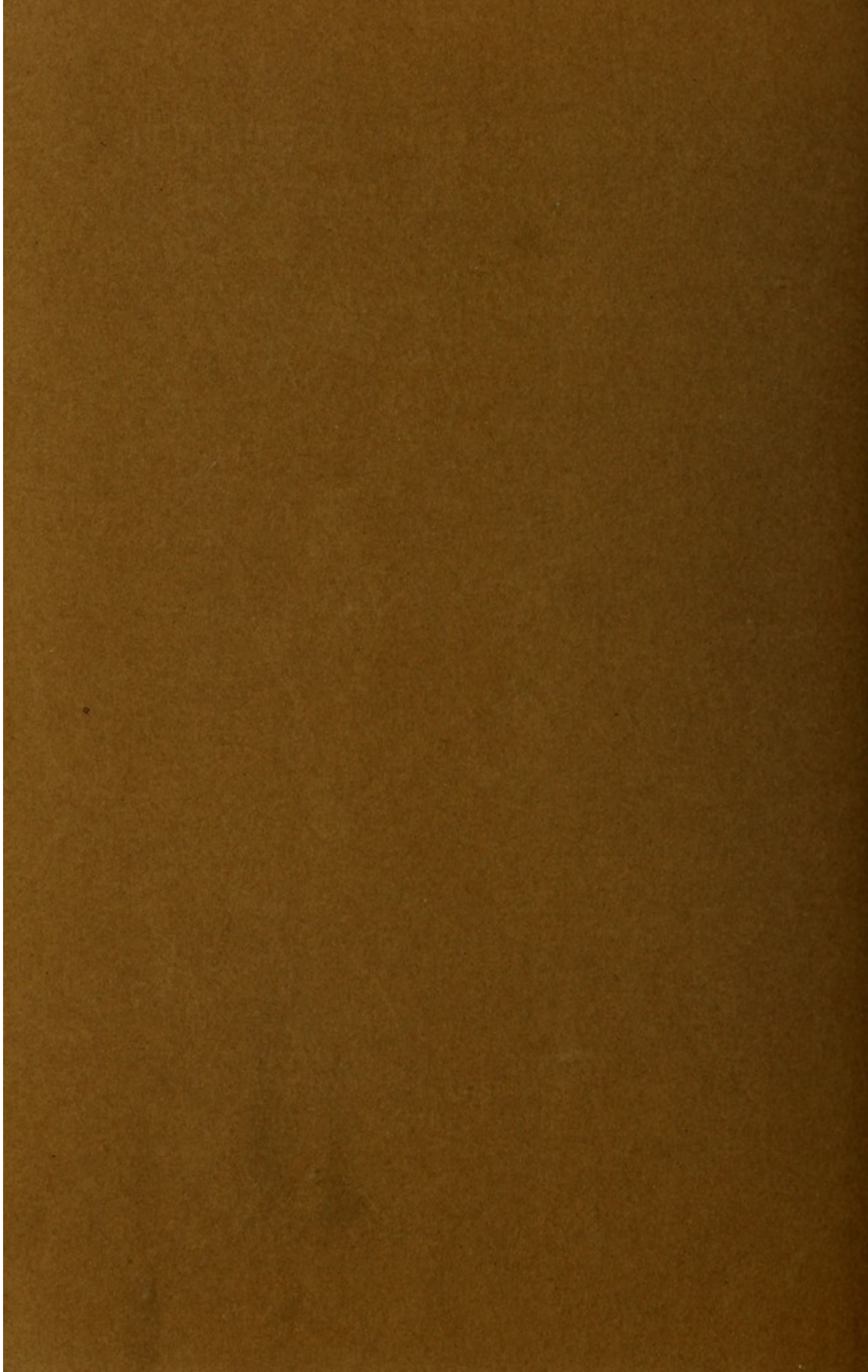
*History, Organization, and
Equipment*

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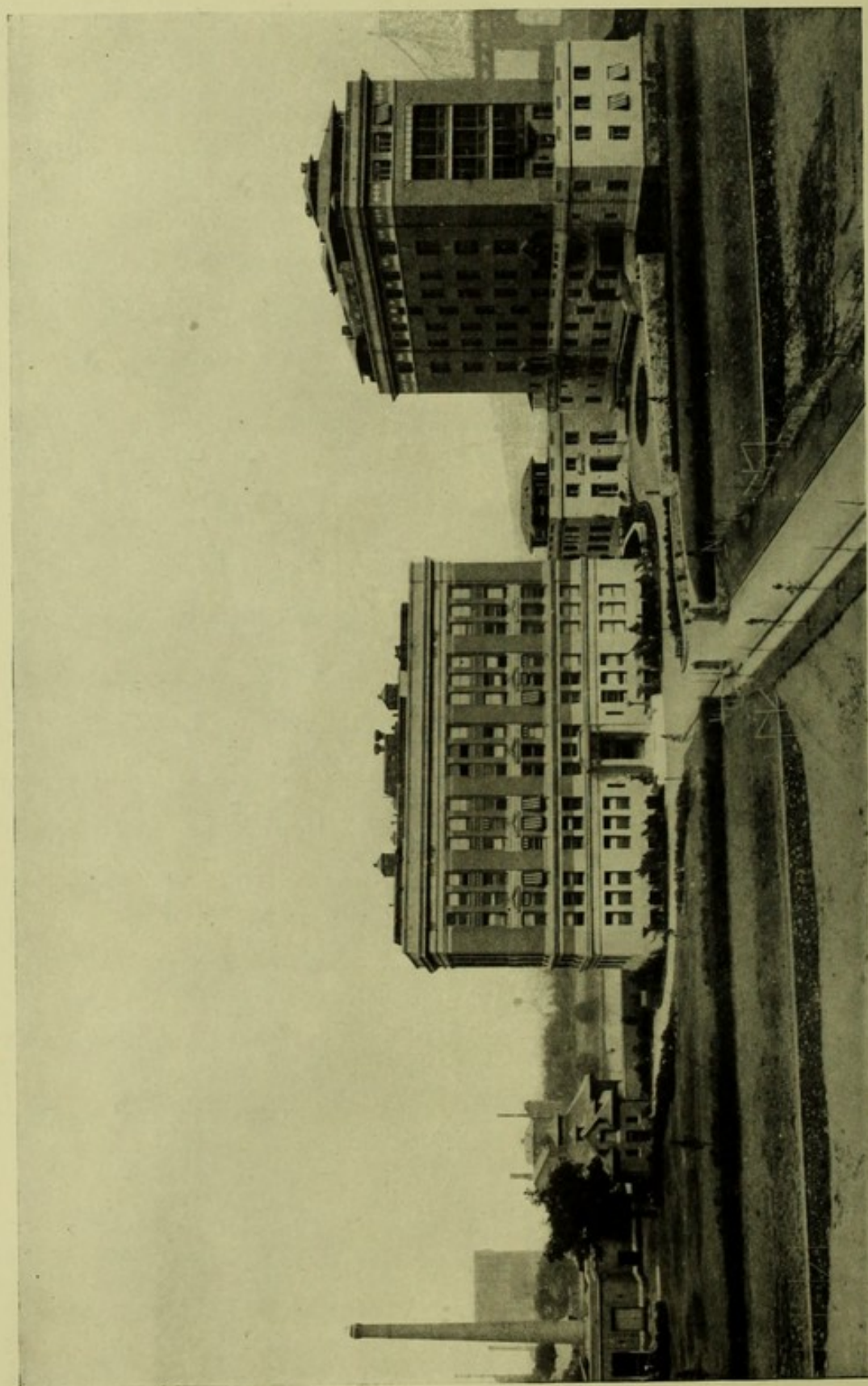


NEW YORK
THE ROCKEFELLER INSTITUTE
FOR MEDICAL RESEARCH

1914







Hospital

Isolation Building

Laboratory Building

Animal House

Power House

BUILDINGS OF THE INSTITUTE IN NEW YORK CITY

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH



*History, Organization, and
Equipment*



NEW YORK
THE ROCKEFELLER INSTITUTE
FOR MEDICAL RESEARCH

1914

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Communications should be addressed to The Rockefeller Institute for Medical Research, 66th Street and Avenue A, New York, N. Y.

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1913-14

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HISTORY AND ORGANIZATION

THE Rockefeller Institute for Medical Research was founded by Mr. John D. Rockefeller in 1901, when the following persons, intrusted by him with the administration of a sum of money pledged for purposes of medical research, secured incorporation under the laws of the state of New York and became the first Board of Directors:

WILLIAM HENRY WELCH, M.D., Professor of Pathology in Johns Hopkins University, Baltimore.

THEOPHIL MITCHELL PRUDDEN, M.D., Professor of Pathology in the College of Physicians and Surgeons of Columbia University.

CHRISTIAN ARCHIBALD HERTER, M.D., Professor of Pathological Chemistry in the University and Bellevue Hospital Medical College, New York City.

LUTHER EMMETT HOLT, M.D., Professor of Diseases of Children in the College of Physicians and Surgeons of Columbia University.

HERMANN MICHAEL BIGGS, M.D., General Medical Officer of the Department of Health, New York City, and Professor of Therapeutics and Clinical Medicine in the University and Bellevue Hospital Medical College, New York City.

SIMON FLEXNER, M.D., Professor of Pathology in the University of Pennsylvania, Philadelphia.

THEOBALD SMITH, Professor of Comparative Pathology in Harvard University, Boston.

The purpose of the Corporation, in the language of the certificate of incorporation, was "medical research with special reference to the prevention and treatment of disease." In 1908 the charter was amended by an Act of Legislature increasing the powers of the Corporation and enlarging the scope of its activities. The purposes of the institution are now described by the amended charter:

"The objects of said Corporation shall be to conduct, assist, and encourage investigations in the sciences and arts of hygiene, medicine and surgery, and allied subjects, in the nature and causes of disease and the methods of its prevention and treatment, and to make knowledge relating to these various subjects available for the protection of the health of the public and the improved treatment of disease and injury. It shall be within the purposes of said Corporation to use any means to those ends which from time to time shall seem to it expedient, including research, publication, education, the establishment and maintenance of charitable or benevolent activities, agencies or institutions appropriate thereto, and the aid of any other such activities, agencies, or institutions already established or which may hereafter be established."

The sum of money pledged to the Institute "for the purposes of medical research" for ten years by Mr. Rockefeller in 1901 was

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH

\$200,000. At the end of the first year Mr. Rockefeller promised the additional sum of one million dollars toward the building of a laboratory and the support of its work for the next nine years. In October, 1902, the present site of the Institute in New York City was chosen, and its acquisition made possible by the founder's purchase of the Schermerhorn Estate, situated between Avenue A and the East River, and extending from Sixty-fourth Street to a line north of Sixty-seventh Street. A strip of land three hundred and sixty feet long and two hundred feet wide lying southward from Sixty-seventh Street along the East River Cliff, and adequate to the immediate needs of the Institute, was conveyed to it by Mr. Rockefeller in June, 1904.

In that year (1904) the Institute, which had hitherto applied its funds only in the form of grants to support the work of investigators in different parts of the world, but which could now anticipate the completion of its own laboratory, leased a small building, formerly a part of the Nursery and Child's Hospital at No. 127 East Fiftieth Street, and gave it a simple equipment for research in pathology, physiology, and chemistry. Here it began its first investigations in laboratories which it could call its own. The original laboratory staff consisted of Dr. Simon Flexner, who had been elected Director of the Laboratories of the Institute two years previously, and Doctors S. J. Meltzer, E. L. Opie, H. Noguchi, J. E. Sweet, P. A. Levene, W. A. Beatty, H. S. Houghton, and J. Auer.

By 1906 a laboratory building, animal house, and power house were completed from plans drawn by Messrs. Shepley, Rutan & Coolidge, of Boston. The cost of these buildings was about \$300,000. The formal opening took place May 11, 1906. Hitherto the immediate needs and requirements of the Institute had been generously met as they developed, but no permanent endowment had been created for either the conduct of research or the maintenance of buildings and equipment. In 1907 the work of the Institute was established on a permanent basis by a gift from Mr. Rockefeller of \$2,620,610 for endowment. During the same year the Board of Directors was invited to submit a plan, which had been maturing since the foundation of the Institute, for an extension of the field of its research so as to include the study of disease in its clinical aspects, under conditions as near as possible to laboratory standards of exactness and efficiency. The acceptance of this important plan was accompanied by a pledge of \$500,000 in 1908 for the erection of a hospital. This sum was augmented by subsequent gifts amounting to \$170,015.20 and a transfer of \$273,487.36 remaining unspent from

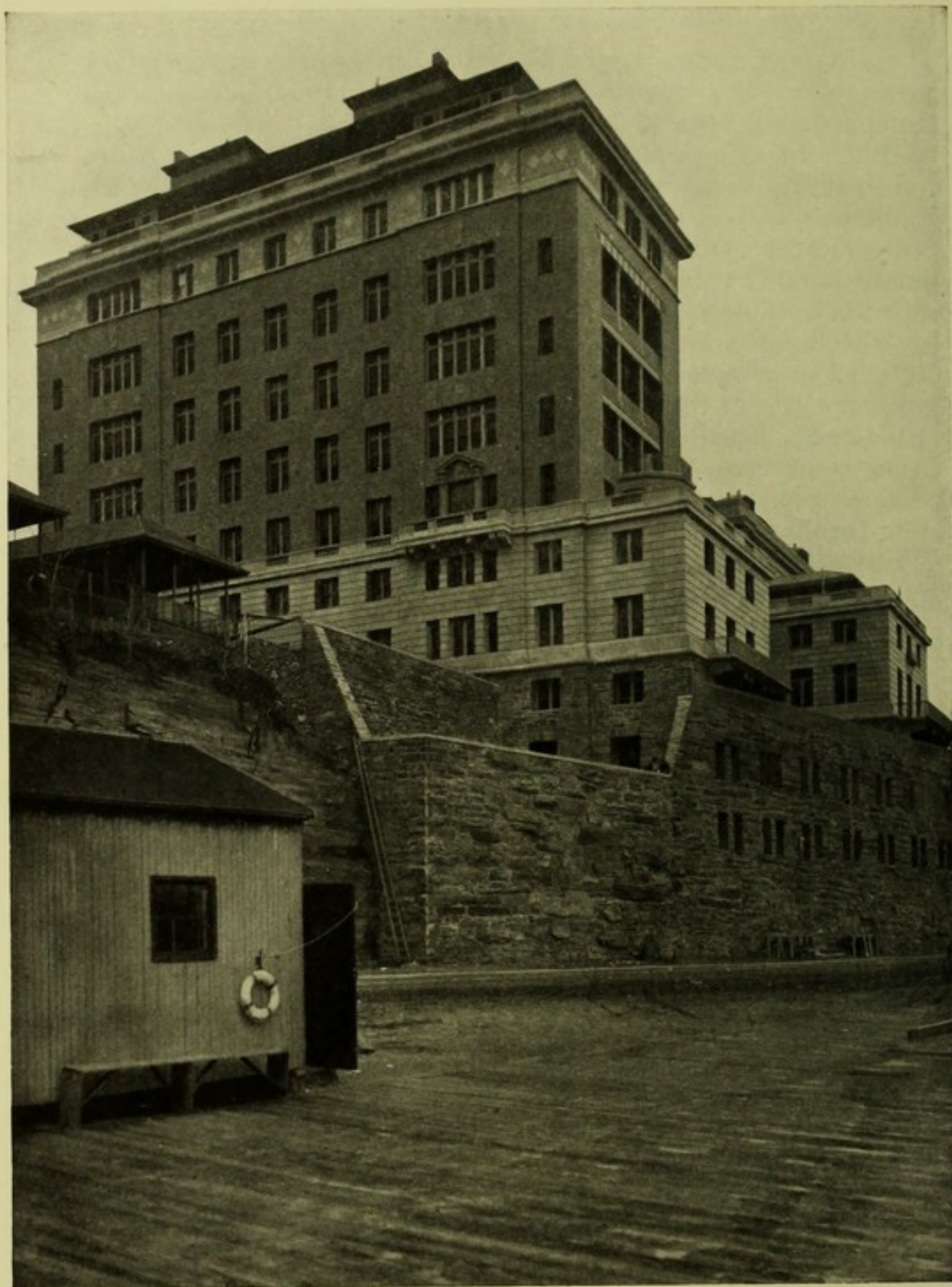
the pledge of 1902. Messrs. York and Sawyer of New York City were chosen as architects. The cost of the hospital buildings and equipment was about \$900,000.

The form of organization which had been adopted in 1901, when the Institute began without hospital, laboratories, or other responsibilities than that of applying the discretion of its directors to the expenditure of \$200,000 in ten years, was ill adapted to the needs of an institution owning laboratories, hospital, and a permanent endowment. Accordingly the amended charter already quoted was granted by the legislature in 1908. Under this charter new by-laws were adopted in accordance with which a Board of Trustees is charged with the care of the endowment and with the maintenance of the buildings and real estate, while the scientific work (to which all income is devoted, except what is required to meet fixed charges) is carried on under the control and direction of a Board of Scientific Directors. On October 17, 1910, the newly organized Board of Trustees assumed the custody of the endowment funds and other property of the Institute. The original Board of Directors which had managed the affairs of the Institute since 1901 became, without change of personnel, the new Board of Scientific Directors. On the same day the newly completed Hospital and Isolation Pavilion were formally opened and patients were admitted for treatment.

In 1908 the lands of the Institute had been extended one hundred feet southward to permit the erection of the Hospital. In 1911 another piece of land was acquired through the generosity of Mr. Rockefeller, so that the Institute became possessed of the frontage along the East River Cliff from Sixty-fourth Street to Sixty-seventh Street, a total of nearly four acres including the space covered by the intervening streets. At the same time access to the Institute from Avenue A was secured in perpetuity by conveyance of a right of way bounded by an extension of the lines of Sixty-sixth Street from Avenue A to the Institute property.

In 1907 a farm of about one hundred acres, with buildings, was acquired in Clyde, New Jersey, as a place for the breeding and care of laboratory animals and the supply of farm products.

In 1911 a laboratory building of frame construction was erected at Wood's Hole, Massachusetts, on land leased from the Marine Biological Laboratory, for the use of the department of Experimental Biology.



HOSPITAL BUILDING VIEWED FROM THE EAST RIVER

DEPARTMENTS OF THE INSTITUTE

THE Institute is composed at present of the Laboratories and the Hospital. This division corresponds with a natural division of medical research into two branches, the first dealing with the problems of disease in their pathological or physiological aspects, and admitting the fullest use of the experimental method; the second with the study of disease as it actually appears in human beings under conditions equally favorable to treatment and to scientific observation. The Hospital has, roughly speaking, two somewhat different functions. It is intended, chiefly, to work on problems that are primarily clinical, although even here the chief instrument of progress may have to be the auxiliary experimental sciences of pathology, bacteriology, or physiology, including biochemistry and biophysics. The staff of the Hospital is accordingly recruited from clinicians who can bring to the problems selected a special training in one or more of the auxiliary sciences. To this end, in addition to the clinical laboratories for routine examinations and diagnosis, the Hospital is equipped with pathological, physiological, and chemical laboratories of its own. The other function of the Hospital is to provide facilities for the therapeutic application of results that have been obtained, whether from purely experimental investigations in the Laboratories or from clinical investigations in the Hospital. In the organization of the scientific staff of the Institute it has been recognized that the ultimate purposes of medical research and discovery may be greatly served by the study of biological and chemical problems that, as such, may appear remote from medical applications. On the other hand, it has not thus far been the purpose of the Institute to choose rare and strange diseases, or atypical cases of common diseases, in preference to those more prevalent or familiar, on which to spend its resources. On the contrary, the diseases now under investigation, whether in the Laboratories or in the Hospital, include many of those which are regarded as the chief scourges of mankind.

THE LABORATORIES

THE Laboratories of the Institute are subdivided as follows: Pathology and Bacteriology, Chemistry, Physiology and Pharmacology, Experimental Biology, Experimental Surgery. The Director of the Laboratories is the chief adviser of the Board of Scientific Directors in regard to the scientific work done in that department, and

is the ordinary means of communication between the scientific staff and the Board. He also has immediate control of the work in his own subject. The work in each of the other subjects is conducted by a Member, with a staff of assistants.

The Laboratory Building is a fireproof structure of steel frame, with outer walls of yellowish gray brick and limestone. Its simple façade shows five full stories, and a basement which is half above ground.

The basement is subdivided into a number of rooms of various sizes, which contain some of the machinery of the building and also the heavier laboratory apparatus, such as centrifuges, a vacuum pump, shaking apparatus, etc. One room is connected by a spiral stairway with the Library above, and is used for the older files of periodicals or other little used books. Two of the rooms serve as storage rooms for laboratory supplies, and three as the Janitor's quarters. The remaining space is available for various uses, such as temporary storage.

The first floor contains the administrative offices, the Library, and an Assembly Room. The Library occupies four rooms, or about one-third of the floor space. The Assembly Room seats about one hundred people, and is supplied with all connections necessary for demonstration purposes, including a stereopticon. This room is used for society meetings and for the weekly conferences of the Institute staff.

The second floor is devoted entirely to chemistry, and is divided into large and small rooms. The larger rooms are fitted out as general laboratories for a number of workers, while some of the smaller ones are used for special purposes; for example, the distillation room, where alcohol and ether are redistilled, the hydrogen sulphide room, combustion room, etc.

On the third floor are laboratories for experimental pathology, bacteriology, and protozoölogy. The private study of the Director is in the northwest corner. The south end of the floor is occupied by a suite of rooms designed especially for aseptic surgical work and composed of three rooms: the first planned for a bath-tub and a hot air drying chamber where the animal may be prepared for operation; the second for autoclaves and other steam connections used for the sterilization of dressings and instruments; the third as an operating room. There is also, in connection with this suite, a fourth room paved with cement, which serves as an animal room. Here animals after operation and other procedures are conveniently kept under observation. Only small animals, such as mice, rats, guinea pigs, rabbits, and monkeys, are kept in this room. These four rooms are connected by a corridor, which also separates them from the main hall of the building.

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The large general laboratory for bacteriology, on the western side of this floor, contains a built-in hot air room whose temperature varies from 35 to 39 degrees C., depending upon the level at which the temperature is taken. This room serves for cultivation and digestion experiments.

On the fourth floor are special laboratories for experimental pathology, for physiology and pharmacology; preparation rooms and a centrifuge room. The laboratories for pathology are formed by a series of four communicating rooms at the north end of the floor. They are equipped not only for ordinary pathological work, but also for work in chemistry, including gas analysis.

The south end of the floor space is occupied by the Department of Physiology and Pharmacology. The Preparation Rooms are two rooms on the western side where bacteriological media are made up; here also most of the hot air and steam sterilizations for bacteriological purposes are carried out. In an adjoining cement-floored room some of the smaller centrifuges are placed. These centrifuges are anchored on rubber and produce very little vibration when in action. There are two other laboratories upon this floor, which are designed for individual workers.

All the laboratory rooms are equipped with hoods containing gas, hot and cold water, electrical and vacuum connections. The hoods of the chemical floor, in addition, are supplied with steam.

The fifth floor contains, at the south end, the Department of Experimental Biology; at the north end, rooms equipped with photographic appliances and other means of reproducing specimens for illustrating publications; a few special research rooms; and, in the centre, a dining room for the scientific staff and one for the clerical staff. Lunch is served daily at a very moderate price.

Each floor is provided with a large refrigerator, which is connected with the main refrigeration plant in the Power House, and with a subsidiary refrigeration plant in the basement. The refrigerators in the basement and in the kitchen are arranged for constant temperatures, while those on the second, third, and fourth floors are divided into three tiers of compartments so connected that each tier may be maintained at an independent temperature.

The various floors of the building, including the roof, communicate with each other by two stairways at the northern and southern ends of the building. There is also an electric elevator.

The roof really forms a sixth floor, for a considerable portion of the space has been covered by an iron house sheathed with copper. This house has been subdivided into a number of small rooms in

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which dogs and smaller animals are kept. Each of these rooms has a concrete floor and communicates with an outside, tiled runway. This runway is separated by heavy wire fences into as many compartments as there are rooms. A separate room is provided for the preparation of the food for the animals.

At each end of this roof house is a suite of operating rooms similar to that on the third floor. In the southern suite all the operations of experimental surgery are carried on. The operating room of this suite faces north, and its north wall and roof are constructed of glass, so that sufficient light is secured for the most delicate work.

ANIMAL HOUSE

FOR the proper housing and care of the principal stock of animals, an Animal House stands just north of the Laboratory Building. It is of semifireproof construction, and is connected with the main building by a covered passageway. The first floor contains stables for horses, sheep, and goats. On the second floor are large, well lighted spaces, where monkeys, cats, rabbits, guinea pigs, and birds are housed. A small room provided with a series of tanks is used for the storage of frogs. There is also a loft for the storage of grain and hay.

THE HOSPITAL

THE Hospital consists of a main building and an Isolation Pavilion. The first two stories of both buildings are built of limestone, and the upper stories of the Hospital of a light brown brick with limestone trimmings. The construction is fireproof throughout, steel, concrete, and terra cotta being the materials used. For floor surface, terrazzo is used in most of the corridors, a small round tile for the wards, kitchens, and laundry, hard pine for small rooms, and a painted cement for the chemical laboratory and for corridors subjected to rough use.

The main building has eleven stories, counting three basement floors and a housed roof. The lowest basement consists of a gallery of eleven rooms, besides toilet and bath rooms, for the housemaids, built in the cliff overlooking the East River. The next level, known as the subbasement, extends under both the main building and the adjoining Isolation Pavilion. It contains a large autopsy room with its adjoining pathological laboratory and refrigerator room, a central linen room, a sewing room, a capacious and well lighted laundry, an incinerating plant, an ice-making tank, four large cylindrical tanks,—

two for compressed air and two for water, —furnishing pressure service for all but the three lowest floors of the building, the elevator machinery, including that of two elevators and the dumb-waiter service connecting the kitchen with all floors, coal bunkers, and several rooms for storage and other purposes. The laundry is equipped with two large washing machines, two centrifugal driers, a drying chamber through which the damp clothing is carried on a slowly moving endless chain, electric irons, a large and a small mangle, and other accessories.

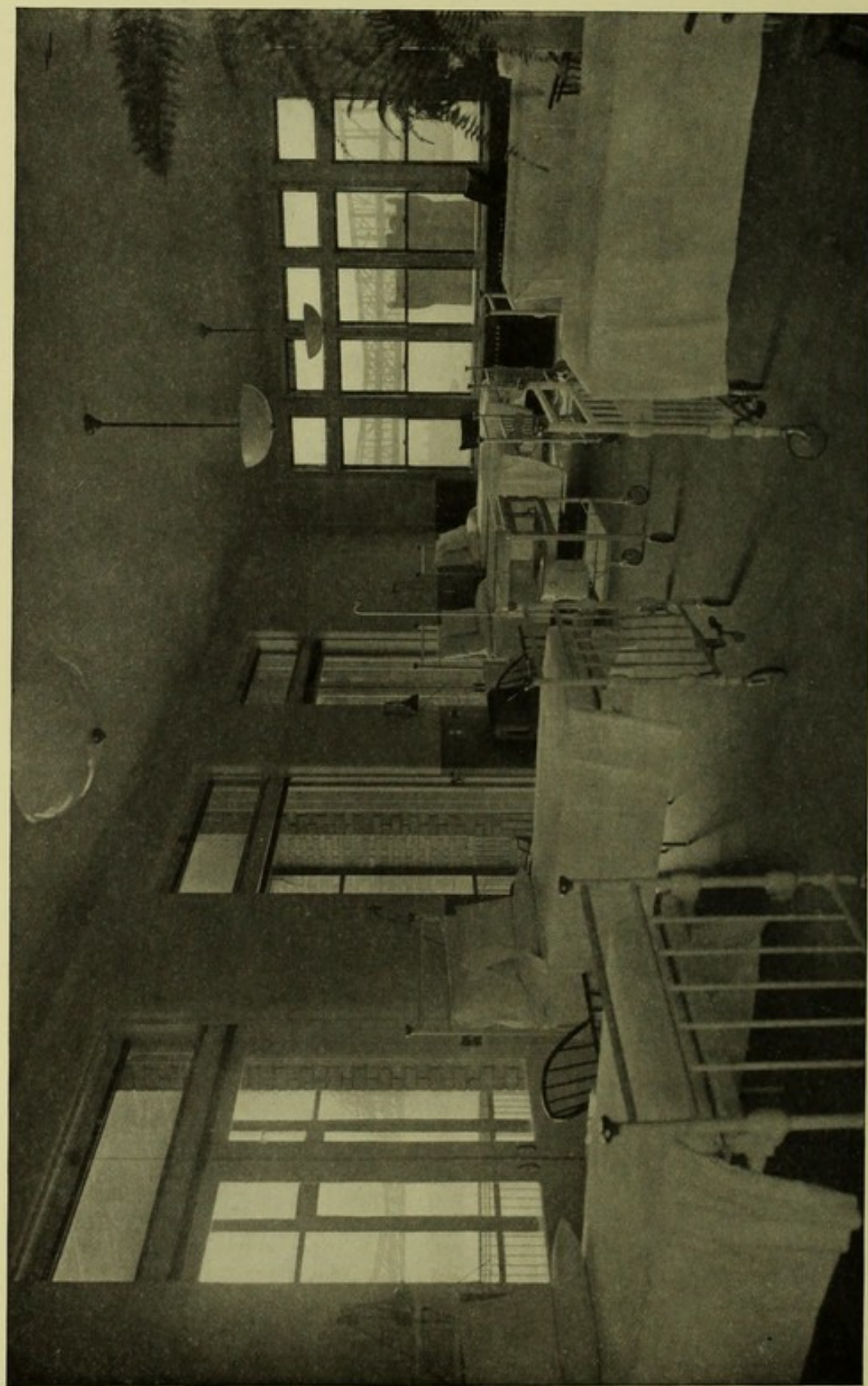
The basement has in its western end, accessible from the sunken driveway for ambulances and service, the rooms devoted to the examination of patients, whether with reference to admission, or to the keeping up of medical records after discharge. The rest of the floor is taken by the main kitchen with its stores, pantries, refrigerators, vegetable room, three service dining rooms, and a room containing an incinerator chute.

The first or office floor contains at the western end the offices of the Director, the Superintendent, and the Housekeeper, a record room, two reception rooms, and, immediately facing the main entrance, the general office. The rest of this floor is occupied by the resident physicians' quarters, with accommodations for eight in all, besides dining and living rooms.

The second floor is occupied exclusively by the Superintendent, Assistant Superintendent, and nurses. The Superintendent and Assistant Superintendent each have a bedroom, sitting room, and bath. Night nurses have their sleeping rooms cut off by isolating corridors and double doors. A dining room, living room, bath and toilet rooms complete the equipment of this floor, which enjoys the separation from other parts of the building made possible, on every floor, by the fact that the stairways are cut off by fireproof screens and doors.

The third floor is devoted to patients, the greater part of the space being taken by single rooms, though rooms with baths are also provided. There are also bath and toilet rooms, work rooms for nurses, and a small clinical laboratory for routine analyses and examinations.

The fourth, fifth, and sixth floors are identical in plan. It was, in fact, the arrangement of these floors that largely determined the plan of the whole building. At each end of the floor are the wards, running north and south at right angles to the long axis of the building and exposed to the air and light on three sides. They are connected by a corridor, the space on either side of which is taken by the ward kitchen, toilet and work rooms, and two rooms for the separate accommodation of single patients, for purposes of isolation, examina-



HOSPITAL : A TYPICAL WARD

tion, dressings, etc. The wards are all eighteen feet wide by forty-eight feet long. They are intended to contain seven beds. Each ward opens on a loggia or balcony at the end of the building, where, if necessary, all the beds in the ward can be placed at one time. The beds are mounted on large casters of special design, which makes it an easy matter to wheel them to the balcony. The work rooms, bath rooms, and toilets open directly from the wards, and there is also a small clinical laboratory for routine work, which adjoins the west ward on each floor. At the northeast and northwest corners of the building, with direct access from the wards as well as from all the other floors, are inclosed fire-escape stairs leading from the ground to the roof.

The only difference in the use of the three ward floors is that on the fourth floor the large centre room on the south of the corridor contains hydrotherapeutic equipment and light and vapor baths, while the corresponding space on the fifth floor is occupied by a special diet kitchen, and on the sixth floor by a constant temperature room for experiments in metabolism.

The seventh floor is occupied exclusively by laboratories, those for chemical work being placed at the eastern end, the biological laboratories at the western end, and the physiological in the centre. The chemical laboratories are provided with water under forty pounds' pressure, gas, electricity, compressed air, and vacuum. A balance room, an animal room, a large constant temperature vault, and two stacks of refrigerators each containing nine compartments are included in the equipment of this floor.

The eighth floor or "roof" has a small operating suite intended for occasional or emergency use rather than for the regular accommodation of surgical cases, a doctors' wash room, a closet for warming blankets, a kitchen for the service of patients who may be placed on the roof, a photographic and X-ray suite, a special room for the storage of mattresses (the mattresses being hung vertically), toilet rooms for patients, and rooms for the ventilating fans. Doors at the centre and ends of this floor open on large roof spaces, the space at the centre, with southern exposure, being sheltered overhead.

The ventilation of the building is of the simplest description. The hoods in the kitchens and laboratories are operated by fans on the eighth story, as are also the flues leading from the two large fireplaces on the inner wall of each ward. Similar artificial ventilation is provided for certain other rooms, but in general the wards and single rooms depend upon the windows and doors for their ventilation.

ISOLATION PAVILION

THE basement of the Isolation Pavilion contains a special laundry and sterilizing apparatus for the clothing and bedding of infected patients, the infected material being dropped through a trapdoor in the receiving room above, into a chamber whence the only communication with the laundry is secured by passage through the sterilizers. Also in the basement are found a clinical laboratory, an orderlies' room, and service rooms.

The main floor of the Pavilion is divided by a corridor running east and west. On the southern side are seven single rooms, separated from each other by partitions of plate glass. On the north side are the reception room, toilet and work rooms, kitchen, and at the eastern end two more patients' rooms, separated by plate glass. The Pavilion is administered as a single ward rather than as a series of private rooms, the glass partitions being intended to facilitate the supervision of patients. The plan of this ward rests upon the well grounded assumption that the communicable diseases largely depend, for transmission from one person to another, upon the carrying of infectious matter by direct contacts. The risk inherent in mere proximity is regarded as so slight, if any, as to be negligible. On the other hand, a rigid aseptic technique is imposed on physicians, nurses, and others, who have occasion to be in the ward or to go from one patient to another.

The rooms or compartments of the Isolation Pavilion are dependent on windows and doors for the intake of fresh air. Ventilation is aided, however, by flues running from each room to the roof, in which a rising current of air is created by steam-pipes. These flues can be thoroughly cleaned by a jet of live steam, turned on for as long as may be necessary.

The second floor of the Pavilion is entirely occupied by nurses' rooms, including a dining room. The floor is divisible into two parts, the one restricted to the use of nurses in attendance on infectious patients, the other accessible from the main building by means of a bridge, and available for other nurses. The roof is partially sheltered, and is available for beds, or as a place for the recreation of nurses or patients.

MEDICAL AND NURSING STAFF

THE medical work of the Hospital is in charge of the Director, who also has the title of Physician to the Hospital. In the care of patients he is assisted by a staff consisting of the Resident Physician

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and a number of Assistant Resident Physicians, all of whom are paid salaries in addition to board, lodging, and laundry service. They are required to have had hospital experience, and to have shown an aptitude for scientific investigation along clinical lines. The full utilization of the Hospital wards may from time to time require the service of additional resident or non-resident physicians.

Special workers in chemistry, pathology, bacteriology, and physiology reinforce the clinical staff in the investigations carried on by the Hospital.

Only graduate nurses are employed. No training school for nurses is maintained by the Institute. The number of nurses varies not only with the number of wards that are utilized, but also with the character of problems under investigation.

ADMISSION OF PATIENTS

THE capacity of the Hospital is about seventy beds. The work at any one time is confined to selected cases that bear upon a limited number of subjects chosen for investigation. The subjects chosen in the first year were acute lobar pneumonia, acute anterior poliomyelitis (infantile paralysis), syphilis, certain types of disturbed metabolism, and certain types of cardiac disease. In the second year, a limited study of scarlet fever was also carried on. Patients are admitted only by the Resident Physician, to whom cases are referred by physicians or hospitals, or by direct application. The Director issues bulletins from time to time informing physicians of the diseases chosen for investigation. While making the fullest use of its opportunities for observation and study, the Institute recognizes at all times the paramount right of the patient to receive the most effective treatment within the power of the attending physicians. A patient does not impair that right by the voluntary character of his application for admission.

Under the By-laws of the Corporation, no charge can be made to persons treated at the Hospital, for professional care or service rendered, or for board and lodging.

POWER PLANT

STEAM heat, electric light and power, and refrigeration are furnished for the buildings of the Institute by a Power House situated at the northern end of the grounds. Exhaust steam is used almost exclusively for heating purposes. The equipment of the Power House includes four 60-horse-power return tubular boilers; three side crank

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engines driving one 100-kilowatt and two 50-kilowatt direct-current generators; one 25-ton compression type refrigerating machine; one 3-cylinder motor-driven vacuum pump; a machine shop, including lathe, drill press, shaper, pipe machine, and grindstone—all motor driven. The ice-making plant in the Hospital has a capacity of 900 pounds of clear ice every twenty-four hours. The subsidiary refrigerating equipment in the Laboratory Building includes a 6-ton absorption-type machine.

DISCOVERIES AND INVENTIONS

ALL discoveries and inventions made by any person while receiving compensation from the Institute become the property of the Institute, to be placed freely by it at the service of humanity in accordance with the beneficent purposes of the founder.

APPOINTMENTS TO THE SCIENTIFIC STAFF

APPOINTMENTS to the scientific staff are made by the Board of Scientific Directors, upon the recommendation of the Director of the Laboratories or of the Director of the Hospital. The following grades are fixed by the rules of the Board: Member of the Institute; Associate Member of the Institute; Associate; Assistant; Fellow; Scholar. Members of the medical staff of the Hospital may have in addition to the appropriate Institute titles, as above, the following titles indicating their special functions: Physician to the Hospital; Assistant Physician to the Hospital; Resident Physician; Assistant Resident Physician. Appointments of Members of the Institute are made without limit of time; of Associate Members for a term of years; all other appointments are made for a term not exceeding one year.

As a rule, all appointments to the scientific staff, whether in the Laboratories or in the Hospital, are made with stipend and engage the full time of the incumbents. No provision is made for the enrolment of individuals or classes for formal instruction in the medical sciences or in laboratory or clinical methods.

Applications for appointment may be made at any time. Blank forms of application are furnished on request. Appointments are ordinarily made only as vacancies occur. They may be sought for the purpose of permanent or indefinite association with the Institute, or for the purpose of temporary association with the Institute with one

of the following objects: (1) experience in methods of investigation generally, or (2) training in a special line of investigation, or (3) opportunity to work more or less independently on a particular problem. The qualifications for appointments to the scientific staff include preliminary training such as would be represented by a medical degree, and, in addition, a knowledge of methods of research; or a training such as would ordinarily be appropriate to the higher degrees in the biological or physical sciences.

GRANTS

A LIMITED amount of money is assigned by the Board of Scientific Directors each year to the support of investigations carried on at other institutions. All applications for grants should be in the hands of the Manager before May 1. Blank forms of application are furnished on request. Grants are made for a single academic year ending June 30, unless otherwise agreed. Payments are ordinarily made by instalments, one-fourth when the work is begun (due notice being given to the Manager), and one-fourth on each of the following dates, — October 1, January 1, April 1.

A grant may be used for any purpose required for the investigation, whether for the purchase of apparatus and materials or for the employment of assistants, subject to the following conditions: (1) A grant is not intended merely to eke out salaries or appropriations paid by other institutions for the same work; the use of each grant must be identified with the particular problem for which the support of the Institute is desired. The Board must be satisfied in the case of every application that the spirit of this rule will be carefully observed. (2) Apparatus purchased from grants may, at the discretion of the Manager, be claimed as the property of the Institute upon the completion of the investigation.

A director or head of a laboratory receiving a grant from the Institute may recommend an assistant working under him, for the purposes of the grant, for formal appointment by the Board as Research Student, Research Scholar, or Fellow of The Rockefeller Institute.

Unless otherwise provided, it is expected that those whose work is aided by grants will devote their entire time to research.

Publication of the results of investigations may be made in such form and place as those conducting them may select, but before publication, unless otherwise arranged, the paper should be submitted

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to the Manager for approval by the Board of Scientific Directors. Due acknowledgment of the aid granted by the Institute must accompany all publications of investigations, and the titles Research Student, Research Scholar, or Fellow of The Rockefeller Institute are to be used after the names of authors possessing them.

A reprint or other accurate copy of each publication must be promptly filed with the Publication Department of the Institute for purposes of republication in the *Studies*. If the original publication is accompanied by illustrations printed separate from the text, an over-run of one thousand copies of such illustrations must be ordered for the *Studies* at the time of the original printing. An electrotpe or the original cut of each text-figure must also be supplied.

No change in the topic of investigation, nor transfer of a grant to another person, may be made without the consent of the Board.

It is understood that all who receive grants in aid of research accept them subject to the conditions and regulations above stated.

PUBLICATIONS

THE JOURNAL OF EXPERIMENTAL MEDICINE

SIMON FLEXNER, M.D., EDITOR

THE Journal of Experimental Medicine, which was conducted by Dr. William H. Welch at Johns Hopkins University from 1896 to 1905, has been published since the latter date under the auspices of the Institute. It is designed to cover the field of experimental medicine, and is a medium for the publication of work conducted in the laboratories of the Institute, or elsewhere under its grants. It is by no means limited to the publication of this work, however, and accepts contributions from other sources.

Since the year 1911 *The Journal of Experimental Medicine* has been published *monthly*. The issues of one calendar year make two volumes of, usually, more than 600 pages each.

Contributions should invariably be written in the English language, and limited preferably to twenty printed pages, not counting the space occupied by illustrations. Articles which exceed in length twenty-five printed pages will be returned to the authors in order that their contents may be reduced to this maximum. Authors receive fifty reprints of their papers free of charge; additional copies may be obtained at cost.

Subscriptions (for a year: \$5.00, 21 shillings, 21 marks, 26 francs;

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for single copies: 75 cents, 3 shillings, 3 marks, 4 francs) may be sent to the Publication Department of The Rockefeller Institute for Medical Research, Sixty-sixth Street and Avenue A, New York; to the Macmillan Company, London; to Gustav Fock, Leipzig; or to Masson et Cie., Paris. Foreign remittances should be made by draft on New York, or by postal money order.

MONOGRAPHS

UNDER the head of *Monographs of The Rockefeller Institute for Medical Research* are published from time to time scientific papers which are so extensive, or require such elaborate illustrations, as to render them unsuitable for current periodical issues. The *Monographs* are published at irregular periods, determined by the available material on hand.

Manuscripts for which publication in the series of *Monographs* is desired should be sent to the Publication Department of The Rockefeller Institute for Medical Research.

Monographs will be sent post paid on application, at \$1.00 each, payable in advance by check or money order.

STUDIES

THE published results of investigations conducted in the laboratories of the Institute, or under its grants, are assembled at irregular intervals and republished in volumes designated *Studies from The Rockefeller Institute for Medical Research*. A small number of the *Studies* are distributed free of charge to libraries, learned societies, and laboratories in which medical research is carried on. A few copies are reserved for sale, and may be obtained at \$5.00 each.

GENERAL ADMINISTRATION

THE general administrative and financial conduct of the Institute, as distinguished from its strictly scientific activities, is delegated by the Governing Boards to the Manager. He is responsible to the Board of Trustees for the care of the grounds, buildings, and equipment of the scientific establishment. He is the treasurer of the Board of Scientific Directors, and is responsible to them and to the Budget Committee of the Corporation for the proper expenditure of the income, in accordance with the budget. As far as possible, he relieves the Director of the Laboratories, the Director of the Hospital, and the other members of the scientific staff from administrative

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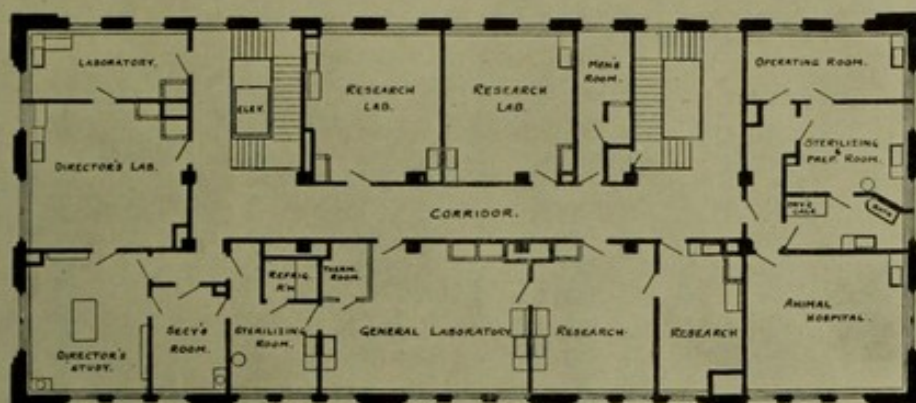
cares, and in general is expected to make and keep the entire plant an efficient instrument in their hands for the scientific purposes of the Institute.

In the Hospital the Superintendent is responsible for the nursing staff, housekeeping, and the purchase of supplies. She is assisted by an Assistant Superintendent, in direct charge of the nursing staff, and a Housekeeper. Stenographic service is provided for the scientific workers as well as for the administrative officers.

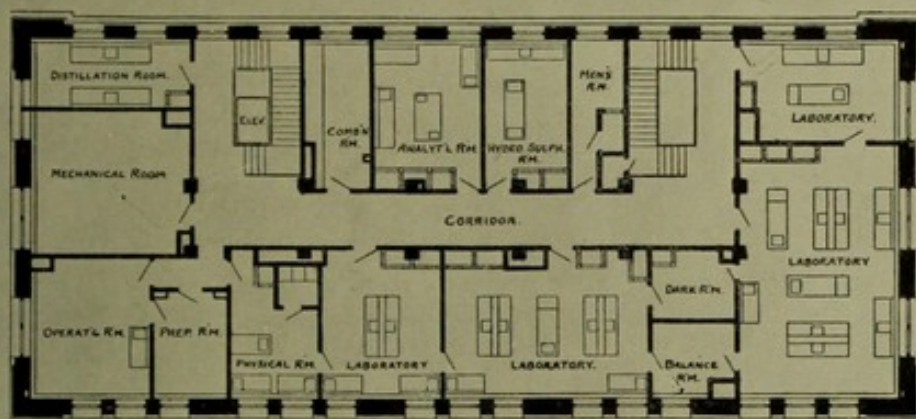
EXPERIMENTS ON ANIMALS

THE authorities of the Institute believe that the use of animals for the purpose of advancing the knowledge of disease, its prevention and cure, is well justified on the grounds of humanity and necessity. They also believe that whenever the sacrifice of an animal is required by the welfare of human beings, or of the lower animals, that sacrifice should be exacted with the least possible infliction of pain or distress consistent with the attainment of the object in view. Members of the scientific staff are required to conform to this standard in all operations upon animals, and the chief of each laboratory is held responsible for the actions of his assistants in this regard.

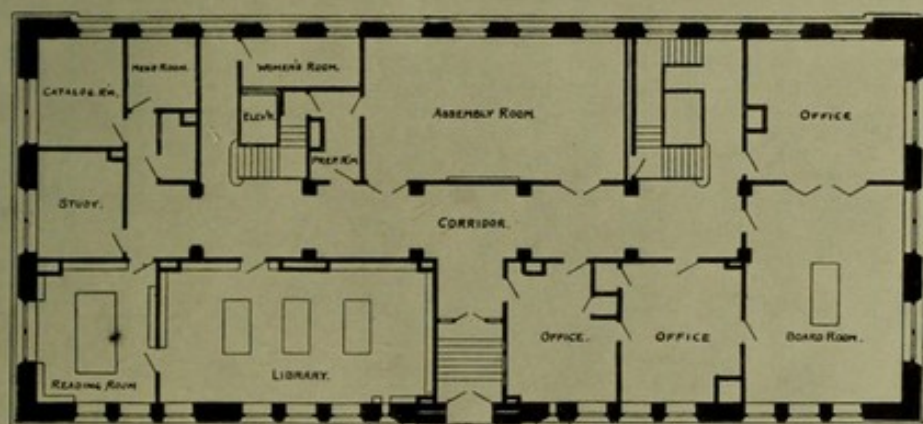
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THIRD FLOOR PLAN



SECOND FLOOR PLAN



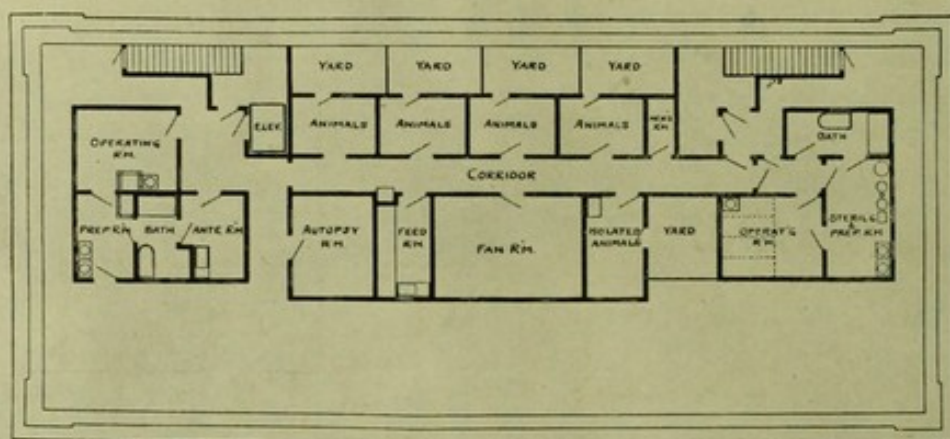
LABORATORY BUILDING

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FOR MEDICAL RESEARCH

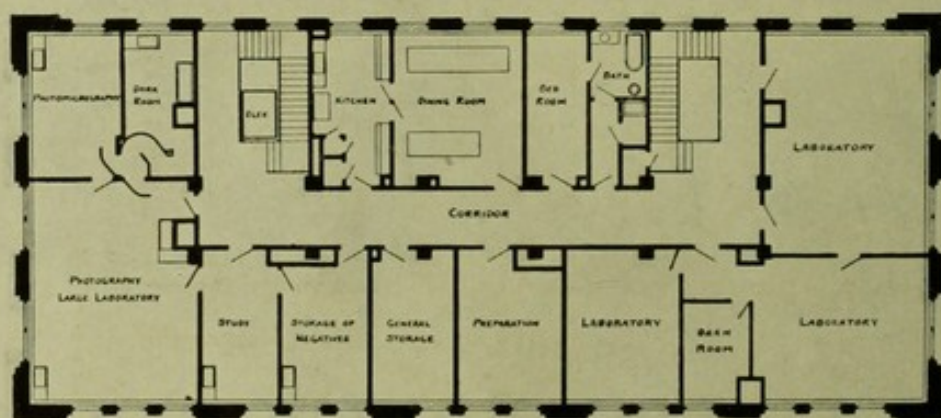
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SHEPLEY RUTAN & COOLIDGE
ARCHITECTS

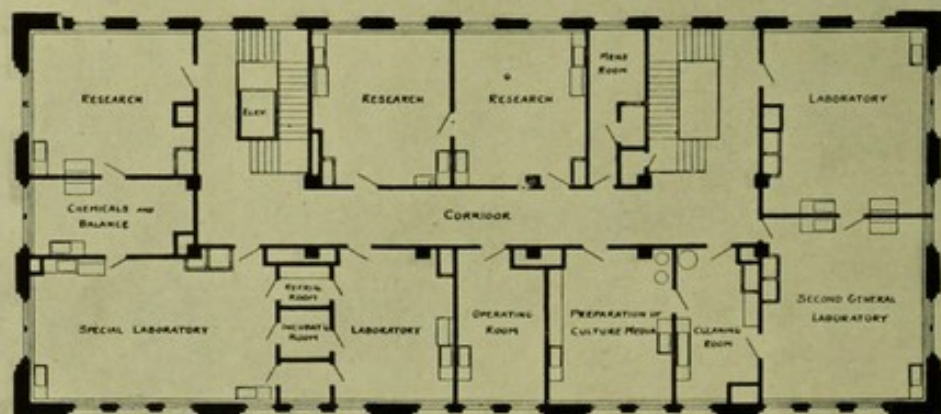
LABORATORY BUILDING: FIRST, SECOND, AND THIRD FLOOR PLANS



ROOF PLAN



FIFTH FLOOR PLAN



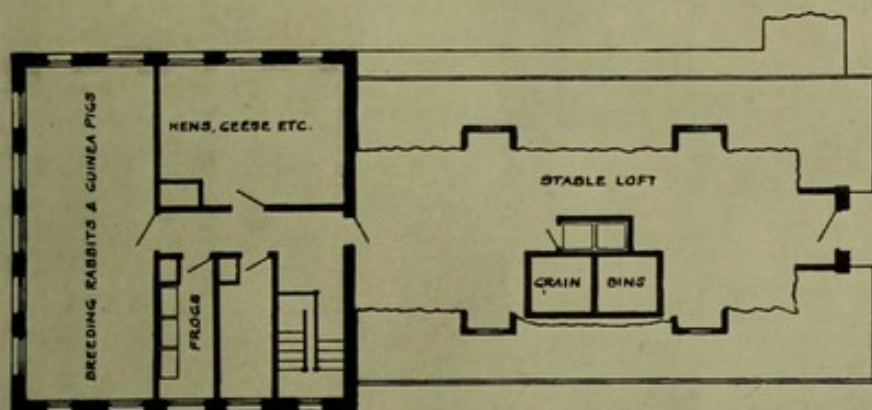
FOURTH FLOOR PLAN

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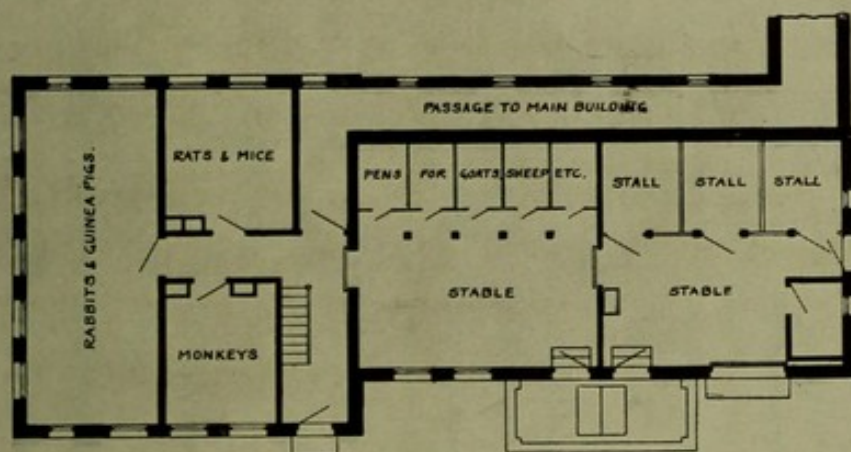
LABORATORY BUILDING

SCALE 1" = 10'

LABORATORY BUILDING: FOURTH AND FIFTH FLOOR AND ROOF PLANS



SECOND FLOOR PLAN



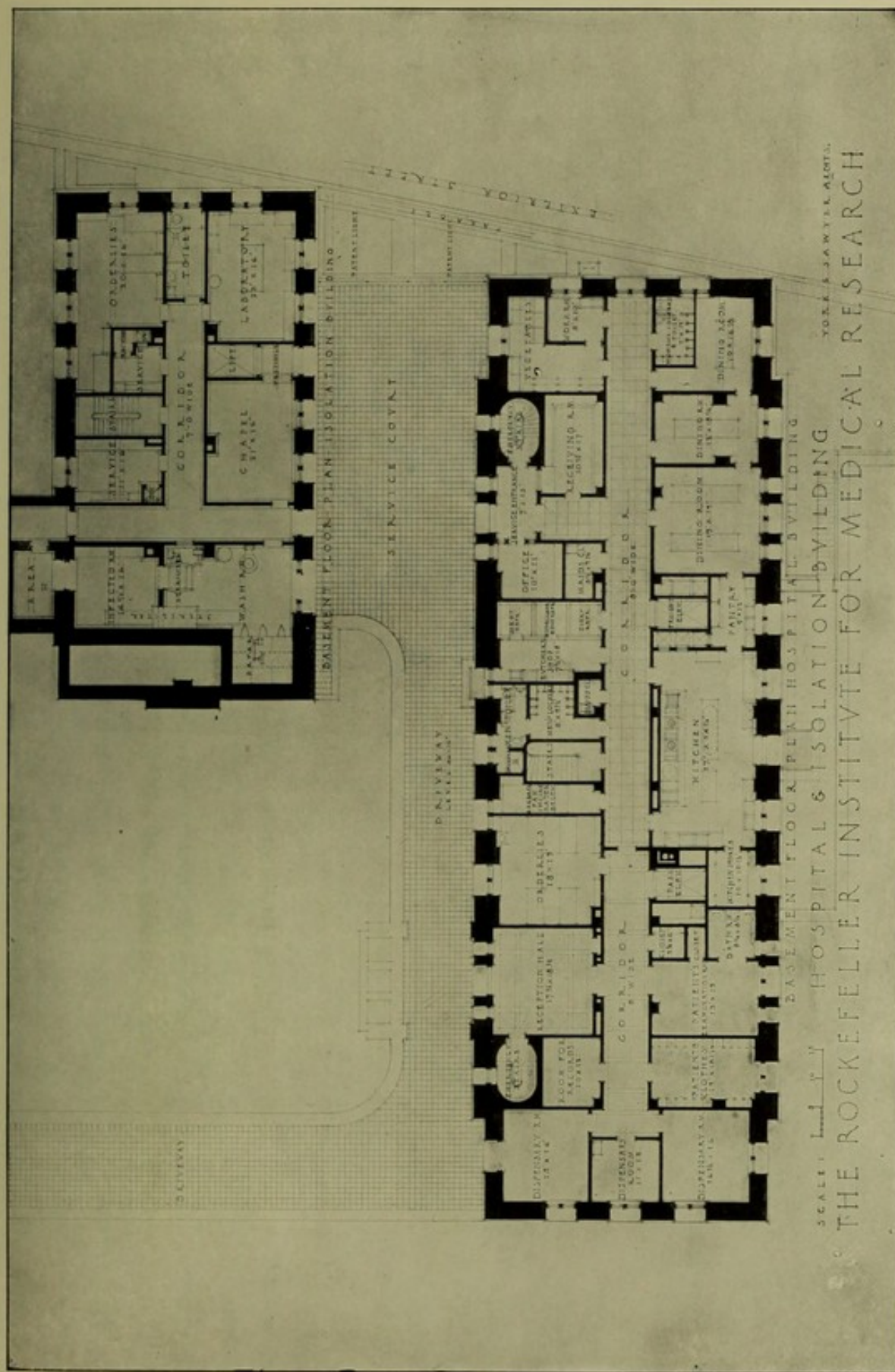
FIRST FLOOR PLAN

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ANIMAL HOUSE

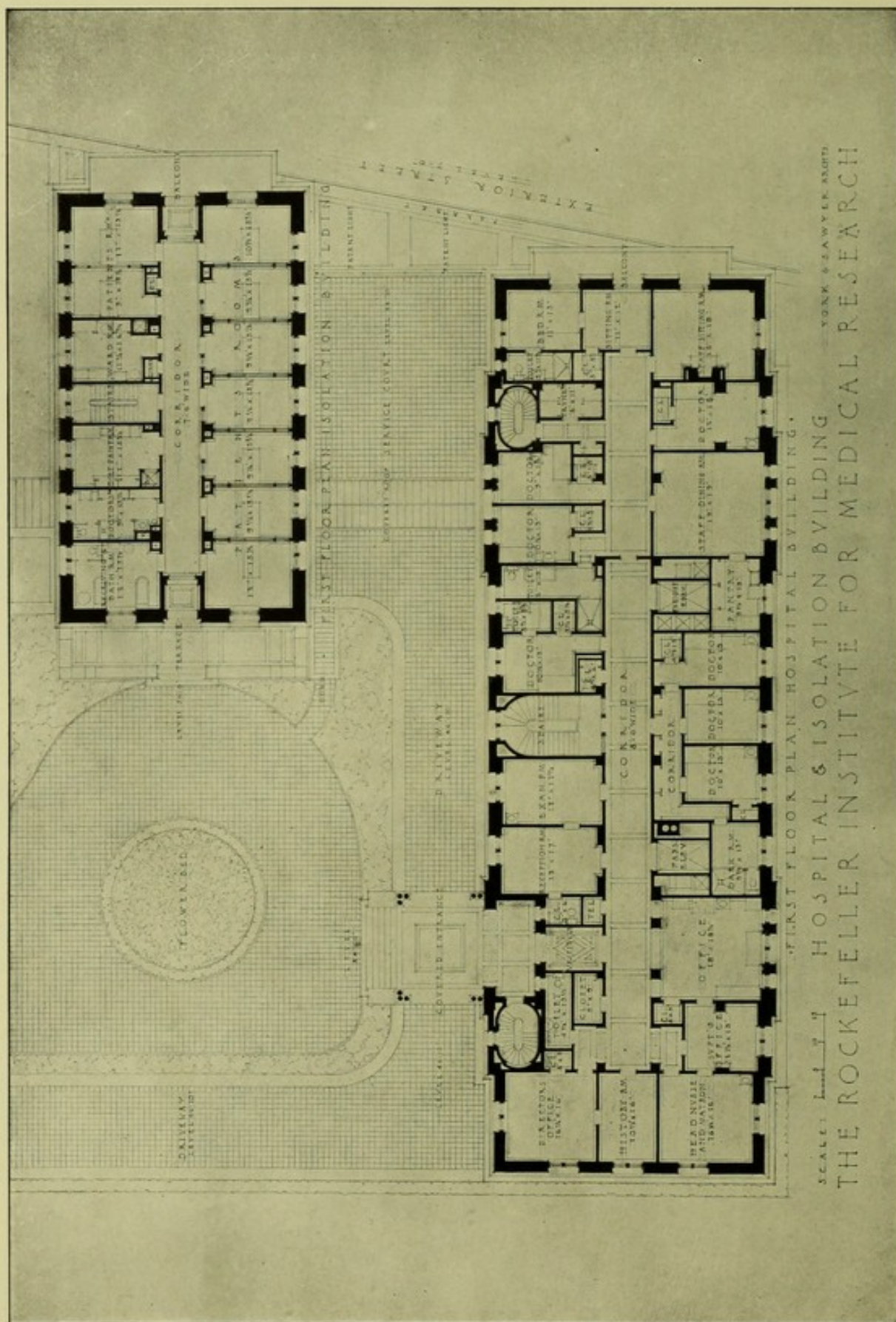
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ANIMAL HOUSE : FIRST AND SECOND FLOOR PLANS

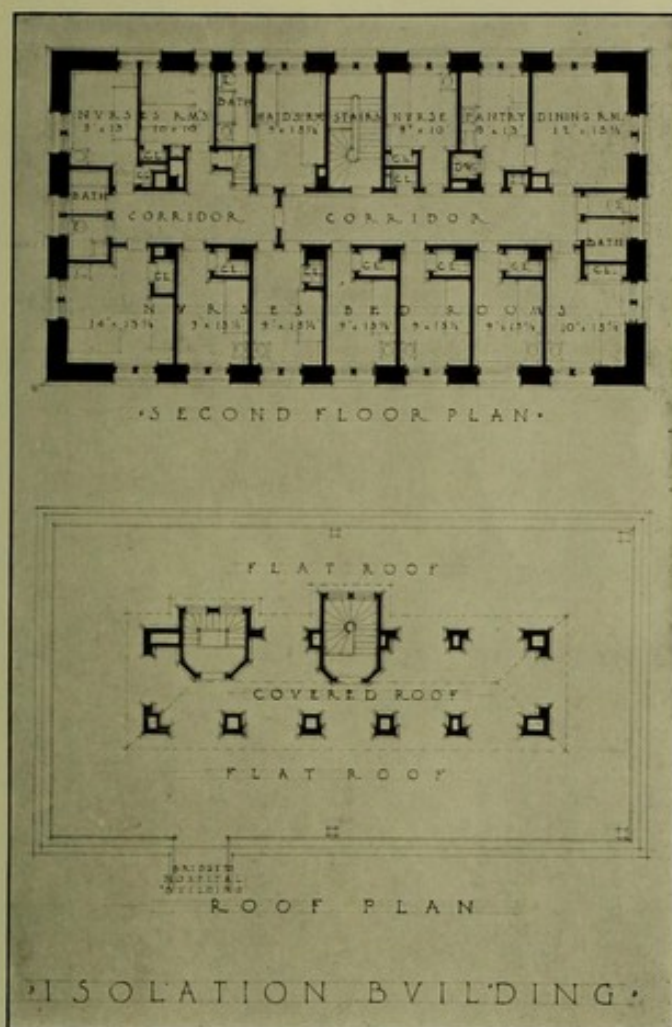


SCALE: 1/4" = 1'-0" HOSPITAL & ISOLATION BUILDING
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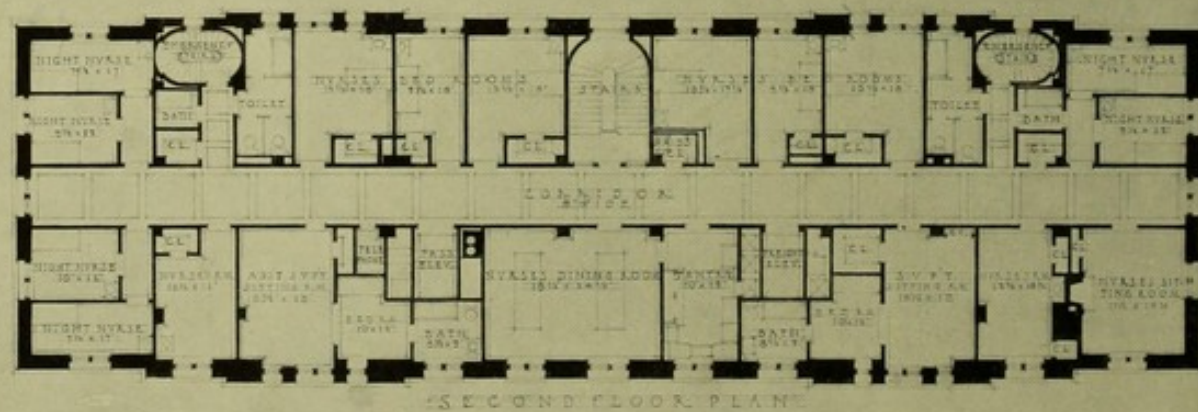
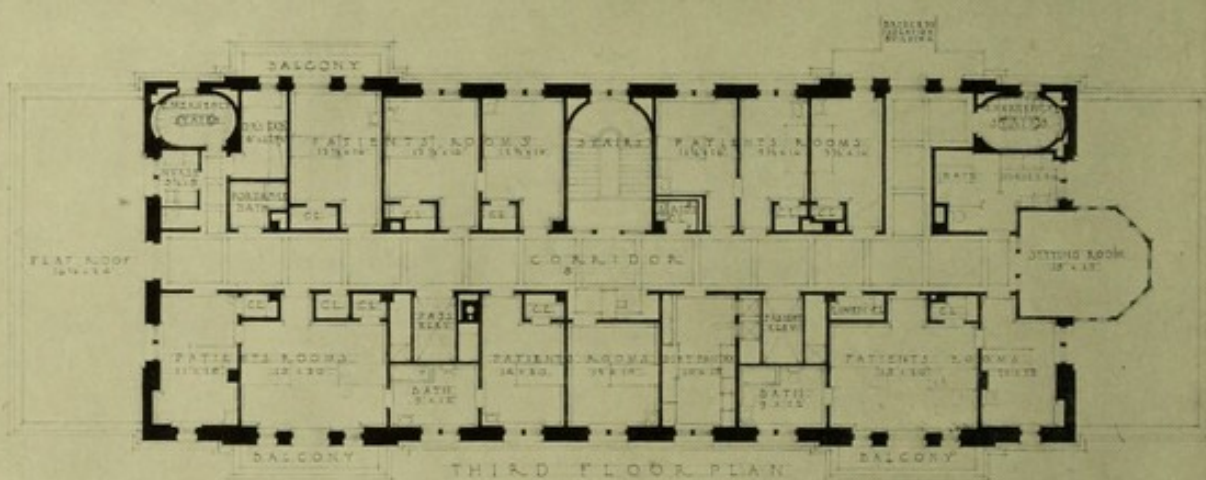
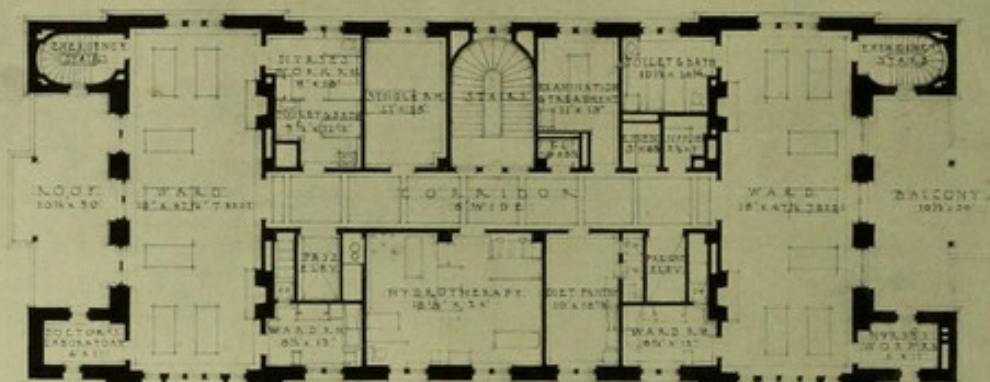
HOSPITAL: BASEMENT, ISOLATION BUILDING: BASEMENT



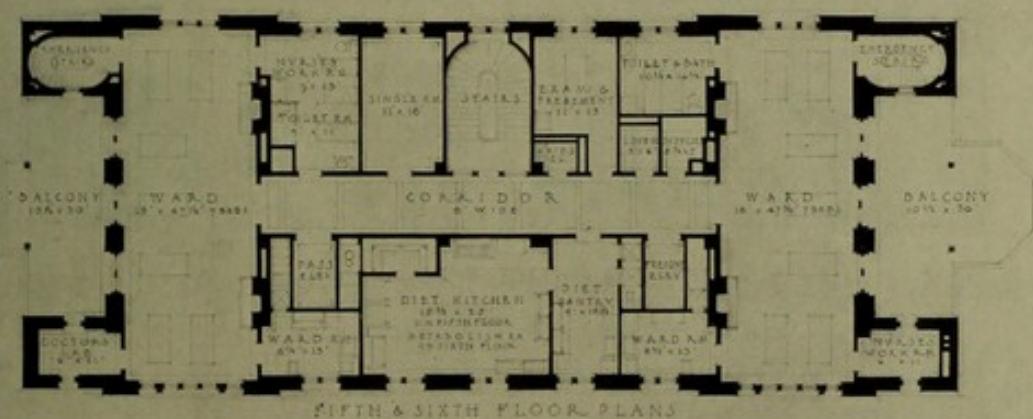
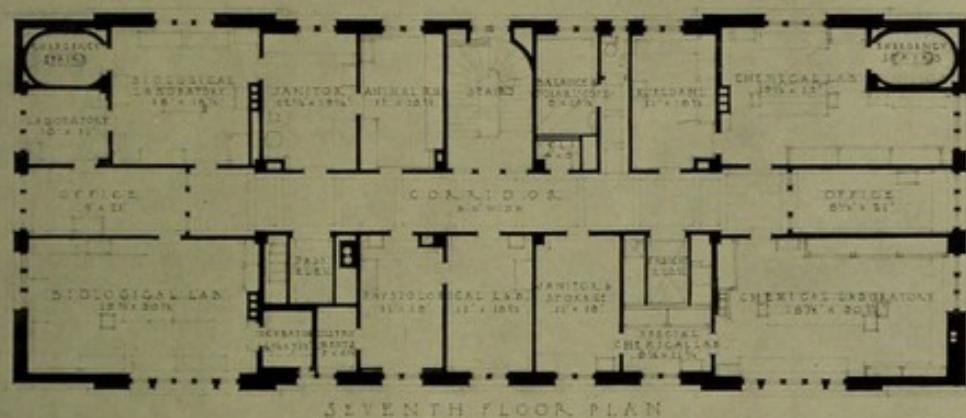
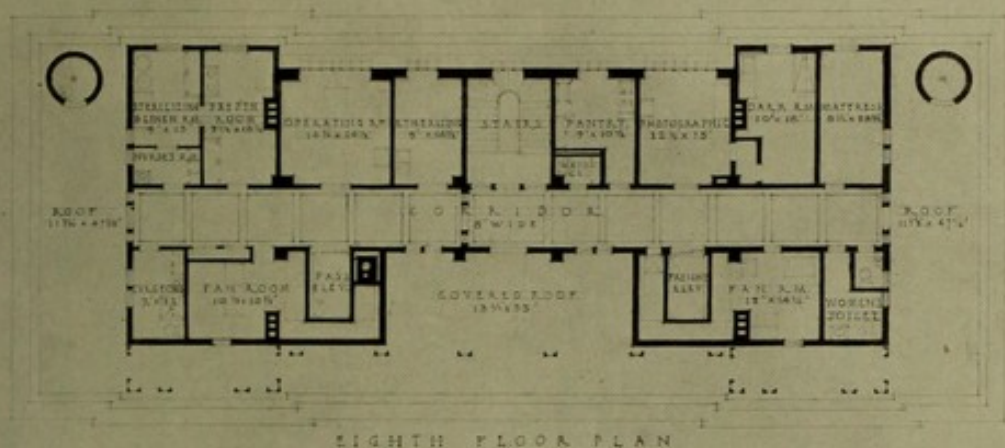
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ISOLATION BUILDING : SECOND FLOOR AND ROOF PLANS

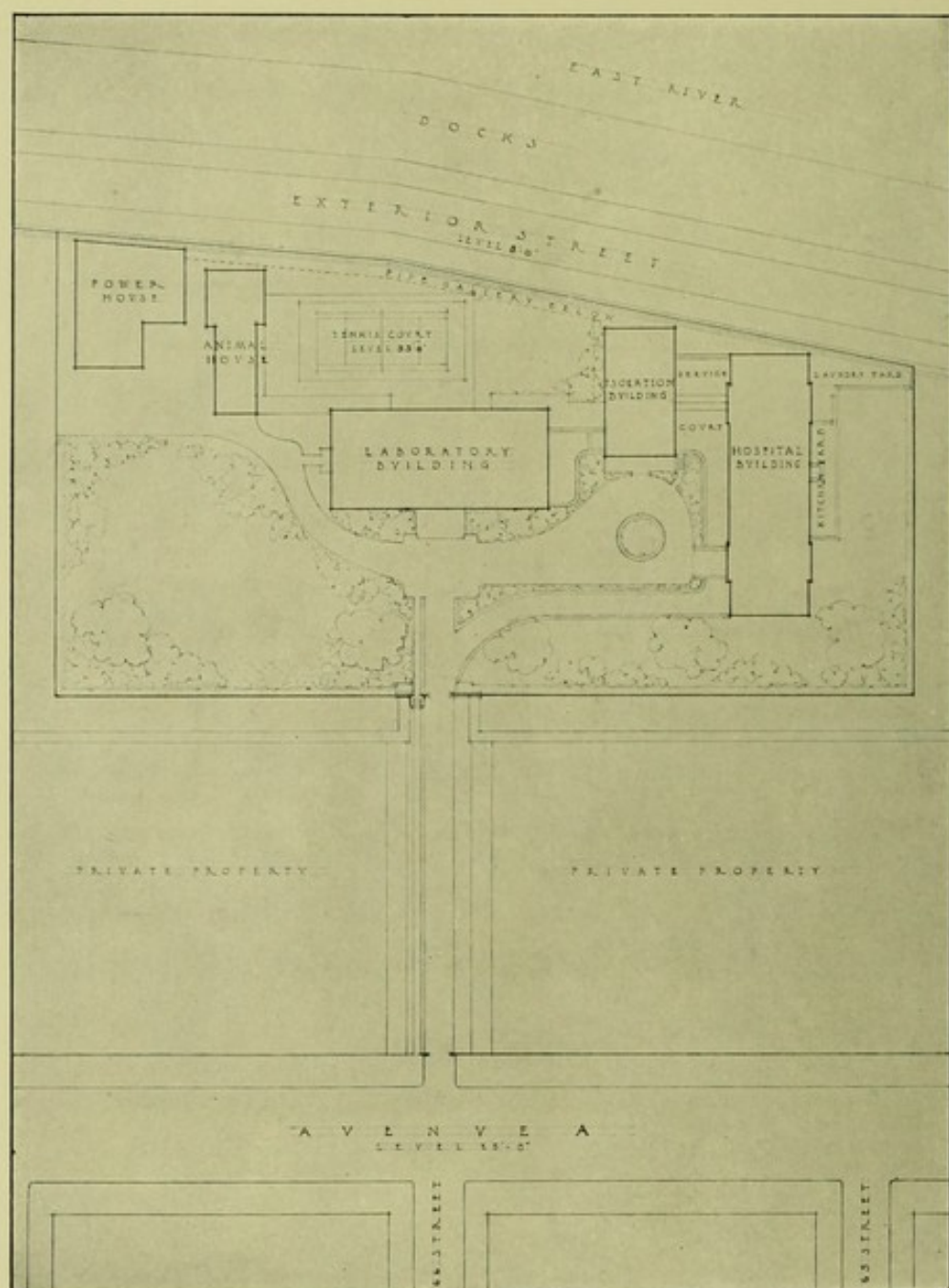


HOSPITAL: SECOND, THIRD, AND FOURTH FLOOR PLANS



SCALE: 1" = 10' HOSPITAL BUILDING YORK & SAWYER ARCHTS.
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HOSPITAL: FIFTH, SIXTH, SEVENTH, AND EIGHTH FLOOR PLANS



PLAN OF GROUNDS AND BUILDINGS

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