

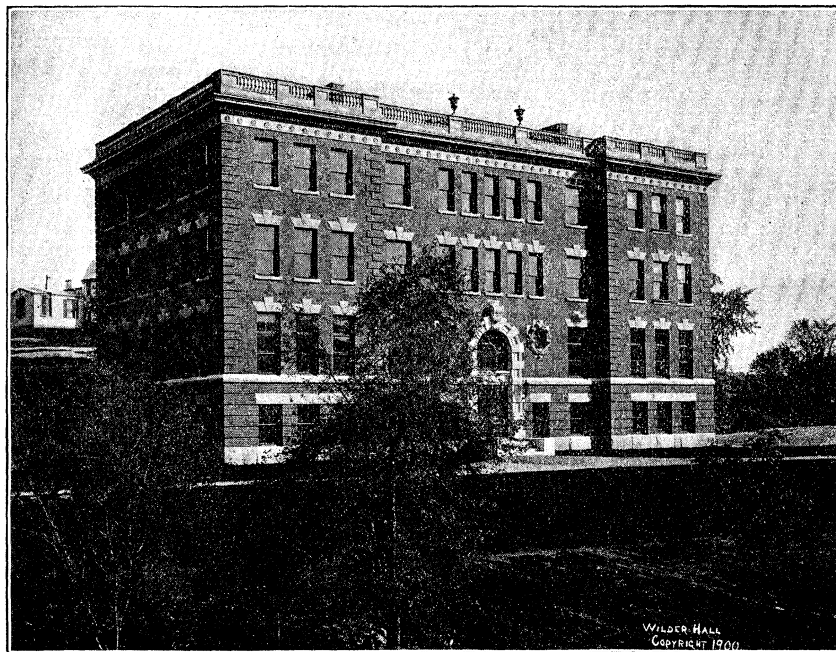
THE WILDER PHYSICAL LABORATORY OF
DARTMOUTH COLLEGE.

By E. F. NICHOLS.

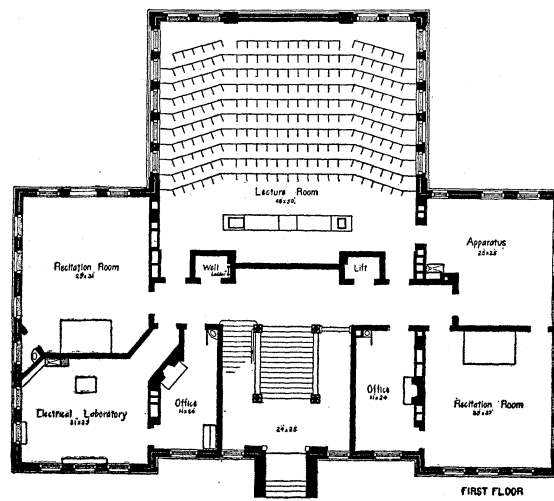
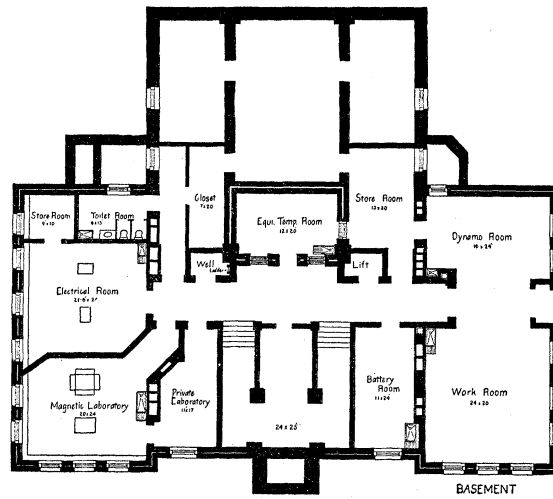
THE Wilder Physical Laboratory, the gift of the late Charles T Wilder, of Wellesley, Mass., was completed in September, 1899. The building, of which an exterior view and floor plans are reproduced here, is of brick with white granite trimmings. It has a frontage running east of north and west of south of 107 feet with a depth of 56 feet, and a rear projection 55 by 35 feet.

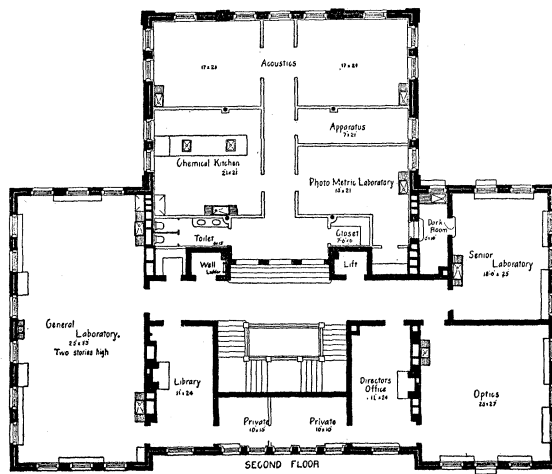
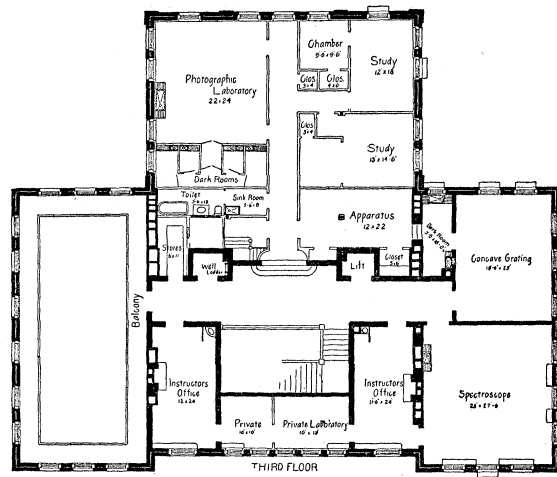
The basement section contains a workshop and dynamo room, equipped with two dynamo generators which, in common with the machine tools of the workshop, are supplied with power from a six-horse-power Pelton water wheel. The shop is provided with good metal- and wood-working lathes, and such other machine and hand tools as are necessary for the repairing and building of simple instruments. The storage battery room is stocked with 30 chloride cells (later to be increased to 60) of the type E, 5 class. These are connected in pairs to a mercury cup switchboard, permitting the grouping of the cells in a great variety of ways. This switchboard is connected to a main switchboard by three independent circuits, which makes possible a division of the battery into three sections for simultaneous use in different parts of the building. In the construction of the northwest corner of the building as high as the second floor, the use of iron has been avoided wherever possible, thus giving a practically iron-free magnetic laboratory in the basement. The basement further contains a large constant temperature room and an electrical laboratory.

A lecture room on the first floor, seating 200, affords every convenience for the purposes of a lecture room for general physics. The windows can be darkened by shades operated by water power from the lantern table in the rear of the room. This table, not



Wilder Physical Laboratory.





shown in the plans, is provided with two power circuits to the main switchboard, with water connections and sink, illuminating gas, air under pressure, oxygen and hydrogen. The lecture table, 25 feet in length, is provided with all the conveniences of the lantern table, and steam in addition. In front of the white finished wall, used as a projection screen behind the lecture table, is a nest of movable blackboards. A roll screen is mounted on the north wall, and at an angle to it, in line with the lecture table, so that a projection lantern may be used in the front part of the room. The lecture and lantern tables, as well as all rooms in the building, are supplied with separate signal circuits, meeting in a telephone switchboard on the second floor. Thus clock, chronograph and other signals may be sent from or to any part of the building. The walls of the lecture room and those of the corridors and nearly all of the laboratory rooms are finished in dark red brick laid in tinted mortar. The room is lighted with incandescent lamps arranged between the open ceiling timbers. An apparatus and preparation room adjoins the lecture room. From a heliostat in a south window of the apparatus room a sunbeam can be projected along the lecture table.

The first floor contains, further, two recitation rooms, offices, and a research laboratory. This, like all of the other laboratory rooms, has slate shelves set in the walls at table height, has water connection, sink with slate draining boards and connections for illuminating gas and compressed air, and one or more independent power circuits to the main switchboard. The general lighting is from overhead fixtures, but for the lighting of scales or special work, wall sockets which may be plugged for portable lamps, are placed at convenient intervals.

The north end of the building, beginning with the second floor, is given up to the general laboratory. The room is open to the roof, giving great height and unusually good light. The wall space at the height of the third floor is made available for the mounting of wall apparatus by a balcony around the room.

The laboratories at the south end of the second and third floors are fitted with black shades for optical work. The southeast rooms on both floors have dark-rooms adjoining. In addition to the piping in other parts of the building, provision is here made for oxygen

and hydrogen. These rooms have additional slate shelves outside the windows for heliostat and other purposes. The corridors and doors of connecting rooms are so arranged with reference to the south windows that a beam of sunlight can be sent into many of the rooms on the north side of the building.

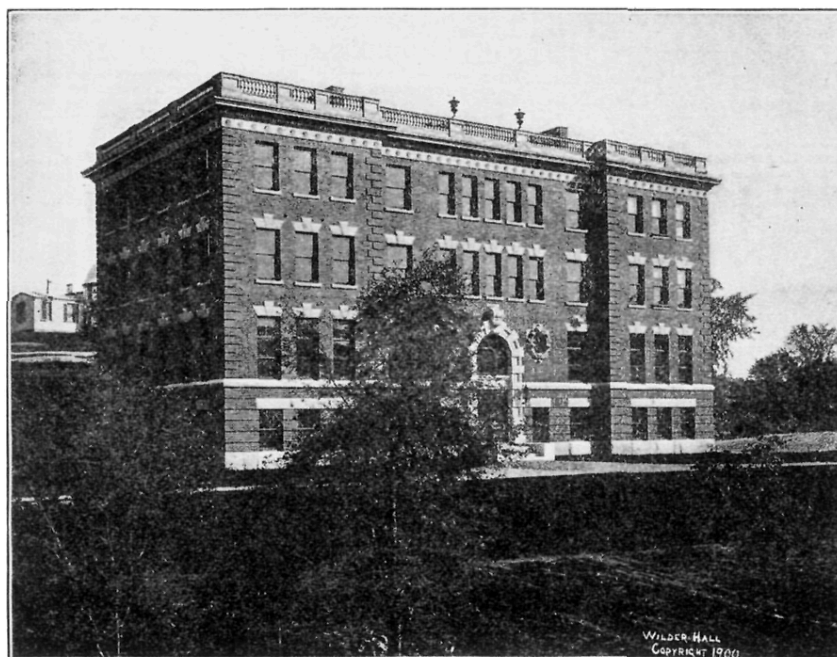
The portion of the second floor above the lecture room contains a photometric laboratory, a chemical laboratory, an apparatus room and two other laboratories. The rear projection on the third floor contains an apparatus room, a photographic laboratory with four developing rooms, and two lodgings for the assistants in the department.

The roof of the building is flat, adapting it for meteorological or other observations. It is accessible by both a stairway and an elevator which runs from the basement to the roof level. A neighboring shaft like the elevator well, gives a free opening 61 feet deep, suited to experiments with falling bodies for the determination of air friction, to pendulum experiments and to the measurement of elasticity and fatigue in wires.

The building is supplied with steam from the college heating station. The heating is almost entirely indirect, providing adequate ventilation. All of the rooms have direct coils which may be used in extreme weather. The lighting is by alternating current. The wiring for lighting and power circuits is enclosed in iron conduits.

The building is after plans by Mr. C. A. Rich, of New York. Credit for the carefully planned interior arrangement and details is due to Prof. Charles F. Emerson, who was assisted in parts of the work by Prof. Edwin B. Frost, Dr. A. C. Crehore and the writer.

The equipment of the laboratory is being carried forward by the income from funds left for the purpose by Mr. Wilder.



Wilder Physical Laboratory.