

## THE PSYCHOLOGICAL LABORATORY OF CORNELL UNIVERSITY

During the past fall Cornell University has completed the remodeling and reconstruction of its psychological laboratory, located on the third and fourth floors of Morrill Hall—one of the three buildings first erected by the University.<sup>1</sup> The building, constructed of stone and wood, is very sturdy and is well adapted to the needs of the laboratory. The outside walls and the cross-partitions are of stone, varying from 24 to 30 in. in thickness; the floor and ceiling timbers are 4 x 16 in.

Both floors of the laboratory have been completely remodeled, as those previously acquainted with the laboratory can see by examining the accompanying floor-plans (Figs. 1 and 2). The lower floor (Fig. 1) contains the departmental offices, the elementary laboratory, and the lecture rooms for the laboratory and advanced courses. The upper floor (Fig. 2) contains the advanced and research laboratories, a seminary and reading room, an apparatus room, a store room, and the business and editorial offices and the stock room of this JOURNAL.

*Lower floor.* The administrative office and the offices of the general instructors are grouped around the entrance hall, while the laboratory instructors have their offices in the heart of the laboratory. Twenty rooms, including two offices, a lecture room, a shop, five dark rooms (four small and one large),<sup>2</sup> and eleven daylight rooms (nine small and two large), constitute the elementary laboratory. Every one of the laboratory rooms is equipped with an apparatus case, a black board, a table, and several chairs, and contains apparatus and equipment necessary for a definite group of experiments. Visual experiments are performed in the dark rooms under the illumination of 'daylite' lamps, and the lamps, color mixers, campimeters, etc., are parts of the permanent equipment of those rooms. The students, who work in pairs, move from room to room as they complete a group of experiments. A hallway extends from the entrance hall to the lecture rooms for the advanced courses<sup>3</sup> and to the stairway leading to the upper floor.

*Upper floor.* The advanced laboratory, providing instruction in the psychophysical and statistical methods, consists of five rooms: a large central room, which serves as a lecture and computing room and is equipped with chairs and tables and with modern computing machines; and four smaller rooms, one a dark room.<sup>4</sup> As in the elementary laboratory, every one of the smaller rooms has its own apparatus case and equipment for the experiments assigned to it.

The research laboratory, also on the fourth floor, consists of a large central hall and fourteen small rooms opening off it (rooms A-N, Fig. 2). The central hall is used as a museum and for meetings and receptions. Every one of the small rooms has an outside window, and is supplied with D.C. and A.C. current and with twenty connections to the laboratory wiring system. Some of the rooms are

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<sup>1</sup>For a description of the laboratory of 1900 and an inventory of the apparatus then available cf. E. B. Titchener, *The Psychological Laboratory of Cornell University*, 1900. The laboratory at that time was housed in eleven rooms on the top floor of Morrill Hall.

<sup>2</sup>These rooms are grayish, not black. Black rooms are, we believe, depressing and in most instances are unnecessary and undesirable.

<sup>3</sup>The lecture room for the elementary courses is located in another building. It seats over 200 students, and adjoins a well-equipped demonstrational laboratory.

<sup>4</sup>The ceiling and the upper part of the walls of this room are painted black; the lower part is painted a neutral gray, and may be covered when occasion demands by means of black curtains, thus providing one black dark-room.

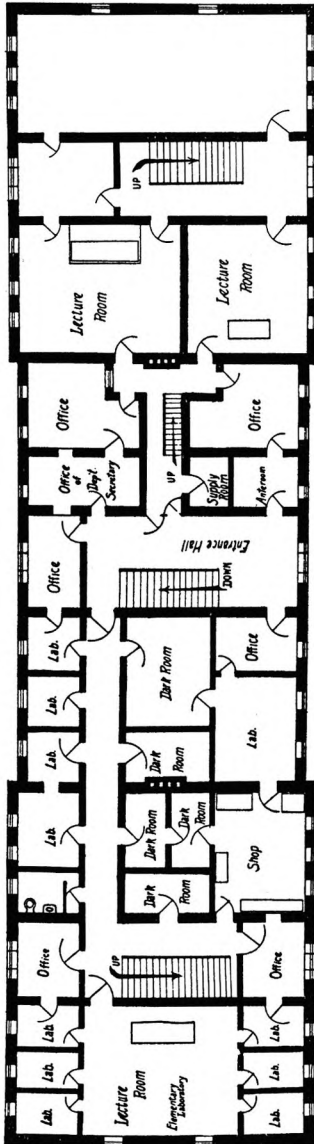


FIG. 1. LOWER FLOOR OF THE CORNELL LABORATORY OF PSYCHOLOGY

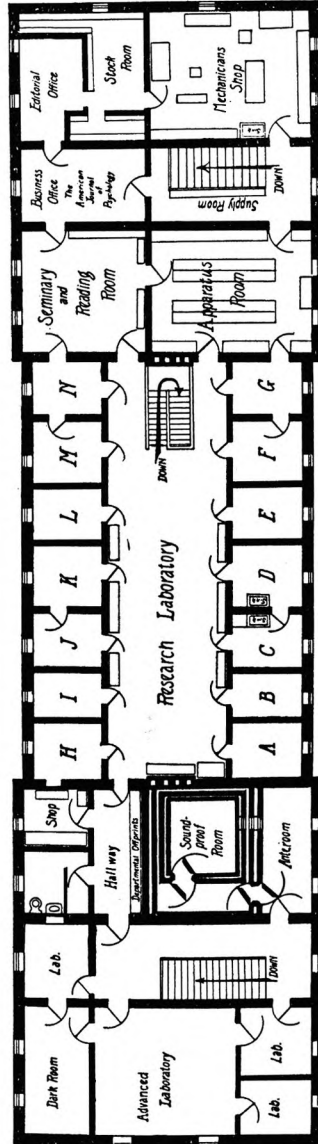


FIG. 2. UPPER FLOOR OF THE CORNELL LABORATORY OF PSYCHOLOGY

equipped with shutters, so that they may be converted into dark rooms; some are supplied with gas, compressed air and running water; and some may be used in suites (rooms C-D, F-G, J-K, and M-N). These rooms are assigned to the graduate students in accordance with the needs of their research.

Auxiliary to these research rooms are the apparatus, seminary, and soundproof rooms, and two shops, one for students and another for the Department's mechanician. The apparatus and the seminary rooms open off the large central hall and are thus conveniently situated for the use of the graduate students.

The apparatus room contains all of the apparatus and materials that are likely to be needed in research.<sup>5</sup> The apparatus is indexed and catalogued, and every piece has its appropriate place. It is checked out and in, and if it is out of order, is given immediately upon its return to the mechanician for reconditioning.

The seminaries and some of the advanced classes are held in the seminary room. Current numbers of psychological periodicals and some of the standard reference books are to be found here.

A shop, well equipped with the smaller tools, is provided for the use of the graduate students. Its location is convenient to the research rooms, but it is isolated from them by a heavy stone wall. The simpler work, incident to the construction and setting up of research apparatus, is done here by the student himself. The more complex work is done by the mechanician in his shop, which is equipped with the more intricate tools and with heavy machinery. This shop, as can be seen in Fig. 2, is completely isolated from the research rooms. The rooms immediately adjacent to the shop are store and stock rooms, and the rooms next to them are the apparatus and editorial rooms.

The soundproof room is also isolated from the rest of the laboratory.<sup>6</sup> It is, however, connected with every one of the individual research rooms and with an anteroom through the laboratory wiring system. It is also equipped with D.C. and A.C. current, compressed air, and a soundproof window. As can be seen in Figs. 2 and 4, the room lies between two heavy stone partitions, each 24 in. thick.

The construction of the room is shown in Figs. 3 and 4. Fig. 3 shows a cross-section in one vertical dimension, and Fig. 4 a cross-section in the other. The soundproof chamber is a room within a room. The construction of the inner room and of the end walls of the outer room is shown in Fig. 3. Passing from the outside and going in there is a layer of hard plaster, which is painted with a gloss paint so as to reflect sound. The plaster is spread on sheet rock. The supporting timbers are backed with insulite, and the interstices are filled with sawdust. Several layers of slater's paper are spread over the insulite; then there is a 2-in. air space, another layer of insulite, several layers of slater's paper, 14 in. of sawdust, and finally a third layer of insulite that forms the inner side of the outer room. The framework supporting this layer is completely isolated, by means of hair-felt,

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<sup>5</sup>Until the remodeling of the laboratory, the research apparatus was classified according to use, and distributed among the rooms of the laboratory, then designated as visual, auditory, cutaneous, etc. This method of disposing of the apparatus is a heritage from Wundt. It was undoubtedly justified when psychological apparatus was simple and meager, but now it merely marks the persistence of a custom due to habit and inertia.

<sup>6</sup>The soundproof room was constructed with the aid of a grant from the Heckscher Foundation for the Advancement of Research, established by August Heckscher at Cornell University.

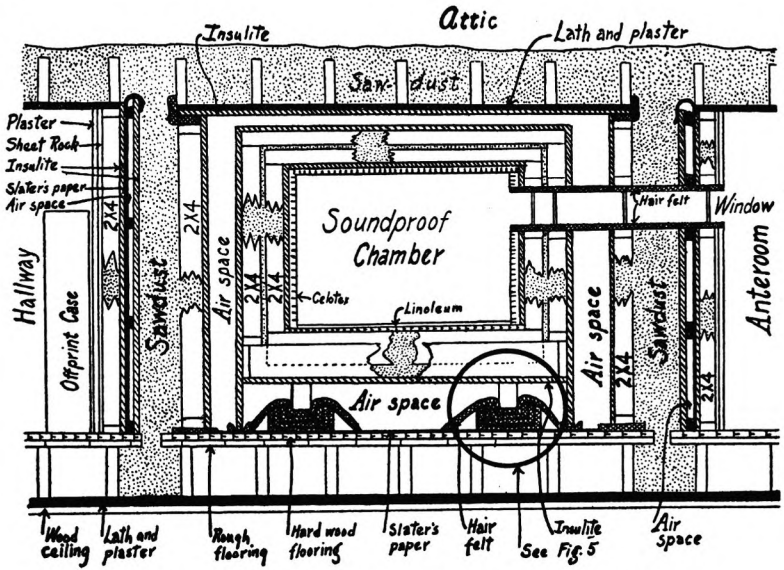


FIG. 3. CROSS-SECTION OF THE SOUNDPROOF ROOM (East-West dimension)

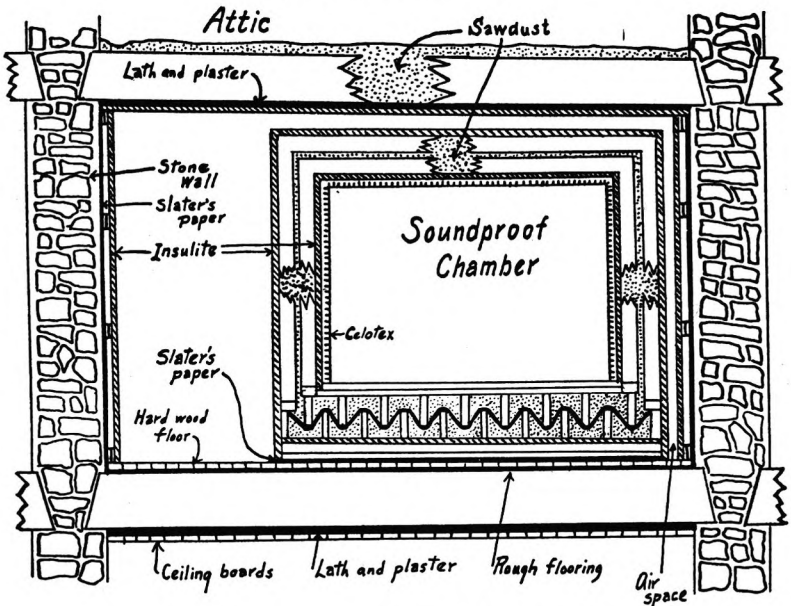


FIG. 4. CROSS-SECTION OF THE SOUNDPROOF ROOM (North-South dimension)

from the ceiling and the floor; it is not even connected to them by nails. The partition is held in position by being nailed to the heavy layers of hair-felt, which in turn are nailed in place. The flooring and the ceiling between the two sides of this wall are broken, as shown in Fig. 3, so that they will not transmit vibrations to the inner room. The ceiling is isolated by means of a 16-in. layer of sawdust, lath and plaster, and a layer of insulite. The floor upon which the inner room is built is isolated from the room below by means of ceiling boards, lath and plaster, 16-in. joists and air spaces between them, rough flooring, hard wood tongue-and-groove flooring, and sheets of slater's paper. The construction of the side walls is shown in Fig. 4. Overlapping sheets of slater's paper are spread over the stone wall; then there is a 2-in. air space and a layer of insulite.

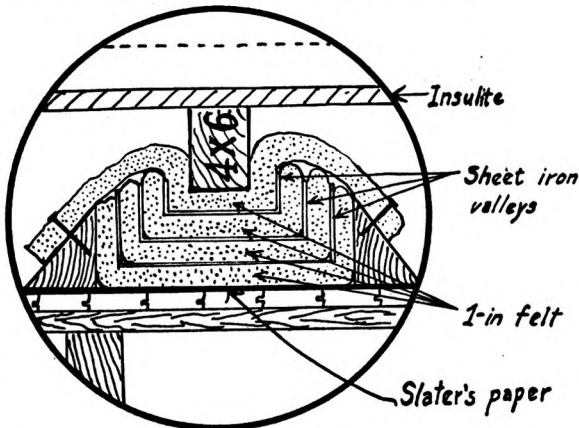


FIG. 5. DETAIL OF THE FLOOR-SUPPORTS OF THE SOUNDPROOF ROOM

The inner room is completely surrounded by an air-space. A 4-in. air-space is left between ceilings and, as shown in Fig. 2, between the walls on three sides. On the fourth side there is a 4-ft. passageway. The floor studding of the inner room rests upon five 4 x 6 in. joists—only two of which are shown in Fig. 3—which in turn rest in felt and metal gutters. The detail of these gutters is shown in Fig. 5. Four layers of one-inch hair-felt separated by sheet-iron valleys support the joists. The purpose of the felt and metal gutters—as of the entire floor construction—is to eliminate vibrations. Across the 4 x 6 in. joists is a layer of insulite, and over that is placed a second set of joists (2 x 6 in.) at right angles to the first. The outer wall and ceiling of the inner room are supported by these joists. They also support, by means of rope hammocks made of 1/2 in. hemp rope and held in position by staple irons, a third and parallel set of joists, which in turn support the floor and the inner walls and ceiling. The floor is made of tongue-and-groove hard wood. The space between the floor and the insulite sheeting nailed to the other side of the second set of joists is filled with sawdust. The outer and inner walls and ceiling are covered with insulite, and the spaces between them are also filled with sawdust. The room is to be lined with a sound absorbent and the floor covered with cork-linoleum and rugs.

The window of the room is made of four different thicknesses of plate glass. Every pane is set in felt, and is structurally isolated from the others. Every one rests upon a structural unit that has no connection other than a felt or sawdust one with the other units. The window greatly increases the usefulness of the room and does not noticeably decrease the soundproofing. When the window is not in use it is closed from both sides by felt and insulite shutters.

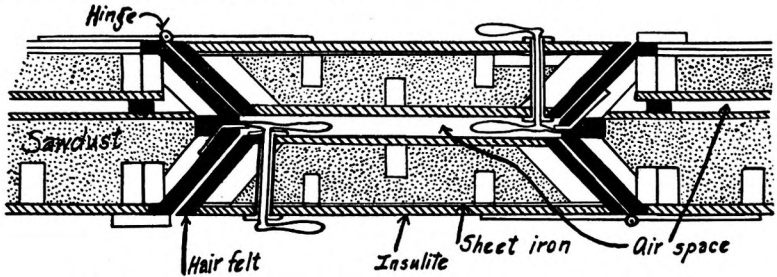


FIG. 6. DETAIL OF THE CONSTRUCTION OF THE DOORS OF THE SOUNDPROOF ROOM

The room is entered, as is shown in Fig. 2, through two double doors, the construction of which is shown in detail in Fig. 6. The doors are beveled, and the edges are covered with heavy hair-felt. The inner side of the doors is covered with insulite, and the outer side with sheet iron and insulite; they are filled with sawdust. The doors do not lock; they are held shut by levers, which draw the doors tightly into the beveled and felt-lined door-frames and may be operated from either side.

KARL M. DALLENBACH

#### THE SKIDMORE COLLEGE LABORATORY OF PSYCHOLOGY

During the forepart of the summer of 1930 Skidmore College acquired a large and valuable estate on which were located several substantial buildings. One of these was a two-story brick and stucco barn 50 x 114 ft.; another, close by, was a brick garage about 32 x 42 ft. with high walls and high pitched roof. The garage will be remodelled for work in comparative psychology; at present it houses the motor-generator for D.C. to supply the laboratories in the larger building.

The first floor of the larger building—formerly used as a stable for high bred horses—was made over for the secretarial department of the college. The second floor having apartments for servants and large storage spaces for grain and hay was allotted to psychology. This floor contains nearly 5400 sq. ft. The writer with the assistance of Dr. Hobbie, Superintendent of Grounds and Buildings, divided this floor space into 10 rooms as shown in the floor plan (Fig. 1).

The east-west location and the original form of the building directly favored the space arrangement and relative position of the rooms that would best serve the requirements of a psychological laboratory, e.g. the store room, lecture room, and soundproof rooms not requiring direct sunlight are located on the north side; and the elementary and advanced laboratories and dark room are placed on the south side, receiving full benefit of sunlight. The rooms and corridor are well lighted, doors are one-half glass except those to the dark room and soundproof rooms. The building is heated by a self-regulating oil burner and each room has