

MARINE BIOLOGICAL LABORATORY.

WOODS HOLL, MASS.

. At the meeting of the Board of Trustees of the Marine Biological Laboratory to be held in Woods Holl, Tuesday, August 12th, 1902, a committee must be appointed to draw up a report of future plans of work of the Laboratory. It has been suggested by members of the Executive Committee of the Carnegie Institution that our report should include an ideal plan, limited in extent and cost only by wise consideration for the future development of Marine Biology, as well as a practical plan based on an estimate of about \$80,000 for land, buildings, and permanent equipment, and an income for maintenance of from \$20,000 to \$30,000 a year. The accompanying skeleton sketch of needs in various lines is sent in the hope that you may be able to make suggestions on any points mentioned, or others, and furnish estimates, specifications, or plans. Any material of this kind sent in to the under-signed will be kept for the information of the committee mentioned above.

THE ZOOLOGICAL LABORATORY.

The Zoological Laboratory is 120 x 50 feet and four stories high, exclusive of basement.

The accompanying plans show the arrangement of the rooms:— On the first floor are six rooms (10—15). Numbers 10, 11, 12, and 13 are intended for a small museum, and two laboratories; numbers 14 and 15 are used for the elementary work, and are capable of accommodating, when properly furnished, about 35 students. Rooms 12 and 13 are at present occupied by the library of the Biological Departments, and 10 is used as a research-room for the Department of Pathology and Bacteriology. Room 11 is in use at the present time for a part of the zoological collections. The remainder of the collections is scattered over the building, or stored in the basement. The space in room 10 is much needed for exhibition of the material; and the recent formal establishment of a Museum of Zoology will soon make the space of 12 and 13 necessary.

The second floor is devoted mainly to research. Room 21 at the west end is a research laboratory for advanced students. Two private research-rooms, A and B, for Fellows of the Department open off this. Rooms 26, 22, and 23 are also research-rooms for members of the staff; 24 is a lecture-room, seating about 60 students. Rooms 25 and 26 are occupied by the Director of the laboratory and the artist; 27 and 28 are research-rooms for Fellows or assistants. 29 is a laboratory, used at present both for bacteriology and

embryology at different times.

The ends of the third floor are occupied by two large laboratories; 31 is used for comparative anatomy and embryology; 36 for bacteriology and embryology; 30 is the embryological preparation-room; 32, 33, and 35 are private rooms for members of the staff; 34 is a research laboratory for the work in variation and statistical zoology; 37 is used both as a lecture-room and general laboratory for the same subjects; 38 is a private research-room.

The fourth floor is at present occupied entirely by the Department of Bacteriology.

In the basement are nine rooms variously used and fully occupied as storage and animal rooms; and a glass-covered extension for aquaria, 25 x 40 feet.

At present the Department is greatly hampered for lack of sufficient space, a condition that will be improved with the removal of the Department of Pathology and Bacteriology. The fourth floor will then come into use for work in comparative anatomy and for the quarters of the preparator, and the room on the ground floor, vacated by pathology, will be immediately occupied by the museum, at present crowded into one small room.

The Department thus needs at the present time the entire space in the building. Even then, one considerable drawback will remain: the lack of a lecture-room of adequate size for the largest classes. For this the department is at present dependent upon the courtesy of the head of the Department of Botany.

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There are still many deficiencies in the furnishing and equipment of the laboratories. The sum of \$11,000 could be well expended in the following ways:--

- \$2,500 for oak, glass-faced cases for the museum.
- 500 " adequate equipment of a preparation-room.
- 5,000 " skeletons, injected materials and rare specimens for the museum.
- 2,000 " completing the furnishings of the laboratories, cases, tables, aquaria, etc.
- 1,000 " a complete photographic outfit and dark-room (one of the most pressing needs at present.)

LIBRARY.

Next to its faculty the greatest concern of a great university should be its collection of books. Since ancient times, at every centre of learning where scholars have come together, they have sought first to establish a great library. It is natural, therefore, that the Department of Zoology should urge the necessity of doing something to improve the scientific side of the Library.

There are two special requirements met by a library in any science like Zoology. First: It is essential that all that has ever been published on any subject of the science should be at once easily accessible. Second: It is important for the investigator that the current ideas of his colleagues in whatever field should be early accessible to him, since they afford suggestions and a stimulus.

The first mentioned function of a library is a consequence of the essential nature of a science. It builds upon recorded facts. If the scientific worker cannot get the recorded facts, he may waste much time in duplicating work already done. Moreover, every worker is bound to show the relation of his facts to those previously known; to bring together all the scattered published data bearing upon his investigation, and to examine them critically in the light of his investigation. All of this requires that the complete literature of zoology, as indexed in the "Record" or "Bericht" of the science, should be available.

At present the library of the University, including the Bio-

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logical group library, comes far short of reaching the ideal of completeness, and is, every year, getting more hopelessly behind. At the present time we are regularly receiving only about 15% of the zoological journals and probably only about 20% of the current output in zoology. We are much more deficient in the literature previous to 1892. All together, probably, less than 5% of the books of zoology are accessible at the University. The chances are thus greatly against a student being able to refer to any article cited. In consequence, any attempt to present a complete, critical analysis of the literature on a subject becomes impossible. In fact, the highest type of scholarly work in Zoology cannot be done at the University, and so long as this is so, the best graduate students will tend to Eastern Universities.

In comparison with other sciences at the University, Zoology has fared very badly. Certain sciences, such as Chemistry, report that they have a nearly complete library. But chemical books cost far less than those of zoology. It is the lithographic plates that make zoological literature the most expensive of any science. An appropriation for books that would suffice for chemistry would be meagre indeed for zoology. Moreover, not only is the zoological literature expensive, but it is very great in the number of parts issued. Consequently, the work of the Department has been hampered by an insufficient library. There is no single way in which the work of the Zoological Department, as at present limited, could be more effectively strengthened than by an income of \$10,000 a year to be devoted exclusively to zoological books.

EQUIPMENT.

The Department possesses 13 Zeiss compound microscopes of the highest grade and about 50 other compound microscopes, mostly by Leitz; 31 dissecting microscopes; 16 camera lucidas; and other optical apparatus. There are 16 microtomes, and electrical projection lantern with attachment for microscopical projection, in addition to a great variety of monor apparatus. The collection of charts includes the complete Leuckart and Nitzsche Series, and about 100 prepared in the laboratory. The Department also has the complete Series of Ziegler Embryological Wax Models, as well as some others.

The museum contains a small synoptic collection composed of typical representatives of the principal groups, and some material prepared for purposes of illustration and demonstration. A collection of North American moths and butterflies, comprising 20 cases, has been purchased by the Department, and, in addition, there is a series of skeletons of vertebrates, mounted and unmounted. Mention should also be made of the Baur Collection of Galapagos vertebrates, including specimens of the famous giant tortoise of these islands.

A collection of microscopic preparations has been begun, which is at present used chiefly in the various courses of instruction, and consists of about 3,000 to 4,000 slides. It is intended, in the case of the embryological collection, to prepare as complete a series of slides as possible; illustrating the development of