

THE TECH

SPECIAL ISSUE--DEPARTMENT OF BIOLOGY.

VOL. XXIX. NO. 131.

BOSTON, MASS., SATURDAY, APRIL 2, 1910

PRICE FIVE CENTS



Students and Instructors in Biological Department.

GENERAL BIOLOGY

By C.-E. A. WINSLOW.

Instruction in all biological subjects begins with a course in General Biology. At many institutions Botany and Zoology are taught as separate branches. It is believed in the Biological Department of the Institute that a much broader and more balanced conception is attained by studying the fundamental laws that underlie the activities of all living things, before the specific characters of different types are brought under review. Accordingly, after a few introductory exercises on the organization of living bodies, their component organs, tissues and cells, and the composition and properties of protoplasm,—the physical basis of life,—a single typical plant and a single typical animal are studied in considerable detail. In these types, the fern and the earthworm, the student is led to see how plant and animal organisms are built up, how their various systems of organs do their individual work and react upon each other, and how the organisms reproduce and pass through their life cycle of development. Finally, the inter-relation of different forms of life is illustrated by a study of some of the simpler microbic organisms, yeast, bacteria and infusoria, which display on a small scale in the hay infusion some of the broader problems which underlie the maintenance of life on the globe.

The primary aim of this course is to acquaint the student with the underlying principles of structure and function and development as exhibited in all living things. Second only in importance is training in close observation and the cultivation of habits of sound induction, to which the study of a complex living machine lends itself with peculiar fitness. To this latter end the lecture treatment is strictly subordinated to laboratory and quiz work.

A long course of five hours a week in this subject forms the introduction to all future work for students in Course VII.; a brief course of one hour a week is designed to serve a similar purpose for chemists and engineers, specializing in biology. Either of these courses is also adapted for the student

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A BRIEF HISTORY OF THE DEPARTMENT OF BIOLOGY

By W. T. SEDGWICK.

Some instruction in biological subjects was offered at the Institute from the very start, for we find that in the First Annual Catalogue, published in 1865, one of the six courses, namely, that in General Science and Literature, included, nominally at least, instruction in Zoology, Botany and Paleontology, as well as Physiology, and Comparative Anatomy.

Under the head of "General Studies," a term which we still employ to describe such subjects as Political Economy, the History of Science, English Literature, and the like, it was stated that "instruction will be given to regular students during the Third and Fourth Years" in various subjects, among which were Zoology, Physiology and Botany.

Several years later a special course in Natural History was established in which instruction was given mainly in Zoology, Botany, Microscopy, and allied subjects. Dr. Kneeland, long the Secretary of the Institute, also lectured upon Human Physiology, and a skeleton which he is said to have used in those lectures is now in the possession of the Biological Department.

General Francis A. Walker, on assuming the Presidency of the Institute, brought to it many of the ideas with which he had been impressed during his service as a professor in the Sheffield Scientific School of Yale College, and among others the conviction that a course in Biology preparatory to medical studies would prove useful. Such a course had in fact been successful in the Sheffield Scientific School, and there seemed no good reason why a similar course should not be developed in the Institute. Much was being said at the time about reforms in medical education; the Harvard Medical School had, a few years earlier, established, as the first among American medical schools, an entrance examination, and there was promise of a new and better medical school soon to be open at the Johns Hopkins University in Baltimore. General Biology, Physiology after the German model, and Embryology were

also gaining prominence over the older and more classificatory studies of the Agassiz period, while Microscopical Botany and Vegetable Physiology were beginning to excite a considerable interest among the newer school of Botanists—especially those trained abroad.

There was, moreover, a good deal of friction within the old Natural History Department itself, especially between the Zoological and the Botanical and Microscopical sub-departments, so that very soon, namely in 1883, General Walker determined to bring in some new blood and to change radically the general character of the Natural History instruction.

To this end he invited the writer, who at that time was an Associate in Biology at the Johns Hopkins University, to come to Boston and undertake the new work, and in July of that year the necessary steps were taken by the formal appointment of the author as Assistant Professor of Biology at the Institute. There were at that time no regular Biological Laboratories excepting a Microscopical and Botanical Laboratory in the "Annex" to Rogers Building (a low, one-story affair, standing approximately where the Walker Building now stands) and this had been done away during the summer of 1883 by the erection of the Walker Building.

The Zoological instruction was given in the basement of the Natural History building by Dr. Alpheus Hyatt, Professor of Zoology, but all the rest of the Biological instruction was now put in charge of the new Assistant Professor. Inasmuch as there was as yet no laboratory available for his uses he was courteously given the part use of the Geological room, which at that time was No. 12 Rogers, occupying the space now subdivided into the rooms occupied by the Dean and by the Instructors in English. There was absolutely no apparatus belonging to the Department inasmuch as the poverty of the Institute had not hitherto allowed the purchase of apparatus. There was

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BACTERIOLOGICAL COURSES

By S. C. PRESCOTT.

It is sometimes said, with seeming extravagance of statement, that the bacteria are the most important organisms in the world, since upon their activity depends our whole organic food supply, and to their efficient behavior we are indebted that the earth is not a vast charnel house rather than a living laboratory wherein are carried on the most important of reactions.

Extravagant as the statement above may seem, it is probably absolutely true for were the bacteria instantly and completely destroyed life would soon become impossible for mankind. Thus bacteriology is at once seen to be a subject of supreme interest to the biologist, the chemist, the sanitarian, and the man of general thought who would investigate and ponder upon the forces of Nature and their influence upon human life and welfare. To the physician and the pathologist it is, of course, a tool, but it is perhaps of equal value to the man of science and technology. This fact was early recognized by Professor Sedgwick, who established the first course in Bacteriology in the Biological Department in the late eighties. It is probable that the Institute was the first technical school to give instruction in this subject.

The student entering upon his fourth year work in the Department of Biology fifteen years ago was introduced to a one term four-hour course in General Bacteriology, wherein he gained his first experience in dealing with those minute but most effective organisms, the bacteria and their allies. This course, which was given at that time by Prof. Sedgwick with the occasional aid of an assistant, was attended by a mere handful of students, perhaps a half dozen in all. The subject was treated from a broad and general biological standpoint, but so fundamentally and so practically that the course was, to the interested student, a continuous delight, as it opened a new field for unbounded speculation, investigation, and usefulness.

So little had the subject been developed at that period that contrasted with the amount of work done in the Institute laboratories of Bacteriology at the present time, our early course would make a rather insignificant showing. But the great work of Pasteur and Koch

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