

tuted current nomenclature for the old, and has added numerous foot-notes, always over his own initials, amplifying or correcting statements made in the body of the work, which has been allowed to stand essentially as in the original edition. Mr. Brewster has also added an appendix comprising additions to Minot's list and containing an abstract of the results of his study of the gyrfalcons—a most perplexing group. He agrees with Ridgway in the number and nomenclature of the forms, and records the authentic New England specimens of each.

It is a great compliment to the worth of Minot's book that one of the most eminent of American ornithologists, and one who could ill spare the time from his own important work, was willing to edit it.

C. H. M.

The Central Nervous System of Desmognathus fusca. By PIERRE A. FISH. Reprinted from *Journal of Morphology*, x, 1, 1895.

Mr. Fish has made an important contribution to our knowledge of the brain of salamanders. His preliminary remarks embrace two statements of interest: (1) That the adult *Desmognathus fusca* lives equally well in the open air or wholly under water, even where no trace of lungs exists; and (2) that the mouth cavity and esophagus are lined with ciliated columnar epithelium. During arial respiration the floor of the mouth is alternately raised and lowered very rapidly, while when the animal was kept under water it was raised and held in that position a long time; the inference being that the blood is oxygenated by means of the epithelium of the mouth.

The simplicity of the amphibian brain renders it, as the author states, "a most admirable object for the study of morphological relations; its general absence of flexure, its successive segmental arrangement and the degree of exposure and differentiation of these segments, give it a great ad-

vantage over most other generalized forms." It was found to be remarkable for the large number of 'embryological' features preserved.

About 40 pages are devoted to the brain and cranial nerves, and the paper is accompanied by a bibliography and four plates.
C. H. M.

Introduction to Botany. By VOLNEY M. SPALDING, Professor of Botany in the University of Michigan. Boston, D. C. Heath & Co. 1895. Pp. 287.

PROFESSOR SPALDING has added to his valuable book that which was needed to make it complete, namely, a full glossary, an index, a brief chapter on the organs of flowerless plants, and a chapter on fungi. These added chapters are in keeping with the general plan of the book. The material required is briefly indicated and directions given for its care. Laboratory directions, brief notes directing the student's attention to prominent features, follow. These are extremely good, and it is hoped this feature of Spalding's method of studying plants, corresponding, as it does, with Dodge's method in biology, will be pursued by future makers of text-books, and that we have seen the last of full accounts of what is to be seen, requiring on the part of the student very little thought, and only the attention necessary for the verification of the statements. It is remarkable, when one stops to think of it, how little the inductive method is used in the study of biology. After the directions, comes a little review or summary, giving information not likely to be attained from laboratory practice. This is a very marked feature of the volume and is especially valuable because the information given is so up to date. A very slight examination of the foot-notes will reveal the fact that the very latest research work has been consulted in the preparation of this text-book.