

been spent in the West, where, as a military officer, he has been stationed at remote outposts from the Mississippi Valley to the Pacific Coast, and from Arizona to Oregon. During his army life he took part in various Indian wars and had command of various exploring expeditions, traveling thousands of miles on horseback over the deserts and mountains of the far west. He thus had very exceptional opportunities for the study of birds in the field. On his retirement from the army he came east, at the solicitation of Prof. Baird, and was made Honorary Curator of the Department of Oology in the United States National Museum, which position he still holds. When he came he brought with him the largest and most valuable collection of birds' eggs ever gathered by one person in America, a collection numbering about 15,000 eggs.

Professor Baird, knowing the extent and value of Major Bendire's field notes, asked him to write a work on our birds, with special reference to their breeding habits, but unhappily did not live long enough to see even its beginning.

Since coming east Major Bendire has spent several summers in the field, chiefly in the Adirondack region in northern New York, thus supplementing his knowledge of the habits of western birds by studies of our eastern species. He is a keen observer and his wide field experience has made him personally familiar with nearly all the species of which he writes. In addition to his own notes he has secured from others a large mass of unpublished manuscript prepared expressly for the present work. The quantity of this original contributed matter is surprising and is vastly greater than that brought together by any author since the time of Audubon.

The work does not require comparison with any other, because no other covers the same ground. It is not in any sense a technical treatise and does not contain descriptions of the birds themselves, though in the case of closely related geographic races the points of difference are often clearly stated. On the other hand, unlike the works of Audubon and Wilson, it contains little in the way of personal narrative, although now and then the pages are enlivened by an anecdote or entertaining bit of personal experience. So far as the geographic distribu-

tion, food habits and breeding habits go, it is not too much to say that the work fairly represents the state of knowledge on these subjects at time of going to press. The proofs of the second volume were read more than a year ago (in June 1895) and the book is dated 1895, but through unfortunate delays in the Government printing office, it did not appear till September of the present year (1896). The reprehensible practice of some of the departments of Government of permitting their publications to bear a date a year or more anterior to the actual date of publication, cannot be too strongly condemned.

Bendire's 'Life Histories' is the only book ever published that contains reliable 'down to date' accounts of the food habits and breeding ranges of our birds, with descriptions of their nests and eggs. Special attention has been given to the geographic distribution of the various species, but the ranges are defined by means of political and geographical boundaries without reference to the faunal areas. The work as a whole is indispensable to students of North American birds and will long remain the standard authority on the subjects of which it treats. Both the author and the Smithsonian Institution are to be congratulated on the excellence of the colored plates, which were drawn by John L. Ridgway and reproduced by Ketterlinus.

C. H. M.

Economic Entomology for the Farmer and Fruit Grower, and for Use as a Text-book in Agricultural Schools and Colleges. By JOHN B. SMITH, Sc. D. J. B. Lippincott Company, Philadelphia. 1896.

Dr. Smith's experience as a teacher of economic entomology and as an investigator in this field has eminently fitted him for the authorship of this volume, just received from the press. Entomologists have been very fortunate during the past two years in witnessing the publication first of Comstock's admirable 'Manual for the Study of Insects,' second, Dr. Sharp's excellent consideration of the class 'Insecta' in Volume V. of the Cambridge Natural History and lastly of the volume now before us. Dr. Smith, in writing specifically for the farmer and fruit grower, and for the students in agricultural colleges and schools has

covered a restricted ground and it goes without saying that he has done it well. In fact, it is difficult to see how it could be bettered. The volume is compact, abundantly illustrated, and contains nothing that is unnecessary. At the same time, it may almost be said that it omits nothing that is necessary, when we consider its especial objects. To cover the whole subject in a volume of less than 500 pages, using, at the same time, nearly 500 text figures, necessitates the most careful selection of material, yet so excellently has this been done and so happily has the text been prepared that there is on the one hand no appearance of forced condensation and on the other no semblance of superficiality. The illustrations for the most part have been borrowed, from which it results that there is great lack of uniformity in their excellence, some of them being extremely good and others very poor. The author evidently endorses the idea that a poor illustration, if not absolutely incorrect, is better than none. Nevertheless, it seems to us that such figures as those of *Agallia sanguinolenta*, *Anasa tristis*, *Necrophorus Americanus*, *Silpha Americana*, *Edema albifrons*, *Cacoecia rosaceana*, *Bibio albipennis*, *Ceraphron triticum* and perhaps a dozen others, should have been redrawn for a work of so many other excellencies. The author has made use of photography in some of his illustrations, but it must strike every one in glancing at his plate of bees, for example, that this method of illustration is only of value where great pains have been taken with the prior mounting and preparation of the subject.

These slight blemishes, however, detract little from the value of the book, which will undoubtedly soon be in the hands of every teacher of economic entomology in the country, and, let us hope, of very many of the rapidly growing class of scientific farmers and fruit growers.

L. O. HOWARD.

SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCE; BIOLOGICAL SECTION, OCTOBER 12, 1896.

DR. BASHFORD DEAN and Mr. G. N. Calkins presented preliminary reports upon the results attained at the Columbia University Zoological Laboratory at Port Townsend, Wash-

ington. The expedition spent about six weeks in exploring and collecting, and brought home large collections from exceptionally favorable collecting grounds. Dr. Dean spent some time at Monterey, Cal., and brought home collections of eggs and embryos of *Chimaera* and *Bdellostoma*.

Dr. J. L. Wortman made a preliminary report upon the American Museum Expedition to the Puerco and Wasatch beds. He reported finding a connecting link between the close of the Cretaceous and the beginning of the Tertiary. He gave an interesting account of the massive ruins of the so-called cliff dwellers in the region visited by him. In the Big Horn basin the expedition had remarkable success, as well as in the Wind River basin.

Prof. Osborn stated that with the collections made this summer the American Museum could now announce that their Eocene collection was complete, containing all mammals now known in the Eocene; that their collection from the Wasatch bed was the finest in existence and that from the Wind River basin was complete; the Bridger was represented by all but two or three types, and fine collections have been made in the Uinta.

Mr. W. J. Hornaday made a report of a tour of inspection of foreign zoological gardens, made under the auspices of the New York Zoological Society. He visited fifteen gardens in England and on the Continent, studying the features of excellence in each.

Prof. Bristol gave a brief account of the progress at the Marine Biological Laboratory at Wood's Holl, Mass., during the past summer.

Prof. Osborn offered the following resolution on the death of Prof. G. Brown Goode, after paying a tribute to his memory:

Resolved, That the members of the Biological Section of the New York Academy of Sciences desire to express their deep sense of loss in the death of Prof. G. Brown Goode, of the U. S. National Museum. In common with all naturalists in this country, we have admired his intelligent and highly successful administration of the National Museum, as well as his prompt and ready response to the requests and needs of similar institutions throughout the country.

In face of the arduous and exacting duties of his directorship he has held a leading position among American zoologists and we are indebted to him for a