

Mrs. Bailey's 'Handbook of Birds of the Western United States.'¹

— The popularity of Mrs. Bailey's standard work on the birds of our western states is attested by the fact that a seventh revised edition has just been published by the Riverside Press. Since the appearance of the fourth edition, which was noticed in these columns in January, 1915, additions appear in the list of species to be added, while the list of proposed changes in the A. O. U. Check-List published in 'The Auk' for October, 1916, are printed in so far as they apply to western birds. The 'List of Birds of the Western United States in the Nomenclature of the 1910 Check-List' now appears under the caption 'Revised Ranges of Western Birds,' and contains additional matter. There are also many additional titles in the supplement to the list of 'Books of Reference.'

All of these additions tend to bring the work up to date and give us the very latest information on the birds of the west, a region in which bird students are increasing at a wonderful rate, while its avifauna is steadily becoming of greater interest to eastern bird students owing to the increasing travel in the west during recent years.— W. S.

Dr. Casey A. Wood on the Fundus Oculi of Birds.²— There are many points in the anatomy and physiology of birds upon which the ornithologist needs light but which he finds himself unfitted to investigate because of his lack of technical training in these special lines of research. This is of course perfectly natural as ornithology like any other branch of systematic zoölogy is so broad a subject and so intricately related to various special lines of investigation that no one man could possibly speak authoritatively upon all its aspects. It is fortunate therefore that specialists upon anatomy, physiology, etc., who lay no claim to being ornithologists, are willing from time to time to give us the benefit of their special training, and to elaborate the particular line of research to which they have devoted their lives, in its relationship to ornithology.

In studying the systematic relationship of any group of birds or the behaviour of a certain species, the ornithologist may have occasion to consider the power of hearing or sight, but without the special or technical training possessed by the medical practitioner who has specialized upon these subjects his deductions are likely to be faulty if not absolutely absurd. With the results of the specialists' researches before him however, he can make use of data on these topics without danger of error.

One special work of the kind we have in mind which might be mentioned

¹ Handbook of Birds of the Western United States. Seventh edition, revised. Houghton and Mifflin, Boston and New York, 1917. Price \$3.50 net.

² The Fundus Oculi of Birds Especially as viewed by the Ophthalmoscope. A Study in Comparative Anatomy and Physiology. By Casey Albert Wood. Illustrated by 145 drawings in the text; also by sixty-one colored paintings prepared for this work by Arthur W. Head, F. Z. S. London. Chicago, Lakeside Press. 1917. 4to, pp. 1-181. Price, until March 15, \$12.50. After that date \$15. H. A. Fox, publisher, Chicago Savings Bank Bldg., State and Madison Sts., Chicago, Ill.

in this connection as it does not seem to have ever been noticed in 'The Auk' is Reichert and Brown's monograph¹ on hemoglobin crystals in which the structure of these crystals in the blood of various birds as well as other vertebrates is discussed and its weight as a taxonomic character considered.

Another work of the same class is Dr. Wood's beautiful monograph on the eyes of birds which is now before us. This work deals mainly with the fundus oculi, or the back part of the eye, as viewed through the pupil by means of the ophthalmoscope, and presents in the main observations of the eyes of living birds, although studies have also been made of prepared specimens of birds' eyes and of eyes of birds recently dead as well as microscopic studies of the tissues.

The topics considered in the various chapters may be outlined as follows: A review of the anatomy and physiology of the organs and tissue seen in the fundus oculi; explanation of the ophthalmoscope and its use; study of the fundus of living birds through the ophthalmoscope,—the eyeground, pecten, areas of acute vision, etc.; study of the fundus in prepared specimens; effect of domestication on the fundus oculi of wild birds; the appearance of the fundus in the various orders of birds; the ocular fundus in relation to a classification of birds; relation of reptilian to avian fundi. The work is illustrated by sixty-one beautifully prepared color plates from paintings by Mr. A. W. Head, of the fundi of various species of birds, as well as numerous outline cuts in the text.

Birds according to Dr. Wood possess the most highly developed vision of any of the classes of vertebrates. They exhibit several different foveæ or areas of acute vision, some concerned only with monocular vision, others with binocular. "Birds with double foveæ", says Dr. Wood, "have exceptionally good eyesight with each eye separately; they are by this effective combination, enabled not only to command a view of the highest efficiency over the whole horizon, but also have the power to concentrate it when needed upon particular objects invisible or indistinctly visible to other species not so provided." But he adds "only when the histology, pathology, and experimental physiology of the avian cerebral organs and their connections have been worked out, as they have been in man, shall we know how the paths pursued by 'brain currents' involved in this switching from monocular single vision to binocular sight, run and are controlled."

Dr. Wood shows that there are six different arrangements of the areas of acute vision which seem to correspond quite closely with the habits of the birds, the gallinaceous birds all coming under one head, the owls under another and the terns and swallows under a third.

In the last chapters of the work he describes and figures in detail the structure of the fundus, the location of the areas of acute vision and the shape of the pecten, in a large number of species representing practically

¹ Crystallography of Hemoglobins. Publ. 116. Carnegie Inst., Washington, D. C., 1909.

all the principal types of birds, and indicates the possibilities of using characters drawn from these structures in the systematic arrangement of the class Aves.

Dr. Wood is to be congratulated upon his success in securing such a representative lot of material and such splendid results — a task which must have required much time and patience, as well as upon providing for ornithologists a work of reference on a subject upon which very few have had any accurate knowledge. The value of Dr. Wood's researches to ophthalmology must also be very great and his work furnishes another instance of the praiseworthy tendency of modern medical research to carry investigation beyond the human subject through the lower types of vertebrates.

The publishers have done their part of the work well and both plates and text are beautifully printed. The only regrettable feature is the lack of an index which would have enabled the reader to bring together scattered information dealing with single topics.— W. S.

Mathews' 'The Birds of Australia.'¹—Two thick parts of Mr. Mathews' great work have appeared since the last notice in these columns. While the paper and typography remain fully up to the high standard that the publishers have set, we think that some of the recent plates are not equal to those of the early numbers. The parrots which furnish the subject matter of these last two parts present a gorgeous array of species and the plates are among the most brilliantly colored of any that the work will contain.

The text is very full and as usual is devoted largely to a discussion of questions of nomenclature and taxonomy. We feel sometimes that the author would have made his points clearer if he had condensed his discussion, for in his praiseworthy efforts to present all the evidence to the reader, he has reprinted large sections from his previous publications which sometimes tend to confuse, especially when double sets of quotation marks are used as on page 234, where it looks at first sight as if some of the quoted "subsp. n." appeared here for the first time.

The accounts of the various species are based upon the observations of Mr. Mathews' correspondents in Australia as well as upon published accounts and appear to bring the subject fully up to date. The frequent allusions to former abundance and present day scarcity among these splendid birds will be read with regret by all who peruse Mr. Mathews' pages.

As to matters of nomenclature, those who enjoy delving into puzzling problems will find plenty to occupy their attention in the parts before us. The discussion under the genus *Kakatoë* is particularly interesting. The A. O. U. Committee on Nomenclature some years ago adopted certain

¹The Birds of Australia. By Gregory M. Mathews. Vol. VI. Part II, February 6, 1917. Part III, April 17, 1917.