

would be under a lasting debt of gratitude to Dr. Canby. There is something very touching and very appealing in the author's delineation of this great and noble-hearted man and the pathos of his struggles to fill the emptiness and the loneliness of his own life with studies, assiduously pursued, of birds and insects and flowers and "the sweet mysteries of nature"—all as part of his greater quest: his explorations for God and for spiritual reality. There are many others in the world who likewise have lost and are seeking their own "hound, bay horse and turtle-dove." To all such, the reading of Dr. Canby's book is heartily commended.—J. S. WADE.

Dr. Strong's 'Bibliography of Birds.'—The enormous output of ornithological literature from year to year places an ever-mounting burden upon the ornithologist who would keep abreast of the progress of knowledge in his special field. Of the various aids currently available, the annual summaries now provided by the 'Aves' section of the 'Zoological Record' are by far the best, but the older literature is less thoroughly treated in these, while for that of recent decades the search through the yearly volumes is a slow and laborious undertaking. For this reason, and because a single all-inclusive index to ornithological literature is at present almost out of the question, special bibliographies covering part of the field are of immense practical value. Such a one is that here presented by Dr. Strong. As its subtitle indicates, it has been prepared "with special reference to anatomy, behavior, biochemistry, embryology, pathology, physiology, genetics, ecology, aviculture, economic ornithology, poultry culture, evolution, and related subjects." The two volumes¹ now issued comprise some 900 pages containing (at an average of twenty-five references to a page) at least 22,500 titles, and are the result of many years of painstaking search.

Because of this limited field, purely taxonomic works are for the most part omitted, though many, if of monographic scope, are included. Palaeontology is already well covered by Lambrecht's catalogue of 1921, so that such papers are omitted except from that date to 1926, the year set as the limit in general of literature listed. Parasitology is largely referred to various excellent bibliographies while "the vast field of poultry economics and management," though well represented, is not completely covered. Works on migration have been selected with a view only to their importance and in general the aim has been to include such titles as seemed likely to be of probable use. These explanations account for the omission of many important works that one might otherwise have expected to find listed. Furthermore, since the work was in progress for a number of years, the compiler's viewpoint has varied from time to time and he acknowledges that a strictly consistent policy has not been possible, but "all reasonable efforts have been made to secure and check references to old or obscure publications that might have any possible use to the investigator," a difficult undertaking at best.

In addition to the titles of papers, the full names of authors, their life dates, and references to their biographies and bibliographies where published, are given. The introductory pages explain the methods employed in citation. A key list of abbreviations to periodicals cited, with their full titles covering some fifty-five pages, gives a little idea of the extent of the search made through ornithological literature. In addition is a list covering ten pages of the titles of minor or ephemeral periodicals, poultry journals and others, that have not been included.

¹ Strong, Reuben Myron. 'A Bibliography of Birds with special reference to anatomy . . . and related subjects.' Zool. Ser. Field Mus. Nat. Hist., vol. 25, pt. 1, pp. 1-464; pt. 2, pp. 465-937, December 1939. \$11.00.

From a standpoint of mechanical style, much pains have been taken to facilitate ready reference within a minimum of space. The titles are arranged in double column on the pages, with omission at times of unnecessary parts; Arabic numerals are uniformly employed, and usages already familiar in standard bibliographies are for the most part followed. A helpful feature is the indication by means of initial letters, of the library where some of the less common publications were consulted. The names of authors and the date of each paper are in bold-face type as paragraph headings, but it appears that the former would have stood out better had the numerals been in Roman type instead. To the reviewer's eye also the capitalization of English common nouns, pronouns and verbs in titles makes reading less easy. In a work of this nature, proof-reading is unusually difficult, but has been remarkably well done, and in many respects the bibliography is a model of its kind. The only important slip noticed is listing of J. Cossar Ewart's paper on down plumages under 'Cossar, Ewart J.' It may be mentioned also that (Capt.) C. C. Abbott who wrote on the fauna of the Falkland Islands in 1861 is not the (Dr.) C. C. Abbott, an American, with whose works his is listed. The publication of additional parts to serve as a subject index are implied in the Introduction and will be eagerly awaited, for they will make at once available the material gathered in this vast compilation of titles. With their appearance Dr. Strong will have produced a guide to literature that will prove indispensable to the serious student of birds and will have rendered a lasting service to the science of ornithology.—G. M. ALLEN.

Dr. Grinnell's 'Bibliography of California Ornithology.'—In two previous installments, the late Dr. Joseph Grinnell has published a bibliography of California ornithology carrying the listing of books and papers up to the end of 1923 ('Pacific Coast Avifauna,' no. 5, 1909; no. 16, 1924). The manuscript for the present or third part,¹ taking the bibliography to the end of 1938, was essentially complete at the time of his death in May 1939, and has been finished and put through the press by Dr. Alden H. Miller and Mrs. Grinnell, who have prepared the indexes to authors and bird names included. Several pages include earlier references previously overlooked, but the main portion consists of 200 pages of titles lately added to the voluminous literature on birds of this State. Dr. Grinnell has had a not inconsiderable share in encouraging the preparation and publication of papers on Californian ornithology, so that in more ways than one, the completion of the bibliography is a lasting memorial to his own life work. As was his habit, the listing is done with meticulous care in reproducing titles and references exactly as published, so that, for example, in journals using Roman numerals, the references give these as in the original, or where Arabic numerals are employed as in volume numbers, these are reproduced in the citation. Here one may protest against the practice of using Roman numerals for any except unusual purposes. Long ago, Dr. R. M. Yerkes (*Science*, n. s., 20: 309-310, 1904) showed by a simple trial, in which ten chosen students wrote the numbers 1-100 in Roman and in Arabic numerals, that it takes three and a third times as long to write the Roman numerals, and the chance of error is twenty-one times as great; while it takes three times as long to read them and the chance of error in so doing, is eight times as great as when using Arabic numerals!

¹ Grinnell, Joseph. *Bibliography of California Ornithology / third installment / to end of 1938 / Pacific Coast Avifauna*, no. 26, pp. 1-235, December 8, 1939; Cooper Ornithological Club. Price \$4.00.