

various angles with many tables and charts and excellent photographic reproductions of typical habitats. This investigation is opened with a fitting quotation from Charles Elton: "The study of animal numbers will form in future at least half the subject of ecology."

Another paper<sup>1</sup> deals with the biology of the European Golden-crowned Kinglet and Chickadee as a comparative ecological study, discussing nest structure, with identification of all materials used in construction, and detailed consideration of food, with careful analyses. There is also an investigation of the musculature of the legs of the two species in connection with their use in grasping branches when feeding, etc. Excellent photographs of series of nests illustrate this paper.

Another contribution<sup>2</sup> discusses *Parus cristatus* on Aland, from an ecological standpoint.—W. S.

**Groebbels' 'Der Vogel.'**<sup>3</sup>—This magnificent volume, the first of three dealing with the bird as a biological organism, especially from the viewpoints of structure, function, habit, and adaptation, is one of the really notable bird books of recent years. It not only summarizes and brings together for the first time a stupendous mass of facts, but also achieves a synthesis of these data that is a remarkable tribute to the learning, breadth of vision, and depth of insight of its author. More than anything yet written it shows that the progressive ornithologist of the present and the future will have to be a physiologist and an anatomist as well as a field naturalist. The present volume deals with two main topics,—respiration and nutrition, the other subjects being reserved for the projected subsequent volumes. Some idea of the comprehensive nature of the work may be gained from the following figures, respiration requires 240 pages for its exposition, while nutrition occupies some 600 pages. Not only are all the data clearly and concisely presented with well chosen illustrations but the literature of each is conveniently cited, so that the book immediately becomes an invaluable guide to the literature of the topics it covers. All in all 2863 bibliographic references are given (744 on respiration and 2119 on nutrition).

A book of this sort is not to be read from cover to cover, but is to be referred to as to an encyclopedia. In skimming through it the reviewer was struck with the author's familiarity with the literature of the birds of the world; there is nothing that savours of local limits in its material; American, Japanese, and Australian literature are nearly as exhaustively ransacked as is the European. For the benefit of readers interested in particular

<sup>1</sup> Zur Biologie von *Regulus r. regulus* (L.) und *Parus atricapillus borealis* Selys. Eine Vergleichend-ökologische Untersuchung. von Pontus Palmgren, Acta Zool. Fennica 14, Helsingforsiae 1932. Pp. 1-113.

<sup>2</sup> Die Haubenmeise (*Parus cristatus* L.) auf Aland. von Pontus Palmgren. Acta Soc. pro Fauna et Flora Fennica, 56, No. 15. Helsingfors 1927. Pp. 1-12.

<sup>3</sup> Groebbels, Franz. Der Vogel. Bau, Funktion, Lebenserecheinung, Einpassung. Erster Band: Atmungswelt und Nahrungswelt. Pp. i-xii + 1-918, 2 pls., 234 text figs. Berlin, Gebrüder Borntraeger, 1932. Price 72 Reichsmarks.

species of birds there is a systematic index to the references in the text. Thus, a person working on coots may readily find what is said on different pages concerning the respiration and nutrition of these birds, etc.

This volume fills a great gap in the working equipment of the serious ornithologist and will be of the utmost value for years to come. The author has placed all bird students deeply in his debt. Ornithology has reached a stage where the superficial data of systematics, plumages, ranges, etc., of species are fairly well known. The need is now for an understanding of these facts and for this purpose the trend of investigation must take on a physiological complexion. No amount of quasi-historical data will ever enable us to explain things; we must study the functionings of present bird species rather than speculate about the theoretical workings of "nature," "environment," etc. As a guide and a pioneering stimulus to the new ornithology Groebbel's book is a beacon of the first magnitude.—H. F.

**Heinrich's Expedition to Celebes and Halmahera.**<sup>1</sup>—For nearly two years, 1930–1932, Gerd Heinrich, accompanied by his wife and sister-in-law, was collecting birds in Celebes and Halmahera for Dr. L. C. Sanford of the American Museum of Natural History. The two principal objects of his search were the extremely little known rails, *Aramidopsis plateni* of Celebes and *Habroptila wallacei* of Halmahera, although a number of other species were also particular desiderata. The Celebesian rail had been lost sight of for more than thirty years and no specimens were in existence in the collection at New York. The author calls *Aramidopsis* the "Bird Snorer" and his expedition a search for this elusive creature. He begins by describing Dr. Sanford telling him that of all the birds in Celebes this is the one he must not fail to get, and closes his book by saying, "Doctor Sanford, I've got your bird." The body of the book is taken up with an account of the expedition, illustrated with numerous excellent photographs of the country, the birds, and several of the author and his two companion-assistants in post-Victorian costume. A drawing of *Aramidopsis* and a photograph of a skin of this bird and of *Habroptila* complete the volume.—H. F.

**Siewert on the White and Black Storks of Europe.**<sup>2</sup>—In this attractively printed and superbly illustrated book the author presents elaborately detailed life histories of the two common storks of Europe, the Black Stork (*Ciconia nigra*) and the White Stork (*Ciconia ciconia*). The former species takes up the first 113 pages; the latter, the remaining 95 pages. The plates, made from the author's photographs, are the outstanding feature of the book and form a wonderful collection. Perhaps the most unusual and instructive from the point of view of the serious student

<sup>1</sup> Gerd Heinrich. Der Vogel Schnarch. Rallenfang und Urtwaldforschung in Celebes. Dietrich Reimer, Berlin, 1932. Pp. 1–196, 63 pls. Price 4 marks 80.

<sup>2</sup> Horst Siewert. Störche. Erlebnisse mit dem Schwarzen und Weissen Storch. Dietrich Reimer, Berlin, 1932. Pp. 208, 80 pls. Price 4 marks 80 pfennig.