

pronounce the Latin genitives the same as the owners of the names pronounced them. These slips, however, can easily be corrected in a future edition.—W. S.

**Griscom's 'Distribution of Bird-Life in Guatemala.'**—The late Dr. Jonathan Dwight acquired, mainly through the able field work of A. W. Anthony, a representative collection of Guatemalan birds upon which he planned to report in association with Ludlow Griscom. This plan, however, was never carried out and after Dr. Dwight's death Mr. Griscom undertook the work alone, the collection, now the property of the American Museum of Natural History, having been placed at his disposal. His completed report<sup>1</sup> is now before us.

The author's previous experience in Panama and other countries of Central America, together with a short visit to Guatemala, admirably fitted him for his task and he has produced a most satisfactory volume, following the model established by Dr. Frank M. Chapman in his reports on the birds of Colombia and Ecuador.

As we turn the pages we find abundant speculation on the origin of Central American bird life; on the formation and extent of the life zones of Guatemala with lists of characteristic species; on the results of migratory movements; and even on the question of the origin of species—which make interesting reading and furnish much food for thought. Following this is an annotated list of the 736 species and subspecies so far recorded from Guatemala with field observations on those represented in the Dwight collection. The synonymy under each form includes references to all publications dealing with Guatemala with lists of localities, while the ranges of both species and subspecies are given. A number of illustrations depict characteristic scenery of the several life-zones and add much to the value of the report.

Mr. Griscom emphasizes the richness of the Guatemalan avifauna—for the country is not larger than the state of New York and only about one sixth the area of Ecuador. He attributes this abundance of bird life to the antiquity of the country geologically, its position between two great zoological regions, and the survival of certain pre-glacial elements; as well as the arrival of northern forms during the pleistocene and of tropical elements during post glacial times. He points out the fact that the mountains are of great geological antiquity, unlike the recent upheaval of the Andes, and emphasizes the indirect effect of the glacial epoch in affecting enormous migrations and in lowering temperatures so that upper life zones must have been brought down to sea level with probable extermination of many of the older types. Recent geological studies, he shows, have demonstrated that no elevation of more than 1000 ft. ever existed at Panama so that the so-called "Panama Fault" brought about through submersion of part of a

<sup>1</sup> The Distribution of | Bird-Life in Guatemala | A Contribution to a Study of the Origin | of Central American Bird-Life | By Ludlow Griscom | Bull. Amer. Mus. Nat. Hist. Vol. LXIV, May 7, 1932. Pp. i-ix + 1-439. 11 figures and 4 maps.

continuous mountain chain and causing a break in the range of various subtropical species, as advocated by Chapman, would seem to be impossible. The origin of these similar or identical forms of bird life in the subtropical zones of South and Central America he explains through the existence of wide ranging tropical rain forests and the effect of glaciation upon the range of species of both the tropical and subtropical faunas.

Mr. Griscom's report presents many problems upon which zoögeographers may work and has paved the way for a better knowledge of the avifauna of Central America of which, curiously enough, we seem to know less than that of the more remote South American countries.

While others may not agree with all of his deductions, we congratulate him upon an excellent piece of faunistic work.—W. S.

**McAtee on Protective Adaptations.**—Mr. McAtee has already published his reasons for doubting the efficiency of warning and cryptic coloration in protecting animals from their enemies (*Proc. Acad. Nat. Sciences Phila.*, June 12, 1912, pp. 281-364), and in the present paper<sup>1</sup> he carries the matter further. He points out that the advocates of this theory now rest their case almost wholly on the reaction of birds to protective adaptations in insects admitting that in the case of predators belonging to lower groups of animals they have no appreciable effect.

Therefore he considers the food of Nearctic birds; demonstrating in group after group that birds are influenced in the selection of their food by availability rather than by the presence or absence of any protective or mimicing device. The author's investigations on the food habits of birds, as a member of the U. S. Biological Survey, are used as a basis for his discussion and in each family of insects or other animals the number of identifications in stomach analysis are given with the percentage of each to the entire number of identifications in the order in which the family is included, as well as the percentage of species in this family as compared to the entire number of species in the order. The identifications of lepidoptera in bird food total about 18,000 and of coleoptera 85,000 so that one can appreciate the vast amount of data upon which our author's conclusions are based. As he says: "the most outstanding feature of the records of the animal food of nearctic birds undoubtedly is the marvellous distribution of them through the phyla, orders, and subordinate systematic groups. Within size limits, animals of practically every kind accessible to birds are preyed upon" and further: "the combined attack of birds plus all other predators still more closely approaches complete indiscriminancy. In other words there is utilization of animals of practically every kind for food approximately in proportion to their numbers. This means that predation takes place much the same as if there were no such thing as protective adaptations. And

<sup>1</sup> Effectiveness in Nature of the So-called Protective Adaptations in the Animal Kingdom, Chiefly as Illustrated by the Food Habits of Nearctic Birds. By W. L. McAtee, Bureau of Biological Survey, U. S. Department of Agriculture. (Publication 3125) Smithsonian Miscellaneous Collections. Vol. 85, No. 7. March 15, 1932. Pp. 1-201, with a subsequently published erratum for p. 56.