hands of the trained observer, but disastrous in those of the "enthusiastic amateur." All these and other factors are mentioned and their influence upon bird life and bird study discussed. A half-tone plate of the Ipswich River in Wenham Swamp forms the frontispiece to the volume and the map of the county which appeared in the original list is here reproduced for handy reference.

In the whole plan of the work and its execution the author has been peculiarly happy and both he and the Nuttall Club deserve the congratulations of ornithologists upon the appearance of the volume.—W. S.

Bannerman's 'Birds of the Canary Islands.'[1]—In 'The Ibis' for 1919 and 1920 Mr. David A. Bannerman has been publishing in instalments a comprehensive paper on the birds of the Canaries. The seven parts have now been issued as a separate comprising 300 pages whcih easily takes its place as the authoritative work on the subject.

It is based primarily upon the author's field work in the islands, he having spent a portion of every year from 1908 to 1913 in the archipelago but other material has been examined and all of the literature bearing upon the Canary Islands carefully studied. The list includes transient species as well as residents and is prepared on a definite plan consistently carried out, which materially aids anyone who may make use of it. The nomenclature is carefully worked out with a reference to the original description of each species, and the type locality. Then follow a concise statement of the nature of its occurrence in the Canary Islands; a full discussion of specimens and relationship, with pertinent quotations from various works on the birds of the Islands and from the author's personal records, all of which go to make up a very full account of the habits and distribution of each species, and finally the range is given, which in the case of resident species is divided into two paragraphs, one giving the range in the islands, and the other the range beyond the archipelago, if the species is not endemic.

In the introductory pages there is a bibliography and an itinerary of those visitors who have done the most important ornithological work on the islands. There is likewise a statement by the author of his methods, including an apology for rejecting the "nomina conservanda" of the B. O. U. 'List.' In our opinion however he is to be heartily congratulated upon his stand in this matter. Uniformity and stability in nomenclature can only be obtained by strict adherence to the rules of the International Code no matter where they lead us.

The summary and conclusions which constitute the last part of Mr. Bannerman's paper give the author's views on many of the general prob-

[1] List of the Birds of the Canary Islands with Detailed Reference to the Migratory Species and the Accidental Visitors. Parts I to VII. By David A. Bannerman. From 'The Ibis', 1919, pp. 84–131; 291–321; 457–495; 708–764; 1920, 97–132; 323–360; 519–569.

lems involved in a study of the bird life of the group. We here learn that of the 217 species recorded from the islands, 75 are regular breeders, while 142 are transients or of casual occurrence. They are further grouped (with some duplication) as Residents 61; Partial Residents (i. e., the resident population augmented at certain seasons by migrants from elsewhere) 5; Summer Visitors (nesting regularly but not wintering) 9; Winter Visitors 15; Birds of Passage 32; Annual Visitors (time of occurrence irregular) 5; Occasional Visitors 30; Rare Visitors 72. There are also given in an appendix 25 species recorded from the islands on evidence insufficient to include them in the main list, and 54 which have been recorded as Canarian birds from such unreliable sources that they may be rejected.

The author's discussion of the origin and relationship of the Canarian fauna and the problem of the origin of island faunas in general is full of food for thought. He endorses the theory that the Canary Islands were never part of the African mainland, their volcanic origin, deep water separation, and absence of terrestrial mammals and reptiles being ample evidence in the negative. The resident birds have therefore been derived from migrants which have been stranded there and remained to breed, and which have eventually become modified by the local environment. In this connection we find that 41 of the 61 resident forms are of northern European affinities and all have closely related races in the British Isles.

The differentiation of races within the Canary group is particularly interesting and as a rule we find one race of a species inhabiting the western group of islands and a different one in the far more arid eastern islands. Here the peculiar desert environment has been active, as it has in producing the pale races of birds in the desert areas of western North America. The distinct races of a few species, which we find inhabiting different islands in the western group, have been attributed by the author to successive invasions of the migrating mainland birds at remote periods, but it seems to us that this supposition is hardly necessary, since birds introduced into two islands simultaneously may select a different sort of food on each island even though the range of choice may be exactly the same, and make other selections which in course of time would be reflected in their color or size. Then too environments which may appear to us precisely similar may have elements of difference that will have a marked effect upon the birds that are brought under their influence. The most interesting of the endemic birds of the Canaries are the two forms of the blue Chaffinch (*Fringilla teydea*) which are found in the pine belts of the high mountains of Tenerife and Gran Canaria, the low grounds of which islands are inhabited by a form of *Fringilla coelebs*. These birds have no close relative anywhere and are probably the oldest species of the endemic avifauna. Mr. Bannerman suggests that an ancestral or allied species might be logically looked for somewhere in the Atlas mountains of northern Africa. It is inconceivable that such strikingly different birds could

have been differentiated on the islands from the *F. coelebs* stock and the only other alternative is that the mainland stock which originally contributed their ancestors to the islands must have become extinct or is now represented by a few lingering individuals in some remote retreat not yet discovered. Space forbids further discussion of the interesting problems touched upon by the author and his paper should be read in its entirity by those who are interested in geographical distribution.

A map and two colored plates, one of the Chaffinches and one of the Titmice, illustrate the paper which is one of the most carefully prepared and philosophic that has recently appeared. The author states in his closing paragraph that "nine-tenths of the value of a collection of birds is to be found in the deductions which we can make from it," and he is to be heartily congratulated upon the excellent way in which he has demonstrated the value of his own collection according to this maxim.—W. S.

Mathews' 'The Bird of Australia.'[1]—The last parts of Mr. Mathews' great work continue the treatment of the Muscicapidae, covering the Australian "Robins," the "Tree Tits," "Fly-eaters," etc. In his systematic consideration of these birds the author follows his usual practice of excessive generic subdivision. In the treatment of subspecies he has improved very decidedly upon the method followed in some of the earlier parts by giving a concise statement of exactly how many races he recognizes under each species. We notice the following new forms described in the present parts, i. e., *Smicrornis brevirostris mallee* (p. 132), Malee. Victoria, and *Wilsonavis richmondi gouldiana* (p. 143), Gosford, N. S. Wales in Part 2; and *Ethelorms cairnensis robini* (p. 151) Cape York; *E. laevigaster intermissus* (p. 160) Melville Isl., *E. l. perconfusus* (p. 161) So. N. W. Australia, and *E. cantator weatherelli* (p. 164) in Part 3.

Leavitt's 'Bird Study in Elementary Schools.'—Bulletin No. 4 of the National Association of Audubon Societies[2] consists of a concise summary of such information as the teacher who desires to introduce bird study in some form into the school course, will require. The bulletin is by Dr. Robert G. Leavitt of the New Jersey State Normal School and seems admirably adapted to its purpose. The economic principle of bird protection is outlined as well as the interest, pleasure and moral effect of the study. Practical instructions to the teacher follow, methods of forming Audubon Clubs, school museums, how to attract birds and how and

[1] The Birds of Australia by Gregory M. Mathews. Vol. VIII, Part 2. June 17, 1920, pp. 81–144. Part 3, August 18, 1920, pp. 145–184. London, Witherby & Co., 326 High Holborn.

[2] Bird Study in Elementary Schools. Bulletin No. 4. By Robert G Leavitt, Ph.D., Head of the Department of Biology, New Jersey State Normal School at Trenton. National Association of Audubon Societies, 1974 Broadway, New York. Price, twenty-five cents. 192 pp. 44.