

meagre evidence that the author has printed them in italics in the nominal list, in order to bring to attention the need of additional information.

The main text of Mr. Wheeler's report deals only with the species which breed in the State, numbering 150. Under the family headings general information about the several groups is given and the striking features in the coloration of the species are contrasted, then under each species there is a brief summary of its range and a few words on its habits and food. A small map of the State with the distribution of the form designated appears in connection with the majority of the species but some of these are subject to revision, representing only our present knowledge of the matter. The report is fully illustrated with photographs of nests, nesting sites, etc., taken by the author, Mr. J. G. Boyce and others, and by reproductions of Mr. Brashier's bird drawings which appeared originally in Pearson and Brimley's 'Birds of North Carolina.' There are also brief accounts of geographic distribution, economic value of birds, bird houses, bird censuses, game laws and other things that the bird student should know, together with a bibliography by A. H. Howell and many useful references. We congratulate Mr. Wheeler and the State authorities of Arkansas on producing a work which will advance the interests both of ornithology and bird conservation in the State.—W. S.

Sumner on the Stability of Subspecific Characters.—This important paper¹ is the result of years of careful and painstaking research. The investigation was prompted by the conflicting opinions of biologists as to whether the characters—largely color characters—upon which subspecies of birds and mammals have been separated are really inherited characters, like those supposed to separate species, or merely the result of environmental influences acting during the life of the individual. In other words would a pale race like the desert Song Sparrow, transplanted into the humid environment of one of the dark north-west coast forms, continue to breed true, or would it respond to the conditions of its new home and become identical with the local form?

Prof. Sumner chose for his experiments deer mice of the species *Peromyscus maniculatus* which breed more rapidly and are much more easily reared than birds. Without going into details, which the reader must study for himself, Prof. Sumner's results after eight years breeding (seven to twelve generations) show that the transplanted animals have made no approach whatever to the coloration or other characters of the native race of the region to which they were removed.

Such slight change as has taken place being curiously enough in the other direction, due no doubt to conditions of confinement which it is difficult to determine or to eliminate even with the greatest care in making living conditions as nearly natural as possible.

¹ The Stability of Subspecific Characters under Changed Conditions of Environment. By Dr. F. B. Sumner, Scripps Institute for Biological Research. American Naturalist, Vol. LVIII, November-December, 1924. pp. 481-505.

Experiments as to the effect of marked changes in climatic conditions upon deer mice were also undertaken and animals of a rather dark race were subjected to hot arid conditions artificially induced. Young, born under these conditions, did show a paler coloration in the first or juvenal pelage as compared with control individuals kept under normal climatic conditions, but this paleness was lost in the next molt and the individuals actually became darker with each molt as they advanced in age. This was doubtless due to factors incident to the almost pathologic conditions necessary in the experiment, some individuals actually dying of the heat.

The importance of this test lies in the fact that the results are directly opposite to those obtained in Beebe's meagre experiments with birds which have been so widely quoted by the writers who argue for the instability of subspecific characters. The reviewer has always maintained that other factors might be involved in the change effected by Beebe and that the experiment should be repeated very carefully before too much reliance were placed upon it; and now we have Prof. Sumner's similar experiment with diametrically opposite result.

Too much praise cannot be given to the careful work of Prof. Sumner which furnishes another excellent example of the danger of jumping to conclusions.

In summing up his results he says that "regarding the more difficult question whether climatic influence may not have a cumulative effect in the course of sufficiently great periods of time, our views must at present be decided by considerations of a taxonomic and distributional nature rather than by any available experimental evidence."—W. S.

Allen's 'Birds and Bird Lore.'—Under the title of 'Birds and Bird Lore' Dr. Arthur A. Allen has had bound together the chapters on birds which he has contributed to 'The Book of Popular Science' published by the Grolier Society of New York. The headings of the several chapters give one a good idea of their contents, viz.: 'Birds as Man's Helpers'; 'Our Common Birds,' covering eight chapters and running from the Thrushes to the water birds; and 'Bird Migration and Home Life.'

Dr. Allen's ability as a popular writer and a teacher is well known and in the work before us he has presented an admirable review of the ornithology of the eastern United States with casual reference to birds of other parts of the world.

Dr. Allen is equally well known as a photographer of birds and the remarkable series of pictures, almost all of his taking, which illustrate these pages, is quite as noteworthy as the text. Unfortunately the crowding on some of the full page plates detracts from their beauty and makes us wish for full space and larger reproductions for all of them.

¹ *Birds and Bird Lore.* By Arthur A. Allen, Associate Editor of 'Bird-Lore' Illustrated. From *The Book of Popular Science.* The Grolier Society. New York. pp. 2746-59, 2873-83, 3004-12, 3126-36, 3200-8, 3342-53, 3467-81, 3582-91, 3730-50, 3858-73, (1924).