

attention to a hybrid Mallard \times Green-winged Teal in the collection of the Academy of Natural Sciences of Philadelphia (see Auk, 1903 p. 209) which cross is not mentioned in Mr. Ball's list. Three plates illustrate his paper.

Mr. Ball calls attention to the lack of detailed description in the records of many hybrids and has done a good piece of work in presenting such a careful account of the specimens which he has studied.—W. S.

Kendeigh on 'The Rôle of Environment in the Life of Birds.'—This voluminous paper¹ is too full of detailed information for adequate review in the space at our disposal and deserves careful reading by all interested in the problems which it discusses. The author has considered especially Temperature, Relative Humidity, Solar Radiation, Food, Precipitation and Wind, and in less degree Biotic Competition and Physiographic Features—all or most of them with relation to the distribution, migration and abundance of birds. The Physiology of the Temperature of birds and their resistance to low and high air temperatures is discussed including the effect of age, sex, relative humidity, light, wind, natural conditions and season on survival time—these based on experiments on English Sparrows. There is also a special discussion of the distribution, migration and abundance of the Eastern House Wren, which is the species most referred to throughout the paper, and a final Discussion and Summary reviewing the physiological processes in birds and their behavior responses; and the factors controlling distribution, migration, abundance, and the rôle of animals in ecological communities.

Quoting just a few of the author's conclusions: he considers that "the northward distribution of the House Wren during the breeding season appears to be limited primarily by low night temperatures, for which the shortening of the daily periods of darkness does not entirely compensate."

That its "wintering area is limited on the north by the low night temperatures combined with long daily periods of darkness, short daylight periods, low intensity of solar radiation, snow and lack of available food."

With regard to migration he concludes that "the northward spring migration is regulated and timed in an important manner by increasing night temperatures, decreasing daily periods of darkness, increasing daily periods of light, and increasing daily maximum temperatures. In the autumn, southward migration is regulated by decreasing night temperatures, increasing daily periods of darkness, decreasing daily periods of light, and, for some species, decreasing food supply." He adds "there is no reason to believe that the stimulus for the migration of passerine birds is due to the effect exerted by any one external or internal factor." All of this harks back in some degree to the earlier theories of migration.

We commend Mr. Kendeigh's paper to the careful study of our readers, he has certainly presented much food for thought.—W. S.

¹ The Rôle of Environment in the Life of Birds. By S. Charles Kendeigh. Ecological Monographs IV, pp. 299-417. July, 1934.