

better to have given emphasis to the common species if the descriptions are intended for the beginner. How can the beginner be expected to pick out the species he finds from more than three hundred descriptions averaging less than five lines in length? On the other hand, if the work is intended for persons already familiar with birds, all these sketchy descriptions may as well be replaced with material of more interest and value.

Judged on a basis of its usefulness as a record of occurrence of birds in the area treated the bulletin shows some evidence of a too ready reliance on subspecific records furnished by other workers. There is little indication that doubtful races or species have been included because identifications have been verified. Some species are included, apparently, without reason. For example, the magpie is listed with the comment that it "may extend its range into this state in the near future." The fish crow has the usual paragraphs of description and range, with record for Arkansas, but with a footnote explaining that the latter is "apparently an error." Scarcely a single species has been given adequate treatment as to its manner of occurrence in the state. This need then remains to be filled by some future worker who is capable of compiling the records of past workers and who is willing to carry on a few seasons of field work.

An outline map of the state would have added much to the usefulness of this bulletin.—JEAN M. LINSDALE.

THE BIRDS OF OKLAHOMA, by MARGARET MORSE NICE. Publ. Univ. Okla., Biol. Survey, vol. 3, no. 1, Norman, April 15, 1931, pp. 1-224, 12 figs.

To present a history of Oklahoma birds from 1820 to the present time is the aim of this number in the Biological Survey Publications of the University of Oklahoma. This aim has been carried out so well that not only does all the material included contribute to this history, but every possible source of information seems to have been drawn upon by the writer. It is hard to think of a bulletin on Oklahoma birds that would be more useful to the person who may want to know the status of any bird species in that state.

First, there is a sketch of the bird life as the white man found it and as it has been modified because of the settlement of the State. The physical features of

the State are sketched briefly. Much of the interest of bird study in the central states is due to the fact that in them the eastern and western floras meet, which circumstance affects so importantly the distribution of bird species. The breeding birds of the area are analyzed both as to geographic relations and numbers per unit of area. The wealth of winter birds is analyzed on the basis of Christmas censuses. There is a short section on migration in Oklahoma with mention of the rather surprising circumstance that large numbers of species are not to be seen during the migrations.

In the chapter on protection of birds it is pointed out that "birds do not belong merely to one class of people who take it upon themselves to kill everything that has aroused their prejudices. All citizens have an equal share in them, those who rejoice in the splendor of the living bird fully as much as those who wish to destroy."

A list of all persons who have done field work on birds in Oklahoma, with their itineraries, and a condensed statement of activity for each, shows the sources that have been drawn upon for the accounts of species.

Present and future students of birds in Oklahoma are fortunate that Mrs. Nice has been able to publish a revised edition, of the *Birds of Oklahoma*, which includes the results of all her work in that State.—JEAN M. LINSDALE.

MUNRO AND CLEMENS ON SPAWN-EATING BIRDS.—In a report* on investigations conducted at Departure Bay, British Columbia, 1928 to 1930 inclusive, the authors give notes on the occurrence and abundance, and in most cases on the food, of about twenty-five species of waterfowl. In regard to wild ducks each individual of which stood accused of destroying millions of herring eggs per day, it is shown that the maximum consumption by the largest duck probably is not as much as 20,000 eggs per day. If every duck on the Bay destroyed herring eggs at that rate, the total consumption of herring would represent a valuation (the authors compute, assuming one adult herring to survive from each 10,000 eggs) of from \$600 to \$1120. This is far less than the ducks

*Munro, J. A., and W. A. Clemens, *Waterfowl in relation to the spawning of herring in British Columbia*, Biol. Board Canada, 46 pp., 7 figs., 1931.