

drop the worker after crushing it in their bill to get the honey.

In the examination of 3,398 stomachs of flycatchers the animal food was found to average 94.99 per cent and the vegetable 5.1 per cent. The presence of a considerable percentage of parasitic Hymenoptera in the stomachs of flycatchers appears to be the one thing that makes their service questionable. However, "weighing as impartially as possible the injuries done and the benefits conferred by them, their good qualities outweigh the bad."

The tables giving a summary of the results of the stomach examinations furnish an interesting comparison of the food of the different species. The long lists of identified insects show careful and painstaking work. Although these lists may be overlooked by most of the farmers reading the bulletin, they give the publication a more permanent value than it would otherwise have.—H. C. BRYANT.

A HISTORY OF THE GAME BIRDS, WILD-FOWL AND SHORE BIRDS OF MASSACHUSETTS AND ADJACENT STATES, by EDWARD HOWE FORBUSH, State Ornithologist of Massachusetts. (Issued by the Massachusetts State Board of Agriculture.) 1912; 8 vo, pp. xvi+622, 36 pls., 26 figs.

Of great immediate, practical use in the swelling campaign against the extermination of American game animals, the book under notice deserves warmest commendation. Its purpose is admirably realized in the scientifically accurate tenor of treatment throughout, combined with the logical and convincing sequence of the subjects as presented.

Here we find just the information needed in regard to the history and in some cases direful fate of Atlantic Coast game birds, and from which lessons can be drawn as to how not to treat our Pacific Coast birds. It is too bad that it is impracticable to secure wide distribution in the west, of Mr. Forbush's work, because of the limited edition and local demands for it. If sportsmen and legislators could but acquire some of the knowledge therein made so clear, a long step would have been taken towards securing proper treatment of our game before it is too late.

It is not possible to adequately describe the book in its numerous useful details, in our limited space; but some of our readers may be interested to know that, as long as they last, copies can be purchased at bare cost price plus postage (\$1.40 in all) by addressing the Secretary of the State Board of Agriculture, 136 State House, Boston, Mass.—J. GRINNELL.

THE PHYLOGENETIC VALUE OF COLOR CHARACTERS IN BIRDS. BY WITMER STONE, A. M.

(Journ. Acad. Nat. Sci. Phila., 2nd ser., xv, Dec. 4, 1912, pp. 313-319, pl. 27).

This brief paper is a *multum in parvo* of first-grade philosophic ornithology. We have of late heard a great deal about the meaning of coloration. Mr. Stone recalls the reader's attention from the various concealing and direct-action-of-environment theories, and invites him to consider some facts more easily explained upon grounds of directive or phylogenetic significance.

Whole groups—genera and even families—of birds possess certain color patterns which occur but slightly modified throughout their members. Other features come and go, but a certain color pattern may persist, to no apparent adaptive purpose. Such a feature surely does show community of descent as much as, and in certain cases, more than does position of nostril or proportions of mandibles.

Attention is called to the over-emphasis often given such "structural" characters as compared with color features, this undue emphasis to be observed in parts of our modern schemes of classification. In some cases it is shown that color features prove more dependable taxonomically than the structural characters currently recognized. But the author refrains in this paper from any specific attempt at revising classification.

Mr. Stone shows convincingly that an extremely promising line of investigation awaits the student who will make a special study of the colors and color-patterns of birds, with problems of genetic relationship in view. The reviewer is not, however, quite ready to agree with Mr. Stone that there is more need of search in the direction of resemblances than in that of minute differences. *Both* are of great value, and equally important, though not necessarily of the same sort of meaning. The well-balanced student will neglect neither.—J. GRINNELL.

THE EXPERIMENTAL METHOD OF TESTING THE EFFICIENCY OF WARNING AND CRYPTIC COLORATION IN PROTECTING ANIMALS FROM THEIR ENEMIES. By W. L. McATEE (Proc. Acad. Nat. Sci. Phila., LXIV, September 6, 1912, pp. 281-364).

This work, reviewing critically the literature of such experimentation, is indispensable to students of protective coloration. The main point emphasized, backed up by abundant evidence, is the danger of drawing conclusions from experiments upon animals in captivity, unless the results are carefully compared with what is known about the habits of the same animals under natural conditions. The evidence seems conclusive that animals in captivity do not re-act to the stimu-