

Coming from so distinguished an entomologist, these conclusions carry much weight, and they are well worth the attention of certain economic entomologists of the United States, who have expressed very different views of the relative importance of birds and parasitic insects.— W. L. M.

Bryant, on Relation of Birds to an Insect Outbreak in California.¹—

This valuable economic paper deals with an outbreak of a butterfly, *Eugonia californica*, which swarmed over portions of California and the larvæ of which defoliated the Snow-brush and Buck-brush, two species of *Ceanothus*. Mr. Bryant's investigations show that five species of birds fed upon the butterflies. Brewer's Blackbird (*Euphagus cyanocephalus*) being the most important and consuming 95 per cent of all the butterflies eaten by birds. Butterflies seem to be rarely eaten by birds under normal conditions and the change of food in this instance is interesting as illustrating how valuable a bird not usually of economic importance may become under extraordinary conditions. The great benefit entailed in the destruction of female butterflies before or during ovipositing as compared with the destruction of larvæ is also pointed out by the author and he estimates that of one Brewer's Blackbird destroyed 100,000 butterflies in a month and his observations seem to support him. If one third of these were females, the destruction of eggs would amount to 336,000! — W. S.

Economic Ornithology in Recent Entomological Publications.—

The following reviews relate exclusively to publications of the U. S. Bureau of Entomology, hence the name of that office is not repeated in the reference. The first article,² in point of date of issue, which we desire to note deals with the bill-bug (*Sphenophorus callosus*). This species, which does great damage to corn in many states, is commonly known in the Carolinas as the "curlew-bug." This appellation refers to a point in common between the bird and the beetle — a long curved beak. One bird enemy of the curlew-bug, the Nighthawk, is mentioned on the authority of the Biological Survey. The finding of not only this species, but of several other *Sphenophorus*, in stomachs of Nighthawks, has a bearing on a debated point, *i. e.*, whether these beetles fly. There is no doubt that most if not all of those eaten by the Nighthawk are taken on the wing.

The false wireworms of the genus *Eleodes*, family Tenebrionidæ, are said³ to do more damage to newly planted grain in the northwestern states than any insect pests other than the true wireworms of the family Elateridæ. The Sage Hen, the Burrowing Owl, and Butcherbird are said to feed upon them and Brewer's Blackbirds often follow the plow to pick up the larvæ and pupæ. Western Bluebirds were seen to feed on larvæ which had

¹ The Relation of Birds to an Insect Outbreak in Northern California during the Spring and Summer of 1911. By Harold C. Bryant. The Condor, Vol. XIII, Nov., 1911, pp. 195-208.

² Webster, F. M. The so-called "curlew-bug." Bull. 95, Pt. IV. April 10, 1912.

³ Hyslop, J. A. Bull. 95, Pt. V, April 22, 1912.