

by C. M. Weed and W. F. Fiske, two competent entomologists. The parent sparrows visited the nest about 200 times during the day they were observed. The observers were able to decide in 38 cases that caterpillars were brought, but a definite identification of a food item to the family was made in only one instance, and tentative reference to a species or family in only 10 cases. In the Brown Thrasher paper (No. 1 above), on the other hand, only 92 identifications out of 1260 are less definite than to the order. In other words Weed and Fiske were able to identify to the order or better only 49 insects brought in 200 visits (proportion 1 to 4), while the author of Paper No. 1 so identifies 1168 invertebrates brought during 775 trips (proportion 1.5 to 1).

Professor F. E. L. Beal has watched the feeding of the nestlings of many species of birds and he has rarely been able to distinguish the character of the food given; the reviewer in his more limited field has had the same experience. A great many birds feed by regurgitation and the food is at no time visible. The reviewer has pointed out¹ a good way of getting at the general character of the food of nestlings, that is, by examination of the excrement (it may be collected in small cloth bags tied on the birds). What is needed above all, however, is more careful, more scientific work, and especially more preparation for the work, and finally publication only of absolute certainties.—W. L. M.

Economic Ornithology in Recent Entomological Publications.—

Three of this year's publications of the United States Bureau of Entomology, contain notes on the bird enemies of insect pests. The sugar-beet wireworm (*Limonius californicus*) does great damage to sugar beets and lima beans on the Pacific coast. It is one of the click beetles, a group preyed upon by most insectivorous birds. A list of birds, common in the infested fields, and which are likely to feed on the beetles is given, in a publication on this insect² in addition to direct proof that the California shrike is an important enemy. About 70 to 80 per cent of the excrement of this species was composed of fragments of *Limonius californicus*.

Another wireworm, erroneously so called, in this instance however, is said to damage the tobacco crop in Virginia at least \$800,000 annually. This "wireworm" is the larva of a moth (*Crambus caliginosellus*) of the family Crambidae. It is stated³ that:

"Birds are a factor in keeping the tobacco Crambus in check. Two species, the quail (*Colinus virginianus*) and the kingbird (*Tyrannus tyrannus*) were observed by the writer to capture the moths, and others are known to feed freely on moths of this genus. F. M. Webster states that

¹ Bull. 32, U. S. Biological Survey, 1908, pp. 23-24.

² Graf, J. E. A preliminary report on the sugar-beet wireworm. Bull. 123, U. S. Bur. Ent., Feb. 1914, pp. 46-47.

³ Runner, G. A. The So-called Tobacco Wireworm in Virginia. Bull. 78, U. S. Dept. of Agriculture, May, 1914, pp. 13-14.

the wood pewee (*Myiochanes virens*) was observed to destroy large numbers of *Crambus laqueatellus* at Haw Patch, Ind., and C. H. Fernald observed barn swallows feeding on different species of *Crambus* in Maine. Meadow-larks frequent weedy fields which harbor the larvæ of *Crambus*, and as these birds are known to feed on various species of cutworms, they doubtless feed also on the larvæ of the tobacco *Crambus*."

The third insect pest, to whose bird enemies the Bureau of Entomology draws our attention is the rose aphid (*Macrosiphum rosæ*). Mr. H. M. Russell, the author of a bulletin on this plant louse states¹ that he has observed the California House Finch and the White-crowned Sparrow feeding on the aphides. The latter bird almost cleared a rose bush of the lice in ten minutes, during which time many hundreds must have been eaten.

A Canadian publication may be briefly mentioned here for the sake of correcting an erroneous statement relating to birds as enemies of the chinch bug. The author, Mr. H. F. Hudson, states:² "Unlike most of our other insect pests, which, for a time, seem to gain the mastery of a tract of country, the chinch bug enjoys almost practical immunity from attack by birds."

On the contrary the chinch bug has no such immunity; we cannot expect birds to specialize on a single species, but there is no doubt that chinch bugs are taken in their proper proportion to the insect world at large. The following 17 species of birds are known to prey upon the chinch bug: Bobwhite, Prairie Chicken, Redwinged Blackbird, Catbird, Mocking-bird, Brown Thrasher, Meadowlark, House Wren, Tree Swallow, Horned Lark, Arkansas Kingbird, Traill's Flycatcher, Seaside Sparrow, Savannah Sparrow, Song Sparrow, Tree Sparrow, and Barn Swallow.—W. L. M.

Hewitt on 'The protection of birds in and around Ottawa.'³—It is a significant proof of the value of bird protection for the Entomologist of a great country like the Dominion of Canada to lend active assistance to the forwarding of the plan described in the present paper. At the suggestion of the author, and with the coöperation of the Ottawa Field Naturalist's Club, two of the larger public reservations near Ottawa have been made bird sanctuaries. They will be abundantly supplied with nest boxes and it is hoped that a great increase in bird population will result.

Dr. Hewitt has had previous experience along this line, having successfully used nest boxes to attract birds to an area where their aid was needed in combating the larch sawfly. This was near Manchester, England. "In the first year (1908), 60 boxes were distributed and 31 per cent were occupied. The number of boxes was increased yearly until in 1911 there

¹ Bull. 90, U. S. Dept. of Agriculture, May, 1914, p. 10.

² Ent. Circular No. 3, Div. of Ent., Canada Dept. of Agriculture, 1914, p. 12.

³ Hewitt, C. G. The Ottawa Naturalist, Vol. XXVII, No. 12, March, 1914, pp. 161-171, Pls. 21-23.