

Field Studies of the Food of Nestling Birds.—Four papers¹ by students at the Iowa Lakeside Laboratory, give remarkably detailed accounts of the food of the nestlings of three species of birds.

These papers are selected for discussion not because they are vastly different from other recent articles on their subject, nor because they lack in general merit. The flaw the reviewer would point out is perhaps due to over-enthusiasm on the part of the observers, or perhaps to failure to realize the difficulty of making exact identifications of insects. Nevertheless it is a fault, and a grievous one to publish identifications that could not possibly have been made under the conditions.

As an example the following is quoted from paper No. 3, on the Catbird: "Among the 55 beetles fed were recognized may-beetles, click beetles, tiger beetles, water beetles, and snout beetles of various species. The flies were mostly fish flies, though house and stable flies were noted." (pp. 179-180.) A mosquito also is recorded. Now the positive identification of a mosquito, and the distinguishing of the house and stable flies, two obscurely marked species of the same family require far closer and more definite observation than could possibly be made on specimens in process of being fed to nestling birds. Sixty-five identifications of mosquitos are recorded in paper No. 2 (p. 55). It would be of interest to know how it was decided that these insects were mosquitos rather than midges (*Chironomidae*), fungus flies (*Mycetophilidae*) or even small crane flies (*Tipulidae*), all of which have a strong general similarity.

These are only instances; the food notes throughout are more definite than could reasonably be expected. When a writer says an adult thrasher on one visit to the nest fed 4 May-flies, on another 5, or 7, or 6, we wonder how they could be so accurately counted. The number of ants is sometimes given; it would have been an achievement merely to have recognized that ants were being fed. Wire-worms are often recorded, in spite of the liability of confusion with very similar Tenebrionid larvæ.

Enough of illustrations however, the point is this: it should be recognized that reporting on the food of nestling birds on the basis of field observation is work for accomplished entomologists, not for amateur ornithologists. Even with so experienced men on the job little would be learned in many cases. In this connection it is proper to refer to Weed's report on "The Feeding Habits of the Chipping Sparrow."² The observations were made

¹ 1. Gabrielson, Ira N. A study of the home life of the Brown Thrasher, *Toxostoma rufum* (Linn.). Wilson Bulletin, Vol. XXIV, No. 2, June, 1912, pp. 65-94.

2. Bigglestone, Harry C. A study of the nesting behavior of the Yellow Warbler (*Dendroica aestiva aestiva*). Wilson Bulletin, Vol. XXV, No. 2, June, 1913, pp. 49-67.

3. Gabrielson, Ira N., Nest-life of the Catbird, *Dumetella carolinensis* Linn. Wilson Bulletin, Vol. XXV, No. 4, Dec. 1913, pp. 166-187.

4. A further study of the home life of the Brown Thrasher, *Toxostoma rufum* Linn. Proc. Iowa Acad. Sci., Vol. XX, 1913, pp. 299-304.

² Bull. 55, N. H. Agr. Exp. Sta., July, 1898, pp. 101-110.

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.