that the relationship of the species involves food habits as well as structure. A fourth of the food of resident Blackbirds consists of cultivated fruits (strawberries, raspberries, gooseberries, currants, plums, and even apples and pears), and 61 per cent in all of the diet is vegetable. The 39 per cent of animal food is subdivided as follows by Dr. Collinge: injurious insects, 22 per cent; beneficial insects, 3.5 per cent; neutral insects, 5.5 per cent; slugs and snails, 2.5 per cent; and miscellaneous, 1.5 per cent. Grouping the birds according to the place of collection, whether in fruit-growing or urban districts, shows that fruit is consumed much more heavily where easily available, the ratio being 28.5 per cent to 18.5 per cent for these districts in the order mentioned. The birds from fruit-growing localities consume only 32 per cent of animal food compared to 45.5 per cent for those from urban areas. Dr. Collinge concludes as follows:

"Investigations conducted in this and other countries on different species of wild birds suggest that this is precisely what we should expect. Over and over again it has been pointed out that a bird feeds upon the food that is the most easily obtained, and that the reason why a species becomes injurious is that we have too many of that species feeding upon the same kind of food.

"It does not seem necessary to enter into any further analysis of the figures obtained, for it is doubtless patent to every unprejudiced mind that at the present time we have too large a resident population of Blackbirds—which is from time to time augmented by immigrants. The struggle for existence must be very keen, and so long as these conditions obtain in fruit-growing districts, the Blackbird will continue to be one of the most destructive birds with which the fruit-grower has to contend. Before it can be regarded as a neutral or a beneficial factor its numbers will have to undergo considerable diminution."—W. L. M.

Birds in Insect Control.—It is gratifying to find a work on Economic Entomology in which a chapter is devoted to birds. The reviewer does not recall a previous instance but we now have one in a book entitled 'The Principles of Insect Control,' by Robert A. Wardle of the University of Manchester, and Philip Buckle of the University of Durham (Manchester Univ. Press, 1923, 295 pp.) in which Chap. V, pp. 57–70 and pp. 259–260 of the bibliography relate to Bird Encouragement. These sections being strictly compiled are rather uneven in treatment of various phases of the subject, and of work on economic ornithology in different countries. However, a stand is made for abundance of material, well distributed seasonally, and geographically as an essential to the proper economic study of a bird. In summing up the practical relations of British birds the statement is made that "the cuckoos, swifts, lapwings, woodpeckers, and the majority of Passerine birds, particularly Paridae (tits), Turdidae (thrushes), Muscicapidae (flycatchers), and Hirundinidae (swallows), are of the utmost value." (p. 61). The reviewer would seriously object to only one sentence in the entire chapter, and that is one which ranks

among important causes of the destruction of birds "the attentions of that trio of self-styled bird lovers, the gamekeeper, the bird catcher, and the ornithologist." Surely this derogatory classification of ornithologists is unjustified in Great Britain as we know it would be in this country. Most ornithologists are true bird lovers, and their collecting of specimens, on the whole, is considerately regulated. Moreover, it should not be forgotten that it is only because of collecting, and the labors of ornithologists that the facts of economic ornithology were brought to light, and that it is upon these that the whole structure of bird protection rests.—W. L. M.

Birds in Relation to the Foot-and-Mouth Disease of Cattle.—The recent outbreak of foot-and-mouth disease in California, although quickly put under control and prevented from spreading, caused excitement throughout the far western states. Since cattle-raising is one of the most important industries of the region apprehension among the people was no more than was to be expected. Numerous proposals for curbing the disease, however, were based on speculation only and among them were some affecting birds. At the original center of the outbreak a demand arose for a general poisoning campaign against Blackbirds and certain other species which were thought capable of distributing the disease. In Arizona, it was proposed to establish a guard near the California line, one of the duties of which would be to shoot all Buzzards and other carrion-feeders attempting to come across. Washington appealed for an open season on "pigeons, crows, and other scavenger birds" that might carry the disease to that State in migration, and so on.

Before action was taken on any of these suggestions, however, cooler counsel prevailed and no campaigns against birds, of any great extent at least, materialized. Investigation by representatives of the Biological Survey and others in the heart of the infected district yielded no positive evidence that wild birds distribute the disease. This has been the net result of previous investigations also and until we know definitely what rôle birds play in relation to the disease, clamor for bird destruction based on insufficient knowledge will recur. We are informed by Dr. J. R. Mohler, Chief of the Federal Bureau of Animal Industry, that in the general outbreak of 1914, when 22 states and the District of Columbia were infected by the disease, considerable time was given to tracing out its various sources of infection, and that at that time among the birds the Crow seemed to have been the chief suspected carrier and that "a careful study of its habits by a number of inspectors brought out some interesting facts in this connection. In one instance a flock of crows was followed by telephone and automobile for a distance of 35 miles. The habits of these birds in flying from place to place, alighting in cattle and hog yards and running over the ground, picking up small bits of manure or litter upon their feet, showed that they may become carriers of such an intensely infectious disease. However, in the 3,556 herds infected in 1914, the birds (and crows particularly) were incriminated in only a few cases, as follows: