

The Rockwood Review

row, the pernicious habits of which have formed the subject of a special report,* and are briefly treated in this bulletin for purposes of comparison. This naturalized sparrow is a pest wherever it is found, while the native sparrows are well worthy of protection and encouragement.

CONSTITUENTS OF FOOD.

The great bulk of the food of sparrows and other small passerine (or perching) birds consists of fruit, seeds, and insects. The fruit may be wild berries taken from the shrubs or trees of economic importance, with little economic result whether the bird eats much or little; or it may be cultivated fruit, in which case, of course, it is desirable to know the amount destroyed.

The seed element is of particular interest only when it shows destruction of grain or weeds. Injury to grain or fruit by birds is usually the most prominent and often the only fact of economic ornithology possessed by the layman; yet comparatively few birds harm either of these crops, while many species render important service to agriculture by destroying weed seed. As has been aptly said, a weed is a plant out of place. Certain plants seem to have formed a habit of constantly getting out of place and installing themselves in cultivated ground, but whether actually among crops or in adjacent waste land, from which they can spread to cultivated soil, they are always a menace. In the garden they occupy the room allotted to useful

plants, and appropriate their light, water, and food. Any check on these noxious interlopers, a million of which can spring up on a single acre, will not only lessen nature's chance of populating the soil with worse than useless species, but will enable the farmer to attain greater success with cultivated crops. The hoe and cultivator will do much to eradicate them, but some will always succeed in ripening a multitude of seeds to sprout the following season. Certain garden weeds produce an incredible number of seeds. A single plant of one of these species, as purslane for instance, may mature as many as 100,000 seeds in a season, and these, if unchecked, would produce in a few years a number of weeds utterly beyond comprehension. The habits of some of the common weeds are considered in connection with the discussion of the value of birds as weed destroyers.

The animal food of the smaller land birds consists of insects and spiders. The insects belong for the most part to the orders Lepidoptera (butterflies and moths), Orthoptera (grasshoppers, locusts, and crickets), Diptera (flies), Hemiptera (bugs), Coleoptera (beetles), and Hymenoptera (ants, bees, and wasps). Lepidoptera, Orthoptera, and Coleoptera furnish the bulk of the insect food of birds. The lepidopterous food is taken almost entirely in the larval condition, and comprises smooth caterpillars belonging largely to the family Noctuidae, which includes cutworms, army worms, and their allies.

*The English Sparrow in North America, Bull. No. 1, Div. Ornith. and Mamm., 1889.