

powerful insecticides which we have. Reference has already been made to the change in the balance of Nature which man makes by interfering with the pre-existing natural conditions through the cultivation of the soil and its products, and this disturbance has a serious effect on bird life by changing their environment. But more serious than this is the effect of the wantonness and inherent barbaric traits of man. One of the most appalling facts in relation to Canadian agriculture and the enjoyment of the people is the wanton destruction of bird life, especially in the West. Small wonder that the visitations of grasshoppers and of other insects proceed uncontrolled when the farmer has killed off his best friends. Is it a matter for surprise that one of the most serious questions affecting the farmer of Canada to-day is the increase in the number of weeds and their spread, when the greatest weed destroyers are not only not encouraged and protected, but are killed, because they have the misfortune to be living creatures and so provide a target? Legislation is not the only remedy to seek; we must employ the greatest of weapons—enlightenment by education, and not rest until we make those who are dependent upon the products of the land understand that they should treat their bird friends as they would their human friends, and in this way increase the pleasures of life and their allies in combatting such foes as destructive insects, mammals and weeds.

A few instances may be mentioned to illustrate the unpaid and usually discouraged assistance of these friends of ours. That large family of our native sparrows—I do not refer to the English sparrow, which does its best to drive away most useful native birds, but to such birds as the tree sparrow, the song sparrow, the junco and the dickcissel, etc.—as weed destroyers they are unrivalled. Dr. Judd, of the Biological Survey of the United States Department of Agriculture, has made a comprehensive study of the food of about twenty species of sparrows, and has examined over 4,000 stomachs of the birds at different periods of the year from different localities. As a result it was found that weed seeds form more than half their food for the entire year, and during the colder half of the year these seeds constituted about four-fifths of the food of many species. A single bird will often be found to have eaten 300 seeds of pigeon grass, or 500 seeds of lamb's quarters or pigweed. As they feed in flocks they are most efficient consumers of these and other weeds. Beal estimated that the tree sparrow may consume one-quarter ounce of weed seed per day, and, on that basis, in a State the size of Iowa, this species would consume 800 tons of seed annually.

McAttee has given the results of an examination of the