for these bird police?—how quickly insects multiply? To take a single instance, a cabbage-aphis weighs little more than a milligram—the smallest fraction of an ounce; yet if there were food enough and room enough the mass of its descendants in one year would weigh more than 822,000,000 tons—eight hundred and twenty-two million tons, or five times as much as the weight of the whole human population of the world.

Fortunately it has neither room enough nor food enough, and it has besides a few friends in the bird-world who are fond enough of it to keep it pretty well in check; what would the gardener do without those birds? Would his sprays and washes have any effect at all?

Other insects increased in similar alarming fashion, so is it any wonder that regions where birds are scarce breed hordes of insects which descend in their thousands and millions on neighbouring fertile areas, bringing famine and leaving desolation?

No longer ago than June 11, 1932, the "Evening Post" reported how locusts from Sinai had descended in clouds on Egypt—clouds as much as twelve miles wide and twenty-two miles long. Regiments of soldiers attacked them with flame-guns—in vain. Trenches were dug into which the hopping armies fell. One trench was twelve miles long. Over 2500 soldiers were employed for two and a half months fighting the pest—a plague of Egypt brought home in modern times. And there are plagues lying latent even in New Zealand.

In a district in Australia a flock of about 100,000 ibises was watched feeding; they were feeding on grasshoppers. It was calculated that they were disposing of two or three million grasshoppers daily. A pair of these ibises came over to New Zealand recently—rare visitors; too rare to be left alone. They were shot and kept as specimens—valuable specimens, admired for their value.

Are there grasshoppers in New Zealand? I have watched one eating a clover-leaf as a boy eats a slice of bread and sugar; it took a good bite off the edge, chewed away, but not so long as it might, took another bite, and the clover-leaf melted away.

Native Birds Becoming Extinct.

OUR New Zealand plains used to swarm with native quail, pipits, wekas, paradise ducks, grebes, and ducks of many kinds. The plains were burned. I am thinking particularly of the Canterbury Plains—the quail are extinct, the wekas are very much reduced in numbers—only the pipits and the paradise ducks have survived, in numbers, the attentions of man.

But man found he had to introduce other birds in place of those destroyed, and now the introduced birds, Californian quail, Tasmanian quail, starling, sparrow, do the work the native birds did; do it so effectively that the settler does not notice the enemy that does the real damage, does notice the birds—when the crops are coming on—and thinks the birds the enemy.

It may be remembered that the South Canterbury farmers were jubilant one year because they had had a good kill; most of the birds had been poisoned—in a season or two Nemesis followed in the shape of caterpillars. Before the introduced birds were numerous enough to cope with them, the farmers had to dig trenches, as they dig trenches for the locusts in Egypt, to trap the hordes of caterpillars advancing on their crops. Napoleon said truly that an army advances on its stomach. These armies did advance on their stomachs; the birds increased, the armies advanced no more; but they are not extinguished.

The particular caterpillar that was so destructive—the caterpillar that once stopped a train—was the caterpillar of the grass-moth. I have tried in vain to learn its scientific name. This pest the birds now keep effectively in check.

Area on which Harm is Done During Three Weeks of the Year.

	Acres.		Bushels.		Bushels.
Wheat	261,000	yielding	9,500,000	or 36.56	per acre
Oats	88,000	yielding	3,850,000	or 43.66	per acre
Orchards	25,000	(the three weeks above may not apply here.)			
Total	374,000	acres			

Area on which Little Harm is Done During the Year.

	Acres.
Potatoes	22,000
Turnips	460,000
Green feed	217,000
Mangolds	10,000
Total	709,000

Area on which only Good is Done Through the Year.

	Acres.
Artificial grasses .	16,900,000
Natural grasses ..	14,100,000
Total	31,000,000

Enemy—Or Friend?

WHEN people speak of the damage done by the sparrow they refer chiefly to the time when crops are ripening and on until they are cut; that is, about the time when the breeding birds have been destroying the greatest number of insects. And it must be remembered that though the old birds no longer catch insects for the young when these have left the nest, the young do not give up that necessary food, but there are 17 birds on the look-out for creepies and crawlies instead of only two—17 birds in every family.

Supposing the period when the birds destroy grain is put down as lasting for three weeks without a break; and supposing we take our one family of sparrows, numbering seventeen. If fifty sparrows are able, as stated by their enemies, to dispose of a quart (2lb) of wheat a day, seventeen birds in three weeks could dispose of about seven quarts, that is 14lb. As an offset, take the insects and weeds destroyed during breeding time alone. Trowers, a New Zealand naturalist, estimated that during the breeding season every pair of sparrows daily carried 3000 insects to its young; supposing we saw 2000, that would mean 42,000 in three weeks; and of weeds, 150 a day (a low estimate) would mean 3150 in three weeks.

What the value of this destruction of insects and weeds would be for the three weeks it is hard to say; it should at any rate be worth two shillings. The value of the debit is more easily calculated. Fourteen pounds of wheat at 4/- a bushel of 60lb comes to something less than a shilling.

It is surely rather surprising to think that, calculated on the figures supplied by the enemies of the sparrow, the damage done by a family of seventeen during the three weeks when the grain is vulnerable is less than a shilling's worth, and the good done is worth two shillings.

It is complained that the birds come swarming from other districts and destroy half the crop. But the swarms by no means confine themselves to grain; indeed, they get the grain only when they can; but eat they must, so while their main object may be the grain, while they wait their chance for that they are playing havoc with the unprotected weeds and insects; they are doing good as well as harm, and probably quite as much good as harm.

And if they destroy half the crop after all, what do they leave for the grower? Statistics tell—the average left in New Zealand is over 30 bushels an acre for wheat and 40 bushels an acre for oats—not a bad remnant.

THESE weeks of harvest are the hectic three weeks of the grain-grower's year; he is doing his best to circumvent the birds—the birds are doing their best to get a portion of their due. Their due? Yes. When at harvest the grower sees with apprehension the swarms of what he calls his enemies—that is, the birds—does he think of the other forty-nine weeks of the year? Does he see with satisfaction his friends the birds doing the work which makes possible any harvest at all?

If he could see the hidden hordes that the birds are searching out during those strenuous forty-nine weeks he would have cause for apprehension; then he would have forty-nine weeks of dread and only three of satisfaction; whereas because the birds are doing their work silently and well, he lives in a fool's paradise; disregards the birds and their work because he does not see the object of it, and at the end grudges their extorted toll of grain, whereas he should welcome it.

And I felt very brotherly to one farmer who said to me: "You know, when we used to broadcast the grain we would throw three handfuls and say, 'Three for us,' and then throw one and say, 'And one for the birds.'" He saw the matter in its true light.

During those forty-nine weeks be sure the birds are not resting on their crops. They still have to eat, and eat more than in the summer; and this is when the pests are being destroyed in millions and millions. Plainly the bird is the friend of the grower. I wish the grower would be a friend of the bird—and I know that many of them are.

Some Surprising Statistics.

BUT this is speaking as if the whole of New Zealand were one great grain field, whereas grain is grown on a very small portion only. The accompanying table shows the 1928 figures, in round numbers, giving the proportion of the various crops, etc., in New Zealand.

These figures are rather staggering. Some considerable harm is being done, but during three weeks of the year only, or about 400,000 acres; but during the rest of the year, on these same 400,000 acres, and during the whole of the year on 30,000,000 (thirty million) acres besides, the birds may be doing a little harm, but are without doubt doing a tremendous amount of good. Even on the native pastures they are doing good, else how is it possible to run turkeys on these pastures and let them fatten on what they find? The birds are doing what the turkeys are doing, and millions of grasshoppers, grass-grubs, wireworms, caterpillars of all kinds, are being converted into feathers, song and cheerfulness.

I should like my Canterbury friends particularly to consider the above figures, for they are the greatest grain-growers—consequently the greatest sufferers in appearance—in reality the ones who benefit most. Of the 261,000 acres of wheat, 217,000 acres were grown in Canterbury; of the 88,000 acres of oats, 52,000 in Canterbury.

But this is not all. The debit against the sparrow has been given above—two shillings' worth of damage per family of 17 during the three weeks when by far the most damage is done—but what of the credit side of the ledger?

He destroys an enormous quantity of insects and weeds during the year, and for all this work which he does with noisy or singing cheerfulness he gets no wages; he works every day in the year and practically from daylight till dark, not even stopping for meals; he takes no holidays, no Sundays off; he has no stop-work meetings, and indulges in no strikes; he never petitions Parliament, though if Parliament legislates at all it is against him; and, the final sacrifice, out of the hard-working family of 17 only two survive, parents or young; the rest cash in, perishing of cold or hunger during the lean part of the year.

If the grower did see the swarms of birds in the off-season, late autumn and winter, he would see them growing less and less. While the insect pests are abundant, the birds are abundant, too; as the pests dwindle the birds dwindle; when the pests disappear in winter, so do most of the birds. The summer swarms of the birds arose with the summer pests—and set with them.

THE lean part of the year is with us now. Have you noticed during the last two or three weeks especially, when cold winds and rains have made even us uncomfortable, how quiet the sparrows have been? Poor little beggars—the weak ones have been dying off—more and more die as the winter drew on; 80 per cent. will have died before the spring is well on. July saw a great mortality—August will see a greater.

If the birds were human, Rachel would be weeping for her children because they are not. Fortunately, they are spared the misery of sorrowful partings; and the scavenging rat every night performs the last rites; he is priest and undertaker and sexton in one, and we see no signs of the night's tragedies in the morning. The birds are not human; it is left for us to be humane.

If my country friends will think over the matter now, before the bias of harvest is on them, I think they will give the little grafters a show. For, remember, the insect plague is always there, ready to carry out its merciless menace as soon as ever the bird-pressure is the least relaxed. The bowels of the insect are not those of compassion—how about our own?