

ENTOMOLOGY

Man Pictured as Aggressor in World-Wide War On Insects

WAR between mankind and the insects, incessant on a thousand fronts, is shown in a new light by Dr. L. O. Howard, recently retired chief of the U. S. Bureau of Entomology. In a new book, "The Insect Menace," he calls attention to the somewhat neglected scientific fact that it is man who has invaded the insect world, rather than that the insects are aggressors against man.

Insects were on earth long before man, or any of the mammals, or even the great lumbering dinosaurs, Dr. Howard points out. Insects flitted and scrambled through the weird forests of the Coal Age, many millions of years ago, when the highest forms of vertebrate life were relatives of the frogs and salamanders. There were giants among them, too: dragonflies with a twelve-inch wing span, and cockroaches as big as mice.

Small Size Advantageous

Evolutionary progress among insects has constantly tended toward producing smaller sizes; in this the insects have differed from the backboned animals, which have always tended to produce bigger and bigger individuals in any given developmental line, ending with unadaptable giants that have been snuffed out by relatively sudden environmental changes. Having small bodies, insects can hide from their enemies more easily. Moreover, they do not need so long a time to grow to maturity: a fly, for example, is ready to produce a family in 21 days, instead of the 21 years or so required by a human being. This makes for easier adaptation to changing conditions, especially when one takes into account the enormous number of offspring produced by insects, out of which only a few especially favored individuals survive.

The real warfare between insects and man began when man became a farmer. Being a farmer means playing favorites with certain plants and animals, increasing their numbers many thousand-fold over their former abundance in the wild state. Wild plants and animals have their insect enemies, but it is only when they are massed on farms and

ranches that these insects breed to the proportions of crop and herd pests.

Some figures quoted by Dr. Howard give vividness and point to his picture of the field of war. His former colleague in the Bureau of Entomology, Dr. C. L. Marlatt, who succeeded him as its chief, has estimated the total yearly money losses due to insects in this country alone at over \$1,500,000,000. This was based on a crop census some years ago. On the basis of a later census, Dr. Howard raises the estimate to more than \$2,200,000,000.

Insecticides used in the chemical warfare division of the insect-fighting army cost annually over \$23,000,000, of which about \$13,000,000 goes for fighting household insects alone. Another item in the household defense budget is screening, for which Americans paid out in a single season \$30,000,000, based on the price in the roll. The United States government keeps 500 entomologists at work, at an annual expense of \$10,000,000; and various state governments spend a great deal more, bringing the total for this highly-trained professional service close to \$200,000,000 a year.

Dr. Howard regards the present situation as serious, but by no means hopeless. The insects will not wipe us out, as many alarmists claim, he says. But unless the attack on them is pushed home hard, the war may well drag itself out inconclusively for many generations. The time for decisive action is now, says Dr. Howard.

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NATIONAL PARKS

Protection is Urged For African Animals

AFRICAN WILD LIFE is succumbing to civilization, and in fifty years there may be no elephant, hippopotamus, or rhinoceros left, says Major R. W. G. Hingston, Oxford University explorer, who has recommended ten national parks for African animals.

Of all wild life, he considers that of Africa most important, for its abundance, variety, size, unique character, and prehistoric appearance. The elephant,



EUROPEAN CORN BORER

This insect has slipped through the lines and is now attacking the eastern part of the corn belt.

rhinoceros, hippopotamus, giraffe, okapi, and gorilla are the most impressive of earth's creatures, he holds.

Wild life needs a place of its own, for it is agriculture's enemy. Elephants trample banana plantations, and sometimes destroy in a single night the food of a village for a season. The buffalo eats corn, and tramples more than he eats. The hippopotamus ruins rice beds on river banks, and zebras break down fences. The giraffe, thought innocent before, varies his diet of thorns with man's more juicy crops.

Trade the Great Destroyer

Lions destroy livestock, leopards carry off small animals, hyenas feed not only on carrion, but on small stock and sometimes children, and buffaloes charge human beings.

Trade is the greatest wild life destroyer. The blaubok, quagga and other animals have been extinct for years. The white rhinoceros is practically gone, and other species will soon not be seen again. The world wants the elephant's tusks, rhinoceros' horns are an aphrodisiac in China, buffalo and zebras have valuable skins, monkeys make coats and rugs, and the giraffe gives meat, leather, bowstrings, and bracelets from its tail-hair to the native. The sportsman is the least serious of animal destroyers, Major Hingston said.

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