

ENTOMOLOGY

Without Benefit of Insects

A World Bereft of These Small Creatures Would Miss Many of Man's Best Friends as Well as Foes

By DR. FRANK THONE

DROWSY Sunday afternoon. The hammock under the apple tree looks inviting. May be something worth reading in this magazine. . . Let's see . . . Something here about bugs . . . mm . . .

You have half decided to take a little snooze instead of going on reading, when your ankle begins to itch: some adventurous mosquito has decided not to wait until dusk. Then a bumblebee zips by, doesn't like something about you, zips back again, a couple of times. And an acrobatic caterpillar slides down a cable of his own making, to drop right on the place where your hair used to be.

Confound all insects anyway! Whatever were they invented for, the crawling, biting, stinging nuisances? World might be a place halfway fit to live in, if the whole lot of them could be wiped out.

And science says, at that, they may wipe us out instead. Well, let 'em. If there get to be many more of the cussed things about, the world won't be fit to live in, anyway. The doggone pests!!

So you give up the hammock and go back to the safe fortification of the screened-in porch.

But would you be happy if all insects were wiped out? It's even a question whether you would be there at all. For though some insects pester man and loot his granaries and warehouses, other insects perform a long list of services for him. So many services indeed that without the insects existence for man and the larger animals would be difficult, if not impossible.

Destroying Friends

And are the insects really threatening to wipe us out? Isn't there a chance that the tables may be turned, and we are in danger of wiping out some of the best friends we have in the insect world?

At least one prominent entomologist thinks there is a chance of that calamity happening. She is Dr. Edith M. Patch, who has just retired as head of the department of entomology at the University of Maine, after more than a generation of service in her science, and hon-

ored widely by her colleagues. She has raised the question of what a world "without benefit of insects" would be like.

Of course, Dr. Patch has no idea that all the insects of the world could be completely exterminated. Whales and elephants can be exterminated, but not insects. But even now the warfare we wage on harmful insects is killing uncountable millions of "good bugs" who happen to be occupying the same territory. It is just like bombing or burning a city occupied by the enemy—and also by friendly non-combants, women, and children. Dr. Patch adduces plenty of witnesses from the ranks of entomologists to back up her own testimony.

Chief sufferer from spraying of fruit orchards seems to be our old friend the honeybee. The situation is ironic. Orchards must be sprayed to keep down the codling moth. The codling moth is the parent of that worm (or half-a-worm) that you find in your apple. If orchards weren't sprayed, codling moth

larvae would worm their way into all apples, all pears, apricots, peaches, almonds. So sprayers go through the orchard several times, dousing blossoms with arsenicals, for it is during and after blossom time that Madam Codling-moth comes to lay her eggs.

But bees, coming on their beneficial errands of pollen-transfer and honey-gathering, drink death with the nectar. Some never get home. Others reach the hive, but become paralyzed and die. The hive becomes too weak to feed its young, to resist disease, to defend itself against enemies.

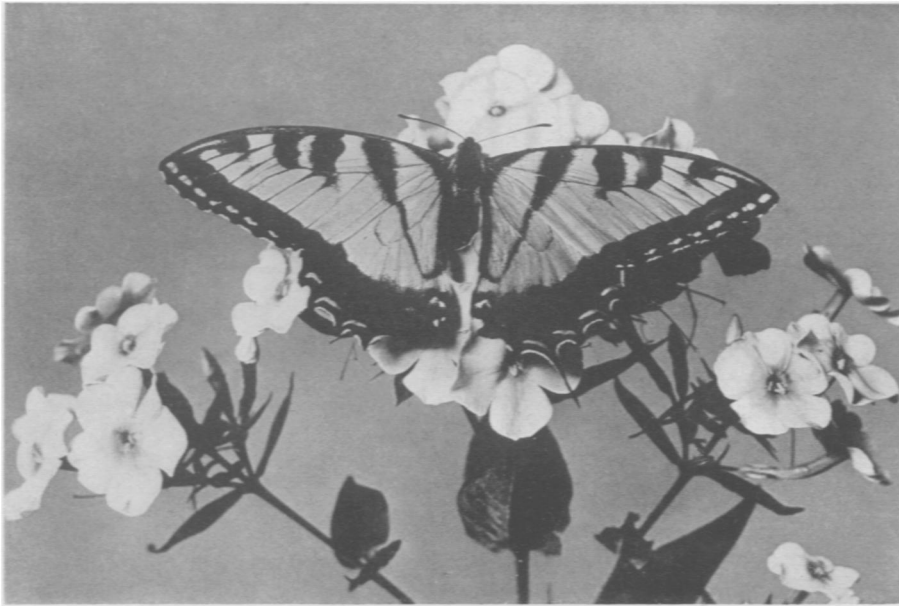
In one part of the Pacific Northwest there was a regular tug-of-war between the spraying orchardists and the anti-spraying beekeepers. The orchardists insisted on spraying; they said they had to. The beekeepers' bees began to die by millions. So the beekeepers pulled out of the orchard country and sought flowering pastures new. It wasn't just a sit-down strike. It was a walkout, with removal of an essential part of the apple-making machinery, the pollen-distributing bees.

Of course honeybees are not the only pollen-carriers for fruit trees, so orchard-



DEATH IS NO CHOOSER

Upon just as well as unjust, in the insect world, falls death in the poison cloud from the airplane as it zooms across this cottonfield, fighting weevil or bollworm primarily but killing all winged life indiscriminately.



BEAUTY EMERGENT

Big green caterpillars with hairs and horns and humps on them are "squirmy" things to see, and often eat a lot of foliage, but if they escape poisoning they may turn into beautiful big butterflies and moths, useful in pollinating many flowers for which ordinary bees are not large enough.

ists may be able to thrive for a long time without them, depending on the assistance of the wild solitary bees, and other less important insects that visit fruit blooms. But it is quite likely that the spray poisons get them, too, so the dilemma is not solved, only postponed for a time.

Even more wholesale destruction is visited on insects when airplanes are used for spreading poison dusts over cottonfields to combat bollworm and weevil, and over forests to control gipsy and browntail moths. The areas covered are much larger, and the insect life, in the forests at least, forms a much more complex community.

Even Birds Affected

Furthermore, in such a wholesale spreading of poison by such an indiscriminate blunderbuss as an airplane, a good deal of the lethal dust usually drifts into the surrounding woods and brushland where it is not needed but where it kills hosts of insects and their larvae that are the food of nesting birds. In this kind of warfare the innocent bystanders certainly get it in the neck with a vengeance!

Dr. Patch does not pretend to know the answer. The war against pests must unquestionably go on, she readily grants. But, she adds, "Perhaps no agricultural situation has ever presented a more serious dilemma. On the one hand, if we

do not destroy enough of certain insects, they may ruin some of our crops. On the other hand, if we proceed to destroy too many insects, we shall have almost no crops at all except such as are wind-pollinated."

For Pleasure

Dr. Patch champions insects not only for the material good they do us but for the pleasure and mental satisfaction we might get from a better knowledge of them.

"If we look backward a few centuries," she reminds us, "we recall that the entomological fellowship then numbered among its members priests—men with leisure for contemplation of the wonders they beheld.

"I have in mind one ancient book the pages of which are filled with richly tinted pictures lovingly painted by hand. And in the introduction the author speaks of his subject with reverence. He has been led, he says, to portray the marvels and beauties of insects 'for the glorification of God'—that men may the better appreciate the wonders of creation with which they are surrounded."

Then she looks forward to the year 2000, and imagines the meetings of some learned societies of that future day. By then the indiscriminate extermination will have done much of its deadly work, and many species will have gone to join auk and dodo. Conservationists

will then be much concerned over means to insure the survival of useful and beautiful insect species left in the world.

Dr. Patch takes us to visit a committee meeting of scientists concerned with the relations between plants and insects, the Phyto-Entomological Society:

Future Breeding Places

"Each member has before him an enonomic botany book to which he refers for the names of all the insect-pollinated flowers listed, together with the names of all insects known to pollinate each species. After noting those insects that are becoming too rare to be efficient, the committee recommends that favorable breeding places be provided for these insects throughout the regions where their services are needed, and that every effort be made to increase their numbers. These recommendations are to be published and distributed to all growers of the plants concerned."

Dr. Patch carries the report of the committee to quarters where it means something in terms of dollars and cents. The growers of seeds for garden and truck vegetables report that since they have for many years kept hive bees for pollination purposes, they have no difficulty in supplying seeds of vegetables pollinated by these insects except in those years when foulbrood or some other bee disease gets an unexpected start and interrupts the activities of the bees at a critical time. Some concern is expressed because epidemics of honey-bee diseases seem to be on the increase.

Plants Extinct

Less cheerful is the picture painted for the nurserymen of 2000 A. D. "They report that they have had to remove from their catalogs the names of plants pollinated by bumblebees and hawkmoths. Indeed, the supply of these plants is so limited that only a few hand-pollinated specimens are being held, from year to year, in their nursery gardens in the hope that they can establish bumblebees and hawkmoth preserves nearby in order to keep these plants from absolute extinction. They hope by these means to increase certain favorites such as petunias, snapdragons, and some of the orchids, sufficiently to warrant offering them again for sale."

Wildlife conservators even today are propagating food plants for waterfowl and upland game birds on already existing refuges—wild rice and other grasses for the ducks and geese, berry-bearing shrubs for quail and grouse. Dr. Patch foresees a day when men will propagate insect food for the songbirds, whose

young thrive best on certain kinds of caterpillars. It may even be necessary to import suitable species of moths and butterflies into a thoroughly-sprayed, caterpillarless land, and keep them in special bird-and-insect preserves.

Just as presidential proclamations now establish new national parks and federal game sanctuaries, the New Deal of 2000 A. D. may be expected to act for the preservation of insects.

"In the year 2000, the President of the United States issues a significant proclamation. In order to provide suitable conditions for native and introduced pollinating insects, the Government claims areas of land at few-mile intervals in rural districts throughout the country. These areas will be maintained as Insect Gardens, under the direction of government entomologists.

Caterpillar Plants

"Milkweed will be grown for larvae of monarch butterflies, plants of the parsley family for black swallowtails, and so on. Woodbine, purslane, and other suitable food will be grown for the larvae of the more important sphinx moths.

"No caterpillars are to be killed in these gardens. If one district becomes overpopulated, the surplus material will be taken to another district where these same insects are not abundant enough.

"Special attention will be given to introducing solitary wild bees into localities from which they have disappeared. European species, if available, will be purchased to increase the supply. Colonies of native bumblebees will be placed in favorable habitats. European species, if available, will be purchased to increase the supply. The emphasis on solitary bees and bumblebees will be necessary because of frequent epidemics of hive-bee diseases that reduce their usefulness when they are most needed."

Insects for Posterity

It may seem fantastic to think of a world careful of its insects, and taking such means to coddle them. But remember, we utterly exterminated the passenger pigeon, and saved bison and pronghorn just in the nick of time. So while you go on massacring the bad insects, better try to be a little kinder to the good ones. Your grandchildren may want them.

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MEDICINE

Medical Association Offers To Hold Medical Patents

Reversal of Policy Made Necessary to Prevent Unscrupulous Commercial Exploitation, Editor Says

U PSETTING 23 years of policy, the American Medical Association has admitted indirectly that patents on medical discoveries are needed.

Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, speaking before the American Chemical Society meeting at Rochester, N. Y., advocated the setting up of a non-profit holding corporation to administer patents in the medical and health fields.

The new suggestion of the powerful and conservative A.M.A. includes suitable royalties to the discoverers. This is a distinct change from the 1914 resolution of the A.M.A. which permitted it to accept patents. Under this resolution neither the A.M.A. nor the patentees would receive remuneration for the patents.

In effect, the physicians now recognize that the profit motive in the development of research discoveries has an important function in present day American society.

Under its 1914 resolution, said Dr. Fishbein, the American Medical Association never accepted any medical patents and it did not formulate any plan for the administration and control of patents in the medical field.

The new proposal advanced by the A.M.A. spokesman is a modern compromise with the rigid principles of medical ethics which state distinctly "it is unprofessional to receive remuneration from patents for surgical instruments or medicines."

The new suggestion for the control of medical patents, declared Dr. Fishbein, seems needed because of the diversified methods which university and non-profit research foundation laboratories have been compelled to take in order to protect their discoveries from unscrupulous commercial exploitation.

Dr. Fishbein cited the discovery, patenting and control of insulin, used in treating diabetes, as an example of desirable control of medical discovery. The arguments in the patent field over the production of vitamin D and vitamin D products are illustrative of the troubles

that may arise, added Dr. Fishbein in contrast. He continued:

"The sun in the sky should be freely available to all who wish to use it. Yet it has been hinted that there are some concerned with patents on vitamin D who would even inhibit investigators from experimenting with the sun."

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per cent. Bombing planes that now could carry 2,000 pounds of bombs will be enabled to carry 3,000 pounds of their deadly missiles with the new 100 octane number fuels.

To the meeting of the American Chemical Society, Dr. Gustav Egloff of the Universal Oil Products Company reported the potentialities of these new fuels which the chemist is developing.

If the engines of the great China Clipper were designed to use these newest fuels the increased payload possible would be worth \$2,000 on each single trip between Alameda and Honolulu, said Dr. Egloff.

Iso-octane is a synthetic fuel that is improved in its burning characteristics over any thing which nature produces. Normal octane, said Dr. Egloff, burns too rapidly in a motor of a modern automobile or airplane, because its eight carbon atoms are strung out in line. During combustion in the cylinder of a motor the flame rushes rapidly down this straight line of atoms and produces the engine knock known so well to motorists.

What the chemists have done with the new iso-octane fuels is to introduce a chemical "maze" through which the flame spreads more slowly, as though bewildered. The maze in reality consists of carbon atoms branching off from the main chain. The slower burning yields less engine knock at higher compression in the cylinders of a motor. And higher compression means more power per gallon of fuel. While this added power is valuable for automobiles it is most vital