CHEMISTRY

DDT Can Wipe Out Plagues

In total war against disease-carrying insects, it could eliminate typhus, malaria and African sleeping sickness, Swiss chemists declare.

➤ DDT CAN send malaria mosquitoes, typhus lice and other disease-carrying insects to join the dodo and the dinosaur in the limbo of extinct species, thereby ending these particular plagues for all time.

This was the promise held out by the two Swiss chemists who started DDT on its present spectacular career as a killer of insects, Dr. Paul Lauger, technical director of the firm of J. R. Geigy, S.A., and Dr. Paul Muller, inventor of the DDT insecticides, at a press conference in New York.

African sleeping sickness, spread by the tsetse fly, was another scourge mentioned as a possible candidate for extinction. The area in Africa that is now practically an unpopulated waste because of the menace of this terrible disease could be hemmed in by a cordon of DDT-armed insect-fighters, who would press constantly in upon the fly-infested terrain both in the air and over the ground, until the last acre had been mopped up.

Mass attacks of this kind, Drs. Lauger and Muller admitted, would cost money and take time; but the cost in either would be only a fraction of that demanded by war—and human lives would be saved, not recklessly spilled. Such campaigns would also be devastating to beneficial insects and other cold-blooded forms of life, they said, but they claimed these could repopulate the areas by inward dispersal from the unsprayed margins.

On a less sweeping scale, but still on a major field campaign basis, the two Swiss chemists pointed out how DDT can be used to combat some of our worst crop pests, like boll weevil and other cotton insects. These often constitute the bulk of the insect life of the large fields where the crops are grown, so that damage to beneficial insect populations becomes a less serious consideration.

DDT can even be used in warfares against dug-in insect enemies, it has been discovered. It can be used effectively in this way against the grubs or larvae of the Japanese beetle, though oddly enough it has not been found particularly poisonous to their close cousins, the big white grubs that grow up to turn into Junebugs or May beetles. Another ground-dwelling pest that succumbs to DDT is the roundworm or nematode that causes root rot, a disease afflicting many plants.

For some of these mass attacks, DDT has been found a hundred times more effective than the arsenical poisons hitherto in use. For instance, 15 pounds of DDT per acre will be as effective against Japanese beetle larvae as 1500 pounds of a standard arsenic compound applied to the same area, Drs. Lauger and Muller stated.

DDT can be applied by practically any method now in use with other insecticides. It is especially effective dissolved in Freon and released as an aerosol, but it also works well dissolved in kerosene or other light oils and used with ordinary spraying machinery. It is only slightly soluble in water, but oil solutions can be easily made into emulsions. Dispersed in inert powdered materials such as talc or kaolin, DDT is an excellent crop-dusting medium.

One of the most promising carriers for household use of DDT seems to be wall paint. Since flies, mosquitoes and other domestic pests need only to touch it with their feet in order to pick up enough to kill them, a DDT-carrying painted surface turns the whole interior of a room into a big death-trap for them. Several well-known commercial firms are already manufacturing DDT paints.

Such paints are effective only as long as their surface remains clean. Coatings of dirt or grease form protecting layers between the poison and the feet of the insects, causing loss of killing potency. Paints that tend to scale or crumble a little, thereby automatically keeping fresh surfaces exposed, promise to be especially good as DDT carriers.

Shelf age, the Swiss scientists declared, holds no terrors for DDT. It stays good indefinitely, either in pure crystal form or in the various solutions.

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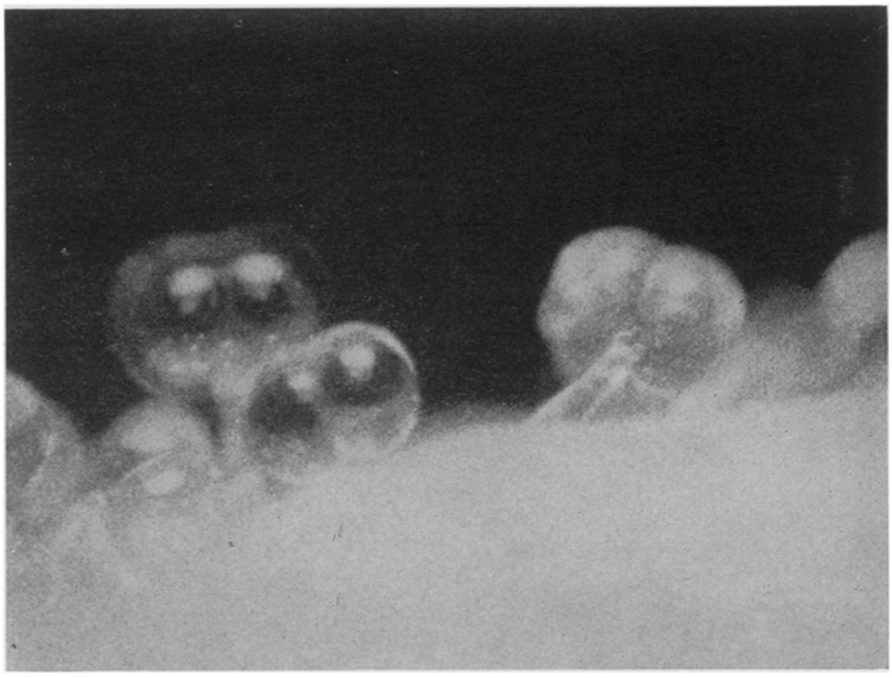
PLANT PHYSIOLOGY

Leaf Glands on Plant Resist Drought

➤ THE FIRST pair of true leaves appearing on the sesame, an herb bearing seeds from which an oil is obtained, be-



RESIST DROUGHT—Glands on the foliage of a sesame plant, as shown in this greatly magnified picture, look like sets of four little soap bubbles on stems. Plants well-equipped with glands seem to be more resistant to drought than plants with bare leaf surfaces.

tray whether the plant will be able to withstand long droughts or excessive rainfall.

During a period of drought, varieties with many leaf glands showed less wilting than the types with few glands, Dr. D. G. Langham of the Department of Genetics, Instituto Experimental de Agricultura y Zootechnica, Caracas, Venezuela, reports in the *Journal of Heredity*. During a period of excessive rainfall, on the other hand, varieties with few leaf glands were more resistant to "wet feet".

With a little practice it is not necessary to use a lens in determining whether the leaf surface has few or many glands, which look like quadruplet soap bubbles on stems. In connection with experiments to develop varieties of sesame adapted to culture in Venezuela, a large number of varieties were studied. It was found that when plants with many leaf glands are crossed with plants with smooth leaves, the hybrid has the glands and so do three out of four of the plants from it.

Science News Letter, September 8, 1945

AGRICULTURE

Distribution Problem

Is seen as the big puzzle in feeding the world. Fewer farmers may actually produce more food if more man-hours are devoted to handling.

➤ FEEDING a world constantly hovering on the thin edge of hunger was presented as a problem of processing and transportation more than of actual labor on the farm itself, by Paul H. Appleby, formerly Under Secretary of Agriculture, now director of Station KIRO, Seattle, speaking before the Sixth Conference on Science, Philosophy and Religion, in New York.

Citing conclusions reached at the international food conference held at Hot Springs, Va., Mr. Appleby pointed out that among other things they "hint at the anomalous fact that the world can be better fed only by reducing the proportion of the world's productive man-hours going into agriculture, and, conversely, by putting more man-hours into the production of other things—roads and railways, machinery, storage facilities, processing plants, household facilities, power plants, etc."

More food, he stated, is produced per capita in countries where agricultural technology is advanced as contrasted with countries having small hand-tool, subsistence type farmers.

Raising the level of all nations' capacity to support themselves, Mr. Appleby contended, does not demand assumption of a Santa Claus role by the United States or any other one country, but rather improvement in international cooperation through interchange of ideas and information of mutual benefit to all.

"The quickest and most certain improvement in communication will be between scientists," Mr. Appleby declared. "Research is essentially international in its approach and in its implications. Scientists wherever they work have constituted one body, even though somewhat nebulous. And the essential unity of scientists carries over to technology and education. In these fields specialized association may be expected to increase markedly with new stimulation and facilities. The numbers concerned, their proportion to total population, and their direct influence will vary greatly among the different national societies, although all three groups will exist in all societies."

Science News Letter, September 8, 1945

CHEMISTRY

Antianemia Vitamin Factor Isolated in Pure Form

➤ CRYSTALS of a pure chemical which is a form of an antianemia vitamin have been isolated for the first time by scientists at the research laboratories of Parke, Davis and Company in Detroit.

This vitamin chemical is known only by the technical name of vitamin Bc conjugate. Its isolation is announced in *Science* (Aug. 31). Scientists reporting the work are Drs. J. J. Pfiffner, D. G. Calkins, B. L. O'Dell, E. S. Bloom, R. A. Brown, C. J. Campbell, O. D. Bird.

The vitamin is related to another vitamin called folic acid. Synthesis of the latter by scientists at Lederle Laboratories, Pearl River, N. Y., was announced a few weeks ago. This vitamin apparently exists in a number of chemical forms in different substances, such as liver and yeast. As various scientists have discovered one or another of its forms, because of its effects on blood formation in monkeys or chicks or its importance for the growth of certain bacteria, they have given varying names to the substances. Some of these substances may be identical. At least five different ones are believed to exist.

Isolation in pure chemical form of vitamin Bc conjugate and the synthesis of folic acid may lead to further knowledge about all these related vitamin factors and what part any or all of them play in human health and nutrition.

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