

D.D.T.—

a New Insecticide

MUCH public interest has been aroused by references in magazine articles and newspapers to the development and use during the war years of a new and effective insecticide known as D.D.T. The name is an abbreviation of the chemical name dichloro-diphenyl-trichloroethane. D.D.T. is a synthetic organic chemical—that is, it is not produced from natural sources, but is made by the interaction of other chemicals, in this case chloral and monochlorobenzene.

ACTUALLY it is only one of hundreds of such synthetic chemicals which have been tested before and during the war for insecticidal properties. It is perhaps the most promising of these, but a few others show almost equal promise.

It is not a new material, since it was first made in Europe about 1872, but its insecticidal properties remained unknown or unexploited till about 1942.

D.D.T. is a white powder, not soluble in water, but soluble in various organic solvents such as kerosene, diesel oil, acetone, and alcohol, etc. It is very slightly volatile. It is used as a spray dissolved in oil, as an emulsion in water, and as a dust mixed with inert material such as talc.

Value in War

Attention was focused on it because of the promise it gave as a substitute for other insecticides which were in short supply because of war conditions. Some of the major insect enemies of armies are lice, mosquitoes, and flies, all of which carry diseases capable of putting an army out of action. The louse, carrier of typhus, is a great problem in static warfare, and in civil populations in times of famine, and the need had long been recognised for a powder which would kill lice when dusted on the body and clothing. D.D.T. surpasses in efficiency all previous powders. In the control of mosquitoes, which carry malaria, yellow fever, and dengue fever, D.D.T.'s high toxicity and the fact that it required only a small quantity of oil to act as a carrier proved a godsend. With the use of the aeroplane for applying very fine mist-like sprays of D.D.T. in oil which killed

both adult and larval mosquitoes, it became possible greatly to reduce mosquitoes in large areas of otherwise inaccessible and difficult country. Against flies, the persistence of the poisonous residues left on walls, etc., after spraying made it very useful in keeping down such diseases as dysentery. It does not, however, knock the flies down as quickly as pyrethrum (the active ingredient in other fly sprays), but D.D.T. and pyrethrum together make an ideal combination. Similarly it has proved effective against cockroaches and bedbugs.

Great Persistence

This persistence of D.D.T. is one of its most striking and valuable characteristics. It will kill flies and other insects which walk on a sprayed surface two or three months after the spraying was done. This property has also proved useful in impregnating clothing with D.D.T. as a defence against scrub mites or itch mites, which carry scrub typhus. Such treated clothing remains effective even after several washings.

It is in the field of disease-carrying and household insects that D.D.T. has proved its value beyond doubt. In combating agricultural insects it has

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been shown to have great promise in some cases, but not in all, and much further work will have to be done before it can be used on all plants without danger of injury to the plants or to man or the animals feeding on them. Another field in which it shows promise is that of dips or sprays for animals, against lice, ticks, etc. Its usefulness as a timber preservative, its incorporation in paints and polishes, its use as a moth proofing for fabrics remain to be explored.

On the debit side there is its undoubted toxicity to man, both when taken by mouth or in oily solutions absorbed through the skin. It is not, however, any more dangerous, if ordinary precautions are taken, than some insecticides already in use. D.D.T. acts on insects as a nerve poison, destroying their muscular co-ordination. Its widespread use on fruit trees and crop plants may have the effect, already observed, of killing off large numbers of beneficial insects which are predators or parasites on pests. Similarly its use could have disastrous effects on hive bees and humble bees frequenting blossoms sprayed with D.D.T.

These questions do not arise yet in New Zealand, since all the present output of D.D.T. is required for disease control in war theatres and devastated areas, although it is expected that supplies will be available at an early date for special civilian purposes.



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