# THERE'S STILL A LOT WE DON'T KNOW ABOUT DDT

THE news that the manufacture of DDT solutions stronger than five per cent is not recommended by the Health Department probably came as a disappointment to many people who hoped this summer to wipe off old scores against mosquitoes, sandflies, bluebottles, and all the other insect pests which can at times take the savour out of the sunniest holiday season. But in counselling caution — and warning against over-optimism—the Department has followed the course any scientific body would normally take when dealing with a new chemical. For despite the spate of publicity about it in the last year or two, science does not yet know all it wants (or needs) to know about DDT.

Dichloro-diphenyl-trichloroethane has been known to laboratory chemists for over 70 years, but it was not used as an insecticide until a Swiss firm put it on the market some half-dozen years ago, and it had little publicity until the United States began using it on a large scale, first of all in Guadalcanal and other mosquito-ridden springboards of the South-west Pacific campaign and later in Europe, where it was used mainly as a weapon against lice, the carrier of typhus.

## Laboratory Work

The publicity which it has had so far, however, has been of a tuppence-technicoloured kind and the more penny-plain scientific information is still hard to come by. Most of the information in this article comes from three Interim bulletins*, one from the United States Department of Health detailing laboratory experiments, an Australian summary of American field experiments and agricultural tests, and a report on the work carried out since 1944 by officers of the Division of Entomology at Pretoria in the Transvaal.

These reports are, of course, written solely for the information of scientists and nine-tenths of the text would be incomprehensible to anyone else, but where ordinary English breaks through (as it does occasionally) the story is interesting enough. The U.S. Department of Health, for example, explains that dissolving DDT powder in fatty oils increases its toxicity and says that laboratory mice, which absorbed DDT through the skin from such solutions, suffered from tremors, jumpiness, and, in extreme cases, convulsions. In sufficient doses, the report adds, it may cause fatty degeneration of the liver and kidneys and changes in the nerve-structures.

After detailing various experiments carried out with mice, rats, guinea-pigs, dogs, and humans, the report offers several conclusions that are worth wider publicity. One is that DDT in anything from a one to five per cent. solution is safe for use as an insecticide—so long as it is not a solution in oil, when toxicity is increased. Similarly, up to 10 per cent. of DDT in an inert powder such as talc can safely be used to dust clothes for the extermination of lice (or moths, if you are on the higher income-levels). But it should be noticed that the reference is only to the dusting of clothes. Such a powder might not be so harmless if used on a pet cat or dog, since cats will always be licking themselves and dogs also have the habit to a lesser extent.

Brief reference is also made in the report to a thorough clinical and laboratory study of three men, each of whom had several months' occupational exposure to DDT used in various forms as an insecticide. No evidence of any ill-effects could be found.

## Effects Upon Wild Life

Far-reaching effects are more likely to result from the use of DDT in the control of crop pests. It is this use of DDT which may eventually be of greatest interest to New Zealanders, but so far only single-application field experiments have been carried out in the United States. But already some useful knowledge has been gathered. Most of it has been summarised in the Australian Liaison Office report which details American experiments carried out to discover if DDT, used extensively, is likely to damage or destroy wild life or the beneficial species of plants or animals.

Areas of up to 1800 acres in Pennsylvania, Maryland, South Carolina, and Nebraska have already been treated from the air but none has had more than one application of DDT. The amount of chemical used varied from 1lb. to 5lb. an acre in the spraying tests, and in South Carolina, where the powder was used to eradicate an "island" of Japanese beetle, the strength was 25lb. of DDT to the acre, the DDT being in the proportion of five per cent. to 95 per cent. of inert powder.

In these comparatively large-scale experiments no mammals were reported to have been affected in any of the areas, and where DDT was less than 5lb. to the acre birds, too, were unharmed. But at 5lb. (in Pennsylvania) the bird population was reduced to about one-third of its prior level and a number of birds were found dead. In the one test where 25lb. to the acre was used several hundred birds were killed.

Cold-blooded vertebrates appeared to be more susceptible, snakes, frogs, and especially fish being killed by 2lb. to the acre. How important this is likely to be, as far as maintaining the balance of life is concerned, has not yet been estimated,

*(continued on next page)*

* (1) Toxicity and Potential Dangers of Aerosols, Mists and Dusting Powders containing DDT, U.S. Dept. of Health. (2) The Effects of Widespread Civilian Use of DDT, Australian Scientific Research Liaison Office. (3) South African Research on DDT by Officers of the Division of Entomology, Pretoria, by Dr. Bernard Smit, Principal Entomologist, Pretoria.