Aerial Control of Beetle Pest

By C. S. SMITH

AN aerial spraying campaign against cockchafer beetles recently concluded in Switzerland was an outstanding example of co-operation among farmers to make possible the use of the aeroplane for pest destruction. The cockchafer (*Melolontha melolontha* L.) has few natural enemies in Switzerland and is a very serious pest. Spraying from an aeroplane is the only practical means of combating it.

THE Rhone Valley in the Canton of Valais in the south of Switzerland is about a mile across at its widest and is 65 miles long. On both sides the Alps rise to 10,000ft., and except for terraced vineyards on the lower, south-facing slopes, cultivation is confined to the flat valley bottom. Conifers grow up to 2500ft. and oak, sycamore, willow, and poplar on the lower slopes. These trees become infested with cockchafers in flight years.

Pest Attacks Roots of Crops

Crops are asparagus, corn, lucerne, potatoes, soft and stone fruits, and pasture. Soil is alluvial, coarse but alkaline, and deep but lacking body. In this light soil lives the larva or white grub of the cockchafer. For 3 years it devours the roots of crops, even of young fruit trees. It defies all efforts to eradicate it by soil fumigant and in winter it burrows down 12 to 30in.

When the sudden heat of spring sun warms the soil in the third year the larva, now a mature beetle, crawls to the surface and flies to the trees. There it mates, and the female descends to the ground again and lays the eggs (40 to 60 eggs per beetle in the few weeks of adult life) that will within a month or so turn into the white grubs that for another 3 years will plague the roots of crops. A population of 1,000,000 to 1 acre is not unusual.

Air Spraying Only Control

Formerly Swiss authorities paid a few centimes per litre to children for collecting the beetles, but year after year the larvae in the ground created havoc. It became apparent that the only way to tackle the cockchafer was when it was on the wing. Air spraying in the flight years, which can be predicted, was the only answer.

Three years ago the Swiss Government sought the help of Pest Control of Cambridge, England, and a contract was signed for helicopters and fixed wing aircraft to spray D.D.T. emulsion on the treetops. A kill of 50 to 90 per cent. was recorded.

The firm was invited again this year to spray against the cockchafer on a large scale. The farmers of the communes paid for the spraying on an acreage basis.

Five aircraft (two helicopters and three Auster machines) with all the ancillary equipment, including insecticide and fuel tankers, spares, and ground crews, had to be transported from England.

Spraying was generally done in early morning and late evening, when the still air would cause the emulsion to sink accurately on to the treetops. Six hours' spraying was about the daily average.

Equipment on the way to the operational area.

For smaller areas the helicopters, carrying 40 gallons of emulsion and having a swath width of 45 to 60ft. close over the treetops, were used. The Austers, carrying 60 gallons a trip and giving a swath width of 60 to 90ft. at 30ft. over the trees, did the larger areas. The average spraying per day was 1800 to 2000 acres.

Successful Results

Results were impressive. Thousands of dead beetles darkened roads under the trees. The D.D.T. emulsion used is toxic whether it touches the beetles or whether they eat the sprayed tree foliage, and it remains toxic for about 14 days.

Switzerland has comparatively little land for growing crops. What there is has to be fully utilised. The cockchafer was a constant and growing menace. A Swiss agriculturist said. "We should have had to give up intensive agriculture in this valley if we had not been able to spray the cockchafer in this way".

Photographs by Pest Control Ltd.