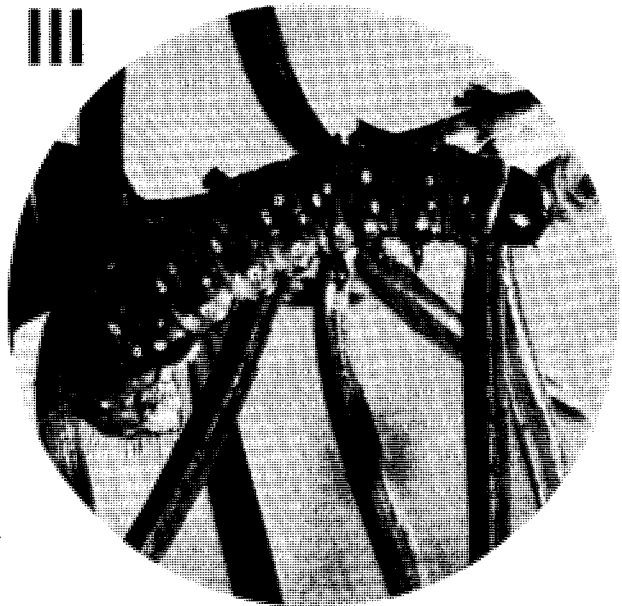


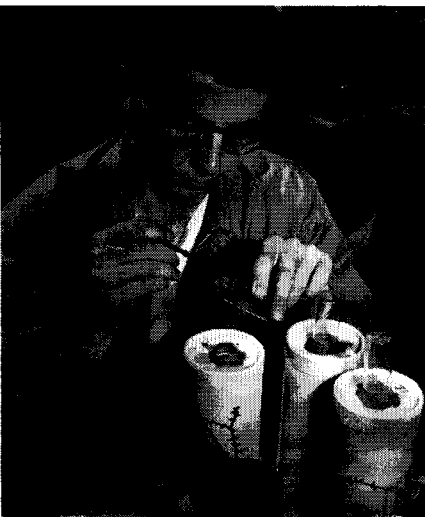
# Operation Budworm III

**Achievements of the past three years in New Brunswick have proved the economic feasibility of protecting vast areas of forest lands by aerially applied insecticides**

The enemy, a spruce budworm which feeds on New Brunswick balsam fir. As many as a quarter million of these larvae may be found on a single tree



**D**URING THE SUMMER OF 1949 foresters reported an alarming increase in the population of spruce budworms in the balsam spruce forests of northern New Brunswick. In 1950 about 200 square miles of forest were stripped of new foliage and by 1951 the epidemic was affecting 2200 square miles.



Early in May the entomologists arrived. Budworms were collected and their development checked to find out when they would be most vulnerable to chemical attack

Until this time there had been no known technique for halting an epidemic of the budworm. The area of the outbreak included valuable timber reserves of several New Brunswick timber companies. In the fall of 1951 the New Brunswick Pulp and Paper Co. in cooperation with the provincial government initiated emergency plans to spray DDT over the affected area in the following

spring. Entomologists had found that the budworm was susceptible to DDT during a brief period in early spring and the spraying operation required a close degree of cooperation between the entomologists and the aerial applicators. In the spring of 1952, 200,000 gallons of DDT insecticide were applied over about 200,000 acres of forest. By summer the entomologists declared that the control campaign had been successful and plans were begun to expand the operation the following spring.

A greatly increased operation was undertaken in the spring of 1953 supported by the Canadian federal government, the provincial government of New Brunswick, and four paper companies.

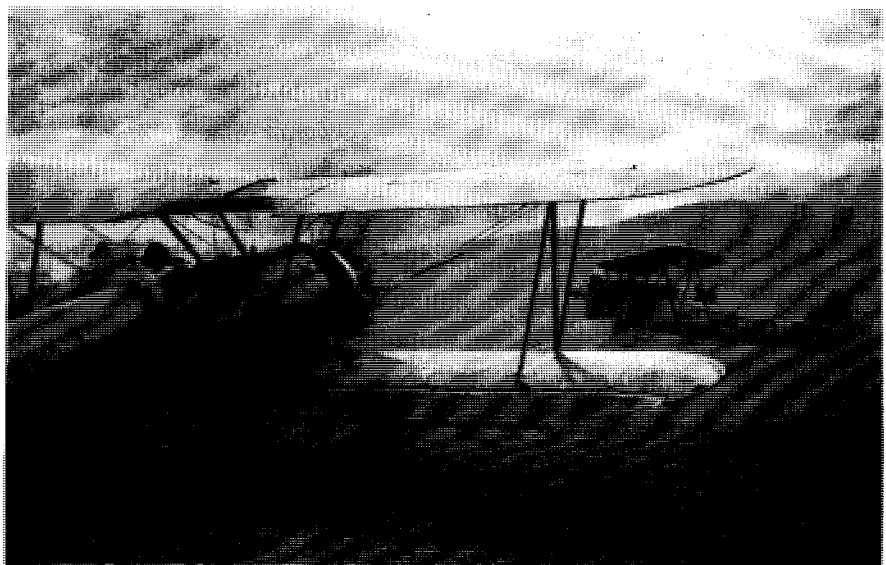
The four paper companies have now set up a cooperative company with the government of New Brunswick called Forest Protection Ltd. to combat the budworm epidemic.

This year's spraying, Operation Budworm III, was administered by the new company. About 1 million acres of forest were treated by 40 airplanes operating from 5 different air strips.

The spring spraying operations require military-like planning which extends over more than 8 months.

The entomologists and foresters survey the forests during the summer to determine where outbreaks of the budworm are threatening. Areas to be treated are then mapped out and roads and airstrips surveyed into the bush to

When the entomologists signaled that the budworms were ripe for attack the planes took off. There were only 30 hours when conditions were right for the aircraft, but over 3000 take-offs and landings were crowded into this time





Spraying airplanes flew in pairs. It was discovered that the air turbulence created by two airplanes flying together provided wider dispersal of the spray particles and permitted more efficient coverage. Left. Budworms were killed by the tens of billions. Trees were covered by these shining silk threads as larvae came spinning down following a lethal dosage of the insecticide

service the planes the following spring. Actual construction of the spraying camps is undertaken during the winter, when the ground has frozen sufficiently to support heavy trucks and earth moving equipment. The roads and airstrips are hacked out in the early fall and during the winter drums of DDT, aviation gas, and other supplies are trucked into the operations bases. It is important to get these heavy loads into the forest before the spring thaws make the roads impassable.

The spray planes, coming from as far as the state of Washington, are flown into the air strips in May and then the operation hinges on the decisions of the entomologists, who decide the optimum for spraying the budworms, the meteorologists, who attempt to predict the wind currents which will be optimum for spraying, and the weather, which is occasionally uncooperative.

Following the spraying the entomologists again survey the area to determine the degree of kill of the insect pests and also to find new areas of threat.

Examination of the trees indicated that more than 95% of the budworms in the sprayed plots were killed. The effectiveness of aerial application of DDT has been proved and the campaign will probably continue as long as the budworm remains a threat to the forest

Mortality rate and effectiveness of the spraying were checked by spreading sheets of chemically treated paper under the trees. Spray droplets would cause a discoloration of the paper. By this device it was easy to find areas which had not been completely covered by insecticide

