

photography gives a record of the external development and appearance of the clouds. As the echoes are tracked on the radar, mobile units are directed by radio into the storm vicinity. Two units are equipped to measure rain and hail fall rates and collect precipitation samples for later laboratory study.

The radar's special variable polarization equipment and displays make it a unique weather radar. The polarization equipment, which became operational last summer, provides for transmission and reception of a variable polarized beam that may enable hail studies scientists to detect the presence of irregularly shaped ice formations which occur within storms. This should permit a good distinction between round, smooth raindrops and non-round, rough hail stones.

SUPPORTING RESEARCH

Four other research groups worked with the hail project last year. The

Saskatchewan Research Council set up electronic equipment in the Lacombe area to measure the electric field in the atmosphere, and to count the number of lightning discharges as storms passed overhead.

A team from the University of Wyoming brought a specially instrumented Twin Beach aircraft to Alberta and spent many hours flying under severe storms, taking measurements of air and moisture flow into the base of clouds. The aircraft penetrated several small growing cumulus clouds to collect and count cloud droplets and ice crystals. Survey flights were also made to measure the number of ice nuclei and the sulphur dioxide concentrations within parts of the project area.

A meteorological research T-33 jet aircraft from NRC's National Aeronautical Establishment, spent several days measuring winds and turbulence up to heights of 30,000 feet around storms. Two experiments were per-

formed in conjunction with chemists from the Desert Research Institute at the University of Nevada. Small amounts of silver iodide and indium hydroxide were released from an aircraft into the updraft area of two storms. Rain samples were collected downwind between 30 and 90 minutes later. The amount of these chemicals will be determined in each sample. The analysis of these experiments should give further insight into the rain-forming process in clouds.

Some 25,000 farmers in the main study area, together with an additional 10,000 in the area south of Calgary, provide data on where, when, and how much hail falls. These reports are then correlated with the display received on the radar. About 35,000 such reports have been received in the project's history. As a result, more is now known about the climatology of hail in Central Alberta than anywhere else in the world.



Crop damage like this costs Canadian farmers millions of dollars annually.

La grêle coûte cher aux canadiens. Les dommages à la récolte se chiffrent par millions de dollars chaque année.