

In the field of housing research, the Division continues its co-operation with Central Mortgage and Housing Corporation; joint studies have been made of field problems such as paint deterioration and basementless houses. A soil mechanics laboratory is in operation and a number of soil studies have been made in the field including an extensive investigation at Steep Rock Lake. Initial tests have been run on the heat performance of existing buildings, preliminary to this winter's programme of similar tests. A long-term study of mortar deterioration is being planned. To assist those interested in the testing of building materials, a directory of commercial testing laboratories in Canada has been prepared as the first of a series of technical reports designed to assist the building industry.

Brief reference may also be made to the work of the Canadian Government Specifications Board formerly known as the Canadian Government Purchasing Standards Committee. Very satisfactory agreement regarding mutual fields of activity have been reached between this Board and the Canadian Standards Association.

The Division of Mechanical Engineering has been engaged during the past year on work in aeronautics, hydrodynamics, and certain phases of mechanical engineering. This Division serves as the research organization of the Royal Canadian Air Force and also provides the Canadian aviation industry with research, development and testing facilities. In performing this two-fold service, the icing and low-temperature operation of jet engines have been investigated and the supercooling of water and the atomization of water have been studied.

In co-operation with the Department of National Defence, the Division has studied the behaviour of fuels and lubricants at low temperatures. Related problems have been investigated in the gasoline and oil laboratory. In the wind tunnels, models of new aircraft have been tested for Canadian aircraft firms. The study of the control and stability of tailless aircraft was continued, with flight trials of the tailless glider at Namao, Alberta. In the autumn the glider was towed, via Winnipeg, Chicago and Toronto to Arnprior where trials will continue this winter at the Flight Research Station. Special automatic instrumentation for the tailless glider and instruments, including a cloud-droplet camera, for the measurement in flight of the meteorological conditions associated with aircraft icing, have been developed in the instrument laboratory.

In the low-temperature laboratory, opened early in the year, the cold chambers are now in full operation and tests on the behaviour of aircraft components, engines, vehicles, etc., at low temperatures are proceeding. Facilities for the static testing of full-scale components in the structures laboratory have been brought into operation and certain wings tested. Work has begun on the design of a laboratory to be equipped with supersonic wind tunnels and equipment for work on combustion, compressors and turbines.

In the hydraulics laboratory, several projects have been undertaken on open-water structures including log chutes, spillways, and river channels. The fire hazard laboratory has continued the testing of domestic oil-burning equipment for the Canadian Standards Association.