

National Research Council

for post-graduate study and makes grants-in-aid to responsible persons in universities for research on approved projects, mostly in pure science.

About forty committees assist the council in the planning and direction of research projects on subjects of broad national interest.

While the work in the national research laboratories is directed chiefly toward increasing the efficiency of Canadian industry, the responsibility for and importance of pure scientific research as a means of keeping investigators abreast of world developments have been recognized and the fundamental work which is going on in the physics and chemistry divisions is of a high grade and is receiving international recognition. The junior positions of the establishment in the fundamental research divisions are being filled by post-doctorate fellowships. Under this plan more than 50 of the world's most distinguished young scientists from 37 different universities and from ten countries of the world have been brought together to work under leading research scientists at the council.

The national research council operates the Chalk River plant as an agent of the atomic energy control board. This establishment employs about 1,200 men and has a budget of about \$6 million. I mention this as one of the responsibilities of the council but will not mention any details as I am dealing tonight with the research council in its more restricted meaning.

One of the most recently established research divisions is associated with building. Because of the high level of construction activity in Canada difficulties have been experienced in building up a staff for this division, and because of the urgency for housing this division has deferred long-term research projects in favour of the more immediate and urgent problems of today. However, a regional station is being developed at Saskatoon to deal with the special problems of the prairies, and a large laboratory facility is being built in Ottawa for testing whole sections under severe cold weather conditions. This division acts as a scientific research arm for the housing corporation and its time and energies are largely devoted to the problems of the corporation. In addition, engineers in this division have co-operated with the authorities in various cities in connection with foundation, construction and subway problems.

Regarding the mechanical engineering laboratory, this is essentially an aeronautical laboratory and serves the research interests of the Royal Canadian Air Force, Canadian

[Mr. Howe.]

aviation industry and the air transport systems. The structures unit of this division is testing full-scale models of the aircraft being made in Canada including the A.V. Roe jet fighter and the jet transport. A supersonic laboratory is being constructed which can test components, and at Arnprior at a very moderate cost a small transonic wind tunnel has been built into the wing of a Mustang aircraft which can operate as a flying wind tunnel. Facilities are available for making complete flight tests on aircraft including the installation of the wide range of complicated instruments required for such work.

The investigations of icing and the development of protective devices against this hazard have been carried on vigorously. At the present time an R.C.A.F. North Star aircraft has been fully equipped and is being used for this important work. In the hydraulics laboratory various models are being tested, and a 30-mile stretch of the Fraser river and its delta is under investigation in this way for possible improvements of the navigation channels. Also numerous problems associated with the movement of logs in rivers, the study of fishways and the problems connected with log jams are being studied in the model tunnels. An extensive line of cold weather investigations is being carried out in the cold weather laboratories, and studies of the effect of low temperature on lubrication problems of motor vehicles, aircraft, diesel locomotives, and many other equipments are being made.

As to the division of radio and electrical engineering, radio problems in connection with aircraft are also being studied in this laboratory. The high speeds of jet-propelled aircraft have brought innumerable problems in connection with antennae and this laboratory has designed a suppressed antenna for the new jet-propelled A. V. Roe transport. Much work has been done on aids to navigation for both marine and air use. Experimental harbour control units have been established in both Halifax and Vancouver, and a marine radar set for merchant steamers designed by the research council is now in commercial production.

The radar section has also given assistance to other departments of government in connection with the development of shoran which makes possible rapid and accurate surveying of large areas from aircraft. This division is also doing extensive service work for other departments of government, divisions of the council, and industry in the many specialized fields of electrical engineering and radio.