

Another method is to shoot a projectile containing the instruments out of a smooth-bore gun, a method being tried by a group in the Engineering Faculty of McGill University with considerable support from the United States Defence Department. An old 16-inch gun has been adapted for this purpose and mounted at a site in Barbados. This is an interesting experiment but the shock of firing the gun introduces problems in design of the instruments being carried.

Space research activities are carried out by several Canadian universities as well as in government laboratories. In fact, upper atmosphere research is a field in which some university research workers have long been active. The National Research Council gives grants to university research workers in space research and, for advice in this field, the Council has formed an Associate Committee on Space Research whose membership includes representation from universities, government laboratories and government departments holding operating responsibilities relating to space technology. Because university space research experiments are usually carried out with the upper atmosphere sounding rockets of the *Black Brant* series, part of the Council's assistance is in supplying the rockets and co-ordinating arrangements for their launching at the Fort Churchill, Man., rocket-launching facility.

Another function of the NRC interest in space research is that of holding membership in the International Council of Scientific Unions' Special Committee on Space Research (COSPAR). This Committee consists of members representing ten international scientific unions and representatives of the National Academies or National Research Councils of countries that are active in space research. This Committee, though non-government in its organization (it represents academic and scientific interests not normally under the direct control of the governments of the countries concerned), has had considerable success in organizing international symposia on space science and has had a great influence in supporting international co-operation. This has been recognized in many references to COSPAR in the Proceedings of the United Nations Committee on the Peaceful Uses of Outer Space.

In addition to the scientific research activities, the construction of a satellite and the development of a series of sounding rockets, Canadian Government departments are taking part in many applications of space technology that affect their normal responsibilities. The first to come into common use are satellite applications to meteorology and communications. Meteorological satellites already have had a considerable influence in advancing the understanding of the world-wide weather pattern. The spread of Canadian territory across the northern hemisphere is such that a data read-out station in Eastern Canada will expand the coverage of transmission from meteorological satellites, particularly in closing the gap between ground stations in North America and Europe. The problem has been studied by the Meteorological Branch of the Department of Transport and an inter-government agreement has been reached for the building of a meteorological satellite data recovery station on Cape Breton Island.

In communications, the use of satellites has already been shown to have an extensive practical future in expanding the now overcrowded communication channels. The Telecommunications and Electronics Branch of the Department of Transport has the major responsibility in this field and an experimental ground station is being planned in co-operation with the United States.

In the organization of space research and practical application, Canada has not yet followed the United States plan of centring all non-military applications in one government organization. Canadian activities are considerable, however, and various groups in government and industry are taking advantage of developments in space research and technology to be consistent with their responsibilities and to meet the needs of Canadian industrial development.