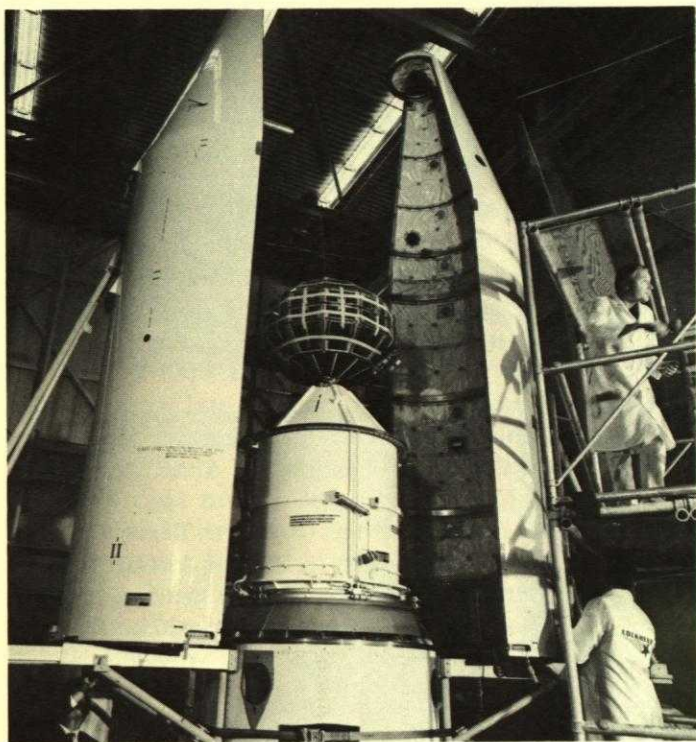




In 1965 Alouette II, part of the ISIS series, rode into space, atop the United States' Explorer XXI, aboard a Thor-Agena rocket. Here, a prototype is fitted into the nose cone.



The United States provided rocket and launch facilities for the ISIS series; Canada provided the satellites. This Delta rocket was used to launch ISIS II in 1971.

back-up model for Alouette I, was modified and reconstructed to conduct five types of ionospheric measurements. It was placed in an elliptical orbit with a 515-kilometre perigee (closest point to earth) and a 2,900-kilometre apogee (farthest point from earth). Alouette II and the U.S. ionospheric satellite, Explorer XXI, were launched on November 29, 1965. Alouette II remained operational for nearly ten years.

The next in the series was the more sophisticated ISIS I. It was launched on January 30, 1969, and is still working. It was placed in an elliptical orbit ranging from 575 to 3,315 kilometres. It measured ten phenomena, including radio propagation, radiation and energetic particles.

On April 1, 1971, ISIS II was launched into a near-circular orbit with a 1,423-kilometre apogee and a 1,356-kilometre perigee. As the most advanced ionosphere-probing satellite, it made 12 types of measurements — at that time, the largest number ever made by a single space vehicle. It continued the research of previous satellites and added measurements of light radiation in the upper atmosphere. This enabled scientists to piece together the first pictures of the aurora borealis as seen from above.

The missions of Alouette I and II are now completed; those of ISIS I and II are expected to extend through 1979. Specialized ISIS projects are being carried out at universities, such as the University of Calgary in Alberta, and in industries, such as the Aerospace Products Division of SED Systems Limited, Saskatchewan. Continuing projects include current experiments using the ISIS satellites and those analyzing the voluminous data already collected.

INTELSAT

In 1964 Canada joined ten other nations in the first agreement for an international communications system employing satel-

lite technology, INTELSAT. This international consortium was created to own and operate a global commercial communications network using satellites stationed over the Atlantic, Pacific and Indian oceans. Its "Early Bird" satellite, launched on April 6, 1965, was followed by the INTELSAT II, III, IV and IV-A series. INTELSAT now has 101 member nations and 163 stations in 88 countries.

Teleglobe Canada, a Crown corporation, is Canada's INTEL-SAT carrier. It operates a worldwide network, which includes both communications satellite circuits and submarine cables. Teleglobe has three satellite earth stations—two at Mill Village, Nova Scotia, and one at Lake Cowichan on Vancouver Island. These are linked to overseas terminals by INTELSAT IV and IV-A satellites. The Mill Village No. 1 earth station was built as an experimental station by the Department of Transport in 1965. The Mill Village No. 2 station began operation in 1969; the Lake Cowichan station, in 1971. A station in the Laurentians north of Montreal is to become operational in 1979.

Teleglobe's dramatic use of the INTELSAT Global Satellite System made the 1976 Olympic Games in Montreal the most widely viewed event in history. Teleglobe installed a transportable earth station that used two simultaneous television channels to transmit approximately 800 hours of Olympic television programming from Canada to Asia, Europe, Latin America and Africa.

TELESAT CANADA

Canada's extensive territory, harsh climate and thinly scattered northern and western settlements have created special communications needs, and space technology has helped meet them. The achievements of Alouette and the ISIS scientific satellites, along with Canada's early participation in the experimental and commercial development of