

ROLE OF CANADA

We in Canada, as members of INTELSAT, hope to play a continuing and influential role in the growth of satellite communications. Throughout the world, in the United States and currently in Canada, extensive discussions are taking place to determine the opportunities that are opened up by the use of these space satellites for the satisfaction of domestic communication requirements. A recent proposal placed before our Government put forward a domestic satellite system as the communications vehicle to cover our country from coast to coast and from the border to the Arctic - for message traffic, radio and television. Spearheaded by a private broadcaster in Canada, typical of an always active and exuberant segment of our business community, and supported by a leading space-electronics company, they contemplate a body called CANSAT which would be somewhat parallel to COMSAT in the United States. Another interesting proposal for using satellites has been made by a leading commercial communications company which has been actively studying the opportunities opened by satellite communication and plan to build an earth station in Canada to test the practicality of this concept. I have confidence that these imaginative proposals will be followed by many others in all fields of endeavour as we build a second Canada....

CANADIAN ELECTRONICS

Innovation and technology know no boundaries. We in Canada are aware that, if we are to play a role to the benefit of both Canadians and the world, we must determine where best we should employ our efforts and talents. The easy route would, of course, be to sit back and wait for our American friends alone to perfect and implement such a satellite communication system. But this would accelerate the growth of a branch plant economy in Canada. The steady allure of research and engineering opportunities in the United States for the scientists and engineers we have trained demand that we create comparable opportunities in Canada. A brain drain is not part of our policy to build the second Canada. We must specialize. We must do our own research. We must use our own brains. We have proven in Canada, particularly in the electronics industry, that we can lead the world in certain major developments. The *Allouette* space satellite was one of the most successful and reliable of any similar space probes. These are continuing. The Canadian electronics industry is a \$700-million a year business today and engages over 50,000 people. Exports are currently running at about \$100 million a year - a healthy 14 per cent of its output. This export is not metal bashing or sub-assembly fabrication from U.S. branch plants in Canada. Rather, for the most part, it covers electronic products and systems developed in Canada and vigorously marketed throughout the world. Let me cite a few examples: airborne doppler navigation equipment, in use in over 3,000 planes of more than 30 types; flight simulators - more than \$35-million worth of exports; wideband microwave relay systems - over 20,000 route miles in 13 countries; digital to video displays - this system, termed DIVCON, was in use by each of the three American networks in the

recent elections and is finding wide applications throughout the world, in stock markets, the broadcast industry and in airline operations; communications satellite - we have a strong integrated capability in this field and expect to glean a fair share of the some quarter billion dollars world market for such stations that will girdle the earth....

AN INTEGRATED APPROACH

...As competition intensifies research becomes even more imperative - and more costly. Research is now so expensive that there is little room for wasteful duplication or unnecessary work. Research must overlap to some degree to advance swiftly. But clearly the time has come for some co-ordination - and on a grand scale. What you and we must do is to determine where each of you in the private sector will best serve and promote electronic development. We must devise new ways of setting priorities in the electronics industry so that all our human skills and talents can be fully utilized for the future. What I am calling for is an "integrated" approach to research development not only by Canadians, but by Americans. Each of our countries must determine how best to serve its own private and public interests by the co-ordinated development of new technology. I am calling for an "interface" between governments, and governments and the private sectors. Each of us should be given priority to do what we do best within a joint plan. In this way no brains will be wasted - and research will follow well-co-ordinated specialties within our joint overall programme. I hope you will not consider this a "spurious" approach, which might founder because of the "parasitic" tendencies from within the industry itself.

CANADA PROVIDES A MODEL

Canada's communication system is unique. On one hand, there is a group of telephone companies that act in concert to provide national services and, on the other hand, there are two railway companies providing services, each of which is national in scope. All companies provide a most comprehensive total communications network. Television relay, data exchange, telex, conventional telephone and standard telegraph transmission services are all included. These systems are intermeshed and intertwined. The two railway companies, one publicly and the other privately owned, are in competition with the private and public telephone groups. This mixture of public and private ownership - all in competition - has served Canada well and may provide a prototype of what might work internationally as well.

The public and private sectors must adjust to vast and rapid changes in electronics. All our concepts, modern as they are, are becoming outmoded.... Do we still believe in Euclidian space - in a three-dimensional world? Or can space itself be bent or curved so that the axioms of Euclid are no longer valid? Space can be altered by the pull of gravitational fields, though this may be putting the cart before the horse, since these fields are the result and not the cause of curvatures in space. If we can shape or control the fields or forces in space, the science-fiction idea of "space-warps" may not be fantasy. If