

Although optical transmission is not expected to come into general use until the 1980s, advantages and problems are such that an active program is fully justified. CRC has been engaged in all aspects of the field, including the electronics of the transmitting and receiving equipment, the design of optical fibres and methods of connecting them, and the mechanisms leading to noise generation within the fibres themselves. The program is being closely co-ordinated with that of industry.

Fruitful collaboration has taken place between CRC and the Bureau of Staff Training and Development at Carleton Place on the whole subject of the use of telecommunications techniques and media in the work of the Bureau.

Outside research. The Department's program of research contracts to universities has been continued under four major categories: space program, communications systems, radio and radar, and socio-economic and regulatory matters. Some 50 contracts, involving a commitment of about \$700,000, were approved in the 1974-75 fiscal year, with about 30% of this total being devoted to research in the socio-economic and legal-regulatory aspects of communications in modern society.

During the year, a trial program was set up designed to encourage R&D within the Canadian communications industry. With funding of \$500,000, eight contracts were let for specific innovative projects ranging from new equipment for teleconferencing to the design of rigid deployable solar arrays for spacecraft.

Another program intended to improve relationships between CRC on the one hand, and industry and universities on the other, involved the appointment of liaison officers by both the Centre and the company or university concerned. Each of these individuals, in addition to his regular work, is charged with the responsibility of making and keeping himself familiar with the make-up and activities of the organization to which he has been assigned, as well as acting as a focus for communications between it and his own organization. Both manufacturers and carriers have been included in this plan.

Expenditures. The Department of Communications spent a total of \$33.4 million on research and development during 1974-75, of which \$14.3 million was in-house, while \$15.5 million was contracted out to industry and universities. The remaining expenditure was for capital projects.

9.2.5 Department of Energy, Mines and Resources

The objective of the Department of Energy, Mines and Resources is to ensure the full and effective use of Canada's energy and mineral resources for the benefit of all Canadians. Its mandate encompasses the development, co-ordination and implementation of federal policy governing energy and mineral resources and the carrying out of research to obtain the scientific, technical and economic information basic to the making of such policy. The Department, in addition to its administrative services, comprises three sectors — energy development, mineral development, and science and technology.

9.2.5.1 Energy development

The tremendous growth in energy consumption in the world's industrialized nations and the increasing awareness that Canada's energy resources constitute a precious and not inexhaustible patrimony whose use must be carefully planned and regulated have given new weight and responsibility to the Department's Energy Development Sector. Its functions are reviewed in greater detail in Chapters 12 and 13.

9.2.5.2 Mineral development

The Mineral Development Sector identifies and evaluates trends affecting Canada's mineral industry by studying the entire mineral industry from geologist to user — exploration and development, processing, transportation, marketing and consumption. The information provides a basis for decisions to be taken within the Department and contributes to the development of resource policies. It carries out the administration of the Emergency Gold Mining Assistance Act; advises and participates in the programs of several other federal departments and task forces; represents the Department on several national and international committees; and co-ordinates the Department's foreign aid activities with the Canadian International Development Agency.