

distinguished by the broad approach taken to the problems of crater identification and analysis: gravity, magnetic, seismic, resistivity, structural, topographic and petrographic methods have all been employed; even more important has been the pioneering use of continuous diamond drilling to investigate the deep zones of a number of craters.

The knowledge so gained has application to the nature, origin and abundance of meteorites and to the history of the more stable parts of the earth's crust. The analysis of field and laboratory observations, coupled with pertinent experiments, has led to a better understanding of the dynamic properties of the earth's crust and the nature of its response to high-energy shock pulses. These results have application to the field of rock mechanics and to the contemplated use of nuclear explosions for large excavations and are of significance to the mining and oil and gas industries because large impact structures have sometimes formed or controlled the distribution of deposits of economic importance.

**Polar Continental Shelf Project (PCSP)** is the name given to an annually repeated effort on the part of an EMR unit to provide electronic position-finding, air transportation and supplies to Canadian and foreign scientists and surveyors exploring the northern Arctic, where the severe climatic and geographical conditions make it almost impossible for smaller field parties to operate on their own.

There are two base camps — at Tuktoyaktuk in the western Arctic, and at Resolute on Cornwallis Island in the eastern Arctic.

Although the PCSP is staffed and managed by the Department of Energy, Mines and Resources, the field parties that it supports frequently belong to other Canadian government and research agencies, and occasionally to scientific agencies outside Canada. The common criterion applied to all of the field surveys and investigations is that they should yield information useful to Canada. Hydrographic surveys of the Arctic seas and straits are one of the major efforts; geological and geophysical studies in aid of resource development and conservation account for another large share of air time and money. Each field season also sees investigations concerning the glaciology, biology, archaeology, and other phenomena as they apply to the northern Arctic.

**The Canada Centre for Remote Sensing** is the newest branch of the Department of Energy, Mines and Resources. It has been set up to supervise and co-ordinate airborne and satellite remote sensing in Canada, and to carry out or encourage research in remote-sensing technology and interpretation.

The sensors being used are mainly of two types: photographic cameras using a variety of special films, including infra-red; and line scanners that operate somewhat like television cameras and are mounted in an orbiting satellite. The Centre has at its disposal a fleet of four aircraft to respond to requests for remote-sensing surveys from federal, provincial and private research agencies. It has also entered into a contract with the US National Aeronautics and Space Administration (NASA) to receive imagery of Canadian territory from NASA satellites. The first of these satellites, the Earth Resources Technology Satellite A (ERTS-A) designed especially to scan the surface of the earth and to catalogue its resources, was launched in July 1972. It orbits the earth at an altitude of approximately 500 miles, the orbits shifting to follow the sun. LANDSAT-2, the second of the series, was launched January 19, 1975.

Canada converted a radar station a few miles outside Prince Albert, Sask., to receive satellite imagery from the ERTS-A satellite. In April 1976, a second satellite tracking station, located at Pouch Cove, Nfld., will extend satellite coverage to the Atlantic provinces and adjacent ocean areas.

Remote-sensing imagery is capable of giving a quick and — in the case of satellites — constantly updated overview of forest cover, snow cover and snow melting, movement of sea ice, the condition of ocean water, urbanization, land use, etc. It is a novel and exciting tool for those charged with planning the orderly development and conservation of Canada's resources.

## 9.2.6 Department of the Environment

### 9.2.6.1 Atmospheric research

The federal agency responsible for atmospheric research is the Atmospheric Environment Service (AES) of the Department of the Environment, concentrated in the Atmospheric Research Directorate. Capital, operating and maintenance funds for research and develop-