

concerned with the recovery of meteorites and investigation of meteorite craters. Branch scientists conducted the world's first systematic search for ancient meteorite craters using air photographs, maps and other information. Sixteen impact sites have been identified in Canada and a greater number of possible sites are under investigation. These investigations have been 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.

The Polar Continental Shelf Project has been undertaken to increase the scientific and technical knowledge about the arctic regions of Canada. It provides the means for integrating or co-ordinating arctic investigations and, by developing specialized knowledge and experience in technology, logistics, communication and human problems and making such facilities and knowledge available to responsible organizations, it promotes effective scientific and technical work in the arctic regions. The project works directly with other branches of the Department in planning and carrying out an integrated program of arctic research and survey; it conducts independent investigations to obtain information of basic importance about arctic phenomena, resources or conditions; and it co-operates with other government departments and agencies and with universities to provide expertise and facilities for arctic studies. Major programs, most of which are undertaken in co-operation with other departmental branches or agencies, include: aeromagnetic surveys of arctic regions and preparation of aeromagnetic maps; geodetic and topographic surveys of arctic regions to improve surveying techniques and knowledge of glaciology; investigation of marine geology of the arctic continental shelf and continental slope; investigation of terrestrial geology of arctic regions; hydrographic survey of the arctic continental shelf and slope; and oceanographic survey of arctic waters near the continent.

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 now 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 number of 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.

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.

9.2.4 Department of the Environment

9.2.4.1 Meteorological research

The federal agency responsible for meteorological research is the Atmospheric Environment Service (AES) of the Department of the Environment. Capital, operating and maintenance funds for research and development allotted to the Atmospheric Environment