

surveys, conducts research in the earth sciences and compiles inventories and disseminates information in these areas. The Mines Branch conducts research in support of industry on the extraction, processing, marketing and use of Canadian mineral resources. It is also active in the field of pollution abatement. Research conducted by the Earth Physics Branch is concerned with geomagnetism, gravity and seismology. The Atlantic Geoscience Centre at Halifax, NS, is involved in research into the geophysical properties of the seabed; such research has important applications to the exploration for off-shore oil. Northern scientific research in such areas as ice conditions is conducted by Energy, Mines and Resources through the Polar Continental Shelf Project.

The Department of Agriculture has the largest single budgetary program devoted entirely to research. Research conducted at the Central Experimental Farm in Ottawa and at regional laboratories across Canada involves all elements of the food chain — soils, crops, animals, plant and animal products — and includes investigation into disease as well as problems of food processing and storage. Other programs in Agriculture which include some scientific activities include the Administration Program (scientific information services), the Canadian Grain Commission (grain research at the Winnipeg laboratory) and the Health of Animals Program (animal and poultry diseases). Further details of these programs are given in Chapter 11.

The Department of National Health and Welfare accounts for most of the intramural expenditures of the federal government on health research; \$13.1 million was spent on research and development studies and related scientific activities in health fields in 1973-74. Major subjects of research were pharmacology, pharmaceutical chemistry, nutrition, microbiology, pesticides, food additives, clinical laboratory procedures, health services, prosthetics, epidemiology and physical fitness.

The Department of Communications spent \$9.5 million on current R&D conducted within the Department in 1973-74 on subjects concerned with communications problems such as radio-wave propagation, terrestrial and space communications systems, electronics, space mechanics and satellites. A major goal of space communications systems research is the development of systems that will provide services to remote areas of the North.

Regional distribution. Federal scientific establishments are located across Canada. Although the bulk of the scientific expenditures and personnel are concentrated in the National Capital Region, there are important establishments in all regions.

Those departments and agencies which maintain significant scientific establishments outside the National Capital Region include: Agriculture; Atomic Energy of Canada Limited; Energy, Mines and Resources; National Defence; and the National Research Council. The Ontario region (excluding Ottawa) has the second largest concentration of research expenditure and personnel, much of it due to the Toronto headquarters of the Atmospheric Environment Service which had total expenditures of \$42 million in 1973-74 for scientific activities. This should be taken into account when making comparisons with other regions as most other major headquarters are in the National Capital Region. Major establishments in Ontario also include the Canada Centre for Inland Waters at Burlington and the Institute of Environmental Medicine at Downsview.

The departments of Agriculture and Environment have important facilities in Quebec. The Atlantic Provinces are the location for a number of important laboratories, particularly those investigating marine problems such as the Bedford Institute at Dartmouth, NS. Major marine research installations are also located in British Columbia at Vancouver and Nanaimo and in Manitoba at Winnipeg (the Freshwater Institute, Fisheries Research Board). Agricultural, forestry and weather research installations are found across Canada. The National Research Council operates regional laboratories in Saskatoon and Halifax.

9.2.3 Personnel

Personnel engaged in scientific activities in the natural sciences in federal departments and agencies are shown in Table 9.5. Data relate to the fiscal year ending March 31, 1974. Continuing employees are reported as at September 30, 1973, while term, casual and seasonal employees reported are the total for the entire fiscal year. Personnel are classified into: executive, scientific and professional, administrative and foreign service, technical, administrative support, and operational for each of the activities — research, related scientific activities, or the administration of extramural programs.