

A total of 25,908 man-years were reported for scientific activities in 1973-74, of which 23,614 were continuing (permanent) employees. The technical category accounted for the greatest number with 8,758 permanent and 628 temporary man-years; the scientific and professional category totalled 6,580 man-years. The principal scientific activity in terms of man-years, with 63% of the reported total, was research and experimental development which also accounted for 61% of the current intramural expenditures.

The Department of the Environment is the principal employer of scientific and professional personnel (2,122 in 1974); the next largest number of scientists (in man-years) is Agriculture with 1,008, followed by the National Research Council with 922. Environment is also the main employer of all scientific personnel accounting for 31% of the reported total man-years, double the number of the next department, Agriculture.

Data on the permanent scientific and professional staff involved in R&D show that 72% of the reported personnel hold advanced degrees. In the departments of Agriculture and National Health and Welfare over 60% of the reported scientific and professional staff hold doctorates. The major scientific employer, Environment, reported a total scientific and professional R&D staff of 1,128 with 46% at the doctoral level.

Personnel costs accounted for 69% of current in-house scientific expenditures in 1973-74. Environment reported 63% of its current intramural scientific budget for personnel and the National Research Council, 64%. Of the major employers the Department of Agriculture reported the highest proportion allocated to personnel, 80% of current intramural expenditures.

#### 9.2.4 Aid to universities and non-profit institutions

Federal payments to Canadian universities and non-profit institutions for scientific activities in the natural sciences in 1973-74 exceeded \$150 million, of which \$135 million was for R&D. Almost one third (29%) of the R&D funds supported free basic research; medical science and public health R&D accounted for an additional 41%. Table 9.6 shows the distribution of payments by scientific activity. R&D contracts are steadily increasing in number but are still relatively minor compared to grants as a source of research funds for universities. The distinction, however, between grants and contracts has not been finely drawn; contracts are generally held to be more directly related to immediate departmental needs, often supplementing research in the department itself, while grants programs have more general long-range objectives. Research is often contracted out when departmental manpower is insufficient to staff all required projects or when the specific expertise required is not available within the department.

The Department of the Environment issues the most R&D contracts in this sector with expenditures of \$1.5 million in 1973-74. The departments of Communications and Indian Affairs and Northern Development each had contract expenditures of \$661,000 in 1973-74. Atomic Energy of Canada Limited, the departments of Energy, Mines and Resources, National Defence, and Transport all spent over \$300,000 in contracts to universities and non-profit institutions in 1973-74.

**The National Research Council** is the largest single federal funder of scientific activities in Canadian universities and non-profit institutions providing a total of \$67 million in 1973-74. The university support program has three broad objectives: the training and development of highly qualified manpower in science and engineering, the support of high quality independent research and the utilization of university research capability in solving problems of social and economic development. Support is provided through research grants to university staff members, special grants, scholarships and fellowships.

The principal types of grants to universities and their staffs are operating grants, equipment grants, negotiated grants and general research grants. Operating grants, for one or three years, are awarded to individual researchers at Canadian universities and are intended to contribute to the normal operating costs of research projects including salaries of assistants, minor equipment, materials and supplies, computing services, field trips and limited travel. Operating grants totalled over \$36 million in 1972. Equipment grants cover the purchase of single items of special research equipment costing in the range of \$5,000 to \$150,000.

Negotiated grants assist Canadian universities in initiating or developing research in areas significant to the economic and social development of the country. These grants funded such major installations as the linear accelerator at the University of Saskatchewan, the Van de