

spectrometers, nuclear magnetic resonance spectrometers are used not only by the chemical specialist in his research, but also in collaborative projects with the biologists. Certain phases of the research work involve co-operation with staff of other government laboratories and universities, especially those in the Atlantic region. Some staff hold honorary appointments in the universities and assist in supervising graduate research. The emphasis of the chemical programs is on the separation, identification and analysis of compounds in mixtures, their chemical and biological synthesis and the molecular structure of the molecules. This includes inorganic substances such as metallurgical slags and silicates, inorganic and organic hydrates, water and organic substances of biological interest. The biological programs are concerned with biocides produced by fungi, the chemistry of the symbiotic relationship between fungi and algae in lichens, and the study of marine plants with an emphasis on marine algae.

The Division of Biological Sciences. The scientific program of this Division is pursued by a number of groups of scientists either structured formally into research units with a recognized leader or made up of flexible associations of scientists collaborating on an agreed short-term goal. The groups include many biologists, chemists, mathematicians and physicists whose collaboration allows a broad approach to the solution of significant biological problems.

During the last year there has been continuing collaboration with universities through the Ottawa River Project, by providing facilities and direction to graduate students and visiting professors, and by divisional staff functioning as Honorary Adjunct Professors. Interaction with industry also continues at a high level, particularly in the area of food technology and through contacts established by the liaison function within the Industrial Research Assistance Program. The Environmental Secretariat is involved in environmental matters outside NRC, both for the Canadian government and for international organizations.

The Division of Building Research was established in 1947 and carries on a comprehensive research program devised to meet the needs of the country for science-based information and knowledge in support of the construction industry. Its activities include technical support to Central Mortgage and Housing Corporation, technical and secretariat assistance to the NRC Associate Committee which has responsibility for the production of the National Building Code for Canada, and service on a large number of standards and technical committees, both national and international, as well as providing an information and advisory service to the industry generally. Commercial testing is carried out on a limited basis, when the special facilities of the Division are not available elsewhere.

The research activities are the firm core, supporting and feeding the other activities, and with a strong and highly beneficial interaction between them. Because of the emphasis on the information and advisory role, and the limited coverage of the industry's research needs which can be achieved at any given time, the Division has always sought to develop and maintain the closest possible links with all other agencies whose work has some relevance for building.

The Division of Chemistry covers a broad spectrum of work ranging from relatively short-term programs for practical application in the natural resource and chemical industries, to long-term fundamental investigations in selected areas of scientific and technological importance. Active fields of research are analytical chemistry, chemical engineering, colloids, high polymers, high pressure physical chemistry, hydrocarbons, kinetics, photochemistry and catalysis, metallurgical chemistry, metallic corrosion and oxidation, textile chemistry, chemical spectroscopy, molecular structures, organic spectrochemistry, organic synthesis, thermochemistry, and theoretical studies.

A typical program involves studies on membrane phenomena which have suggested a separation of constituents of solutions by osmotic action. Considerable potential exists for reverse osmosis as a large-scale engineering process for saline water conversion and other concentration processes. Applications to problems of environmental quality appear to be of particular importance at present.

The Division of Mechanical Engineering. The distribution of the theoretical and experimental research effort of the Division remains as follows: transportation engineering 45%, manufacturing technology 30%, standards and standardization 10%, computers in engineering design 6%, engineering and biological control systems 5%, medical and surgical instrumentation 4%.