

benefit of both Canadian and foreign scientists. It has facilities for the launching of most types of sounding rockets and balloons carrying scientific experiments to investigate the earth's upper atmosphere. Associated ground-based instruments are available to study the aurora borealis by photographic and spectrophotometric methods. For occasional use, there is also a small launching facility at Resolute in the Northwest Territories, and a temporary facility was used at East Quoddy, NS, for studies of the solar eclipses of 1970 and 1972. An additional temporary site was used at Gillam, Man., for launchings in 1972 and 1973. The Branch also operates the Great Whale Geophysical Station at Poste-de-la-Baleine in Quebec, which records auroral phenomena for Canadian and United States scientists.

In the implementation of the sounding rocket program, the Branch is responsible for providing the vehicles and incorporating the scientific experiments into suitable payloads with associated telemetry and other devices; this work is carried out mainly by industrial contracts. The work of the Branch also includes the reduction of flight data to provide vehicle trajectory and attitude information to experimenters, and the provision, from the telemetered information recorded on magnetic tape, of data required by individual scientists in any form desired.

The Atlantic Regional Laboratory at Halifax in Nova Scotia is engaged in practical and fundamental studies in chemistry and biology related to the resources and industries of the Atlantic Provinces. Such studies include investigations of: the biochemistry and physiology of marine algae, fungi, bacteria, lichens, mosses and higher plants; the chemistry of naturally occurring organic compounds; and the physical chemistry of inorganic compounds at high temperatures. A major objective is to develop varieties of seaweeds with enhanced commercial value and to investigate the growth and cultivation of seaweeds and other marine algae. Surveys are being made to reveal new sources of seaweeds. An applied project on toxic microfungi in pastures is being carried out in collaboration with the Canada Department of Agriculture at Nappan, NS. Fundamental studies on inorganic reactions at high temperatures may be of value to the steel and glass-making industries, and research in organic reactions, which includes work on methods of synthesis, may also eventually have industrial value. Some of the work in biochemistry and physiology is related to medicinally important compounds such as antibiotics and drugs that affect mental processes.

The Prairie Regional Laboratory at Saskatoon, Sask., develops wider uses for crops grown on the Prairies. The laboratory program is carried out by five sections: physiology and biochemistry of fungi, physiology and biochemistry of bacteria, plant biochemistry, chemistry of natural products, and engineering and process development. Research is carried out on the properties and reactions of plant components, and on the biological, chemical and engineering processes for turning them into other compounds. The development of oil-seed crops as alternative crops has received considerable attention.

For some time, studies have been carried out on major plant constituents such as carbohydrates, protein, starch, lignin and fibres. An example of this work is the definition of the chemical structure of several polysaccharides found in cereal grains and important in baking, milling and fermentation technology. Attention is also being given to minor plant constituents, such as phenols, flavonoids and terpenes, which are known to have fungicidal and germicidal properties and facilities have been set up for the systematic study of extractives from local plants and shrubs.

Developments attracting commercial interest are: the production of feed supplements by direct use of micro-organisms, and specific essential amino acids such as lysine; poly-hydroxy alcohols such as glycerol and arabitol; hydroxy fatty acids; and the possibilities of producing specific glyceride types using the enzyme systems of micro-organisms. The laboratory works in co-operation with the Canada Department of Agriculture to help maintain Canada's position as the world's leading exporter of rapeseed, used to produce cooking oils, dressings and oil for use in margarine and shortening. A group working in the field of mycology is concerned with the production of new chemicals, antibiotics, alkaloids and amino acids.

9.2.1.3 University research support

From its inception, the National Research Council has encouraged and supported research in Canadian universities. A system of postgraduate scholarships and postdoctorate fellowships gives assistance to students, Canadians and landed immigrants who have shown promise of research ability. The awards are: Postdoctorate Fellowships; Industrial