

In 1950 the Institute became an independent corporation under federal charter, administered by a Board of Directors consisting of appointees from McGill University, industry, and the Federal Department which is now Northern Affairs and National Resources.

This Corporation has taken over the building it occupied on the University grounds, together with all its equipment—the land remains University property and is lent to the Corporation. The Corporation has complete control of the operation, subject to the provision that work leading to degrees will be under the control of the appropriate faculties of the University.

McGill's entire Division of Industrial and Cellulose Chemistry and part of the Division of Physical Chemistry form integral parts of the Institute; to some degree the Institute has also become the bureau of standards for the pulp and paper industry.

Numerous contributions to the fundamental knowledge of the chemistry of cellulose and lignin, the chemical and mechanical pulping of wood, the behaviour of fibres in water, and the testing of pulp and paper have been made by Institute personnel. At present, studies in physical chemistry are being conducted mainly on the surface chemistry and swelling of cellulose, and the flocculation of suspensions of fibres, while research in organic chemistry is being carried out on the reactivity of cellulose, the properties and constitution of cellulose derivatives, and the chemistry of lignin and of bark. Much work is also being done on the various methods of producing chemical pulp.

University Research.*—Research undertaken in the universities is in three broad categories: research undertaken by the student under the guidance of a professor, or committee, to meet requirements for an advanced degree; that undertaken by the professor, which may be of a more or less continuous nature; and larger research projects undertaken co-operatively on a faculty or interfaculty basis in the university laboratories or in such special institutions as medical research laboratories, institutes of microbiology and hygiene, science service laboratories, and agriculture colleges.

Research has always been an integral part of university life at the graduate level and the amount undertaken decade by decade has more than kept pace with the growth of graduate schools. Research undertaken in the universities is limited largely by the number of staff members, time available, and equipment. Professors have busy schedules of lecturing, examining and assisting in academic administration. Students too are busy with lectures, reading and assignments and in addition they feel an urgent need to complete their task in a specified time. Nevertheless an increasing number of scholarships, fellowships and grants have not only enabled more students to undertake research but have enabled both professors and students to undertake more complex tasks.

Until 1919 only two universities, Toronto and McGill, offered graduate courses beyond the master's degree. In that year they had graduated eleven students with doctorates in pure science. Today Ontario has four, Quebec three, and six provinces each have one major university with graduate facilities. All of these have provision for obtaining advanced degrees in science although the number of fields is restricted in all but the larger institutions. During recent years the universities have graduated annually about 200 with doctorates and 1,500 with master's or equivalent degrees in arts and science. In addition there are many colleges and universities which provide excellent undergraduate training in research in many fields.

* Prepared in the Education Division, Dominion Bureau of Statistics.