

The Institute's research activities comprise a basic program, contract research, and technical services. The basic program is supported by assessments from the Maintaining Membership (some 40 companies, representing more than 100 mills and about 90 p.c. of the total production of the Canadian industry), by a basic grant from the Canadian Pulp and Paper Association, and by appropriations from McGill University (primarily for student work). It comprises research of interest to the industry broadly, as distinct from that which is the concern only of a single company or a small segment of the industry.

The projects in the basic program range from studies of the growing seedling in the forest to the converted pulp and paper product. The emphasis is, however, primarily on fundamental and exploratory studies. The Institute is regarded as a centre for broad, long-range and uninterrupted studies of basic principles which individual pulp and paper companies would find difficult to justify in terms of immediate applied objectives. Moreover, the Institute is a centre of highly specialized equipment and manpower which individual companies would not be in a position to keep occupied on a continuous basis.

In addition to its permanent staff, the Institute, in co-operation with McGill University, has some 25 graduate students working on fundamental projects in the background of pulp and paper technology, which also serve as their thesis topics. The head of the Institute's Wood Chemistry Division, who is also E. B. Eddy Professor of Industrial and Cellulose Chemistry at McGill, directs graduate student work on such subjects as the behaviour of the materials of which wood is made—cellulose, lignin, resins, sugars, and other carbohydrates. The head of the Institute's Physical Chemistry Division, also a Research Associate in the McGill Chemistry Department, directs graduate student work in the physical chemistry of fibres, e.g., the forces which cause cellulose fibres in a water suspension to mat together to form paper. The head of the Institute's Chemical Engineering Division, also Associate Professor of Chemical Engineering at McGill, directs graduate students in such chemical and mechanical studies as the friction losses occurring when pulp flows through pipelines.

In addition to its basic program of research, the Institute undertakes contract research projects for individual companies or groups of companies in the pulp and paper or allied fields. The larger of these co-operative contracts have been concerned with problems of particular segments of the Canadian pulp and paper industry, such as the investigation into the causes of corrosion in alkaline pulping equipment, and the current project investigating the rapid deterioration of paper machine wires.

A further function of the Institute is to provide a broad range of technical information services to the industry and, to some extent, to other industries and the public. It maintains a specialized library for this purpose which supplies bibliographies, abstracts, translations, and critical reviews to the scientific staff and the industry.

In addition to its own program, the Institute co-operates with outside agencies in special projects. It maintains close liaison with the National Research Council and, in the past, has carried out joint projects with the Applied Chemistry Division and other Divisions of that organization. At present the Institute is engaged in a practical study of spruce regeneration in mixed wood stands, co-operating with two pulp and paper companies, a research foundation, and federal and provincial government departments.

Some of the major projects in the Institute's basic program are briefly outlined in the following paragraphs.

**Woodlands Research.**—Institute research in this field includes silvicultural studies of forest regeneration, such as forest seeding and planting techniques and the use of growth stimulants, biological studies of insect control, and engineering studies of wood harvesting methods. A major part of woodlands research is in this latter field such as the project on full-tree logging, a method which involves felling and transporting the whole tree from the stump to a central point where it is processed to pulpwood, and where by-products from bark and slash may be made. The basic study of the forces involved in pulpwood