

Progress in research is frequently largely dependent on the recording of data secured from actual operations. Field studies have been made at a number of sawmills, on logged areas, and in industrial plants in order to provide factual records of production with a view to determining the factors responsible for efficient operation. Planning and selection of representative sites for these studies permit application of results on a broad basis.

Recently a Research Sawmill of the circular headrig type has been installed at the Ottawa Laboratory. It is instrumented to provide for the control, study and recording of the many variables that affect lumber recovery and quality and is providing fundamental data on conversion processes.

Recognition of the considerable waste of valuable wood substance through residue occurring in log conversion and other manufacturing processes has resulted in many studies directed to reducing such waste to a minimum and to finding economic uses for the various types of residue. Investigations in the field of waste utilization have included reprocessing and chemical conversion and, recently, research in possible new production through microbiological means. A considerable volume of data has been placed on record relative to the chemical composition and chemical processes for the utilization of wood substance. In this field, production of tannins, determination of extractives, recovery of lignin from waste pulp liquors, and hydrolysis have been the principal avenues of research.

The various processes of veneer and plywood production have received much attention and the available records contain extensive data of a fundamental and applied nature. A commercial-size rotary veneer lathe, with necessary ancillary equipment, and instrumented for research, has been in operation at the Ottawa Laboratory. Investigations include the determination of the suitability of Canadian woods, not now used, for cutting to veneers and for the production of plywood, as well as the efficiency and suitability of various glues and bonding processes.

The use of radio-frequency power in the wood-using industry, and particularly in wood-bonding operations has been intensively studied. Fundamental data have been obtained and practical applications, including the production of curved plywood shapes and building panels, have been developed. Data on the dielectric properties of Canadian wood species have been recorded.

Thus, past research of the Forest Products Laboratories has been so oriented as to procure basic and applied data on the complex factors involved in all conversion processes, and to determine those conditions which produce the most satisfactory results from wood in service.

**Future Research.**—Fundamental research into the mechanical, physical and chemical properties of Canadian wood species will continue in order to expand and complement data now on record and to keep under continual review the basic factors that affect utilization and satisfactory service.

To keep abreast of or, whenever possible, ahead of industrial trends, investigations will be undertaken to assess or develop new techniques and new approaches to conversion and utilization practices. Field and laboratory studies will continue to be directed to the more economical use of available wood substance and to means of reducing to a minimum incidental waste or residue. Research will be extended