

New Zealand firm for slicing has shown that three of the five species which are fairly abundant produce attractive veneers, and the possibilities of securing a continuity of log supply is being urgently investigated.

Other investigational work has been centred primarily on the completion of grading specifications for peeler logs of rimu, matai, and miro. Their introduction would have the desirable effect of eliminating logs whose conversion by sawing would give a substantially better yield of finished product than could be obtained by rotary peeling. The extent to which the pith of the tree is located away from the diametric centre is obviously very significant. Four inches off centre for logs under 6 ft. in girth and 5 in. for larger logs is recommended as a permissible maximum. Spiral grain is a serious defect likely to give poor conversion and to cause warping in the finished plywood. Nine inches in 6 ft. 6 in. should be the permissible maximum. Emphasis upon limitation of size and type of shake is a most important feature, as this defect causes excessive wastage in veneer.

Percentage conversion of green timber to green usable veneer was shown to be 60 per cent. for "select" quality logs (average of five species), as compared with 47 per cent. for lower-quality peeler logs. An additional 19 per cent. loss occurs in subsequent factory operations due mainly to shrinkage and trimming to finished panels. Wastage due to inaccurate tearing of the veneer as it comes off the lathe and at the wet clippers is largely unavoidable. A significant reduction of waste can come only by improved technique at these points, by improved quality of logs accurately crosscut, and by salvage of small sizes at the lathe.

During the year increased quantities of insignis-pine veneer were used to good advantage in thick composite plywood of five and seven plies, of which two inside plies were pine. As regular supplies of this timber become available in peeler-log sizes, this type of plywood is certain to be an important product. A few forest-grown logs from Waiotapu Forest yielded exceptionally good veneer. Peeled even in plies over a quarter of an inch thick the product comes off cleanly and smoothly. Drying and warping problems are insignificant in comparison with logs of indigenous species.

Among the problems with which manufacturers are faced are the elimination of hair checking in face veneers of plywood used in furniture and bus bodies (closer control of finished moisture content is apparently necessary), and the production of built-up products at a price comparable with solid timber for use in casket and furniture manufacture and the manufacture of special types of stereo blocks. The increasing use of built-up construction—e.g., solid or hollow core with veneer or plywood surfaces—to replace solid wood for furniture is an encouraging trend. Apart from its use for bus-body and similar construction, resin-bonded plywood has found one of its logical applications as shuttering for smooth concrete curves. Developmental work on compressed, resin-bonded assemblies employing veneers of local woods is progressing.

90. *Pulp and Paper Production.*—In order to demonstrate the manufacture of newsprint, kraft paper, liner board, &c., from New Zealand woods, arrangements were made with Australian Paper Manufacturers, Ltd., whose co-operation is gratefully acknowledged, to carry out an exhaustive series of laboratory tests prior to the manufacture on a full mill scale of quantities of bleached, semi-bleached, and unbleached sulphate pulp. The co-operation of Australian Newsprint Mills Pty., Ltd., is also assured for the demonstration of the manufacture of groundwood and newsprint, incorporating the semi-bleached sulphate pulp and groundwood in the newsprint furnish. Associated Pulp and Paper Mills, Ltd., is likewise expected to assist in the manufacture of fine papers from bleached pulp, and Australian Paper Manufacturers, Ltd., will complete the manufacture of kraft paper, including some that will be used for the manufacture of multiwall paper bags. At 31st March the laboratory work was still in progress, but it is hoped to complete the whole of the demonstration at an early date, after which it should be possible to finalize arrangements for establishing the industry in New Zealand on a sound basis.

91. *Charcoal Production.*—No charcoal burning was undertaken during the year. A total stock of 8 tons remains, sales for the year being 22 tons.