

86. *The Drying of Timber.*—A specification prepared by the Forest Service for the practice of kiln drying was fully discussed by a Standards Institute Committee and has now been submitted for final comment by the trade before final adoption. Width of side flues has been related to stack width. Stacks up to 7 ft. 6 in. width require a side flue width of 18 in., and wider stacks require a width of 27 in. The Forest Service recommendation is that stacks should not exceed 7 ft. in width. The inclusion in architects' specifications of the requirement that timber be supplied "kiln dried" in accordance with this specification is a necessary corollary if it is to achieve its object.

Further experience was gained on the drying of rewarewa for furniture and of tawa for furniture and handles (see paragraph 82). Schedules similar to those recommended for heart rimu are fairly satisfactory for both these timbers for furniture. One of three loads of tawa dried at the Waipa Mill was, however, dried by the "stress reversal" method. Higher temperatures and a constant high humidity are maintained until strips cut from boards in the load indicate that the reversal of stresses stage has been reached. Without further increasing the dry-bulb temperature, the humidity is then dropped by 40 per cent. It is essential that the change be made at the correct time, and the method cannot yet be recommended for general use.

In the drying of insignis pine containing pith, the most satisfactory schedule developed at Waipa uses lower dry-bulb temperatures and lower relative humidities than for timber free from pith. A final conditioning treatment has been shown to be necessary for pine timbers as well as for the common building timbers. The pre-seasoning in the air of timber intended for kiln drying is recognized as beneficial for such timbers as North Island rimu (especially hill-grown), and is necessary for other timbers such as silver beech. Such seasoning, however, tends to be uneven when applied to kiln stacks with boards stacked edge to edge. It is good practice to withdraw boards from the centre of the stack (slotted fillets facilitate removal) just before kiln drying commences and to cut the moisture-content samples from these. Assistance has been given to a number of kiln operators with schedules, testing of controller bulbs, air-velocity measurements, and other problems of operation. Inspections of seven new units were made during the year.

87. *Wood Preservation.*—Standard Specification No. E202, "Code of Practice for the Preservative Pre-treatment of Timber by Cold Dipping Process," was issued during the year by the New Zealand Standards Institute. This specification described the method of treatment and provides for three alternative preservatives which may be used—viz., pentachlorophenol, copper naphthenate, and zinc naphthenate.

Test specimens exposed in 1943 to marine borer attack in Auckland Harbour were again recently examined. Creosoted exotic species remained immune to attack, except in a few instances in which creosote penetration was shallow. Untreated control specimens of the same species are all badly attacked or nearly destroyed. Of the indigenous species (untreated), totara still exhibits marked resistance, being only very slightly attacked. There is fairly widespread attack in taraire, though only moderate destruction has occurred. Tawa, miro, and kauri, on the other hand, are very badly attacked and partly destroyed. Round bolts of tawa, taraire, and miro with bark intact, both summer and winter cut, were exposed in 1944, and where the bark has remained intact no attack has occurred. Retention of bark appears to be best in taraire, being more intact and tighter than for either tawa or miro. So far there appears to be no significance in the season of cutting.

Observations were completed of an investigation commenced two years ago at Waipa to ascertain whether the treatment of round larch posts would be more successful if the bark were left on them for periods of one month, two months, and three months after cutting and they were then stacked for final seasoning rather than if the posts were barked immediately after cutting, as is at present customary. Observations were made on posts cut at monthly intervals throughout a year. It was found that retention of bark for the periods mentioned had no significant influence on the absorption or penetration of creosote. It was also found, as was to be expected, that no significant drying occurred until the bark was removed; that there was no difference in the rate of seasoning between posts barked immediately after cutting and posts on which the bark had been