

checking during seasoning, it is obvious that kiln drying down to the final required moisture content of between 12 per cent. and 15 per cent. is not the best method. From experience gained in this study and information obtained overseas, it is preferable to kiln dry the sectors only to about 30 per cent. moisture content; they should then be rough-turned and stored for slow final seasoning in a conditioned room.

Numerous attempts have been made in the past to accelerate the drying of timber to a degree far in excess of that achieved by normal kiln drying, and two processes developed in the United States of America have potential value to New Zealand. The solvent-seasoning process developed by the Western Pine Association has not yet been brought into regular commercial operation, but the vapour-drying process developed by the Taylor-Colquitt Co. is already in regular operation as a method for pre-seasoning railway sleepers and large-dimension structural timbers before treatment with creosote or other preservatives, and that has been its most important application so far. A technical officer of the Forest Service who visited the Taylor-Colquitt plant last October has reported very favourably upon the process as applied to large-dimension stock, and has also indicated that its application to the drying of sawn timber is worthy of close investigation. However, it has not yet been proved to be commercially practicable.

Tentative equilibrium moisture-content figures for various indigenous and exotic timbers have now been developed for most parts of New Zealand. This was based on a study of equilibrium moisture contents in Wellington over a period of two years, with the assistance of the comprehensive range of meteorological data now available for New Zealand.

(6) *Wood Preservation.*—Service test lines of creosoted rimu poles which had been installed in co-operation with the Post and Telegraph Department were examined critically during the year. Whereas unpreserved controls had failed after two to four years' service, all preserved-poles with the exception of two were found to be perfectly sound after eighteen years' service. These poles were treated by the open-tank process, and because of the limited control over absorptions and penetrations it was thought at the time of treatment that a life in excess of twenty years would not be obtained by this method of treatment. The present condition of the preserved poles indicates that an average life in excess of thirty years may be anticipated; and a report covering the treatment details and service performance of these creosoted rimu poles has been prepared for publication.

The performance of creosoted larch poles under service conditions is being studied in co-operation with the Post and Telegraph Department in four test lines in the North Island and one in the South Island. For rural reticulation, creosoted larch (*Larix decidua*) poles are extensively used by the Post and Telegraph Department, and also by some Power Boards. Larch poles are known to check severely during seasoning prior to preservation, and the possibility of these checks progressing during the service life of the pole and extending beyond the depth of creosote penetration was a matter for concern. Poles that have been in service for ten years were examined, and the results of this inspection were gratifying, as no evidence of decay was apparent. It would appear, therefore, that no extensive exposure of untreated wood occurs after preservative treatment. Severely-checked poles that have been in service for ten years were removed from some lines so that they may be dissected to investigate the depth of checking in relation to the depth of creosote penetration. Creosoted larch cross-arms have been used by the Post and Telegraph Department, and the service performance of these units has also been placed under observation. In co-operation with the Railways Department, the testing of creosoted insignis pine sleepers has been undertaken.

Service testing of creosoted fence-posts in New Zealand dates back to 1922, when the first test lines were erected by the Forest Service. Additional lines were erected during the period 1922 to 1927. Pines, beeches, larch, and eucalypts were included in these tests, and were given various hot and cold bath butt and full-length treatments.