

The most interesting results from toughness tests were obtained from a batch of white-manuka specimens which gave an average toughness value of 245 in.-lb. for air-dry material with a density of 59 lb. per cubic foot. This timber is not equal to hickory for the highest-duty handles but it appears to be superior to spotted gum and American and European ash in toughness.

A conference of representatives of British Commonwealth countries actively conducting strength tests was proposed at the 1947 Empire Forestry Conference for the purpose of standardizing testing procedure. This Conference was convened at Ottawa during September-October, 1948, and was attended by the Engineer in Forest Products. In addition to British delegates, there were representatives from the United States Forest Products Laboratory at Madison, Wisconsin, where the second half of the Conference was held. With the transfer of forest products research to Rotorua in the near future it will be necessary to purchase equipment for standard and structural A.S.T.M. tests for accelerated work on exotic species from the various districts in which these forests are approaching maturity. In the meantime the arrangement by which the Forest Service is able to use the testing machines at the technical college and Works Department in Wellington will be continued, the co-operation of these institutions being greatly appreciated.

(4) *Wood Technology*.—Routine microscopic identifications of 21 specimens were undertaken during the year. In addition, the microscopic investigation of New Zealand woods by major botanical family groups was commenced. Thirty proven samples were supplied for microscopic sectioning, and some 150 permanent microscopic slides were added to the reference collection.

An extensive survey of specific gravity and shrinkage variation in the New Zealand beeches has been initiated, over 40 specimens having been collected from forest areas ranging from Mamaku Plateau in the North to western Southland.

Interim conclusions are:—

- (a) In general, North Island silver beech is of high density, as indicated originally by the Mamaku strength test trees.
- (b) Silver-beech samples from parts of the Nelson Conservancy suggest that resources of the light-weight versatile timber may not be limited to Southland.
- (c) Red beech, represented by the greatest range of material, shows a tendency to decrease in density from North to South. North Taranaki samples (with basic specific gravity 0.64) were exceeded only by one fast-grown sample from near Wellington, while the minimum values, 0.45, were recorded from Westland (the latter being the same as the average figure for Southland silver beech.)
- (d) Samples from two other species (hard and black beech) gave general confirmation to the figures established from the strength-test material.
- (e) Samples from small mountain-beech trees from montane forests gave specific-gravity figures lower than those established for the low-altitude large trees of western Southland.
- (f) Additional strength-test data should be established for red beech from important South Island forests.

A comprehensive study of the density of non-heart rimu was made, using samples of weatherboarding, flooring, and matchlining. There is no appreciable difference in the mean densities for North Island, Westland, and Southland material, but the North Island samples showed the greatest variation. It must be noted, however, that the South Island material came from two reasonably homogeneous localities, while the North Island material was from rather widely dispersed areas. The mean density at 17½ per cent. moisture content was 33.9 lb. per cubic foot.