Section B.—Industrial Investigation.

78. The National Grading Rules for building timbers continue to find increasing use throughout the Dominion, and slowly but surely out-of-date and non-standard terms and grade names are being eliminated from price-lists and specifications. As mentioned in the last annual report, the one glaring deficiency as disclosed by Forest Service arbitrations and inspections is the absence of a standard condition of sale giving purchasers the right to reject complete shipments when more than a stated percentage of the parcel is below grade. Further progress was made with standard specifications for New South Wales hardwoods at meetings of the Hardwoods Subcommittee of the New Zealand Standards Institute Timber Committee.

79. A report on the standardization of profiles for weatherboarding, flooring, and lining is also being prepared for the New Zealand Standards Institute Timber Committee, and in this connection additional samples have been collected and partial analysis made of the complete series. The elimination of wasteful effort in running these and other finishing lines to a multiplicity of designs is rendered more urgent by the war.

80. A draft standard for light timber construction has been prepared and circulated for comment by the Timber Building Code Committee of the New Zealand Standards Institute. The Department is now making investigations into heavy timber construction to enable similar progress to be made with this section of the National Building Code. Fundamental to this study is the development of structural grading rules and working stresses involving both field inspections and analysis of timber-testing results.

81. Tawa mill studies have been commenced in the Mamaku district pending further efforts to expand the markets for this timber as a substitute for imported oak. A preliminary mill study of *Pinus radiata* logs at Waipa mill yielded conversion factors varying from 6·22 for 4 in. logs up to 8·64 for 18 in. logs, the basis of reference being small-end diameters inside bark. As no salvage equipment was in operation at the time, these factors may be expected to increase as the various salvage saws work up to full production.

82. With improved kiln-drying practices and the development of successful protection treatments against insect and fungal attack, some New-Zealand-grown timbers are now finding a much wider use than previously as all-time substitutes for imported timbers. Tawa, by virtue of its wide distribution, is of considerable importance as a substitute for imported oak, especially for furniture, fittings, and interior finishings. It also promises to rank as a major plywood timber. In appearance and mechanical properties tawa resembles North American black ash, and its already proven use for clothes-pegs, turnery, handles not subject to impact, &c., indicates its suitability for a much wider range of products now that kiln drying has solved the problem of its seasoning.

Silver beech, which ranks first in production amongst the indigenous hardwoods, also commands the widest field of use. Many of its qualities are such as to commend it for numerous specialist purposes, amongst them for rifle-stocks and even for certain classes of pattern work. It is anticipated that as munitions-production extends throughout the Empire substantial quantities will be required for such work in both Australia and New Zealand, perhaps even in Great Britain, to which one shipment was made last year at the special request of the Hardwood Timber Controller.

Insignis pine, under the impact of war conditions, has already attained an importance both unique and unexpected. No other timber is filling so many roles or substituting for so many timbers in so many fields of use. Except for those few foodstuff containers such as butter-boxes in which freedom from taint is essential, insignis pine has already gained an unassailable pre-eminence in the boxing and crating industry. In the building field its most spectacular achievement has been the replacement of Californian redwood and North American western red cedar for flush-door cores and frames. The most recent wartime demand has been for peeler logs both for plywood and for the manufacture of wooden-match splints and match-box skillets. In munition-work it is being employed for ammunition-boxes, grenade-cases, motor-boxes, &c.