The most important result of the boxing and crating studies carried out on behalf of the Department of Agriculture was the establishment of the important fact that the numerous complaints received from overseas markets as to the occurrence of sawdust on butter were the direct consequence of using sawn instead of planed timber for butter-box shooks. Butter stored in locally-grown European-larch boxes was also proved to be free of taint after five months' storage, indicating such a promising avenue of utilization for the large quantities of this species grown in the State plantations that experiments with an overseas shipment will be instituted during the year ending 31st March, 1932.

In an effort to meet a greater portion of the local demand for telegraph and power poles, most of which are at present imported, strength and preservation tests of full-sized rimu poles were carried out with considerable success. The coastal type of rimu forest in Westland and Southland yields poles of excellent shape and strength, and with the development of suitable treating methods, which is contingent upon the establishment of an experimental pressure treating plant, it is anticipated that a thriving industry may soon be established. Approximately 100 poles treated by the non-pressure process have now been placed in use, and will be carefully inspected at regular intervals along with the numerous treated fence-post lines installed in previous years. These service test lines have now definitely established the fact that in most localities a butt treatment is insufficient, and that posts, poles, &c., must receive a fairly heavy full-length preservative treatment to give a satisfactory life.

Although kiln drying still figures as the key problem in the wider and more efficient utilization of the native timbers, it was not possible to proceed with the installation of the pilot kiln as previously anticipated. Nevertheless, several operators have been actively interested in the possibilities of the process and suitable designs prepared for their guidance. As indicative of the ever-increasing public appreciation of kiln-dried timber, it is significant that the specifications for the National Museum call for kiln-dried material. Unless this is forthcoming in native timbers, imported timbers will be used. During the year only one series of piles demonstrative of improved air-seasoning practices was installed, but these have yielded valuable data on air drying in the Westland Region, indicating that both the degrade and average time required to reach moisture equilibrium may be substantially reduced by the methods advocated.

In the field of wood technology the outstanding achievement has been the development of a microscopic identification key for the various beech species. Efforts to develop a key, however, based on the gross characters of the wood—that is, its physical appearance to the unaided eye—have not yet proved successful, but studies along various lines are being pursued. An important study was also commenced dealing with the "heart centre" or "core" in the native hardwoods, the work having been concentrated on silver-beech.

The economic pulpwood survey, for which the necessary field-work is complete, has yielded valuable data not only as regards pulpwood, but in respect to log-utilization generally. As indicative of the close cutting practised by New Zealand mills, it may be mentioned that whereas the Pacific Coast mills of North America yield from their slabs, &c., about 50 cubic feet of good pulpwood per 1,000 ft. b.m. of sawn timber, the local mills yield only 9 cubic feet.

The overseas trade extension work was again concentrated on silver-beech and tawa, two trial shipments of the former, amounting to over 1,000 ft. b.m., being shipped to Great Britain for experimental purposes. Owing to numerous difficulties encountered in the development of suitable seasoning methods for tawa, the despatch of trial shipments of this species has been delayed until this year.

A detailed field examination of wooden buildings in the Hawke's Bay earthquake area was made in co-operation with the timber-utilization officer of the New Zealand Federated Sawmillers' Association, and a report prepared and published for use as a basis of recommendation for the Government Building Regulations Committee.

Minor projects in course of progress include silver-beech and tawa for wine-keg experiments, tests of white-pine for wooden match-box skillets, and of silver-beech for rifle-stocks, bleeding of European larch for venetian turpentine, routine wood-identifications, nail-pulling tests, &c.

CHAPTER III.—THE TIMBER TRADE.

1. Markets.

A review in the annual report for the year ended 31st March, 1930, indicated that from a study of the export and domestic markets, including an investigation into the interrelations of the housing ratio and timber-consumption, the industry would be faced with a decreased demand for the period now under review. At no time, however, was it anticipated that the decrease in demand would develop either as soon or as rapidly as has since occurred, and the phenomenal decline in building activities is almost wholly responsible for this position. Until public confidence is restored it is improbable that building activities will return to normal. The most promising feature of the present situation is that, in sympathy with the general price-decline, building-costs are falling appreciably and will probably become stabilized within the very near future, when the general wage question, now in course of consideration, is settled. Having foreseen this development, various institutions, firms, and individuals who have suspended indefinitely their building activities may reasonably be expected to revive them, thereby not only improving the demand for timber, but also recreating employment in numerous allied industries.