employment of proprietary preservatives which, almost invariably, are either sold at excessive prices or withheld from sale in order to force the user to employ the proprietors in treating his timber. With few exceptions there are as good as and even better standard wood-preservatives which can be manufactured to recognized specifications at a much lower price. For instance, the standard pentachlorphenol preservative advocated by the Forest Service for the treatment of building-timbers has been found during the year to be at least ten times as toxic and valuable as one of the widely used proprietary lines being employed throughout the Dominion, and it is for this reason that some of the treating companies specifically use the pentachlorphenol preservative.

Equally important as the preservative is its effective application, and for this reason both treating companies and members of the public who consult the Forest Service are advised that employment of a supervising architect or builder is desirable in order to attain this end and protect their mutual interests. The Forest Service has further advocated the removal of emphasis in advertising such work from borer control to the more inclusive and important basis of *house-maintenance*. Unfortunately, the philosophy of wood use for New Zealand building has been one of specifying the very highest grades and quality and imagining thereby that the whole wooden structure may be forgotten and neglected virtually for a generation or more. Epitomized, it is a philosophy of abuse rather than use, and it is no exaggeration to say that if builders, painters, and treating companies would co-operate to give a regular annual house-maintenance service the effective life of dwellings could be doubled by correcting from year to year any defect which might develop in the wood due to fungal and insect attack, paint failures, &c.

An appropriate specification covering the quality of wood-preservatives and their application to building-timbers has been submitted to the Standards Institute for submission to a special committee already set up to consider such matters.

Of the various chemicals tested at the Waipa Mill for the prevention of sap-stain on insignis pine, Lignasan, Dowicide, and Santobrite have proved effective, and while the first is less troublesome than the other two, the difficulty of avoiding dermatitis through long-continued handling of the dipped timber has forced the Department to resort, so far as is practicable, to kiln drying as an alternative, although the possibility of dipping the timber after stacking in unit packages is now under investigation and will probably be adopted.

88. *The Painting of Wood.*—Erection of panels on the vertical paint-test fence at Wallaceville was completed during the year in order to ascertain the most suitable priming paints for insignis pine, some eight types being under test on weatherboarding panels featuring edge and flat-grain timber, and two grades based upon size and frequency of major defects. Control panels of heart rimu are also being used in a parallel test series embodying rimu boards of varying grades and quality. Observations of other paint tests under the control of the inter-departmental Paint Committee have been continued.

The degree of water repellence afforded by locally available products such as creosote, oleates, waxes, and their combination with metallic salts was studied, using insignis-pine test specimens. As a result it was established that in both water immersion and high humidity exposures one hot-dip solution of copper oleate and wax in a fuel oil imparted a useful degree of repellence and reduced the serious surface checking characteristic of both untreated and painted rimu plywood after exposure to weather. A related problem—retardance of dimensional change—arose in connection with wooden bushings for bung-holes of barrels. Silver-pine had been tried in service with fair satisfaction, but as a result of tests of both treated and untreated insignis pine and matai the untreated matai was shown to be much superior, altering its shape in use much less than the other woods.

89. *Plywood-manufacture.*—A Forest Service junior technical officer was stationed at one of the new plywood-factories to assist in the solution of current problems in the manufacture of both casein- and resin-bonded plywood for defence works. While marked advances have already been effected in manufacturing technique, there is still considerable room for improvement. The tentative conclusion has been arrived at that the high moisture content of rimu and other indigenous logs makes it extremely difficult to dry their veneers in standard driers and at the rates, temperatures, and humidities usually employed in plywood-manufacture. The matter is being further studied. A grading study of peeler logs has also been commenced, as it has been established beyond all possible doubt that for the local product to compete post-war with imported plywoods on a quality basis it will be necessary to improve the quality of logs at present being supplied. Straightness of grain and reasonable freedom from defects are essential to the production of sheets free from twist and warp, &c., and only by the development of a rigid log-grading rule can plywood-factories be assured of suitable log-supplies.

90. *Pulp and Paper Production, &c.*—Investigations into the possibility of establishing a local pulp and paper industry based on the utilization of exotic softwoods have been advanced by a searching study into recent developments in the pulp and paper industry in Australia. The results show that the only manner in which a healthy and economic enterprise can be established in New Zealand is through the adoption of a large central scheme by the operation of which the public can be assured of receiving locally manufactured paper in place of the imported article without any increase in existing tariffs. For this country to allow the future of such an industry to be jeopardized by piecemeal development and the erection of small uneconomic units would be a tragedy without