

CHAPTER VII.—FOREST ENGINEERING

53. *General.*—War conditions have again delayed the carrying-out of any major construction works, and even maintenance of existing services was achieved only with extreme difficulty.

54. *Roads and Bridges.*—Road construction and maintenance were necessarily limited by the labour and equipment available; nevertheless thirty miles of new roads for access and fire protection were made and thirty-seven miles of existing roads regraded.

55. *Other Transport Facilities.*—The Forest Service siding at Rotorua Railway-station again proved invaluable in expediting the despatch of the urgent defence and other essential timbers produced in that conservancy.

56. *Buildings.*—The only new buildings erected were in Rotorua Conservancy and comprised two small houses built of exotic softwood in Waipa Village and extensions to fuel-bins, power-house, workshop, and dry-storage sheds at Waipa Mill. New premises were acquired in Rotorua Borough to accommodate the conservancy staff, as after some forty years of occupation the old headquarters building at Whakarewarewa was quite inadequate for present-day needs. Certain structural alterations were necessary to make the new building suitable for office use.

57. *Water-supply and Drainage.*—With the increase in growth and area of the exotic forests, the fire risk, particularly at outlying stations, becomes progressively higher, and every effort has been made to supplement existing water-supplies by sinking wells, although so far with little success owing to scarcity of labour, piping, &c. At Kaingaroa, Hammer Springs, and Conical Hills State exotic forests, trailer pumps have been installed, and the Waipa mill trailer pump has been mounted on a truck for greater mobility and utility. In Rotorua abnormally heavy rain fell on four occasions—in one period of four hours 7 in. were recorded, the heaviest within living memory—and some damage was done in the vicinity of the logging area and the mill by flood-waters. Steps have been put in train to minimize damage in the future should another cloud-burst occur at any time.

58. *Utilization Plants.*—With its second full year of operation, the Waipa log-frame mill has demonstrated beyond all possible doubt the pre-eminence of this type of equipment for the conversion of exotic softwood logs. With an annual production of 7,750,000 board feet, its output is as follows:—

- (a) The largest of any single mill cutting either indigenous or exotic timber:
- (b) Almost equal to the output of the next three largest mills cutting exotic timber:
- (c) Equal to over ten times the average output of all other mills cutting exotic timber:
- (d) Equal to over one-eighth of the entire Dominion output of exotic timber.

So successful has been the mechanization of operations in relieving workers of undue physical exertion that on the sawmill floor the output per man is—according to the size of the logs sawn—from 2,000 board feet to 5,000 board feet per day, as compared with a usual figure in the century-old circular-saw mills of only 500 board feet per day. Coupled with this achievement is the fact that the timber is so accurately sawn that it may be used directly for many purposes for which the ordinary circular-sawn timber would have to be further dimensioned by planing, &c., which is also reflected by the fact that the loss in sawdust, slabs, and shavings at Waipa is only two-thirds of that in the circular-saw mills, whose only usefulness in the future will be in the working-up of the few rough logs yielded by shelter-belts and marginal trees from farms, &c.

The reliability of the Waipa plant is demonstrated by the fact that during the year there were only seven days on which it operated less than seven effective working-hours and not one day on which it did not operate at least six effective working-hours. This record is a tribute both to equipment and to maintenance staff.

The only major improvement disclosed by the year's working was the necessity for expanding fuel storage in order to carry sufficient stocks of sawdust and hogged slabs over week-ends for the generation of steam required for the continuous working of the dry kilns. The installation of the necessary bins is well on its way to completion. Minor improvements to the log crosscut saw and the outfeed equipment to the log frames have been effected by the installation of heavy feed rolls, those originally supplied having proved somewhat light to withstand the heavy green logs and excessive wear due to pumice.

In the dry kilns, box-factory, and creosote plants the equipment has performed satisfactorily, but experience in the box-factory indicates that, with the large amount of salvage material which must be reworked in order to minimize wastage, an extensive system of subfloor conveyors is essential if a high standard of production management is to be attained. The superiority of sliding-type cut-off saws and metal cut-off tables has also been well proven. The kilns, which include three 66 ft. long chambers and one 20 ft. chamber, are the largest of their kind in the Dominion, and have effectively demonstrated the practicability of large-scale commercial drying of exotic softwoods for box-making even in stock up to 2 in. in thickness.

59. *Transportation.*—The only additions to the departmental motor fleet has been a pneumatic-tired straddle truck for the handling of unit timber packages at the Waipa mill. It has been found infinitely superior to the solid-tired equipment owing to its ability to operate on even the softest pumice. As was the case last year, vehicles due for replacement have of necessity been kept on the road, but only with extreme difficulty. Close supervision to ensure only essential running has again been exercised by controlling officers. The transportation of increasing quantities of manufactured produce from the Waipa mill to the railway-station has been effected by the use of detachable semi-trailers, four of which together with only one truck have succeeded in moving the whole output of the mill and creosoting plant a distance of four miles to the Rotorua Railway-station. Gas-producer units fitted to the departmental trucks last year have operated satisfactorily although their operation has been curtailed through the fire season.