STATE FOREST SERVICE UTILISATION UNIT.

The aerial photograph reproduced here by courtesy of the Director of Forestry was taken at an altitude of 7,500 ft. on 1st February, 1941.

Situated within the Whakarewarewa State Forest, 2 miles from Rotorua, this unit is in its second year of production.

The following brief descriptions of the various departments are numbered to correspond with the photograph references.

(1) Log Skids.

The logs, (mainly Pinus radiata) are brought in from the forest by lorry in lengths of 40 ft. to 60 ft. and are unloaded by means of an electric winch on to the log skids where they are crosscut by a power driven circular saw into millable lengths, and stacked until required by the mill.

(2) Log Pond.

Logs are rolled from the skids into the log pond and floated up to the mill where they are put on to the "bull chain" which takes them up to the mill sawing floor. Before entering the mill all logs must be sorted into 1 inch top diameter classes and stocks of any one 1 inch class on hand must be sufficient for four hours sawing, the mill saws being changed twice daily.

The log pond provides, in the case of the small logs, for this sorting and soaking softens the pumice and grit which is ultimately washed off the surface of the logs by a series of high pressure sprays or water jets at the foot of the "bull chain." The larger logs are usually graded before being placed in the pond.

(3) The Mill.

Two Swedish gang saw frames may be operated either independently or in echelon but principally the latter, the practice being to cut a cant or fitch with bark on both edges from the centre of the log in the first frame and produce square edged timber by sawing the cant into boards, using the second machine as a multi-saw deal frame.

The gang frames are of heavy long stroke type, operating at 300 r.p.m. and the round logs are handled and held in position for sawing by hydraulic equipment on an infeed carriage. This checks any tendency for the log to twist or turn until sawn into a cant by the first frame.

Waney edged (i.e. with bark on both edges) are produced from the outside cutting on both frames and these are sorted mechanically from square edged stock, the former going automatically to two-saw-hydraulically controlled shadow line edgers where the bark is trimmed.

Shadow line equipment of the most modern type is used in front of both gang frames and edgers to assist operators to line up timber to the best advantage.
All waste slabs and edgings, etc., gravitate directly into hogs from which chips are produced and mixed with sawdust and elevated to a fuel bin above the boilers.

(4) **Power Plant.**

This comprises two sections:

(a) Boilers by Babcock & Wilcox with special step grate furnaces designed to burn hogged fuel, sawdust and boxmill shavings which gravitate from the fuel bins directly into the furnaces. Steam is drawn off to generate electricity, to heat dry kilns and for the Creosote plant some 1,600 feet distant.

(b) The engine room is equipped with three Bellis Morcom engines direct coupled to generators, the latter furnishing electricity for all sections of the plant for power, light and minor heating purposes.

(5) **Workshops.**

Due to the fact that the nearest provincial town and foundry and large engineers shop is 78 miles distant, it is necessary to carry out all ordinary repair and maintenance jobs for logging tractors, haulers, cranes, motor trucks as well as the whole of the plant at the Waipa and Waiotapu Mills.

(6) **Sorting Table and Sap Stain Bath.**

The sawn timber leaves the mill by a gravity shoot and is thrown out on to an endless chain which conducts it sideways through a chemical bath for the prevention of sapstain, thence on to the sorting table which is 140 ft. 10 ins. in length.

Alongside this table the unit timber packages, 16 ft. by 3 ft. 6 ins. by 4 ft. 6 ins. are assembled according to grades and classes, filleted for air or kiln drying or block stacked for immediate sale.

(7) **Dry Kilns.**

Unit packages, filleted at 2 ft. intervals, are picked up by the straddle truck, delivered to the kiln loading platform and positioned by the endlift truck. Each of the 66 ft. kilns takes a load of four packages in length by 4 in section. Drying occupied 3 to 4 days for 1 in. timber from the green condition of 160% moisture content. The smaller kiln is suitable for experimental work and contains a weighbridge which enables the operator to note at all times the progress of seasoning. A small laboratory in the block provides for routine testing work.

(8) **Air Seasoning Yard.**

Timber from the sap stain bath is filleted in unit packages and placed in stack with the aid of straddle and end-lift trucks. Stocks vary from 1,500,000 feet to 2,000,000 board feet.

(9) **Box Factory.**

This building 300 ft. by 71 ft. with the floor clear of roof supports is constructed entirely of insignis pine, using Belfast roof trusses. Machinery comprises two band resaws, three 4-sider planers, three cir-
cular resaws, five crosscuts, two small gang rip-saws, cheese crate and cutting machines, corrugated shook fastening machines, three colour box printer, automatic cutter and saw sharpening equipment, an exhaust system to remove fine waste to the boilers and sub-floor conveyors to remove dockings, etc.

In manufacture all timber, box shook, etc., moves forward progressively and there is a graded fall in the boxmill floor to facilitate this process.

(10) **Dry Storage Shed.**

Dry loads withdrawn from the kilns pass in sections along the traverser to the dry storage where they are held until required, for shipment or local use.

(11) **Administrative Office.**

(12) **Wood Preservation Plant.**

Three rectangular steel creosoting tanks 37 ft. by 4 ft. by 4 ft. are situated beneath a gantry from which is operated an electric crane. The creosote is heated by steam coils at the base of the tanks; the steam being supplied from the mill boilers. The adjoining shed houses a fourth 37 ft. tank, designed for the treatment of building timber with a clean oil preservative (5% pentachlorphenol in fuel oil).

(13) **Creosoted Produce.**

Creosoted posts and poles, etc., are stacked here prior to disposal.

(14) **Charcoal Kilns.**

Charcoal for producer gas motor fuel is manufactured here in several types of steel portable kilns.

(15) **Posts—Seasoning prior to Creosoting.**

The standard 6 ft. 6 in. posts are mostly larch and corsican pine.

(16) **Poles—Seasoning prior to creosoting.**

18 ft.—36 ft. larch poles, with some locally grown eucalypt poles.

(17) (19) **Larch Stands.** Age 25 years.

The thinned areas can be distinguished from the unthinned.

(18) **Tarawera Washout.**

The cloudburst following the Tarawera eruption in 1886 caused the bare pumice area now occupied by the seasoning yard.

(20) **Corsican Pine Stand.**

(21) **Maori Reserve.**

The trees on this tapu area are *Pinus muricata*.

(22) **Clear felled area:** formerly larch.

(23) **Road to Rotorua.** 2 miles.