

1926.

QUEENSLAND.

DEPARTMENT OF PUBLIC LANDS.



QUEENSLAND FOREST SERVICE.

REPORT

OF THE

PROVISIONAL FORESTRY BOARD

FOR THE

YEAR ENDED 30th JUNE, 1926.

PRESENTED TO PARLIAMENT BY COMMAND.

BRISBANE :

BY AUTHORITY: ANTHONY JAMES CUMMING, GOVERNMENT PRINTER.

A 54.—1926.

ERRATA.

Page 52.

STATE SAWMILLING.

In schedule *delete* £8,213 13s. 7d. from loss column, year 1925-26.

Page 99.

APPENDIX "A."

Amend heading *to read* "Operations for half-year ended 30th June, 1925."

ADMINISTRATION.

Amend heading *to read* "Expenditure half-year ended 30th June, 1925."

Page 127.

APPENDIX "V."

Amend heading *to read* "Water Supply—Establishment, for the year ended 30th June, 1926."



A CORNER OF A TEN YEARS OLD HOOP PINE PLANTATION.
(Wongabel Forest, Atherton District.)

DEPARTMENT OF PUBLIC LANDS.

QUEENSLAND FOREST SERVICE.

Report of the Provisional Forestry Board for the
Year ended 30th June, 1926.

TO THE HON. T. DUNSTAN, MINISTER FOR LANDS, BRISBANE.

Offices of the Provisional Forestry Board,
Brisbane, 30th September, 1926.

SIR,—We have the honour to present to you the Annual Report of the Provisional Forestry Board upon the operations of the Queensland Forest Service during the half year ending 30th June, 1925, and during the financial year ending 30th June, 1926.

We are, &c.,

E. H. F. SWAIN, Chairman.
A. A. STAINES, }
C. R. PATERSON, } Members.

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QUEENSLAND FOREST SERVICE.

Report of the Provisional Forestry Board for the Year ended
30th June, 1926.

THE YEAR'S WORK, 1925-26.

The following summary presents for ready reference works carried out by the Forest Service during the year:—

1. The propagation at various forest nurseries of 1,100,000 plants.
2. The planting-out of 350,000 softwood-producing seedlings over 500 acres of State Forests.
3. The regeneration of 4,650 acres of Eucalyptus forest.
4. The leasing of 78 acres of the Amamoor forest lands for combined banana and tree growing.
5. The clearing of 700 acres of new plantation site.
6. The incidental production of 1,450 bushels of maize for departmental use.
7. The purchase for £1,600 of an area of land at Stanthorpe for the production of *Pinus insignis* case timber for the Granite Belt fruitgrowing industry.
8. The purchase for £4,020 of an area of 2,046 acres of land at Pechey for the supply of miscellaneous hardwood, case timber, and softwood for the Downs market.
9. The reconnaissance of 516,000 acres of jungle and timber land and the strip estimation of 5,900 acres.
10. The intensive contour and assessment survey of 59,178 acres of reservation as the basis of working plans.
11. The division into compartments for purposes of operation, of 54,471 acres of the forest estate.
12. The preparation of Forest Working Plans for 392,000 acres of forest reserves, with the objective of applying silvicultural management.
13. The preparation of volume tables for Hoop and Bunya Pine.
14. The logging and sale of 53,000,000 feet of Hoop and Bunya Pine and 9,000,000 feet of hardwood.
15. The purchase for £5,000 of a logging tramline and wharf on Fraser Island.
16. The milling of 3,860,000 super. feet of sawn timber and of 49,000 sawn sleepers.
17. The purchase for £10,000 of the Yarraman band sawmilling plant.

18. The sale from the Forest Service Sawmills and Timberyards of 6,794,000 super. feet of sawn timber, and from Birimgan Mill of 54,689 sleepers for a total sum of £158,733.
19. The making of a net profit of £8,213 from the sawmilling and timberyard enterprise.
20. The hewing, splitting, and extraction of 957,300 super. feet of transoms, crossings, wales, braces, and headstocks, &c., of 192,000 lin. feet of girders, corbels, piles, and other round timbers; and of 404,000 sleeper blocks, sleepers, posts, &c., the total value being £90,000.
21. The completion of a lengthy study in the technology of the native woods of Queensland, the issue of the Universal Wood Index, and the part preparation of a publication on "Forests and Timbers."
22. The clearing of 40,000 acres of prickly-pear and 1,700 acres of other pest plants.
23. The augmenting of the acreage of permanent State Forests by 4,000 acres and of Timber Reserves by 126,000 acres.
24. The leasing for grazing purposes of 113,000 acres of distant forest reservations.
25. The displays of forestry exhibits at the National Exhibition at Brisbane, the South Seas Exhibition, at Dunedin, N.Z., and at Sydney, Townsville, and Gympie.
26. The setting up of arboreta and of experimental plots for oil and tan bark production.
27. The protection of the forest estate from fire and trespass.
28. The training of Cadet Foresters at the Departmental Offices, at the University of Queensland, and at the Australian School of Forestry in Adelaide.
29. The collection of a gross revenue of £453,037.
30. The netting of a log trading surplus of £225,370.
31. The reinvestment in forest production and management of £42,006.

FOREST SERVICE *RAISON D'ETRE.*

The Forest Service exists for the primary purpose of providing Queensland in perpetuity with timber and forest products.

Its place in the economic comity may be appreciated best by a survey of the uses to which its products are to be applied.

The following is an abridged general list of the uses of wood in Queensland:—

Aeroplanes.	Golf shafts and heads.
Aeroplanes construction.	Gun stocks.
Artificial limbs.	Hockey sticks.
Axe handles.	Military purposes.
Baseball clubs.	Mining purposes.
Bent-wood.	Motor bodies and parts.
Billiard cues.	Munitions.
Blinds (Venetian).	Musical instruments.
Boat building.	Piano timbers.
Boot heels.	Picture frames.
Bowls.	Piles.
Boxwoods (in lieu of English Box).	Ply and veneer work.
Bridge construction.	Poles.
Broom handles and dowels.	Polo heads.
Brushware.	Printing trade.
Building.	Railway timbers.
Butter boxes.	Rulers, scales, &c.
Carpenters' tools.	Shipbuilding.
Carving.	Sleepers.
Cases and boxes.	Sporting material (see also baseball clubs, billiard cues, bowls, cricket bats, cricket wickets, croquet mallets, fishing rods, golf shafts and heads, hockey sticks, polo heads, tennis racquets and wedges).
Clothes pegs.	Templets.
Coachbuilding and vehicles.	Tennis racquets and presses.
Cooperage.	Tobacco pipes.
Cricket bats.	Tools and tool handles.
Cricket wickets.	Tram construction.
Croquet mallets.	Violin timbers.
Electrical trade.	Wharf timbers.
Fancy articles.	Whip handles.
Fencing.	Wood paving.
Fishing rods.	
Fruit cases.	
Fuel.	
Furniture and cabinet woods.	

OUR TIMBER NEEDS.

Broadly speaking, we need timber for public works, for home-building, and for furnishings, and for these purposes we require both hardwood forests, softwood forests, and cabinet-wood forests. But whereas hardwoods are rare and cherished commodities in Europe and America where pine trees congregate, the Antipodean circumstances of Queensland are such that the country is held by native armies of Myrtaceous and Leguminous hardwoods, which, occupying the dried hills and plains of the hinterland, have advanced upon the coastal belt under cover of winter and periodical droughts, and now beleaguer the small cabinet-wood and softwood jungles situated at the points of soil saturation along the high rainfall isohyets of the coast lands.

THE HARDWOOD PROBLEM.

The hardwood problem of Queensland is no severe problem except to the farmer who seeks to combat upon his farm the high reproductivity of the native Eucalypt. The hardwoods occupy the poorer and drier soils, are fitted to resist both fire and drought, and under comparatively simple silvical plans can be made to yield of their produce in sustained sufficiency for the needs of the increasing population. Last year the Forest Service treated 4,653 acres of Eucalyptian timber land by silvical

loggings, regenerative ringbarking, and protective measures, and although this effort represents but 30 per cent. of the actually necessary hardwood campaign, it is earnest of the early attainment by the Forest Service of its silvicultural objective for the native hardwoods, most of which, indeed, are stronger even than the more famous Jarrah of the West.

CABINET-WOOD SILVICS.

The cabinet-wood problem in silvics is more complex, but Queensland, by virtue of its possession of a rich variety of luxury timbers, is destined to remain the principal supplier to Australia of furniture, and must realise its inherited task. In the world there are no fine woodwares to surpass the Maple Silkwoods, the Silky and Satin Oaks, the Black and Walnut Beans, the Rose Walnuts and Mahoganies and Grey Teaks of Queensland. The silvical difficulties, however, lie in an embarrassment of riches, and in the general forest matrix in which the most valuable species are embedded. Much research and studious compilation of data are essential yet, but the shelterwood operations of the Maple Silkwood forests of North Queensland thus far undertaken have resulted in a robust second growth which gives promise of larger successes to follow.

THE SOFTWOOD SHORTAGE.

The essential feature of the forestry position of Queensland at this opening stage, however, is that an aboriginal insufficiency of building softwood exists for the needs of the civilised State. It is true that compared with our Southern neighbours we are relatively rich in the possession of important hillside forests of Araucaria in the South and of Agathis in the North, whence have come our supplies of building softwoods in the shape of Hoop and Bunya Pine and of Kauri Pine, supplemented by lesser supplies of the harder and more brittle Cypress Pine of the South-West. These assets, however, were always inadequate to the needs of a colony capable of carrying a population in '60 years' time of 3,000,000 souls, and no amount of husbanding could possibly have overcome the original smallness of the native coniferous timberlands.

In the beginning of our settlement we possessed natural softwood assets measuring in volume between 3,000,000,000 and 4,000,000,000 feet. Some of these assets have been wasted in pioneering land settlement processes, but from 1883 to 1925 we actually used up for developmental works 2,450,000,000 super. feet of Hoop and Bunya Pine saw logs (exclusive of casing qualities), plus 600,000,000 super. feet of Kauri and Cypress.

From a consideration of forest valuation surveys made over the last 15 years, it is estimated that our Hoop and Bunya Pine reserves at 30th June, 1925, stood at 1,070,000,000 feet of saw logs on Crown forests, and 230,000,000 feet on private areas (exclusive of case logs).

During the financial year we logged a further 117,000,000 super. feet. of Hoop and Bunya saw logs from both Crown and private lands, and imported 12,000,000 super. feet of foreign softwood as well. Were we to fulfil our softwood needs wholly from our own holdings, our entire coniferous resource of mature saw logs other than casing qualities would be absorbed by the year 1938, twelve years hence!

There is now operating in Queensland a local timber industry, the wealth of whose annual production is estimated to be close on £3,000,000. Within that not unimportant industry are 257 sawmills, of which the larger number depend upon the natural pineries of the State for their continuance. The Provisional Forestry Board cannot escape a sense of some responsibility for the welfare of this timber industry, and has given considerable thought to the industrial and economic problems confronting it in consequence of the indigenous softwood deficiency. Obviously there are only two policies from which to choose, the first to cut out the Hoop and Bunya stands within these twelve years from 1926 to 1938, when the pine milling industry would suddenly disappear, or to ration the cut over a more extended period, and by dilution and import to ease the decline in our small resources down to the point at which the incline of the new plantations of Forest Service creation can assume the responsibility for providing increasing supplies of log material.

This latter policy the Provisional Forestry Board has chosen.

Hitherto private timber estates, although in an acreage minority and holding only 25 per cent. of the softwood volume, have contributed a larger yield than the State's own much more important timber land properties. This large contribution is due mainly to their generally better accessibility and because of the haste to realise upon the stumpage values in order to convert the land to farming ends.

Between the years 1911 and 1923, these private areas provided two-thirds of the State's requirements, yielding, in 1912, 80,000,000 super. feet of logs, including tops. In 1924-25, the private cut had dwindled to 58,000,000 super. feet, including tops, and the State's cut had increased to such an extent that it has now assumed the chief burden of supply, and this position it will maintain henceforth. The private resource is running out quickly, and it is calculated to dwindle rapidly to an almost entire end by the year 1937. Thereafter the Forest Service will become practically the sole purveyor of native pine to the community.

For the purposes of forest regulation in Queensland the unit reservations have been grouped into Working Plan Areas; modern transport having widened the zones of marketing, and made it inadvisable to sustain the yield for individual forests, more particularly in view of the deficiencies which exist among the junior age classes of the original stands.

The stock schedules of the Crown forests, brought up to date, reveal the following stocks of Hoop and Bunya Pine of mature size,

exclusive of tops, now remaining within each Working Plan Area:—

Working Plan Area.	Stand of Mature Pine over 60" G.B.H. (exclusive of Case Timber) at 30th June, 1925.
	Super. feet (<i>Hoppus</i>).
Brisbane Valley	249,000,000
Kilkivan	197,000,000
Many Peaks	123,000,000
Mary Valley	100,000,000
Nanango	96,000,000
Kilcoy	96,000,000
Warwick	74,000,000
Bundaberg	49,500,000
Maryborough	31,500,000
Brisbane	30,500,000
Mackay	18,500,000
Fraser Island	3,000,000
North Coast	1,000,000
Rockhampton	1,000,000
Total	<u>1,070,000,000</u>

It will be seen that the principal assets are in the Brisbane Valley, Kilkivan, and Many Peaks areas, and these, mainly in the mountains, difficult of immediate access.

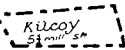
These stands being original natural forests of a climax type are in a more or less aged and stagnant condition wherein growth merely balances decay, and wood interest is being cancelled automatically by accruing deterioration of old stocks. Two-thirds of the contained trees are of girth classes exceeding 60-in. g.b.h. and deserve exploitation as accumulated surplus products. The remaining third represents vital capital producing annually around 10,000,000 super. feet of new wood. The Board's plan is to reduce the stagnant accumulations over a convenient period determined by economic considerations, until the annual cut of pine for the State becomes 10,000,000 super. feet. If, as calculated, this figure is a more or less accurate determination of the true annual wood increment of the forests it will thenceforth become a perpetual yield, gradually increasing as plantation capital is added until it is equal to the needs of the multiplying population at the rate of 140 super. feet of saw logs per capita per annum.


This point should be arrived at according to plan in the year 1996, by which time the original softwood supplies of the world will have reached comparative exhaustion, and the possibilities of importation have become practically nil.


REGULATING THE SOFTWOOD CUT.


In the meantime we will be operating over a period of decline in local pine utilisation.

MAP OF S. E. QUEENSLAND

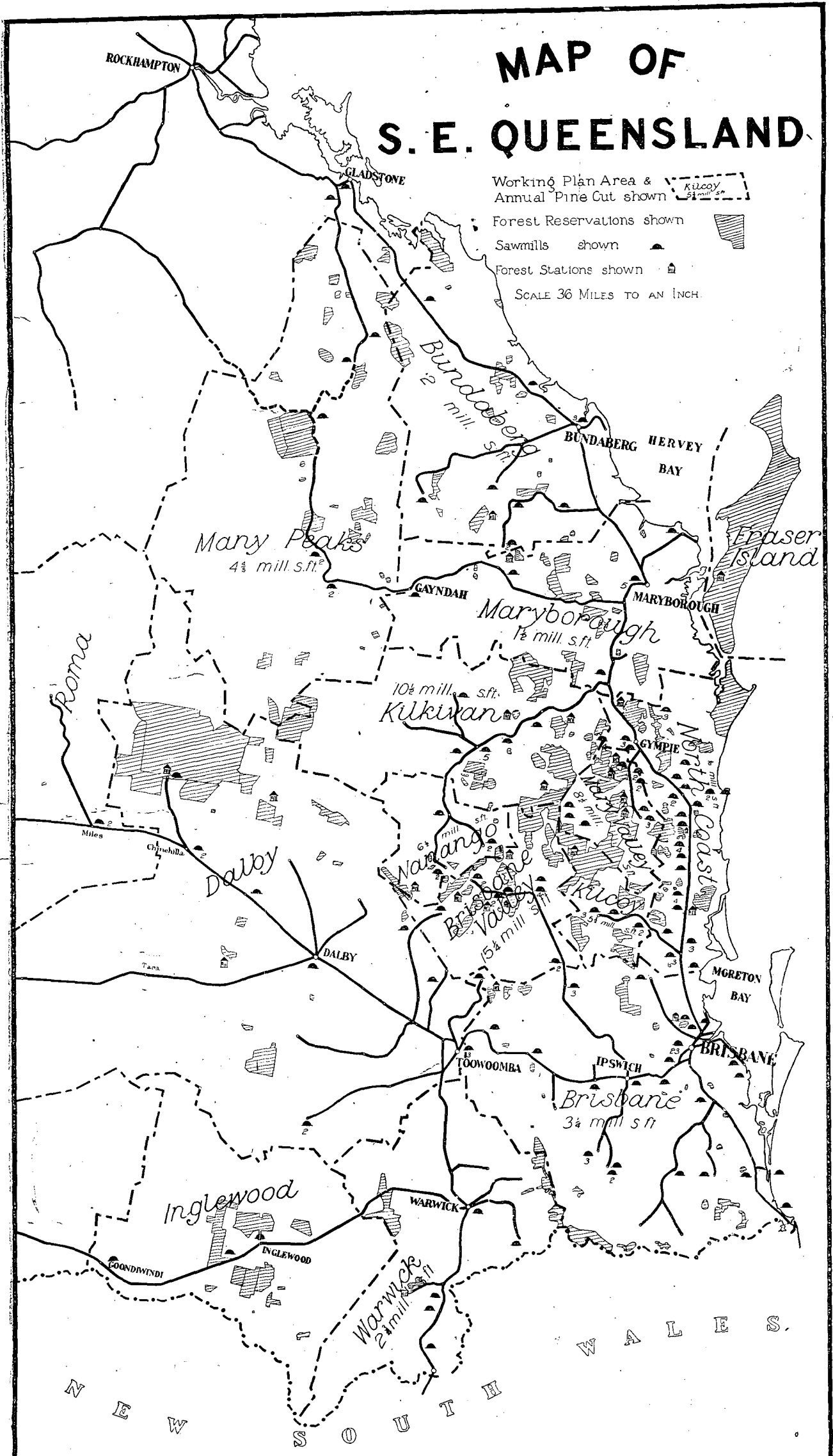
Working Plan Area & Annual Pine Cut shown  Kilkivan 5 1/2 mill s ft

Forest Reservations shown 

Sawmills shown 

Forest Stations shown 

SCALE 36 MILES TO AN INCH.



NEW SOUTH WALES

The reduction of the present cut of 90,000,000 sup. feet to the 10,000,000 sup. feet of the sustained yield will be carried out over a period of years during which the average cut will be—

$$\frac{90 \text{ plus } 10}{2} \text{ million superficial feet} = 50,000,000 \text{ superficial feet.}$$

and the period of reduction, therefore, will be—

$$\frac{1300}{50} = 26 \text{ years.}$$

Over this period the annual reduction will be—

$$\frac{80}{26} = 3,100,000 \text{ superficial feet.}$$

To accommodate the market to the quick outgoing of the private holdings in timber the Crown deliveries will be stimulated temporarily at the calculated phase of greatest depression, viz., 1930-1939, thus graduating the decline as evenly as possible.

The cutting programme with its accumulating deficit in raw material is presented clearly in the following table:—

SHOWING ESTIMATED FUTURE LOG CUT OF HOOP AND BUNYA PINE (EXCLUSIVE OF TOPS).

Year.	Estimated Cut from Crown Lands.	Estimated Cut from Private Lands.	Estimated Total Cut for State.	Excess of Requirements over Cut.	Accumulated Deficit.
	Super. feet (log measure.)	Super. feet (log measure.)	Super. feet (log measure.)	Super. feet (log measure.)	Super. feet (log measure.)
1926	49,500,000	40,500,000	90,000,000	6,500,000	6,500,000
1927	48,000,000	38,000,000	86,000,000	12,000,000	19,000,000
1928	48,000,000	36,000,000	84,000,000	18,000,000	37,000,000
1929	48,000,000	33,000,000	81,000,000	24,000,000	62,000,000
1930	51,000,000	27,000,000	78,000,000	30,000,000	92,000,000
1931	54,000,000	21,000,000	75,000,000	36,000,000	130,000,000
1932	56,500,000	15,000,000	71,500,000	42,000,000	170,000,000
1933	58,500,000	10,000,000	68,500,000	48,000,000	220,000,000
1934	59,000,000	6,000,000	65,000,000	54,000,000	270,000,000
1935	59,000,000	3,000,000	62,000,000	60,000,000	330,000,000
1936	58,000,000	1,000,000	59,000,000	66,000,000	400,000,000
1937	56,000,000	..	56,000,000	72,000,000	470,000,000
1938	53,000,000	..	53,000,000	78,000,000	550,000,000
1939	50,000,000	..	50,000,000	84,000,000	630,000,000
1940	47,000,000	..	47,000,000	90,000,000	720,000,000
1941	44,000,000	..	44,000,000	96,000,000	820,000,000
1942	41,000,000	..	41,000,000	100,000,000	920,000,000
1943	38,000,000	..	38,000,000	110,000,000	1,030,000,000
1944	35,000,000	..	35,000,000	115,000,000	1,140,000,000
1945	32,000,000	..	32,000,000	120,000,000	1,260,000,000
1946	28,500,000	..	28,500,000	125,000,000	1,380,000,000
1947	25,000,000	..	25,000,000	130,000,000	1,510,000,000
1948	22,000,000	..	22,000,000	140,000,000	1,650,000,000
1949	19,000,000	..	19,000,000	145,000,000	1,790,000,000
1950	16,000,000	..	16,000,000	150,000,000	1,940,000,000
1951	13,000,000	..	13,000,000	155,000,000	2,100,000,000
1952	10,000,000	..	10,000,000	160,000,000	2,260,000,000
1953	10,000,000	..	10,000,000	170,000,000	2,420,000,000
1954	10,000,000	..	10,000,000	175,000,000	2,590,000,000
1955	10,000,000	..	10,000,000	180,000,000	2,770,000,000

Market and weather conditions will affect the curve from time to time and introduce a jaggedness which does not appear in the graph presented herein, but the all-important facts for the timber industry of Queensland to know are that henceforth, until about the year 1952, there will be approximately 3,000,000 super. feet less of Hoop and Bunya Pine available each year for milling, and that so far as these woods are concerned, each such year will be marked by one or more unfortunate fatalities amongst the 257 sawmills now in active operation.

OPENING NEW FORESTS.

The trade has from time to time sought relief from its raw material problems in the idea of opening new bushes, and the timber merchant's 1925 El Dorado in this connection has been the Manumbar State Forest group which is calculated to carry around 200,000,000 of the 1,070,000,000 feet of standing pine in Queensland.

These forests are situated in the hills, approximately thirty miles south of Kinbombi and Goomeri. A railway line has been surveyed from Goomeri to Coothing, a distance of thirty-three miles, and this line would tap economically practically the whole of the Manumbar group. Operations on these areas have been restricted pending the possible construction of the railway line which, however, would cost at least £200,000, and could not possibly pay so far as timber is concerned, because the additional freight rate gained by the extension for logs consigned to Maryborough or Brisbane, would be only 4d. per 100 super. feet. Moreover, the line would take three years to complete, and the sawmillers' case is too urgent for so long a delay.

During the year three other alternatives were examined by the Board. They were—

- (1) Direct trucking of the logs from the forest to rail by motor wagon ;
- (2) Construction of a Forest Service logging tramway ;
- (3) Milling *in situ*, with motor transport for the sawn material.

The first method, involving no capital expenditure, would cost the Forest Service about 5s. 6d. per 100 super. feet. The second was calculated to reduce this figure to 3s. 10d. per 100 super. feet, but involved a Forest Service capital outlay of £110,000 from loan. The third method it was found would reduce the cost further to 3s. 3d. with a sawmillers' capital investment of say £20,000, but with the disadvantage for railside mills at Maryborough and Brisbane of having cut off the supplies to which they looked to relieve their shortage.

As the Board had in prospect, however, the opening of important forests by the nearly completed Many Peaks-to-Monto railway line, from which relief could be provided for Maryborough mills, the third alternative was decided upon as the basis of its exploitation policy for the Manumbar forests, with the provision, however, that the projected bush milling operations should be located outside the zone likely to be benefited by any future Goomeri-to-Coothing railway line.

Accordingly it determined that pending such construction sufficient quantities of log timber should be made available at Pungun, Tankallaman, and Moonda-Waamba Creeks, to enable an efficient sawmill, State or private, to operate at each of these sites, and that the timber on Coothing and Toomcul Creeks should be withheld from working until the fate of the railway construction was decided.

Having these arrangements in mind, and giving consideration to local factors for all other regions whilst adhering to central policies, the Board has apportioned the annual log cut.

In order best to fit the regulated annual production of Hoop and Bunya Pine logs to the current needs of industry, the Provisional Forestry Board has adopted the Working Plan Areas into which it has grouped the Crown forests of the State, as units of the harvesting programme.

For each of the next five years, 1925-26 to 1929-30, a cut of 48,750,000 super. feet of sawn logs, -excepting casing qualities, has been fixed; with casing logs added, the fixed cut became 61,000,000 super. feet, made up as follows:—

Working Plan-Area.	Annual Pine Cut, super. ft. (including Tops.)
Brisbane Valley	15,250,000 (4.7 per cent. of stand)
Kilkivan	10,500,000 (4.4 per cent. of stand)
Many Peaks	4,800,000 (3.0 per cent. of stand)
Mary Valley	8,500,000 (7.2 per cent. of stand)
Nanango	6,500,000 (7.6 per cent. of stand)
Kilcoy	5,750,000 (4.9 per cent. of stand)
Warwick	2,750,000 (3.0 per cent. of stand)
Bundaberg	2,000,000 (3.3 per cent. of stand)
Brisbane	3,250,000 (9.2 per cent. of stand)
Maryborough	1,500,000 (4.0 per cent. of stand)
North Coast	100,000 (6.2 per cent. of stand)
Mackay	100,000 (0.45 per cent. of stand)
	<u>61,000,000 super. feet.</u>

This figure of 61,000,000 super. feet represents a considerable increase of Forest Service logging operation, as may be seen from a survey of the following figures of yields including tops since 1919:—

1919-20	43,113,383
1920-21	33,887,627
1922	41,768,289
1923	44,512,655
1924	57,607,386
1925	53,639,458

The production from private forests including tops has declined as follows over the same period:—

1919	96,000,000
1920	72,000,000
1921	56,000,000
1922	62,000,000
1923	61,000,000
1924-25	58,000,000

In the cutting of the annual quota from the State's reserves, due thought is given to the necessity for removing as quickly as possible damaged and deteriorating trees which are not putting on wood interest. In addition to special cuttings of fungus-infected constituents of the stand, the following general rules are applied:—

- (1) In virgin stands the minimum g.b.h. is fixed at 72-in., 84-in., or 96-in., depending upon the size and density of the pine stand. If a stand of large timber over 96-in. g.b.h. exists, and sufficient remains between 60-in. and 96-in. to justify recutting after a period of years, the minimum g.b.h. is fixed at 96-in. Should the stand over 96-in. g.b.h. be insufficient, the girth is reduced to 84-in. or 72-in. g.b.h. as appears necessary.
- (2) In the second cutting, carried out after a period of years, the trees are felled to 60-in. g.b.h.

Variation of the above principles is determined by circumstances. The following cases will exemplify:—

- (a) When the size of pine is small or the stand very light, the cut is to 60-in. g.b.h. in the first operation.
- (b) From areas to be alienated or felled for planting, all marketable pine is removed.
- (c) Small isolated scrubs in danger of destruction by fire are cut to 60-in g.b.h., or if regeneration is of little consequence all marketable pine is cut.
- (d) In inaccessible areas the g.b.h. may be reduced to 60-in. for the first cut, as long as the stumpage of a 60-in. g.b.h. tree is not less than one-third of that of a 72-in. g.b.h. tree.
- (e) Except for cases mentioned in (b) and (c) the g.b.h. is never reduced below 60-in.

SITUATION OF THE TIMBER INDUSTRY.

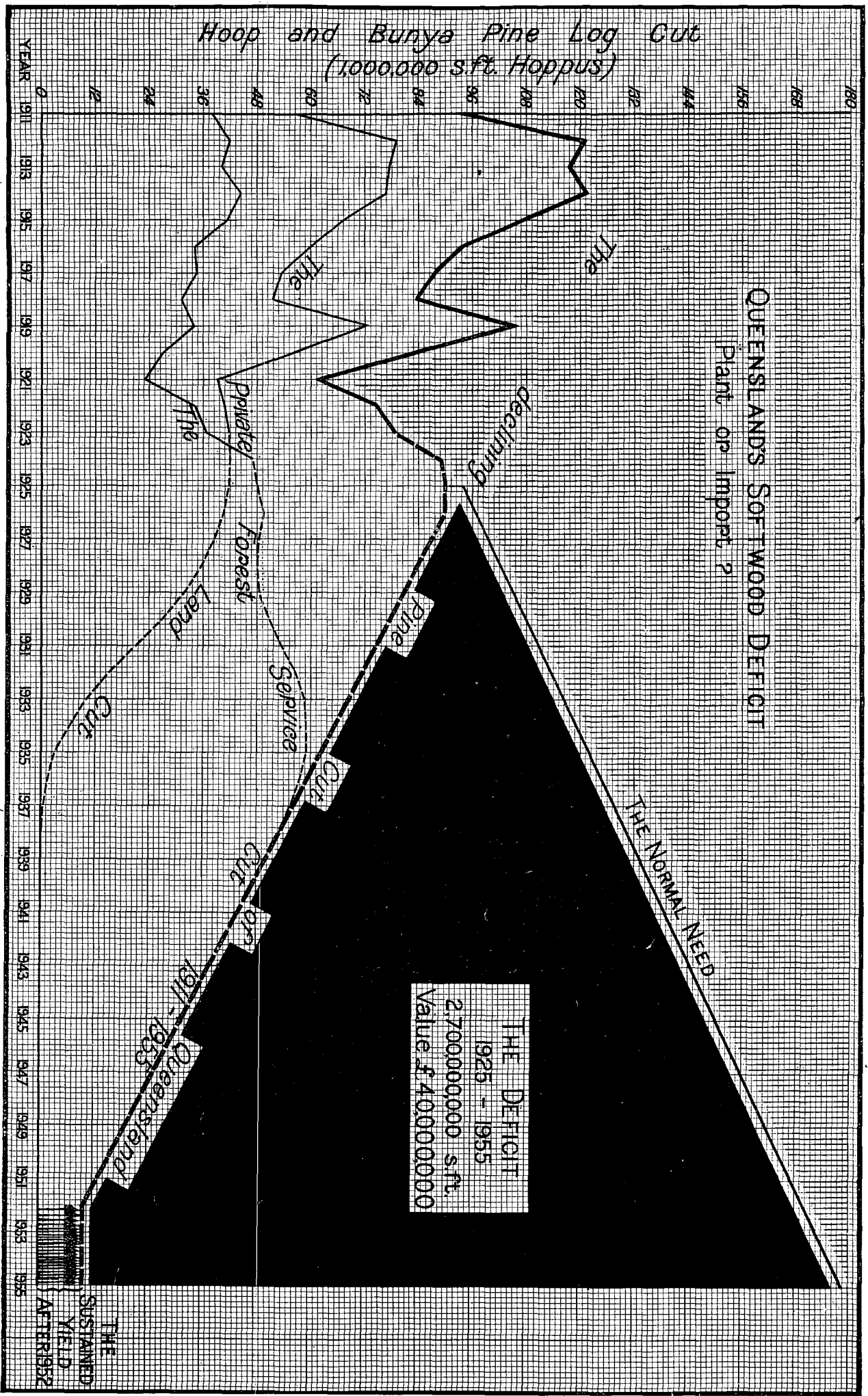
That sawmilling circles are beginning to appreciate the incidence of the decline in raw material reserves is made evident by recent manifestations of alarm and the developing panic disposition to accuse Government of withholding supplies of saw logs in order to "force up royalties," and thus to persuade the alternative policy or lack of policy of "eat, drink, and be merry," with the wood resources of the country, "for to-morrow we die."

The facts, however, are clear and are here set down for public knowledge.

The plants most affected are those of the city and railside, established long ago to deal with the then conveniently located original bodies of timber adjacent to rail and market. With the passage of time these handy resources in wood have been eaten up, and the old plants are left straining for supplies of raw material over the prolonging distances to the retreating resources in the hills. As the miles increase, however, the haulage of logs with their included waste over the country roads, involves a loss of up to 3s. per 100 super. feet, as against milling *in situ* and the cartage of the converted produce. This loss must be borne by the Forest Service as the supplier to the Brisbane and other key markets of logs at market prices for various grades. It is, however, not proper so to subsidise old-established plants whose location has been rendered uneconomical by the changing facts of trade, and the Provisional Forestry Board has found it necessary increasingly to operate on back block reservations in mill size lots at stump with bush mills.

The snapping up by bush milling interests of stump sale log lots so offered had immediate effect in shortening deliveries to rail. Coincidentally a shortage of railway trucks left the railside market more or less bare of logs, and an outcry arose from milling interests in Gympie, Maryborough, Moore, and Yarraman—in the latter two cases, the very existence of the towns being at stake.

The contest between old and new interests came to a crisis in September, 1925, when protest was made to the Minister by deputations of the assembled timber trades against any extension by the Board



Queensland's Softwood Deficit.—The Combined Private land and Crown land Yield of Pine is declining steeply—the 1926-1955 Deficit will be 2,700,000,000 superficial feet.

of the policy of milling *in situ*. Request was made by timber merchants that preference in log deliveries should be given to town and city mills, as against bush mills, and that Forest Service log sales should be arranged to suit railside interests by direct log marketing at rail instead of by any further sales at stump. After various discussions had taken place, however, the cleavage between old and new interests again asserted itself, and the dispute ended in the policy of the Board being confirmed by the consensus of trade opinion to the following extent:—

- (1) That pine should be sold on stump when it is situated too far from rail to be hauled profitably in the log to the nearest railway station;
- (2) That pine standing near enough to haul to railway for supply to town mills be sold on trucks;
- (3) Mills whether operating in the past on either Crown or private forests should have the right when cut out to compete for new log supplies on stump in Crown forests beyond the radius of economical direct log deliveries to rail.

The remaining points at issue were as to the quantity and time aspects of stumpage sales, upon which points the merchants themselves were not unanimous, leaving them to the Board to decide upon their local merits, with the request that earnest consideration be given to the difficulties in which railside mills found themselves.

The evolution which the logging and sawmilling industry is now undergoing is a perfectly logical economic development which cannot be stayed by artifices. It is necessary that sawmillers should realise the facts of the log supply in order that they may adjust their businesses to the changing circumstances which are now arising.

The essential thing is that the Queensland consumer be served with efficiency, and that ineffective organisations and dispositions be not subsidised by adoption by the Department of uneconomic programmes and policies.

An unavoidable accompaniment to the facts of the declining of log supplies below current demands is that the profit margin for sawn pine will narrow to the point almost of elimination.

For the year 1925-26, the State's sawmills, managed by the Provisional Forestry Board, bought from the State Forests at current competitive rates 4,500,000 super. feet of pine logs, purchased from private sawmills at current market wholesale prices 3,121,000 feet of sawn pine and hardwood, and sold 6,224,000 super. feet of sawn products at less than fixed prices. After paying depreciation, redemption, interest, &c., the operation yielded a net profit of £8,213, equal to a dividend upon the investment of 16 per cent., less taxes and rates.

The force of the law of supply and demand can have no other effect but to gradually increase the price of pine logs at the expense of this margin.

It is significant that during the current year there were sold at public auction by the Forest Service 53,000,000 feet of pine logs, and in not one instance, despite the compelling demands of every sawmiller, were the Forest Service upsets bettered by bidding.

Avoiding the free play of the laws of competition and survival of the fittest, the sawmilling industry has chosen to adopt a mutually protective purchasing organisation under which it buys raw material for the industry non-competitively from the Forest Service at upset prices, and proceeds to allot to each of its members an apportioned share of the purchases.

This method involves the sharing of the deficiency in supplies of raw material amongst the industry as a whole, so that each unit sawmill accepts short time rather than that the life of the least efficient should become forfeit at competition.

The arrangement is in the nature of an anti-suicide club, and the industry is clearly entitled to adopt it. The Forest Service has no criticism to offer beyond the reflection that the weight of the accumulating shortage inevitably must have its eventual way in determining those units which by reason of efficiency in location and management are best fitted to serve the community's need in wood.

The Southern situation in Hoop and Bunya Pine was reproduced during the year in the Kauri forests of the North.

In North Queensland, which in age of timber industry development is many years behind Southern Queensland, the bush milling conception for distant forests is practically unknown. Like the townships of Moore and Yarraman—utterly dependent upon timber for their bread and butter—the township of Mount Molloy in North Queensland has grown up on a local logging and sawmilling industry, and its established railside mill has served the community well in the handling of timber lands adjacent to the town. At this date, the Kauri Pine resource has retreated before the timbergetters until the chief supplies are back in the mountains twenty miles distant from the mill. The Provisional Forestry Board has been compelled to recognise the community loss involved in the haulage of the inherent log waste over this distance and, following upon its Southern experience, determined to offer the Kauri Pine upon this reserve in such size lots as would permit of bush milling competition. Accordingly 10,000,000 feet of Kauri were offered for sale on stump, the term of extraction being seven years.

The sale attracted considerable attention. The town mill protested vehemently against the sale and the upset. There were no bids at the auction, and this apparently bore out the local contentions against the bush milling policy, but the timber was purchased the next day as an after-auction purchase by a bush milling interest, the Crown netting £23,000 over and above the calculated proceeds of direct logging to rail, thus again justifying the carefully considered policy of the Board.

At Yarraman, in Southern Queensland, the elements of dispute were rather different. Here the sawmill at the railhead had been operating for a number of years on important forests adjacent to the township in which it was situated, but its territory had been invaded by city sawmilling interests in search of more material. The annual cut fixed by the Forest Service stood at 4,000,000 super. feet of logs plus tops, sufficient to maintain the existence of the mill for a further series of years. Under the purchasing arrangements agreed upon between sawmilling interests, the whole of this quota was bought, indeed, by the Associated Sawmillers

at the Forest Service log auctions without competition, but in the subsequent division of the log lots acquired, the local mill was obliged to share the Yarraman supplies with its fellow members from far and near. In consequence, the Yarraman plant fell short of supplies, and was obliged to stand and watch sorely needed stores of raw material go past it *en route* to Brisbane. Again the recourse was to the Department for assistance, and there came deputations of workmen to Brisbane praying for more logs. The prospect of partial or complete closure of the mill, which employed 60 men, shook the township of Yarraman to its very foundations. Obviously, however, any increase in log lots at auction would again be swallowed up by members of the Associated Sawmillers, and relief from this arrangement could not be obtained at the hands of the Board.

It chanced, however, that the Yarraman Band Sawmilling Plant came under offer to the Forest Service at a moment when the Forest Service had in contemplation the erection of a new and large bush sawmill on the Manumbar State Forests, in order to meet the increasing demands of its city timberyards for sawn timber to sell. At the close of the financial year the Yarraman plant was purchased by the Board, under authority of the Government, and became a Forest Service State Sawmill.

The solution of Yarraman's troubles in this way was a happy one, because it not only made a continuous sawmilling operation possible, and thus saved the life of the township, but it also served the State and made possible the association of the Yarraman State Forest, State Sawmill, and State Forest Station in a well-rounded scheme of Forest Service logging, sawmilling, and silviculture upon the valuable State Forests at the Yarraman railhead. In this respect Yarraman now parallels the Forest Service arrangements at Imbil and Benarkin of a Forest Service combination of logging, milling, and silviculture. (In parenthesis, the purchase during the year by the Forest Service of McKenzie's logging tramline and wharves on the Fraser Island State Forest makes another pretty combined logging and silvical operation possible under the one resident Forest Service organisation.)

Towards the supply of Maryborough needs in pine, the Board initiated arrangements in 1925 for the logging of the stands on the Lowmead forest, by means of tramline and power arrangements, but by the end of the financial year the contractor had not reached the conclusion of his labours and the yield of logs will not commence until early in the ensuing year. On the Goodnight Scrub, however, motor truck contracts were entered into for the haulage of 1,500,000 super. feet of pine, and this quota is now coming to market. The opening of the almost virgin stands of pine upon the New Cannindah forest awaits the completion in August, 1926, of the new railway line to Barrimoon. In anticipation thereof, tenders have been called by the Forest Service for the haulage of 1,000,000 super. feet of pine from this source.

The troubles of the timber trade for 1925, having spread like an epidemic from merchants to workmen, finally affected the haulage contractors of the Department. The depletion of the private holdings in pine logs threw a gradually increasing number of bullock teamsters on to the Forest Service haulage contract market, keening up the competition for contracts intensely. The extension of the bush milling policy before referred to, however, shortened the logging contracts available,

and on to this shortened market the newly arrived motor truck logger drove with visions of large earnings at low haulage prices. Finally, in North Queensland the boom logging year of 1925 fell sharply into the gulf of a 1926 depression in trade which left few logs to be hauled.

The needs of the haulage contractors primarily were for work, which, however, the new situation could not provide for all, and teamsters having idle team capital locked up eating £2 per day in feed were, in a number of instances, in bad case.

Solution for these troubles, as in the case of the timber merchants, was sought in economic artifices. Teamsters' Unions were formed, and claims were made first of all for preference to unionists, even to the extent of preference against motor truck logging and, in fact, for an actual vetoing of motor truck logging, on the grounds that motor trucks were not made in the Commonwealth and bullock wagons were. The abolition of the tender system was sought, and request was made for regulated prices for log haulage, with the right of appeal to an Industrial Court.

Deputations were formed, agitations were developed, and petitions came in from the four quarters of the State. Claims were made for increased contract prices, for priority to local contractors, and for increased logging contracts to provide for all contractors who were then or might in the future become available.

Despite the industrial sympathies of the times, the Board has found it impracticable to solve the contractor's difficulties by recourse to the wage protection arrangements for wages men. Fundamentally, teamsters are contractors, and as such must accept the risks of contract. Up to 50 per cent. of the contract price for log haulage is in respect of service of plant, and there can be no guarantee on the part of the Board that the capital so represented shall return fixed dividends to ambitious and speculative bush workers who may purchase teams and commence a contracting career in the hope that all the risks of that career, however modest its ambit, may be borne by Government.

For the same reason the newly formed Teamsters' Union had no status before the Arbitration Courts of the land. Technically they are not employees, but employers, and a Teamsters' Union is, in effect, if not in degree, an Employers' Federation. Preference to unionists could not be applied, and the resort to economic artifice has not and cannot resolve the discord of contracting losses into harmony.

Obviously the Board cannot increase its logging operations against the determination of policy in order to come to the assistance of teamsters caught in the pinch of trade. To do so would only increase the evil, because an army of logging contractors would grow correspondingly. Nor can it determine log haulage prices by schedule, because every gully, every road, every species, every season, and every situation demands its accurate and separate appraisal.

There can be no other economic solution for contractors' difficulties than that for the timber merchants: the most efficient alone can survive. If motor-truck logging is the most efficient operation for the future, it would be foolish to stay its development. Upon reduced cost of production the community awaits for a reduced cost of living.

IMPORTS AND TARIFFS.

The general diminution of the pine supplies of Queensland, and the particular diminution at rail because of the extension of bush milling operations must force upon the attention of town and city mills a consideration of other alternatives in raw material.

Already the reduction in the native pine log yield is being marked by a corresponding increase in the importation of cheap building softwoods from abroad.

To supply the accumulating deficit in the local softwood supplies, Queensland has no possible alternative but to enlarge its importations. Between 1926 and 1952 we will have to buy from foreign countries over £30,000,000 worth of coniferous wood.

Obviously the first section of the milling industry to convert its establishments to the working up of imported stuffs must be the city and railside interests which are being ousted by bush milling developments from their ancient sphere.

It is apposite at this stage to refer to the application made by timber merchants during the year, to the Commonwealth Tariff Board for increased tariff protection on imported timber.

This application was dealt with by the Tariff Board, which duly inquired into and reported at length upon "Timber" in a publication issued late in 1925. The Tariff Board was "unable to suggest any new proposals embracing still higher duties that would be suited to the varying requirements of the respective States."

It advised as follows:—

"The conflicting interests between the States and within the States have very generally accustomed themselves to the tariff passed by Parliament in 1920-21, and the Tariff Board accordingly cannot recommend that this balance should be disturbed, and more particularly for reasons which in the opinion of the Tariff Board has been demonstrated by the evidence are not supported by facts."

During the hearing the operations of the Queensland Forest Service were cited by witnesses against the tariff increase proposals.

Witnesses appeared to be unaware that the Forest Service classified its logs into fourteen market grades for marketing purposes. They construed the highest prices received for logs delivered by train to the Brisbane market of the limited, select, perfectly cylindrical and flawless plywood quality to be the prevailing price for ungraded logs standing in the forests 150 miles from the city. Similarly, the economic confusion at the inquiry was made manifest by the belief expressed that enormous profits were being made by the Forest Service from the State Forests, witnesses overlooking the soil rentals due to the State upon a perpetual lease basis for the use of four or five million acres of land held against other possible rural occupation.

Following are the actual figures of net timber sales revenues "of forestry from 1919 to 1926, showing the average stumpage prices per

100 super. feet:—

Year.	Net Revenue.	Average Rate per 100 super. feet.
1919-20	£ 107,276	s. d. 3 0
1920-21	139,883	3 7
1922	175,871	4 11
1923	182,433	5 1
1924	268,031	5 1
1925-26	225,370	4 8

The Department was invited to furnish a pronouncement in evidence upon the tariff increase application, and this it did. The complexities of timber trade economics, however, are so bewildering to the layman that it is not surprising that the evidence it tendered was entirely misunderstood.

The timber tariff question, however, is one which has more aspects than that of a request for a subsidy of trading timber ventures. Actually it is one involving fundamental considerations of national welfare.

The attitude of the Provisional Forestry Board was that such a measure of tariff protection should be afforded the timber and forest industries as would return them to a not less favourable trading position than that which they would have enjoyed under an open door supply-and-demand policy, and that the proceeds of such tariff protection should be funded under the Federal Government for loan to the States for the two explicit purposes of home-building and forestry, these being the interests affected by a tariff on imported wood.

The conclusion at which the Provisional Forestry Board had arrived was that the general tariff protection policy of Australia, by raising the level of the cost of living and, therefore, of wages, has increased production costs above the free-trade level without having afforded to timber a commensurate protection. This applies particularly to case material, where the duty is only 1s. or free from New Zealand and Canada under reciprocity. The effect of this disadvantage is that it becomes unprofitable to haul knotty pine logs, for instance, from any but the areas closest to market, and a compulsory waste ensues beyond this zone, of native wood which in quality and value is equal to that which we then proceed to import from America and the Baltic.

These foreign products, under an unbalanced tariff schedule, enter the Commonwealth virtually as subsidised lines, and the further fundamental consequence is produced that natural assets of the country, which have a real market value under free trade trading conditions, are made to appear as liabilities under the protected conditions, so much so that their destruction is induced because calculations prove that the cost of production exceeds the current market value.

The country is thus persuaded to scrap assets represented by a part of its natural resources—natural resources, indeed, which are said to

constitute the foundations of all national prosperity. Australia, by this scrapping of portion of her timber assets by the burning and ringbarking of her trees, has earned an international reputation as a tree destroyer, so that visitors from abroad regularly stand amazed at the sight of the dead woodlands of the Commonwealth.

Australia has an abundance of hardwoods, timbers which are the envy of the outer world because of their great strength and durability. Countries overseas lacking hardwood would absorb our surplus, did not our high production costs limit the possibility of export at prices which the world is ready to pay. So the native timber trade on the one hand is unable to export to any great extent because of the local cost level, and on the other hand is faced with objections of local trade that its products are more difficult to work than imported Oregon.

The proposition that we should maintain our axe-ripe State Forests in an unprofitable state of suspended animation until American and Baltic forests are cut out, and, at the same time, put our native timber industry into cold storage for twenty-five years until importations cease of their own accord, is not possible of economic application and by no means sweeps away the issues at stake.

Realising as we should the truth that the original softwood stands of the globe are soon coming to an end and that every land must henceforth farm its own timber crops, the logical national forest policy for Australia is compounded of two things—

- (1) To plan such forestation measures as will ensure a softwood ration of 100 super. feet per capita for a population which is increasing at the rate of $2\frac{1}{4}$ per cent. per annum.
- (2) To utilise to the greatest possible extent the varied resources in wood indigenous to the land.

Inasmuch as these most obvious parts of a national forest policy have their basis in national economics, it must be equally obvious that their beginnings lie in the tariff schedule of the country.

As for Queensland, a planting programme of 5,000 acres per annum of softwood has been initiated, and this will permit of a softwood ration of 100 super. feet per capita per annum being prepared for the 3,000,000 units of the anticipated population of the State in the year 1996.

Meanwhile it may be desirable that the tariff protection policy of the Commonwealth should not merely return the timber trade to the *status quo ante* protection but even give economic encouragement to the ideal of a more extensive use of the comparatively abundant hardwoods and semi-hardwoods still in our possession—unringbarked!

IMPORTED *VERSUS* INDIGENOUS TIMBERS.

In the production of joinery quality Hoop and Bunya Pine, two or three times as much of building, merchantable, and casing qualities are produced by the sawmills, and with these more voluminous lesser grades Oregon and Baltic successfully compete. But still more do the Oregon and Baltic coniferous woods vie with the abundant native hardwoods and with Cypress Pines, which, although stronger, more durable, and more white and resistant than the imported article, are less preferred by the Australian carpenter because they are more difficult to work.

Yet the Tasmanian and Alpine Eucalyptus are not difficult to handle, and Rose or Flooded Gum is being planted by the South African Forest Department actually as a softwood provider for the future.

The Provisional Forestry Board has no desire to limit the use of Oregon or of Redwood each on its merits in its proper place, and in the quantities that actually will be required by Queensland. But Australia should guard against any artificially-induced general displacement of native products by imported products of no better grade, and the Board feels that it is desirable on the score of local industry to press for a revision of specifications for the use of local timbers before the architectural specifications for the imported are relaxed.

There are extant in Brisbane certain timber trade advertisements which accord to Oregon Pine much greater merit than it possesses. It is said that Oregon is within coo-ee of Queensland hardwoods as regards strength. This statement is bad. Tests made by Queensland Railways on 39 specimens of 4 species of Ironbark, containing from 18 to 25 per cent. moisture, gave an average modulus of rupture of 16,900 lbs. per square inch in bending, with a crushing strength of 10,400 lbs. per square inch. Grey Ironbark averaged 20,000 lbs. per square inch modulus of rupture. Compare Oregon's average of 10,840 lbs. per square inch.

Actually, Oregon is inferior even to Hoop or Bunya Pine in strength, holding power of nails, and in relative durability when exposed to weather. The following are results of Queensland Railway tests on air-dried samples of these species:—

Timber.	No. of Tests.	Moisture per cent. Reckoned on Dry Wood.	Weight per cubic foot.	Modulus of Rupture in lbs. per sq. inch.	Crushing in lbs. per sq. inch.
Bunya Pine (<i>Araucaria Bidwilli</i>)	3	Maximum Minimum Average 14.6	33.66 31.56 32.61	14,152 13,683 13,870	8,122 7,527 7,831
Hoop Pine (<i>Araucaria Cunninghamii</i>)	7	Maximum 20.20 Minimum 10.02 Average 13.82	37.43 30.30 34.55	14,667 9,746 12,830	8,444 6,751 7,616
Oregon Pine (<i>Pseudotsuga Douglasii</i>)	20	Maximum 12.1 Minimum 10.0 Average 11.33	37.5 28.7 33.34	13,944 7,789 10,841	8,605 5,980 6,783

These figures speak for themselves regarding the relative strengths of the species given. It will be noticed that Bunya Pine holds first place in both bending and crushing tests, with Hoop Pine second, and Oregon Pine last.

The trade advertisements of Oregon in Brisbane in 1925-26 reversed the above results by measuring seasoned Oregon of 32 lbs. weight per cubic foot, against heavy green Hoop Pine of 54 lbs. per cubic foot, an obviously unscientific comparison.

The tests given deal only with strength in bending and crushing on end grain. The question whether the timbers will withstand a great shearing stress with the grain or a torsional stress, has not been considered. Hoop Pine is tougher, and will withstand a greater shearing stress with the grain than Oregon, which opens up freely in the sun, showing long deep cracks, and is more easily split with the grain. The resistance to a torsional

or twisting stress in a timber depends upon its tensile strength, compressive strength and shearing strength. Here again Oregon is inferior, and splits much more easily in a longitudinal direction when a board is twisted. This can be proved by a simple practical experiment.

From railway test results, it will be seen that Hoop Pine and Oregon Pine are about the same weight, but Oregon is more variable. The heavy timber weighing up to 40 lbs. per cubic foot is usually saturated with resin. Bunya Pine shows a slightly lower average.

Oregon is softer and less tough than Hoop Pine. It can be nailed more easily, but nails do not hold in it nearly so well. A practical test can be made by driving nails to an equal depth in Oregon and Hoop Pine and ascertaining the force required to pull them out.

Hoop Pine has a texture uniform and firm, whilst Oregon consists of alternative layers of hard and very soft wood. The soft layers of Oregon succumb to exposure much sooner than does the wood of Hoop Pine, and although neither should be used in preference to Queensland hardwood in exposed positions, Hoop Pine has the greater chance of survival, particularly as the wood cracks to much less extent.

For indoor work, including flooring, ceiling, and lining, great strength and durability are not required, and timber will last for fifty years, provided that it is not attacked by rot (from dampness, or insects, such as borers or white ants. Hoop Pine is more durable, but the advantage is so small here that it need not be considered. Both Oregon and Hoop Pine are liable to insect attack.

Oregon being softer, is slightly more easily nailed than Hoop Pine, and can be cut more easily. When dressed on its "edge grain" or radial section, it responds quickly, but is more difficult on the "flat grain" or tangential section when the grain is inclined to "lift." Hoop Pine being firmer than Oregon, is more suitable for stained flooring as it does not mark so easily, but hardwoods give the best results here.

The general appearance or "grain" of Hoop Pine is uniform in colour and quite unfigured, which makes it of special value for white kitchen furniture.

Oregon has a striped figure on the "edge" or radial grain, and a pretty looped marking on the "flat" or tangential section. The "flat grain" looks very fine in stained lining and ceiling boards, but should not be used for flooring, as the "grain" lifts and splinters with wear. Boards cut to show "edge grain" on the broad face should be used for this purpose.

For any furniture intended to hold food, Hoop Pine is preferable as it is odourless, whereas Oregon will soon taint food with its resinous smell.

It will be seen that more care must be taken in the cutting of Oregon boards when intended for different purposes.

Hoop Pine is best for white furniture and select work, on account of its even texture and non-resinous nature.

Oregon has a nice figure for stained work, but "edge grain" only is suitable for flooring. Its resinous odour is an objection. Paint does not take so well to Oregon boards on account of this resin. For steam bending purposes it is much more wasteful than Hoop Pine, and is disliked, although it is extensively used on account of its cheapness. It has the advantage of being cheap, and obtainable in long boards, saving labour in extra joints in flooring.

UTILISATION OF NATIVE WOODS.

In New South Wales during the year the Associated Country Sawmillers inaugurated a "shop-at-home" movement, having as its object the stimulation of the use of native woods in buildings of every class. It issued the following appeal:—

"For all building frame construction, where durability and strength are necessary, use native-grown timber. For bearers, plates, joists, studding, and rafters use:—

Ironbark	Tallow-wood
Red Irongum	Woollybutt
Grey Irongum	Blackbutt
Spotted Irongum	Brush Box
Yellow Stringybark	

"For battens, use—
Blackbutt

Rose (Flooded) Gum

"For weatherboards, either rusticated or rough, use—

Red Messmate	Spotted Irongum
Yellow Stringybark	Red Irongum
Blackbutt	Ironbark
Tallow-wood	

"For ceilings, partitions, and linings, use—

Yellow-wood Ash	Yellow Stringybark
Bollywood	Spotted Irongum
White Ash	Blackbutt
Red Messmate	Red Irongum

"For internal furnishings, use—

Rose Mahogany	Grey Teak
Miya Mahogany	Red Messmate
Yellow-wood Ash	Silky Oak
Bollywood	Coachwood
White Ash	White Quandong

"The average breaking strain of these timbers is about 8,000 lb. per square inch, whereas imported timbers used for building purposes have only a breaking strain of about 5,000 to 3,000 lb. to the square inch. This enables smaller sections of our native timber to be used, thereby reducing quantity, and hence the price, as compared with the foreign timber, as well as doubling the life of your house. The durability of these timbers is an outstanding feature, as all native and locally grown timbers are particularly free from weathering and other forms of deterioration."

The Provisional Forestry Board is of opinion that the time is ripe also for a Queensland movement in favour of the greater and the better utilisation of our indigenous woods in industry.

In such a movement the first and most important step is to economise in native pine. There is no need to longer continue the use of 1-in. boards of Hoop and Bunya Pine for lining and ceilings. The Forest Service urges the use of $\frac{5}{8}$ -in. and $\frac{3}{4}$ -in. boards for these purposes at 6s. 6d. and 5s. less per 100 super. feet than for the traditional, but unnecessary, 1-in.; or for ornamental linings, let wall boards of Queensland plywoods be applied.

Nor is there necessity longer to continue the specification of spotless joinery quality pine for flooring which becomes nail marked and dented immediately, and has sooner or later to be covered with linoleum. If Hoop Pine must be specified for flooring to suit the demands of carpenters for easy work, let it be "B" quality, containing some blue stain, sound knots, and wane. But, better still, let all home floors in Queensland in future be laid down in Australian hardwood, or in the white ant resistant native Cypress Pines, which are now replacing ant-eaten Baltic floorings by the million feet in Sydney.

Similarly, in the case of rusticated weatherboards, ordinarily the rising costs of joinery quality pine would compel the attention of users to cheaper alternatives, but the modern fixation of prices as applied to timber imposes a barrier to the ordinary operation of the laws of supply and demand, and makes necessary the finding of other means to timber economy. The Board of Trade has contributed during the year to the timely ideal of economy in local pine by relaxing the general classification for joinery quality to admit of minor defects such as slight blue stains, and by adding an extra 3s. 6d. per 100 super. feet for special specifications by consumers of selected wood.

The thanks of the Provisional Forestry Board are due to the Manager of the State Advances Corporation and to the Under Secretary for Public Works for their ready assent to the Board's ideal of pine economy and extended hardwood use, and for their assurance of co-operation in this ideal in their future building programmes. In the case of Workers' Dwellings and Workers' Homes, however, it is necessary to enlist also the services of the home-builder, since the part played by the State Advances Corporation is limited to suitably advising its clients. If the client insists upon the use of selected joinery quality for kitchen flooring, the client is bound to have his extravagant way.

BRISBANE BUILDINGS, 1925-26.

A survey of current building operations in Brisbane in 1925-26, revealed a developing tendency towards an extending use of woods previously tabooed. Grey Blackbutt and Rose (or Flooded) Gum have been rejected by Queensland carpenters in the past, although in New South Wales these timbers have been in common use in building for several decades. Brisbane contractors have always pressed for supplies of Red Messmate (or Stringybark) although it shrinks as much as Blackbutt, is no¹¹ more

durable, and is harder to nail without splitting. Red Messmate was less in evidence in 1925, but Red Messmate and Blackbutt between them contributed 75 per cent. of the hardwood requirements of builders for the year. The old favourites, Ironbark, Spotted Irongum, and Tallowwood are still represented, but in declining volume, whilst the despised Rose (or Flooded) Gum is now often to be seen in plates, joists, and weatherboards, in the latter case posing possibly as Red Messmate (Stringybark). Comfort, however, may be given to house owners having Red Stringybark weatherboards made of Flooded Gum in the knowledge that the same thing happens commonly in New South Wales with little or no ill effect. The main thing is that the wood should be seasoned, and this is a point that calls for emphasis at this stage. The timber trade of to-day does not cater for the seasoned timber market because it has not the spare capital to carry large stocks of timber undergoing seasoning, and because no higher price is obtainable for wood that is fully dried than for wood that is just skin dry. Thus, Brush Box and Turpentine, two Queensland woods which occur in some abundance but require pains in treatment, do not appear upon the sawn timber markets of Queensland at all, whilst the hardwoods which do are sold semi-seasoned, and a year later cry out against the trade in structures which show the tongues of the lining boards and make visible in $\frac{1}{8}$ -in. cracks the ground beneath the verandas.

Were Flooded Gum, Brush Box, Turpentine, and other now little used woods subjected to proper seasoning processes, there is no reason why they should not secure an honourable place in the architectural specifications of the day.

The appearance in the year's building operations of Scribbly or White Gum (*Eucalyptus hæmastoma*) and Rusty Apple Gum (*Angophora lanceolata*), and Blackbutt (*Eucalyptus pibularis*) in the guise of house stumps, however, is to be straightforwardly condemned. These timbers are not durable in the ground, and warning is issued to the public by the Forest Service accordingly. It was noted in one instance that the contractor had stained these pale-coloured timbers red, so that with their gum veins they might seem to be Red Bloodwood, which, with Ironbark or Yellow Stringybark, should be the specified woods for house blocks. These woods are in demand for telegraph poles for the self-same reason of durability in the ground, and the prices which can be obtained for them are higher therefore than the unsuitable species now being substituted.

Following is a use classification for local hardwoods, prepared by the Forest Service Branch of Wood Technology for the information of architects:—

Division A.—Very durable in the weather and in the ground.

- Grey Ironbark (*Eucalyptus paniculata*).
- Narrow Leafed Ironbark (*Eucalyptus crebra*).
- Broad Leafed Ironbark (*Eucalyptus siderophloia*).
- Yellow Stringybark (*Eucalyptus acmenioides*).
- Yellow Messmate (*Eucalyptus Cloeziana*).
- * Red Bloodwood (*Eucalyptus corymbosa*).
- Grey Irongum (*Eucalyptus propinqua*)
- † Tallowwood (*Eucalyptus microcorys*).
- Red Irongum (*Eucalyptus tereticornis*).
- Crows Ash (*Flindersia Australis*).

* Rarely sawn on account of large gum veins.

† Somewhat liable to split if the wood is exposed to the hot sun.

Division B.—Durable in the weather but not as durable as A in the ground.

- ‡ Spotted Gum (*Eucalyptus maculata*).
- Blackbutt (*Eucalyptus pilularis*).
- Red Messmate (*Eucalyptus resinifera*).
- Yellowwood (*Flindersia Oxleyana*).

Division C.—Durable in the weather, but special care must be taken in seasoning to prevent distortion.

- § Brush Box (*Tristania conferta*).
- Turpentine (*Syncarpia laurifolia*).
- || Red Satinay (*Syncarpia Hillii*).
- || Swamp Mahogany (*Tristania suaveolens*).
- Rose Gum (*Eucalyptus saligna*).

Division D.—Not durable in the ground or in the weather. Durable when not exposed to moisture.

- Tulip Oak (*Tarrietia argyrodendron*).

For linings, ceilings, and mouldings, Hoop and Bunya Pine have been most commonly used during 1925, and here these species have a legitimate application, although, as previously stated, the traditional 1-in. board should be reduced to $\frac{5}{8}$ -in. at 6s. 6d. per 100 super. feet less. Ceilings of plywood are becoming popular, and wall boards of native ply are also becoming more frequent. In one instance plywood was used in place of linoleum as a floor covering, and in another the partitions were wholly constructed of ornamental ply, fitted into slotted joists. The greater use of Rose Gum, Silky Oak, Sassafras, Rose Walnut, and Bollywood, however, is advocated as effective and ornamental Hoop Pine substitutes for these purposes.

Hoop and Bunya Pine have been generally specified also for flooring. These woods in joinery grades are now too valuable for this use and they are unsuitable for polished flooring because they are too soft and too easily disfigured. It is to be hoped that the 1925 specification in this connection will be revised by architects and builders at the earliest possible moment. Queensland has other more applicable woods which should be used in lieu of Hoop and Bunya Pine for flooring purposes. Among these are Rose Gum, Rose Mahogany, Red Satinay, Rose Walnut, Marara, and Tulip Oak, all of which exist in commercial quantities, and all of which are capable of taking a high polish. Of these six woods, Red Satinay, Rose Mahogany, and Rose Walnut found some favour during the year as polished floorings. They can be used also for verandas, for which service the usually specified Crow's Ash was displaced to a small extent in 1925 by its substituted congeners White and Leopard Ash, both, however, excellent woods for the purpose.

Rafters have generally been of "B" quality Hoop Pine, containing sound knots, wane, and blue stain. Oregon may be used for this purpose and is being substituted, but, before this is done, the native Blackbutt or Rose (Flooded) Gum should be considered.

‡ Sapwood of this is liable to borers and should be cut off.

§ Not durable in wet places.

|| Durable in the ground, the last is weak and is not sawn. Groups Nos. 1 to 4 approximate order of strength in bending.

FURNITURE AND CABINETWOODS.

Maple Silkwood held undisputed sovereignty as a cabinetwood upon the all-Australian market of the year, and, notwithstanding the December slump in log values at the source of supply in North Queensland, held up its high retail price. The resource, unfortunately, is shortening visibly each year.

Of Silky Oak, an export surplus exists, but, even at the low present quotes of 45s. f.o.b. Cairns, has failed thus far to extend its local popularity to the Southern States.

It is significant of the difficulty of introducing new timbers into utilisation that it took many years to place Honduras Mahogany, now the most sought after tree product in the world, upon the furniture market. The experience of Maple Silkwood in Australia is a parallel example. In the line of succession to the Australian cabinetwood supremacy Silky Oak, however, holds the next position.

There are, fortunately, many other fancy wood possibilities in the opulent timberlands of Queensland and, with the helpful agency of the Wood Technology Office of the Forest Service, a number of new woods made their debut during the year just ended.

They were as follows:—

RED SATINAY (*Syncarpia Hillii*)—

This rose-pink ripple figured timber is much easier to work than its appearance would indicate. It takes a very high polish and makes handsome furniture. Supplies are only obtainable from Fraser Island. Weight, 50 lb. per cubic foot. Red Satinay is a little harder and heavier than Maple, but it is a significant fact that buyers of this wood seldom fail to return for more.

WALNUT BEAN (*Endiandra Palmerstoni*)—

This would probably become the most prized of all furniture woods were it not for the difficulty experienced in sawing the logs. This is now being overcome by especially hardened saws, and supplies are being sent from North Queensland where it grows. This wood is very similar to Italian Walnut, having a general chocolate-brown tone with black stripes. It is a little heavy and is hard to work, and it is not yet popular in Brisbane. Weight, 52 lb. per cubic foot.

ROSE WALNUT (*Cryptocarya erythroxylon*)—

A firm, highly scented, pale pink, easily worked Silkwood-like timber, often with a beautiful ripple figure, excellent for furniture and panelling. Commonly found from Brisbane to the border. Weight, 48 lb. per cubic foot.

YELLOW SIRIS (*Albizzia species*)—

This light yellowish-brown unfigured timber is one of the best furniture woods for easy working in Queensland. It is a native of the Cairns district, and is much in demand for the cheaper class of furniture, for which it is stained. Weight, 38 lb. per cubic foot.

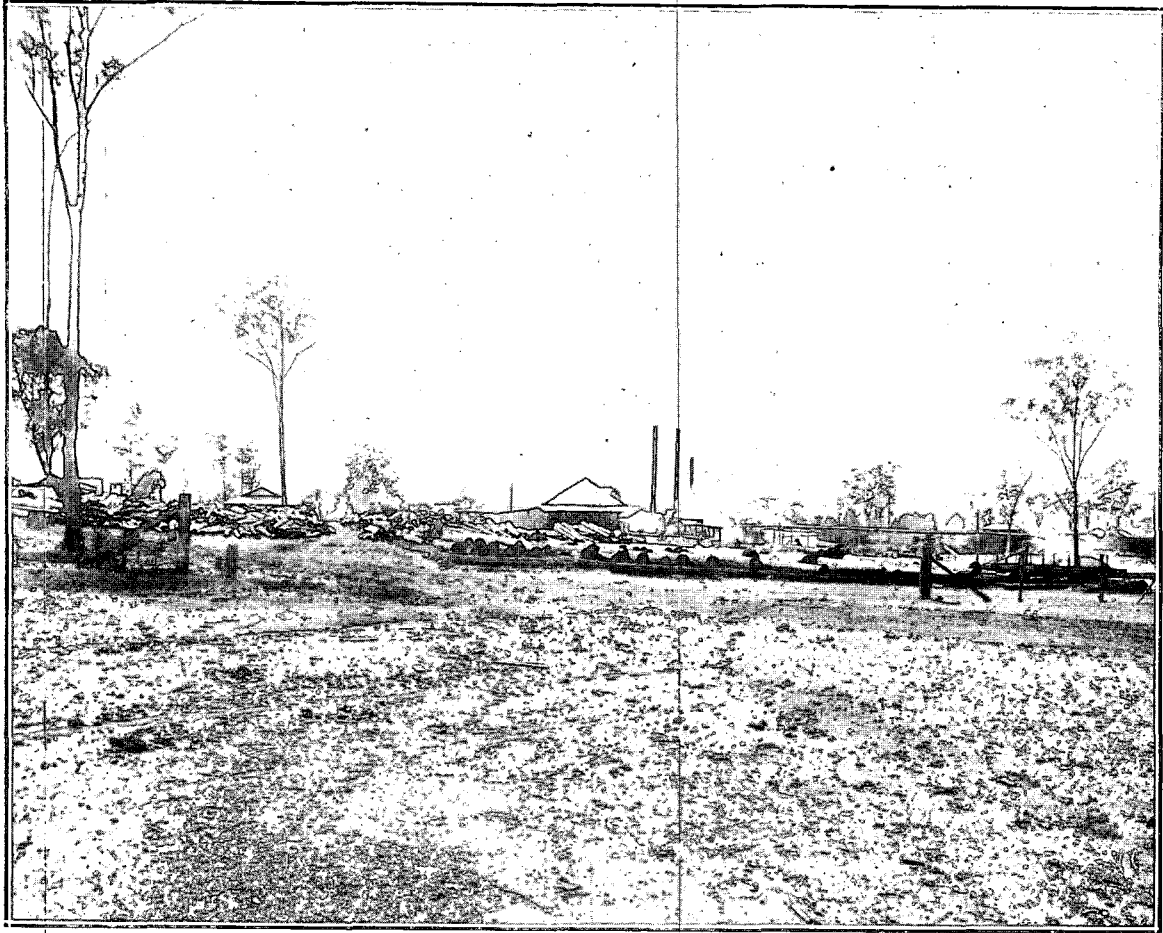
ROSE MAHOGANY (*Dysoxylon Fraserianum*)—

A moderately hard rich red coloured wood with a fine satiny figure and pleasant perfume, found in South Coastal Queensland. Very durable and excellent for furniture and cabinet work. Weight, 45 to 50 lb. per cubic foot.

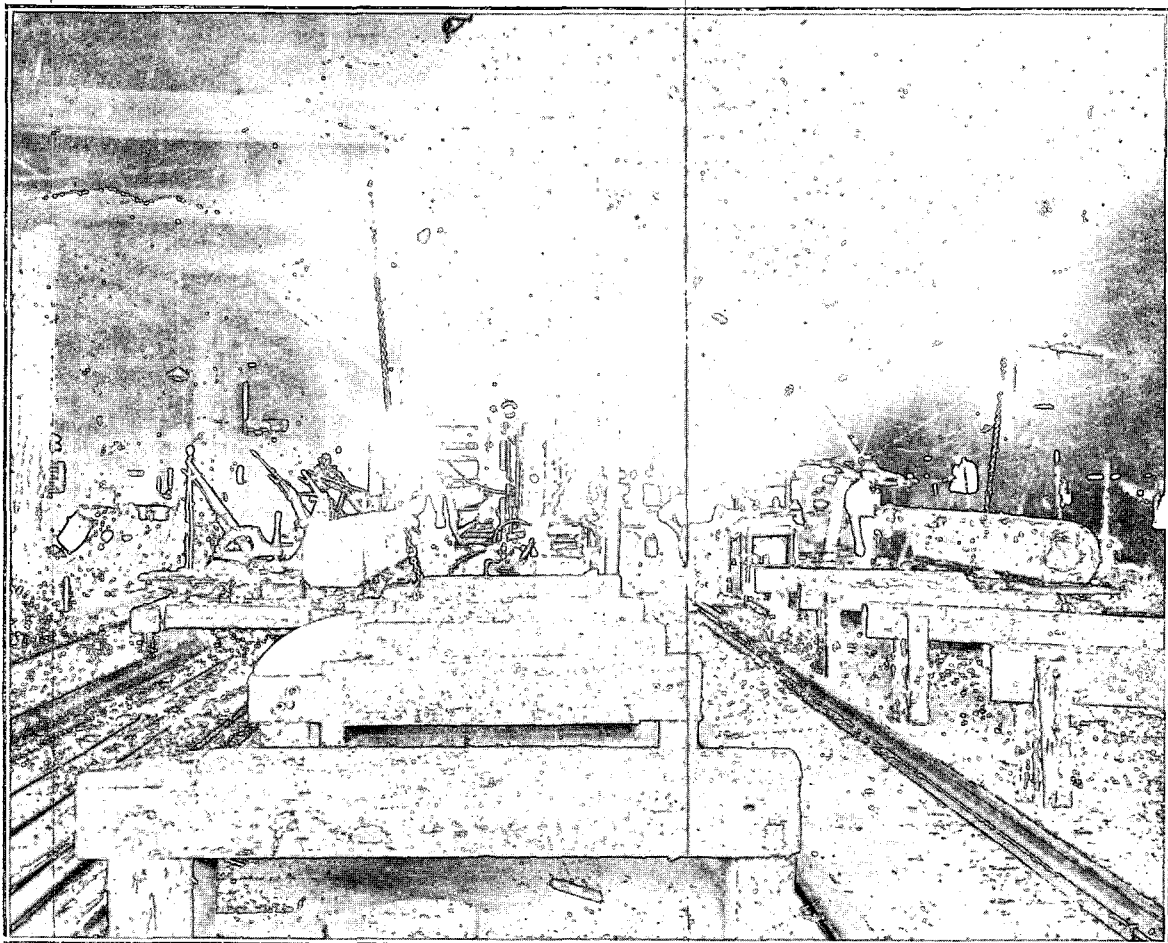
RED TULIP OAK (*Tarrietia peralata*)—

Is a native of tropical Queensland and, although harder and heavier than the more common furniture woods, its rich brownish-red colour and silver grain make it very attractive. It takes a high polish. Weight, 58 lb. per cubic foot.

Considerable inquiry for it has resulted from exhibits of furniture shown at the recent Brisbane Exhibition by the Forest service.



The Yarraman Bandmill Purchased by the Forest Service, 1926.



Interior View—Forest Service Sawmill at Yarraman.

ROSE ALDER (*Ackama quadrivalvis*)—

This timber is of a pinkish-brown colour and is soft, light, and tough. It has no distinctive figure, but is easily worked and is liked for cheap furniture, music stools, &c. It grown in North Queensland. Weight, 33 lb. per cubic foot.

SILVER SILKWOOD (*Flindersia acuminata*)—

Is a wood quite equal for cabinet work except that it does not fume. It behaves even better than Maple in seasoning. It has a silvery sheen, but is usually stained when made up. Weight, 35 lb. per cubic foot.

ROSE ASH (*Flindersia laevicarpa*)—

The wood of this tree very much resembles Maple but is harder and heavier and has a sweet scent by which it can be easily identified. It is a little harder than Maple to work, but looks very well when made up. Weight, 50 lb. per cubic foot. Supplies are obtained from the Cairns district.

SATIN SYCAMORE (*Weinmannia spp.*)—

Is also from North Queensland. It is pink in colour, firm, but easy to work. It shows a beautiful fine figure resembling American Sycamore, especially on the tangential section, but is inclined to warp in seasoning. Weight, 36 lb. per cubic foot.

SILVER QUANDONG (*Elaeocarpus grandis*)—

Is a very soft light wood found in southern and northern scrubs. It is very easy to work, and is often stained and used in cheap furniture. Weight, 30 lb. per cubic foot.

GREY SASSAFRAS (*Doryphora sassafras*)—

This timber, which is a native of Southern Queensland, has given every satisfaction as a substitute for Pine in stained cabinetwork. It stains readily, and holds nails and screws very well. Weight, 34 lb. per cubic foot.

BROWN BOLLYWOOD (*Litsea reticulata*)—

Is a product of the rain forests of South Queensland. It is very soft and light, of a pale brownish colour, but with no distinctive figure. It seasons quickly, is easy to work, and is useful for cheap furniture. Weight, 32 lb. per cubic foot.

SATIN OAK (*Embothrium Wickhami*)—

This much resembles the common Silky Oak, but the figure is more pronounced. It is also much softer and a little lighter in weight. As it is slightly greasy it is not liked greatly for furniture, but is prized for the panelling of yachts, &c. It is an excellent joinery wood. Fair supplies are available in the Cairns district. Weight, 33 lb. per cubic foot.

LAUREL SILKWOOD (*Cryptocarya oblata*)—

Is the latest Maple Silkwood substitute supplied by the tropical forests of North Queensland. It has a very similar colour and texture to Maple Silkwood but does not respond to fuming by ammonia to the same extent. It is soft, light, and easy to work, and is an excellent cabinetwood. Weight, 37 lb. per cubic foot.

BLUSH CUDGERIE (*Euroschinus falcatus*)—

This light soft wood is very similar to Maple Silkwood when dressed and polished, and is often sold as Maple in suites of furniture. It is a little lighter, softer, and less pink than Maple Silkwood, but is more difficult to clean up on account of its woolly nature. It is often highly figured but will not fume. Trees are distributed in coastal rain forests from the border to the Cairns district. Weight, 32 lb. per cubic foot.

PLYWOOD AND VENEER.

During the war years a native plywood industry established itself in Queensland with small beginnings. There are now eight plywood plants which use annually about 6,000,000 super. feet of Hoop Pine logs and 600,000 super. feet of logs, principally of Maple Silkwood, Silky Oak, White Ash, and some Oregon, and produce annually about 24,250,000 sq. feet of manufactured three-ply.

The industry operates thus far upon a rotary basis only, peeling into ply, as if it were unrolling a heavy roll of linoleum, picked logs of perfect symmetry, without blemish and quite sound. Of such flawless logs naturally there is to be collected only a small percentage of the total volume of logs produced by the forests, and for these high grade productions was secured usually a price of 3s. 6d. per 100 super. feet over and above the rate for logs of the same size of first class mill grades. Such, however, was the inquiry last year from the competing plants that, at the Forest Service log auctions held, the bids for ply quality Pine logs advanced from the upset of 27s. to 40s. per 100 super. feet. The price now stands, however, at around 30s. At the same time the retail market figure for the manufactured article receded to 14s. per 100 sq. feet, compared with 57s. 6d. retail for 4½-in. by 1-in. lining boards.

Queensland plywood is more beautiful than even the whitest of Pine lining boards, and at the prices now prevailing is more economical. It should be used in every home. From the log there can be obtained three to four times as much in superficial feet of three-ply as there can be secured of 1-in. boards. Therein lies the national economy of three-ply for house lining.

Estimating the standing forests of Queensland to contain 1,300,000,000 feet of log timber and calculating that 10 per cent. of this constitutes ply grades, the life of the rotary pine plywood industry, using as it does at present 6,000,000 super. feet. per annum, would be twenty-two years, but as the milling industry probably absorbs for milling purposes 50 per cent. of ply logs yielded by the forest, the effective life of this industry is about eleven years.

It is doubtful whether such logs can be produced in the plantation forests of the future. A longer term of growth is requisite to do so, and the demand for saw logs is bound to be so acute that it seems unlikely that the new forests will be allowed to survive to a ply log rotation. It can be calculated at all events that supplies of Pine ply must dwindle to much smaller proportions over the next ten or fifteen years.

There is, however, "corn in Egypt" for the industry in the shape of ply log resources still unexplored, and again in the richer undiscovered field in Queensland of slice veneering.

Northern Kauri Pine with its uniformly cylindrical bole is bound to supplement the Hoop Pine stores. Maple Silkwood and Silky Oak, are being utilised in increasing volume for rotary peeling.

But there are still others. Forest Service ply timber studies during the year, plus the experimentations of the industry itself, have afforded the following clues to future utilisation of indigenous trees in this developing field of wood industry:—

1. Kauri Pine (*Agathis Palmerstoni* and *robusta*).

These both are excellent plywoods, but the latter (southern) variety is now rare.

Black Kauri (*Agathis microstachya*).

Is equal in quality to Kauri Pine.

2. Black Pine (*Podocarpus amara*).

This is from the Cairns timber belt, is a splendid timber for ply work, and is well liked.

3. Silver Quandong (*Elæocarpus grandis*).
This timber peels very well and makes a strong plywood of a very clean white colour.
4. Silver Ash (*Flindersia Schottiana*).
The excellent value of this timber for ply-making has been proved, and a considerable quantity is being used.
5. White Ash (*Flindersia pubescens* and *Bourjotiana*).
These two timbers from the Cairns district are also excellent for ply, being very similar to 4, but without the characteristic "bumps" on the logs.
6. Walnut Bean (*Endiandra Palmerstoni*).
This provides a very handsome plywood, superior in figure to Maple or Silky Oak, and the logs peel well. The use of this timber is now established and the ply is highly esteemed.
7. Canary Ash (*Cryptocarya Bancroftii*).
The plywood from this is a rich yellow colour and is an excellent Pine substitute. It is a little harder than Pine.
8. Red Satinay (*Syncarpia Hillii*).
This makes a very rich coloured ripple-figured plywood, but is a little severe on the peeling knives.
9. Rose Alder (*Ackama quadrivalvis*).
Is soft and easily peeled and makes good plywood of a rich cedar colour. It is used occasionally.
10. Brown Bollywood (*Litsea reticulata*).
Makes good plywood, but is rather wasteful in peeling, and is liable to borer attack.
11. Rose Gum (*Eucalyptus saligna*).
No tests appear to have been made on this wood, although it is much softer than 15 and 16, and is easily procurable in large straight-grained cylindrical logs. Young trees of this species can be recommended for trial.
12. Red Cedar (*Cedrela australis*).
This provides a nicely figured plywood and is well known.
13. Tulip Cedar (*Melia composita*).
Plywood made from this has a very marked figuring, and is very highly favoured for decorative work, but the irregularity of the logs causes a large amount of waste and increases the price.
14. Bunya Pine (*Araucaria Bidwilli*).
Is sometimes used instead of Hoop Pine, but is not liked, being rather spongy to peel. The plywood when made up is of good quality.
15. Red Messmate (*Eucalyptus resinifera*).
It has been reported that this can be successfully peeled, but is rather hard.
16. Spotted Irongum (*Eucalyptus maculata*).
One manufacturer says that this fairly suitable, but is hard.
17. Rose Walnut (*Cryptocarya erythroxylon*).
Opinions vary as to the value of this timber for ply. Some say it gives satisfactory results, others say it is on the hard side. Selected logs should give good results.

On the other hand, the following species have been weighed on the ply balance and have been found wanting:—

1. Cypress Pine (*Callitris spp.*).
These are the hardest of the native pines and are usually quite unsuitable for ply, the logs being small and very knotty.
2. Rose Tamarind or Mackay Maple (*Nephelium Lauterianum*).
This is unsuitable for plywood, being too hard and liable to split.
3. Rose Ash or Scented Maple (*Flindersia laevicarpa*).
Trials made on this timber show that it is not very well suited for plywood.

4. Briar Oak or White Oak (*Musgravea stenostachya*).

Is soft, light, and well-figured like Silky Oak, but the occurrence of very fine concentric veins in the logs spoil the strength and appearance of the finished plywood.

5. Tulip Oaks (*Tarrietia spp.*).

These cannot be classed as plywoods, being too hard.

6. Rose Mahogany (*Dysoxylon Fraseranum*).

Not considered suitable for ply manufacture.

7. Miva Mahogany (*Dysoxylon Muelleri*).

Not considered suitable for ply manufacture.

8. Blush Cudgerie (*Euroschinus falcatus*).

Trials have been made with this timber but it is too "woolly" to give satisfactory results. It is also a favourite with borers.

9. Grey Satinash (*Eugenia spp.*).

Does not give good results for ply manufacture.

10. Rose Satinash (*Eugenia spp.*).

Does not give good results for ply manufacture.

The rotary process, however, obscures the quartered beauty of the wood, and slice veneering is necessary to obtain many effects. This aspect of the industry has not been touched on in Brisbane, although it is in full swim in Melbourne and Sydney. Beautiful veneers can be obtained by slicing up the highly figured butts of many of the species listed for rotary ply. Those particularly recommended are Maple Silkwood, Red Cedar, Walnut Bean, Brown Bollywood, the Pines, and Rose Walnut.

PARTICULAR STUDIES IN WOOD TECHNOLOGY.

Not the least important Forest Service activity of the year was that relating to research in native wood utilisation.

There are some four hundred species of wood-producing plants in Queensland, of which not many more than forty are known to the timber trade. Each of these four hundred, however, has a quality to be discovered and a service to be found. To these ends the Wood Technology Branch of the Department bent its energies during 1925 with interesting results.

By extending the utilisation of our native stores of wood, even though they be but by-products of the timberlands, we are economising the natural resources upon which the national prosperity founds; we are building up locally not unimportant wood-using industries, and we are clearing the forests for replacement by new crops, by use.

Important functions of the branch of Wood Technology are the identification of wood samples, the prescription of wood in industry, and the inculcation of economy and right use in wood service.

A user of wood lights upon a piece of wood particularly suitable for his especial purpose—his first question is "What is it?" His second, "Where can it be had?" His third, "Is it available for my purpose in sufficient quantity and at reasonable cost?"

Perhaps the timber may have some locally applied name unrecognisable on the market. It has to be identified, its botanical and various vernacular names listed, its distribution and sources of supply given, details of the previous use in industry provided, and advice as to its most appropriate treatment furnished.

During the year the Wood Technology Office identified for tradesmen over fifty such samples, not merely from many parts of Queensland but also from other countries. One was sent from a Government Department with the inquiry "What is it? What can it be used for? Where is it obtainable?" It proved to be Redwood (*Sequoia sempervirens*) from California, used for cabinetwood and joinery. Other samples hailed from Canada and the Philippines, whilst a local engineer supplying two samples of varying weight and hardness asked which was Oregon. Both were!

There are large untapped resources of semi-hardwoods and fancy-woods in Queensland of which greater use could and should be made, sufficient indeed to serve any particular objects catered for by imports from Czecho-Slovakia, Japan, and other countries. There are 60,000,000 idle feet of Red Satinay on Fraser Island, and 60,000,000 idle feet of Grey and Red Satinash on the Eungella Range, near Mackay. There are untold millions of feet of Tulip Oak in the forests of the whole coastline.

The Wood Technology Office of the Forest Service is now in a position to give advice on the technical application of a very large number of little known native timbers. Among the purposes prescribed for in new woods during the year were the following:—

Axehandles	Furniture and cabinet work
Boatbuilding	Golf shafts and heads
Carpenters' mallets	Gun stocks
Carving	Inlay work
Cork substitutes	Motor bodies
Diaphragms for shell cases	Pick handles
Dowels	Polished fancy flooring
Electric light blocks	Printers' mallets and planers
Fencing	Ship decking
Fireproof doors	Telegraph poles
Fishing rods	Turnery
Floating dock construction	Violins
Footboards for gun carriages	Walking sticks
Fruit cases	Wheel barrows

Several species were recommended for use by the Defence Department for the footboards of gun carriages, for diaphragms of shell-cases, and for gun-stocks.

A special report was prepared for the information of the Postmaster-General with reference to the use of Eucalyptian hardwoods for poles. Another was made with respect to substitution of Crow's Ash and Grey Teak (Beech) for Indian Teak in the decking of two cruisers under construction for the Australian Navy; whilst a third related to the prescription of Queensland hardwoods for the construction of the Singapore Floating Naval Dock, which will absorb nearly 20,000,000 feet of wood.

Quotes for Forest Service Supply were added in the latter case.

Following were the timbers recommended:—

TIMBERS RECOMMENDED FOR FLOATING DOCK AT SINGAPORE NAVAL BASE.

Common Name.	Botanical Name.	Average Weight per Cubic Foot Air Dry.	Specific Gravity.	Modulus of Rupture.	Crushing.	Nature of Wood.	Remarks.
Grey Ironbark	<i>Eucalyptus paniculata</i>	In lb. 74	1.18	In lb. 20,000	In lb. 10,000	Very hard, tough grain, wavy or straight. Very strong	Specially recommended for use below water (very durable). Extensively used in Queensland for such purposes. Is protected from teredo by sheathing. Has been known to last 27 years on a pile-driving punt. Very durable wood; used for ships' planking.
Narrow Leaved Ironbark	<i>Eucalyptus crebra</i>	70	1.12	18,000	9,000	Very hard, very tough, grain interlocked.	Very durable; used for ships' planking.
Broad Leaved Ironbark	<i>Eucalyptus siderophloia</i>	72	1.15	20,000	10,000	Very hard straight grain or wavy. Very strong.	Specially recommended for use under water; a favourite for ships' planking.
Spotted Irongum	<i>Eucalyptus maculata</i>	64	1.02	17,000	10,000	Hard; often wavy grained; greasy nature; elastic.	Used where toughness is required; durable. Used for ships' planking.
Red Irongum (Blue Gum)	<i>Eucalyptus tereticornis</i>	65	1.04	14,000	8,000	Very hard; very interlocked grain; very tough	A durable wood.
Grey Irongum	<i>Eucalyptus propinqua</i>	66	1.06	17,000	9,000	Very hard; usually straight-grained.	Used for boat planking.
Rose (Flooded Gum)	<i>Eucalyptus saligna</i>	58	.93	12,000	7,000	Moderately hard; straight-grained.	Splendid hardwood.
Tallowwood	<i>Eucalyptus microcorys</i>	63	1.01	14,000	8,000	Moderately hard; very greasy nature; straight-grained.	Used in punts, building, &c.; a durable hardwood.
Grey Blackbutt	<i>Eucalyptus pilularis</i>	59	.94	14,000	8,000	Hard; straight grain.	Very durable wood.
Yellow Messmate	<i>Eucalyptus Cleziana</i>	67	1.07	14,000	9,000	Hard; straight grain.	Used for frames for punts and lighters.
Red Messmate (Stringybark)	<i>Eucalyptus resinifera</i>	61	.97	17,000	9,000	Hard; usually straight; open grain.	Specially recommended for use under water. Used for planking of punts and piles; wood resists teredo; very durable.
Turpentine	<i>Syncarpia laurifolia</i>	65	1.04	13,000	8,000	Hard; curly grain; tough.	Very durable; used for piles.
Red Satinay	<i>Syncarpia Hillii</i>	55	.88	10,000	..	Moderately hard; curly grain.	

NOTE.—The hardwood planking of lighters, punts, and wooden vessels is usually protected by a special sheathing of teredo resistant timber. The timbers preferred for this are Cypress Pine (*Callitris species*) and She Pine (*Podocarpus elata*), both of which are rather scarce. If wooden sheathing is not used then Muntz metal sheathing is used instead. All our hardwoods are more or less liable to teredo attack, but are otherwise durable under water. Grey Ironbark, Spotted Gum, and Turpentine are considered to be the most lasting by the foreman of the South Brisbane Dry Dock, who has had thirty years' experience in this work, and Turpentine is teredo resistant. A mixture of coal tar and arsenic has been found to give good results in preventing teredo attack. All the timbers in the above list could be used in the construction of the floating dock, both above and below water, but those mentioned above should be reserved mostly for use under water. Timber containing knots, shakes, or large gum veins is not suitable for planking.

The general researches in wood use science during 1925-26 resulted in the following memoranda:—

AEROPLANES—

Several of these already have been constructed in Queensland. Messrs. D. G. Brims and Sons have a factory under construction for this purpose. The timbers used are Maple Silkwood (*Flindersia Brayleyana*), Silver (or Bumpy) Ash (*Flindersia Schottiana*), and Silver Quandong (or Blue Fig) (*Elæocarpus grandis*). No exotic timbers are called for, as the native woods are sufficient to fulfil the requirements for all parts of the machine. White Ash (*Flindersia Bourjotiana* and *pubescens*) is also suitable in place of Silver Ash, but has not yet been used.

Imported timbers used for aeroplane construction are White Ash (*Fraxinus Americana*), Hickory (*Carya alba*), and Aeroplane Spruce (*Picea sitchensis*), in addition to Birch, Red Gum, Mahogany, Lime, Poplar, Willow, White Wood, and Alder, which are used for plywood.

A list of the parts of an "Avro" plane, with the Queensland timbers which are in use, is given hereunder:—

UNDER CARRIAGE—

Bracing strut ("toothpick") Silver Ash (Bumpy Ash or Cudgerie) (*Flindersia Schottiana*)

BODY—

Longerons ditto
 Struts (uprights and horizontal) .. Silver Ash (Bumpy Ash or Cudgerie) (*Flindersia Schottiana*) or Blue Fig
 Engine bearers Silver Ash (Bumpy Ash or Cudgerie) (*Flindersia Schottiana*)
 Engine bearers struts ditto
 Cockpit hoop (4 laminated) ditto
 Control column ("Joystick") .. Silver Quandong (Blue Fig) (*Elæocarpus grandis*)
 Footboards ditto
 Rudder bar supports ditto
 Engine bulkhead (laminated) .. Maple Silkwood (*Flindersia Brayleyana*), 13-ply, 1 $\frac{3}{8}$ -in. thick
 Instrument board (laminated) .. Maple Silkwood (*Flindersia Brayleyana*), 5-ply, $\frac{5}{16}$ -in. thick
 Seats (bent) Maple Silkwood (*Flindersia Brayleyana*), 3-ply
 Sheeting and webbing of body .. Maple Silkwood (*Flindersia Brayleyana*), 3-ply
 Propeller (laminated) Maple Silkwood (*Flindersia Brayleyana*)

WINGS—

Spars Silver Quandong (Blue Fig) (*Elæocarpus grandis*)
 Ribs Silver Ash (Bumpy Ash) (*Flindersia Schottiana*)
 Interplane struts ditto
 Sheeting Maple Silkwood (*Flindersia Brayleyana*), 3-ply

CARVINGS (WOOD)—

The following woods can now be recommended for carving:—

SOFTWOODS—Grey Teak (*Gmelina Leichhardtii*), Satin Oak (*Embothrium Wickhamii*), Silver Aspen (*Pleiococca Wilcoxiana*), Red Cedar (*Cedrela toona* var. *australis*), Brown Bollywood (*Litsea reticulata*), Yellow Cheesewood (*Sarcocephalus cordatus*), Silver Quandong (*Elæocarpus grandis*), Pencil Alder (*Ackama Muelleri*).

FIRM WOODS—Hoop Pine (*Araucaria Cunninghamii*), Rose Silkwood (*Flindersia Pimentelliana*), Maple Silkwood (*Flindersia Brayleyana*), Brown or She Pine (*Podocarpus elata*), Red Carrobean (*Weinmannia Benthami*), Black Bean (*Castanospermum australe*).

HARD WOODS.—Brown Teawood (*Melaleuca leucadendron*) White Hollywood (*Pittosporum rhombifolium*) Rose Marara (*Weinmannia lachnocarpa*), Ivory Hollywood (*Siphonodon australe*), Grey Boxwood (*Hemicyclia australasica*), Yellow Boxwood (*Sideroxylon Pohlmanianum*), Yellow Boxwood (*Sideroxylon myrsinioides*), Silver Bulletwood (*Sideroxylon australis*), Rose Gum (*Eucalyptus saligna*), White Blackbutt (*Eucalyptus eugenioides*), Red Satinay (*Syncarpia Hilli*).

VERY HARD.—Red Irongum (Blue Gum) (*Eucalyptus tereticornis*), Red Ironbark (*Eucalyptus crebra*). Suitable for very durable work where much intricate undercutting is required.

EXTREMELY HARD.—Gidya Spearwood (*Acacia Cambagei*), Myall Lancewood (*Acacia pendula*), Brown Spearwood (*Acacia rhodoxylon*), Queensland Ebony (*Maba humilis*). These are too costly to work except in small pieces. The last is unique in its black colour.

CASES AND BOXES—

The high price and diminishing supplies of pine have led to the trial of new woods for this purpose. Rose or Flooded Gum (*Eucalyptus saligna*) is now being used extensively in the North Coast Districts for fruit cases. The trees, which grow very rapidly, are felled and sawn when from seven to twenty inches in diameter. In older trees the wood is harder.

Brown Teawood (*Melaleuca leucadendron*) is also being tried and, so far, has given satisfaction.

Grey Blackbutt (*Eucalyptus pilularis*) is said to warp and twist too much.

A number of scrubwoods, including Blush Cudgerie (*Euroschinus falcatus*), Brown Figwood (*Ficus macrophylla*), Pink Satinash (*Eugenia Francisii*), Silver Quondong (*Elæocarpus grandis*), Brown Bollywood (*Litsea reticulata*), Brown Cudgerie (*Bursera australasica*), and Grey Sassafras (*Daphnandra micrantha*), can also be used for this purpose when available.

CARRIAGE AND CAR CONSTRUCTION—

Following is a list of the various uses and timbers in the above trades. Timbers recommended but not yet in use are marked *.

(a) HORSE DRAWN VEHICLES (Buggies, sulkies, carts, drays, and wagons).—

Brake Blocks—Blush Cudgerie (*Euroschinus falcatus*), *Pink Satinash (*Eugenia Francisii*).

Dash Boards and Splash Boards—Silky Oak (*Cardwellia sublimis*), Maple Silkwood (*Flindersia Brayleyana*), Bunya and Hoop Pine (*Araucaria Bidwilli* and *Cunninghamii*), Red Cedar (*Cedrela australis*), and other cabinet woods. *Rose Walnut (*Cryptocarya erythroxylon*).

Felloes (Heavy)—Red Irongum (Blue Gum) (*Eucalyptus tereticornis*); (light)—Yellowwood Ash (*Flindersia Oxleyana*), *White Ash (*Flindersia Bourjotiana*).

Flooring (Heavy)—Spotted Irongum (*Eucalyptus maculata*), Grey Blackbutt (*Eucalyptus pilularis*), and other hardwoods; (light)—Hoop and Bunya Pine (*Araucaria Cunninghamii* and *Bidwilli*), *Rose Walnut (*Cryptocarya erythroxylon*), *Grey Sassafras (*Doryphora sassafras*).

Framing (Heavy)—Grey Ironbark (*Eucalyptus paniculata*), Spotted Irongum (*Eucalyptus maculata*), and other hardwoods; (light)—Yellowwood Ash (*Flindersia Oxleyana*), Spur Mahogany (*Dysoxylon Pettigrewianum*), Silver and White Ash (*Flindersia Schottiana Bourjotiana*, and *pubescens*).

Shafts and Poles.—(Heavy)—Spotted Irongum (*Eucalyptus maculata*); (light)—Yellowwood Ash (*Flindersia Oxleyana*), *White Ash (*Flindersia bourjotiana*), *Spur Mahogany (*Dysoxylon Pettigrewianum*).

Spokes.—(Heavy)—Grey Ironbark (*Eucalyptus paniculata*); (light)—Yellowwood Ash (*Flindersia Oxleyana*), White Salwood (*Acacia Bakeri*), *White Ash (*Flindersia Bourjotiana*), *Rose or Flooded Gum (*Eucalyptus saligna*).

Naves or Hubs.—(Heavy)—Grey Ironbark (*Eucalyptus paniculata*); (light)—Grey Mangrove (*Avicennia officinalis*).

(b) MOTOR VEHICLES.—

Hood Sticks—Yellowwood Ash (*Flindersia Oxleyana*), *White Ash (*Flindersia Bourjotiana*), *Red Tulip Oak (*Tarrietia peralata*).

Car Body Framings—Rose Walnut (*Cryptocarya erythroxylon*), Blush Cudgerie (*Euroschinus falcatus*), *White Hazelwood (*Symplocos spicata*), *Brown Cudgerie (*Bursera australasica*).

(c) TRAM CARS AND RAILWAY CARRIAGES.—

Underframes—Grey Ironbark (*Eucalyptus paniculata*), Narrow Leaved Ironbark (*Eucalyptus crebra*), Red Messmate (*Eucalyptus resinifera*), Tallowwood (*Eucalyptus microcorys*), Red Irongum (Blue Gum) (*Eucalyptus tereticornis*), Red Ironbark (*Eucalyptus siderophloia*), Spotted Irongum (*Eucalyptus maculata*), Grey Irongum (*Eucalyptus propinqua*), Yellow Stringybark (*Eucalyptus acmenioides*), Yellow Messmate (*Eucalyptus Cloeziana*), Hickory Ash (*Flindersia Ifflaiana*), *Grey Blackbutt (*Eucalyptus pilularis*), White Blackbutt or Stringybark (*Eucalyptus eugenioides*), *Brush Box (*Tristania conferta*).

All should be well seasoned, particularly the latter three, which shrink rather more than most in drying.

Flooring—See "Hardwoods" under "Underframes," also Hoop Pine (*Araucaria Cunninghamii*).

Slats—Crow's Ash (*Flindersia australis*), Hickory Ash (*Flindersia Ifflaiana*), *Spotted Irongum (*Eucalyptus maculata*), *Tallowwood (*Eucalyptus microcorys*).

Tram Pillars and Carriage Body Framing—Yellowwood Ash (*Flindersia Oxleyana*), *White and Silver Ash (*Flindersia Bourjotiana* and *Schottiana*), *Rose Walnut (*Cryptocarya erythroxylon*), *Rose (Flooded) Gum (*Eucalyptus saligna*), Rose Ash (*Flindersia levicarpa*), *Red Tulip Oak (*Tarrietia peralata*).

Seats—As for "Pillars." Also Hoop Pine (*Araucaria Cunninghamii*).

Roof Sticks—Yellowwood Ash (*Flindersia Oxleyana*), *White Ash (*Flindersia Bourjotiana*), *Red Tulip Oak (*Tarrietia peralata*), *Spotted Irongum (*Eucalyptus maculata*), *Brown Salwood (*Acacia spp.*).

Cant Rails—As for "Pillars."

Panelling—Grey Teak (Beech) (*Gmelina Leichhardtii*), Maple Silkwood (*Flindersia Brayleyana*), Red Cedar (*Cedrela australis*), *Red Satinay (*Syncarpia Hillii*), *Rose Walnut (*Cryptocarya erythroxylon*), *Satin Oak (*Embothrium Wickhamii*), *Rose Ash (*Flindersia levicarpa*), *Brown Bollywood (*Litsea reticulata*), *Yellow Siris (*Albizia spp.*), *Walnut Bean (*Endiandra Palmerstoni*), *Rose Mahogany (*Dysoxylon Fraserianum*).

Window Sashes—Yellowwood Ash (*Flindersia Oxleyana*), Maple Silkwood (*Flindersia Brayleyana*), Red Cedar (*Cedrela australis*), Silky Oak (*Cardwellia sublimis*), *Silky Oak (*Grevillea robusta*).

(d) RAILWAY WAGONS.—

Sheathing—Red Irongum (Blue Gum) (*Eucalyptus tereticornis*), Grey Blackbutt (*Eucalyptus pilularis*). *Also hardwoods under "Underframes" above. These are also suitable.

ELECTRICAL PURPOSES.

(A) TELEGRAPH, TELEPHONE, AND POWER POLES—

A great deal of information has been gathered during the year regarding the conditions governing the use of poles and the timbers which are most highly esteemed.

Power poles, such as those used by the Brisbane Tramway Trust and City Electric Light Company, require the very best class of timbers, which must combine great strength with long life in the ground and weather, and must be obtainable in long lengths. These poles must be free from defects such as knots, sapwood, shakes, bends, or gum veins, as the poles are tapered from top to bottom to a very precise specification, and are required to carry much heavier loads than most telegraph and telephone poles. Durability in the ground is a most important factor. The best poles for this purpose are Grey Ironbark (*Eucalyptus paniculata*), Narrow Leaved Ironbark (*Eucalyptus crebra*), Red Ironbark (*Eucalyptus siderophloia*). The tramway poles are less exacting in requirements than those used by the City Electric Light Company, because they are usually shorter and with a greater taper. Yellow stringybark (*Eucalyptus acmenioides*), which is very durable in the ground, can also be included here. Red Bloodwood (*Eucalyptus corymbosa*) gives a longer life than Ironbark in wet situations, but its gum veins prevent its use as a dressed pole. As it is a weaker timber it is used in larger sizes.

For telephone and telegraph poles, in addition to those mentioned above, a number of other species may be used. Poles for this purpose may contain slight bends or small knots, provided that the strength of the poles is not seriously diminished. These are not sapped for their full length, but only where they are placed in the ground.

Other suitable timbers are—

GREY IRONGUM (GREY GUM) (*Eucalyptus propinqua* and *punctata*)—

Trees often contain pipes, but when sound provide timber of a strong durable nature, and are preferred next to Ironbark in New South Wales.

YELLOW IRONBOX (YELLOW BOX) (*Eucalyptus melliodora*)—

Also prone to pipes, but it has been found that small pipes do not increase in size, and good results have been obtained in New South Wales.

TURPENTINE (*Syncarpia laurifolia*)—

Has a good reputation for durability in the ground, is very tough and strong, but is not much used. It is considered suitable by the Postmaster-General's Department. Poles should be cut with the sap down.

GREY IRONBOX (GUM TOPPED BOX) (*Eucalyptus hemiphloia*)—

It is durable in the ground but is not well known. It is being tried by the Railway Department on the Mount Edwards-Kalbar Line.

TALLOWWOOD (*Eucalyptus microcoriys*)—

Wood rather free-grained and liable to open up in the hot season; lasts well in the ground. Poles have been used with iron bands to prevent splitting.

RED SATINAY (*Syncarpia Hillii*)—

Will not carry very heavy loads. Poles in the Pialba District have given good results. It is very durable.

SPOTTED IRONGUM (*Eucalyptus maculata*)—

This timber is said by some to rot off in the ground, but this is attributable to its wide sapwood, which is not durable and is very liable to borers, being left on the poles. It is a very strong timber, and is used by the Railway Department for bridge girders. It is reported that it has been successfully used in Victoria, when fully sapped.

CYPRESS PINE (*Callitris arenosa* and *glauca*)—

The special value of these woods is their great resistance to white ants. Attacks by termites on the heartwood of these woods are almost unknown. The poles provided are not strong, as compared with those from *Eucalyptus*, but last very well in the ground. Poles from *Callitris glauca* are common in Western Queensland, and poles from *Callitris arenosa* have been employed with good results in the Pinalba District. The latter species is reputed to be much stronger.

RED IRONGUM (BLUE GUM) (*Eucalyptus tereticornis*)—

The fibres of the wood of this tree are very much interlaced, which results in the poles being of a brittle nature and liable to snap with a short fracture under a heavy stress. Poles of this species are disliked for this reason. The wood is very durable in the weather and gives good service in the ground. Thousands of poles could be used where the load imposed upon them is very small and allows for a high factor of safety even in a weaker wood. It is only a matter of selecting the stronger species for the heavier duty, and Red Irongum could be used with good results. When it is remembered that in other countries species of Pines are used for poles, with a strength of only half that of this species, its true value will be seen.

GREY BLACKBUTT (*Eucalyptus pilularis*)—

This a very strong timber, but is not very durable in the ground under certain conditions. It should be thoroughly tested after preservative treatment to ascertain if its life in the ground cannot be lengthened. If this can be done it will make an excellent pole timber.

WHITE BLACKBUTT (*Eucalyptus eugenioides*)—

This also is not very durable in the ground. It is regarded as weaker than Grey Blackbutt. It is a useful building timber.

LIFE OF HARDWOOD POLES—

It is usually estimated that a good Ironbark pole, under reasonable conditions, will last twenty years, but under favourable conditions a pole might be sound after being forty years in use.

A number of factors contribute to the life of a pole:—

(a) *The Season of Cutting.*—Pole timber should be cut when the sap in a tree is less active or when it is termed "down." This corresponds with the drier portion of the year with Queensland trees. Poles cut at this time season more rapidly, because they contain less sap to be evaporated. Sap in the wood hastens its destruction by fungi and insects. This precaution is not so important when poles are being obtained from country with a low rainfall, where the seasons make little difference to the condition of the sap.

(b) *The Type of Country in which the Poles have been Grown.*—Trees grown on dry high country have proved to be superior to those obtained from low swampy country or near scrub edges. (*Eucalyptus crebra* is found on hilly country, and it is interesting to note that this is preferred for poles.)

(c) *The Speed of Growth of the Tree.*—Quickly grown timber lacks the strength, hardness, density, and, consequently, the weight of timber grown slowly on drier soil. The timber is also less durable when quickly grown.

(d) *The Nature and Composition of the Soil in which the Pole is Erected.*—Poles cut at the same time from trees of the same age and close together in the same locality will often show great variations in their term of service when erected in different types of soil. Red Bloodwood (*Eucalyptus corymbosa*) is usually more durable than Ironbark in damp situations. This dampness is a factor to be considered.

(e) *Preservation and Methods of Reducing to a Minimum the Injurious Effects of the Growth of Fungi and Insect Attack.*—To prevent the attacks of white ants, the butts of the poles which are placed in the ground are usually saturated with a solution of soda and arsenic, and are then thickly tarred. The custom of placing a bedding of concrete around the base of the pole is useful in firmly fixing the pole, and also in preventing rotting at the ground level. Some engineers concrete all round the pole butt, another leaves a space at the bottom to permit of seasoning. This is unnecessary if the pole is already seasoned.

No artificial preservatives, other than those mentioned, are used in Queensland. This should be thoroughly investigated to ascertain if more timbers such as Blackbutt could not be used when so treated.

It is very important that the butts of poles should be carefully trimmed of all sapwood before placing in the ground. Sapwood is not durable, and is a menace to the poles, as it attracts borers.

(B) CROSS ARMS—

Timbers for this purpose are required to be strong and durable. Any strong, durable building hardwood is suitable. To prevent the spindles splitting the cross arms in a vertical plane, under a heavy cable load, bolts are placed horizontally through the ends of the cross arms. All the timbers used for cross arms in Queensland are Eucalypts, and in these it is much more difficult to split the wood on the cross section in a direction parallel to the medullary rays than parallel to the growth rings. This additional strength could be used to prevent the splitting by the spindles if the cross arms were so sawn that, when fixed in position, the growth rings would be parallel to the ground. Cross arms cut in this way would also keep their angles more square in seasoning than if cut in a random manner. They should be well seasoned before use.

(C) SPINDLES—

The following timbers are accepted by the Postmaster-General's Department, Brisbane, for wooden spindles:—Red Irongum (Blue Gum) (*Eucalyptus tereticornis*), Grey Irongum (*Eucalyptus propinqua* and *punctata*), Ironbark (*Eucalyptus paniculata*, *crebra*, and *siderophloia*), Spotted Irongum (*Eucalyptus maculata*), and Tallowwood (*Eucalyptus microcorys*).

Much of the valuable information given above was obtained as a result of discussions on timbers with Mr. J. S. Just, Engineer and Manager of the City Electric Light Company, and Mr. O'Reilly, Deputy State Engineer of the Postmaster-General's Department.

(D) TIMBERS WITH HIGH INSULATING PROPERTIES—

Timbers which offer a high resistance to the passage of electric currents are of great value in the construction of various kinds of electrical apparatus. In the Postmaster-General's Department a quantity of timber having this quality is used in the manufacture of switchboards, and such timber is also of value for wireless equipment. It is also used in certain places in power stations.

In May, 1924, a number of woods were tested to ascertain their insulating qualities by the Postmaster-General's Department. Since then further tests have been made there, and also by the City Electric Light Company, and Ipswich Railway Workshops.

A summary of the results obtained are given below:—

(a) POSTMASTER-GENERAL'S DEPARTMENT—

(1)

Date.	Name of Timber.	Botanical Name.	Space Between Contacts.	Air Humidity.	
				42% Megohms.	65% Megohms.
12th May, 1924 ..	Black Bean	<i>Castanospermum australe</i> ..	1 inch ..	2,488	515
Ditto ..	Tulip Oak	<i>Tarrietia argyrodendron</i> ..	ditto ..	2,317	1,500
Ditto ..	Walnut Bean	<i>Endiandra Palmerstoni</i> ..	ditto ..	1,133	765
Ditto ..	Red Satinay	<i>Syncarpia Hillii</i>	ditto ..	209	96
Ditto ..	Rose Walnut	<i>Cryptocarya erythroxyton</i> ..	ditto ..	91	63
Ditto ..	Tulip Plumwood ..	<i>Pleiogynium Solandri</i> ..	ditto ..	75	29
Ditto ..	Blush Coondoo	<i>Sideroxylon Richardii</i> ..	ditto ..	66	17
Ditto ..	Rose Satinash	<i>Eugenia spp.</i>	ditto ..	58	51
Ditto ..	Miva Mahogany	<i>Dysoxylon Muellieri</i>	ditto ..	34	15
Ditto ..	Grey Satinash	<i>Eugenia spp.</i>	ditto ..	21	8

(2)

Date.	Name of Timber.	Botanical Name.	Space Between Contacts.	Air Humidity.	
				44% Megohms.	59% Megohms.
15th and 27th July, 1925	Red Siris	<i>Albizzia toona</i>	1 inch ..	4	8
Ditto ..	Red Tulip Oak	<i>Tarrietia peralata</i>	ditto ..	12	50
Ditto ..	White Salwood	<i>Acacia Bakeri</i>	ditto ..	40	50

Remarks.—The tests were carried out with a Sullivan-D'Arsonnal reflecting galvanometer and testing battery of 400 volts. In preparing the timber for the test two holes were drilled 1-in. apart and No. 4 screws inserted to a depth of $\frac{1}{2}$ -in. in each case, the insulation resistance being taken between the two screws. Immediately before each test the timber between and around the screws was carefully rubbed with fine glasspaper to remove any trace of surface moisture. In the last three woods, which were first dressed on one face for the test, the improvement in the readings despite the rise in the percentage humidity is attributed to the timber drying out around the embedded test contacts.

(b) CITY ELECTRIC LIGHT COMPANY—

Tests on Tarrietia argyrodendron and Terrietia peralata.—Some of the results obtained on this timber were—

When small blocks were tried by testing to destruction, the samples flashed over before puncturing, although the relative distances of flash over and puncture were 3.5 to 1.

In testing rods 4 in. long, Red Tulip Oak withstood 33,000 volts for two minutes, whereas Brown Tulip Oak broke down after one minute at this pressure.

As these tests were taken on untreated timber the results are very satisfactory. The Company expressed the opinion that both Brown Tulip Oak (*Tarrietia argyrodendron*) and Red Tulip Oak (*Tarrietia peralata*) are quite suitable for use in the manufacture of electrical apparatus where timber is required for insulation purposes. Although Red Tulip Oak gave the best results, it was thought that Brown Tulip Oak would be more adapted to cases where machining or lathe work would be necessary.

IPSWICH RAILWAY WORKSHOPS—

The Works Manager reported as follows:—

“I beg to advise that we have tested the samples of wood *Tarrietia argyrodendron* var. *trifoliolata* and *Endiandra Palmerstoni* for electrical purposes. They are durable, pleasing in appearance, and give very satisfactory results in insulation tests.”

Further tests will be carried out during the coming year.

FANCY ARTICLES—

Queensland possesses a very large assortment of beautifully figured woods suitable for all kinds of fancy articles. Some of these are the product of small and rare species, while others are plentiful. Articles made of these include the following:—

Walking sticks	Nut and Pin bowls	Paperknives
Whip handles	Serviette rings	Handkerchief boxes
Conductor's batons	Tea trays	Stud and glove boxes
Pointers	Ink stands	Jewel cases
Fancy mallets	Rulers	Mirror backs
Umbrella handles	Pens	All kinds of inlay work

Some of the woods prized for this work are—

Tulip Lancewood (*Harpullia pendula*)
 Tulip Plumwood (*Pleiogynium Solandri*)
 Brown Tulip Oak (*Tarrietia argyrodendron*)
 Red Tulip Oak (*Tarrietia peralata*)
 Flame She Oak (*Casuarina inophloia*)
 Rose She Oak (*Casuarina torulosa*)
 Rose Mahogany (*Dysoxylon Fraseranum*)
 Rose Almond (*Owenia venosa*)
 Red Satinay (*Syncarpia Hillii*)
 Wallum Oak (*Banksia æmula*)
 Beef Oak (*Embothrium Wickhami*)
 Walnut Bean (*Endiandra Palmerstoni*)
 Black Bean (*Castanospermum australe*)
 Brigalow Spearwood (*Acacia harpophylla*)
 Ringed Gidya (*Acacia Cambagei*)
 Maple Silkwood (*Flindersia Brayleyana*)
 Silky Oak (*Cardwellia sublimis*)
 Green Satinheart (*Geijera Muelleri*)
 Silver Aspen (*Pleiococca Wilcoxiana*)
 Queensland Ebony (*Maba humilis*)
 Yellow Boxwood (*Sideroxylon Pohlmanianum*)
 Yellow Cheese-wood (*Sarcocephalus cordatus*)
 Tulip Satinwood (*Rhodospheera rhodanthema*)

BOXWOOD SUBSTITUTES AND PRINTERS' MALLETS—

A very large number of uses are made of English Boxwood (*Buxus sempervirens*) including rulers, scales, set squares, curves, and other instruments. It is also used for engraving. Boxwood is the product of a small tree, and is very expensive to buy.

After a series of tests, carried out by manufacturers of rulers, &c., including Messrs. Settin and Durward of Birmingham, England, a number of Queensland woods have been proved suitable for Boxwood substitutes. These are hard, tough, and extremely close grained. The species are:—

Yellow Boxwood (*Sideroxylon Pohlmanianum*) (*Sideroxylon myrsinioides*)
 White Boxwood (*Denhamia pittosporioides*)
 Grey Boxwood (*Hemicyclia australasica*)
 Ivory Hollywood (*Siphonodon australe*)
 White Cornelwood (*Citrus australis*)
 Orange Boxwood (*Celastrus dispermus*)

The following are not quite so good, and can be used in rulers of a cheaper grade:—

White Hazelwood (*Symplocos spicata*)
 Silver Bulletwood (*Sideroxylon australis*)
 White Hollywood (*Pittosporum rhombifolium*)
 Ironwood Box (*Syncarpia subargentea*)
 Rose Marara (*Weinmannia lachnocarpa*)

Timbers for Printers' Mallets.—After over twelve months' hard wear in the Courier Office, several printers' mallets of Brush Box (*Tristania conferta*), and Ironwood Box (*Syncarpia subargentea*) were in a sound condition and were said to be excellent for the purpose. Further tests on other timbers were arranged, but have not yet been carried out owing to no seasoned wood being available.

MILITARY PURPOSES—

Rifle Stocks.—Last year the Small Arms Factory of the Defence Department at Lithgow, New South Wales, decided that Rose Walnut (*Cryptocarya erythroxylon*) and Grey Satinash (*Eugenia spp.*) were probably suitable for the manufacture of rifle stocks after a preliminary test. Several thousands of superficial feet of these timbers have been since purchased from this Service and are being thoroughly seasoned for a final test. Should this be satisfactory, it is likely that further supplies will be required. Maple Silkwood (*Flindersia Brayleyana*) is at present being used for this purpose, but the price is becoming too high.

Gun Carriages and Ammunition Boxes.—A large number of gun carriages and various types of wagons are used by the Royal Australian Field Artillery at the various training depots. These are constantly requiring repairs, and, as the English timbers such as Oak, Ash, and Elm, of which they are constructed, are not obtainable locally, Queensland timbers must be used. For the Ash poles, Spotted Irongum (*Eucalyptus maculata*) has been substituted successfully, and also other hardwoods for framing, naves, spokes, and felloes. Pine is used for sheeting. A tough, light wood is required for footboards and the diaphragms of ammunition boxes. Grey Sassafras (*Doryphora sassafras*) was recommended amongst others for this and has been reported as being satisfactory. The others were mostly too costly. Pine is used for the sides of the large ammunition boxes holding four shells each. Further tests are being made.

MUSICAL INSTRUMENTS—

Violins.—At the present time a number of violins and 'cellos are being made from Queensland timbers. These are of excellent finish,

and have a good tone, and are well spoken of by professional players. The timbers suitable are:—

Backs.—Maple Silkwood (*Flindersia Brayleyana*), Blush Coondoo (*Sideroxylon Richardii*).

Bellies.—Blush Coondoo (*Sideroxylon Richardii*), Hoop Pine (*Araucaria Cunninghamii*), Brown Pine (*Podocarpus elata*), Black Pine (*Podocarpus amara*), and Kauri Pine (*Agathis robusta* and *Palmerstoni*).

Fingerboards, Pegs, and Chin Rests.—Queensland Ebony (*Maba humilis*), Brown Spearwood (*Acacia rhodoxylon*) which is extremely hard, close grained, and tough, is also recommended for trial here. It is of a dark-brown colour and has the advantage of being less liable to chip than Ebony.

RAILWAY TIMBERS.

Railway Name.	Other Vernaculars.	Forest Service Official Name.	Botanical Name.
Blackbutt .. ..	.. ..	Grey Blackbutt	<i>Eucalyptus pitularis</i>
Blue Gum	Red Gum (New South Wales)	Red Irongum	<i>Eucalyptus tereticornis</i>
Dead Finish	Messmate (Gympie)	Yellow Messmate	<i>Eucalyptus Claziana</i>
Grey Gum .. ..	.. ..	Grey Irongum	<i>Eucalyptus propinqua</i>
Grey Hickory	Cairns Hickory	Hickory Ash	<i>Flindersia Ifflaiana</i>
Gum Top Box	Grey Box	Grey Ironbox	<i>Eucalyptus hemiphloia</i>
Messmate	Dead Finish (North Queensland)	Yellow Messmate	<i>Eucalyptus Claziana</i>
Moreton Bay Ash	Carbeen	Carbeen Bloodwood	<i>Eucalyptus tessellaris</i>
Narrow Leaved Ironbark .. ..	.. ..	Narrow Leaved Ironbark	<i>Eucalyptus crebra</i>
Narrow Leaved Ironbark	Grey Ironbark	Grey Ironbark	<i>Eucalyptus paniculata</i>
Red Ironbark	Broad Leaved Ironbark	Red Ironbark	<i>Eucalyptus siderophloia</i>
Red Ironbark	Broad Leaved Ironbark	Red Ironbark	<i>Eucalyptus siderophloia</i> var. <i>glauca</i>
Red Bloodwood	Bloodwood	Red Bloodwood	<i>Eucalyptus corymbosa</i>
Red Stringybark	Red Mahogany (New South Wales), Red Stringy and Jimmy Low (Queensland) (South of Bundaberg)	Red Messmate	<i>Eucalyptus resinifera</i>
Spotted Gum	Citron Scented Gum, Lemon Scented Gum (North of Bundaberg)	Spotted Irongum	<i>Eucalyptus maculata</i>
Spotted Gum .. ..	.. ..	Lemon Irongum	<i>Eucalyptus citriodora</i>
Tallowwood .. ..	.. ..	Tallowwood	<i>Eucalyptus microcorys</i>
Thozet's Blackbutt	Thozet's Box or Mackay Blackbutt	Black Ironbox	<i>Eucalyptus Raveretiana</i>
Thozet's Box	Thozet's Blackbutt	Black Ironbox	<i>Eucalyptus Raveretiana</i>
Turpentine .. ..	.. ..	Turpentine	<i>Syncarpia laurifolia</i>
White Box .. ..	.. ..	White Ironbox	<i>Eucalyptus albens</i>

SHIP AND BOAT BUILDING—

During the last year a great amount of information has been obtained regarding Queensland timbers which are suitable for this important industry, and it has been demonstrated that Queensland can produce timbers suitable for all parts of a ship from truck to keel and stem to stern.

Following is a list of the various main parts of large vessels, yachts, and small boats, with the Queensland timbers recommended for the purpose:—

MASTS, BOOMS, AND SPARS—

Hoop Pine (*Araucaria Cunninghamii*).

Experienced yachtsmen state that Hoop Pine gives a longer life and will carry a greater load than Oregon. Hoop Pine is stronger, more durable, and less pliable and inclined to split vertically.

DECKING—

Large Craft.—Crow's Ash (*Flindersia australis*), Hickory Ash or Cairns Hickory (*Flindersia Ifflaiana*), and Yellowwood Ash (*Flindersia Oxleyana*).

Small Craft.—Grey Teak or Beech (*Gmelina Leichhardtii*), Miva Mahogany (*Dysoxylon Muelleri*), and Hoop Pine (*Araucaria Cunninghamii*).

KEEL AND KEELSON—

Large Craft.—Grey Ironbark (*Eucalyptus paniculata*) and Spotted Gum (*Eucalyptus maculata*).

Small Craft.—Yellowwood Ash (*Flindersia Oxleyana*). Other hardwoods may also be used here.

STERN AND STEM POSTS, DEADWOODS—

Red Irongum (or Blue Gum) (*Eucalyptus tereticornis*). Yellowwood Ash is suitable for light boats.

RIBS OR TIMBERS (BENT)—

Heavy Work.—Spotted Gum (*Eucalyptus maculata*) and Hickory Ash (*Flindersia Ifflaiana*).

Light Work.—Yellowwood Ash (*Flindersia Oxleyana*), Leopard Ash (*Flindersia collina*), and Silver Ash (*Flindersia Schottiana*).

KNEES—

Heavy.—Natural bends of Prickly Tea Tree (*Melealeuca genistifolia*), Broad Leafed Tea Tree (*Melaleuca leucadendron*), and Brush (or Scrub) Box (*Tristania conferta*).

Light.—Grey or White Honeysuckle Oak (*Banksia integrifolia*) and Grey Mangrove (*Avicennia officinalis*).

PLANKING—

Heavy.—Spotted Irongum (*Eucalyptus maculata*), Grey Ironbark (*Eucalyptus paniculata*). Other hardwoods may be used in less important punts, &c.

Light (for Motor Boats).—Hoop and Bunya Pine (*Araucaria Cunninghamii* and *Bidwilli*) and She Pine or Brown Pine (*Podocarpus elata*). (This resists the teredo.)

RACING SKIFFS—

Red Cedar (*Cedrela australis*), Silver Silkwood (*Flindersia acuminata*), Maple Silkwood (*Flindersia Brayleyana*) (rather heavy), Brown Bollywood (*Litsea reticulata*), and Blush Cudgerie (*Euroschinus falcatus*).

FLOORING—

Hoop Pine (*Araucaria Cunninghamii*).

INSIDE FITTINGS—

Silky Oak (*Cardwellia sublimis*), Maple Silkwood (*Flindersia Brayleyana*), Satin Oak (*Embothrium Wickhami*), Tulip Cedar (*Melia composita*), Rose Mahogany (*Dysoxylon Fraserianum*), Rose Walnut (*Cryptocarya erythroxylon*), Red Satinay (*Syncarpia Hillii*), Red Cedar (*Cedrela australis*), and many others.

LINING—

Hoop and Bunya Pine (*Araucaria spp.*).

OARS—

Very Heavy.—Spotted Irongum (*Eucalyptus maculata*).

Light.—Silver (or Bumpy) Ash (*Flindersia Schottiana*) and Hoop Pine (*Araucaria Cunninghamii*).

Very Light (for Racing).—Silver Quandong (*Elæocarpus grandis*) and Blush Cudgerie (*Euroschinus falcatus*).

ROWLOCK BLOCKS AND HEAVY PULLEY BLOCKS—

Red Irongum (Blue Gum) (*Eucalyptus tereticornis*).

LIGHTER PULLEY BLOCKS—

Yellowwood Ash (*Flindersia Oxleyana*).

SPORTING GOODS—

(a) *Billiard Cues.*—A number of Queensland woods have been used for this purpose, but the Ashes (*Flindersia spp.*) and Tamarinds (*Cupania*

spp.) seem to have given the greatest satisfaction. Pine is used for toy cues. The following can now be recommended:—

1. Pink Tamarind (*Cupania pseudorhus*).
 2. White Tamarind (*Cupania xylocarpa*).
(These two are the best.)
 3. Silver (or Bumpy) Ash (*Flindersia Schottiana*).
 4. White Ash (*Flindersia pubescens* and *Bourjotiana*).
 5. Rose Ash (*Flindersia laevicarpa*).
 6. Yellowwood Ash (*Flindersia Oxleyana*).
 7. Hickory Ash (*Flindersia Ifflaiana*).
- (The latter three are fairly heavy.)

The butts can be inlaid with the figured woods mentioned under "Fancy Articles."

(b) *Cricket Stumps*.—Silver Ash (*Flindersia Schottiana*) is quite equal to any imported wood for this purpose and is now popular. White Ash (*Flindersia Bourjotiana*) from North Queensland is just as good.

No suitable wood has yet been found to replace Willow (*Salix spp.*) for bats.

(c) *Fishing Rods*.—After many experiments, this branch has succeeded in setting aside a number of timbers which are excellent for the manufacture of fishing rods. The species represent all parts of Queensland, and are very strong and elastic. The woods recommended for tips and middles are—

FOR HEAVY RODS—

1. Saffron Heart or Ghittoe (*Halfordia scleroxyla*).
2. Queensland Greenheart (*Endiandra compressa*).
3. Green Satinheart or Axebreaker (*Geijera Muelleri*).
4. Brigalow Spearwood (*Acacia harpophylla*).
5. Iron Spearwood (*Acacia excelsa*).
6. Spotted Irongum (*Eucalyptus maculata*).
7. Brown Tulip Oak (*Tarrietia argyrodendron*).

FOR LIGHTER RODS—

8. Brown Salwood (*Acacia Cunninghamii*).
9. Brown Salwood (*Acacia aulacocarpa*).

Hundreds of pieces of these timbers in sizes 3 ft. long by $\frac{5}{8}$ -in. square, ready for making up, were sold by the Fancy Woods Section during the year. Numbers (1) to (5) are so strong that straight-grained pieces only $\frac{5}{8}$ -in. square in cross section, supported with free ends 3 ft. apart, will carry a concentrated load of 120 lb. at the centre without cracking.

For the butts of rods a larger number of timbers can be used, as such great strength is not required here. Clean turning woods of moderate weight are preferred for this purpose. Rose Marara (*Weinmannia lachnocarpa*) and Red Satinay (*Syncarpia Hillii*) are favourites, although many species are in use.

(d) *Golf Shafts and Heads*.—A number of golf experts are at present experimenting with Queensland woods for this purpose, but with success in few cases. Very strong woods with a "steel like" recoil are required for shafts, and great care must be taken to season the pieces so that the correct moisture content (10 to 15 per cent.) is retained in the wood. Pieces which contain a natural oil or too much moisture have been

found to be "leathery," or too slow in recoiling after being bent. They also become strained and retain a "set" or permanent deformation. Pieces from which too much moisture has been dried out are inclined to be brittle.

Timbers which have been found satisfactory to some extent are—

Saffron Heart (*Halfordia scleroxyla*).
 Queensland Greenheart (*Endiandra compressa*).
 Green Satinheart (*Geijera Muelleri*).
 Brigalow Spearwood (*Acacia harpophylla*).
 Spotted Irongum (*Eucalyptus maculata*).
 Brown Tulip Oak (*Tarrietia argyrodendron*).
 White Salwood (*Acacia Bakeri*).
 Hickory Ash (*Flindersia Ifflaiana*).
 Iron Spearwood (*Acacia excelsa*) is recommended for trial.
 Tamarind (*Cupania pseudorhus*).

For golf heads, Water Box (*Tristania laurina*) and Grey Handlewood (*Aphananthe Philippinensis*) can be recommended. Brush Box (*Tristania conferta*) is also suitable if curly-grained. Grey Persimmon (*Diospyros pentamera*) has proved satisfactory in some cases but in others has been too free.

(e) *Tennis Racquets*.—A number of Queensland timbers have been tested for making tennis racquets and several kinds have been found to bend well. The best species are:—

Silver Silkwood (*Flindersia acuminata*).
 White Ash (*Flindersia pubescens*).
 Silver Ash (*Flindersia Schottiana*).
 Silver Quandong (*Elæocarpus grandis*); and
 Red Tulip Oak (*Tarrietia peralata*).

The lastnamed is not suitable unless the wood is light and selected from young trees.

Further tests on these timbers will shortly be carried out in Tasmania by a company interested in this work.

WOOD CLASSIFICATION SYSTEMS AND OTHER MATTERS.

A description of the Queensland Forest Service Universal Wood Index System was prepared for publication, and was accepted by the American Journal of Forestry, the official organ of the American Society of Foresters.

The number of woods indexed have been increased from 100 to 250, and effective comparisons may now be made between Queensland timbers and those of similar type from other countries. The indexing of a number of wood samples of Eucalyptus, grown in plantation in South Africa, disclosed the consistency of the index factors, but revealed the plantation-grown product as slightly lighter, softer, and more straight-grained than natural produce from Australian wild forests.

Following upon the index arrangement the naming of local woods for trade purposes was revised and the general ill-nomenclature cleared up by issuance of an official list of adopted vernaculars, based on the wood type and defined by the appropriate colour adjective. The heavier and harder gums and boxes resembling the Ironbarks were given the group names Irongums and Ironboxes.

The revised nomenclature now covers 240 species, and the new name list has been applied in this report.

Detailed descriptions of native woods were increased from thirty to eighty. The data includes the botanical, trade, and other names, the size, nature, and habitat of the tree, the colour, figure, texture, weight, strength, and uses of the timber, its respective advantages and disadvantages, method of treatment, and identity factors.

A new and enlarged departmental publication, entitled "The Forests and Timbers of Queensland," was prepared for issuance early next year. It will make available for general information the departmentally collected data relating to indigenous timbers.

THE LOG MARKET OF 1925-1926.

During the year, the Board adopted the practice of publishing in the *Government Gazette* all variations of its log price lists.

In the hardwood log market of 1925-1926 there was no price movement, either up or down, but demands continued firm. Hitherto, railside private lands have been the principal suppliers of hardwood and, during the previous year, the Crown forests contributed only 6.5 per cent. of the total deliveries, or 4,960,000 super. feet. In 1925-1926 the Forest Service, however, provided nearly double this quantity, viz., 9,250,000 super. feet. A sale of 10,000,000 super. feet on stump at Werribee, Rockhampton District, was made during the year, with a seven years' term of operation.

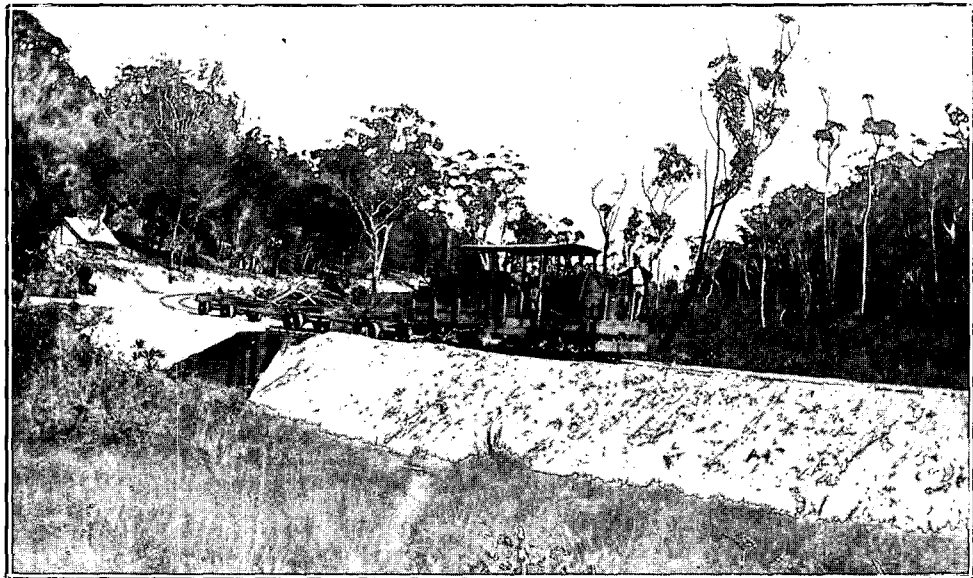
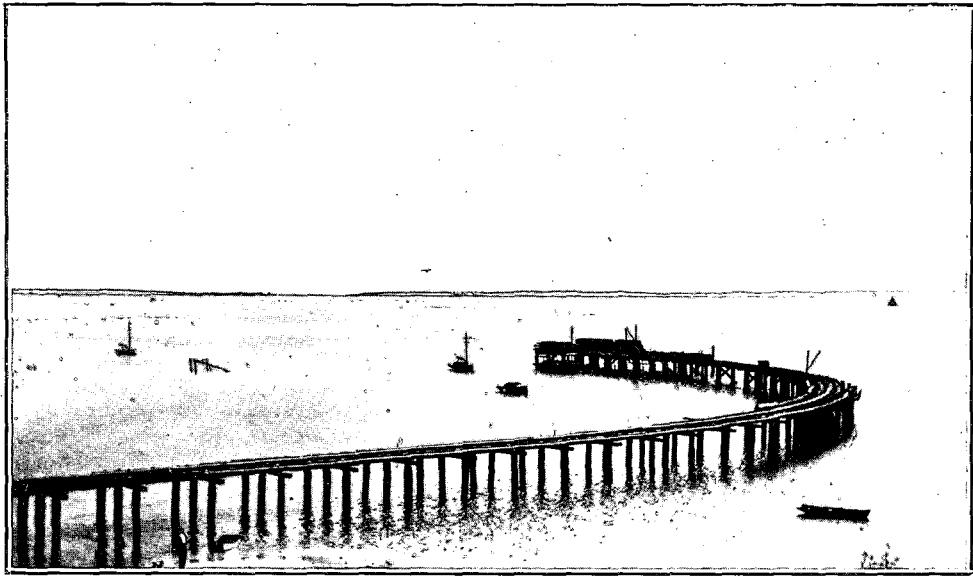
In connection with logging operations for hardwood on Fraser Island, the Government, upon the recommendation of the Board, purchased the logging tramline, wharves, &c., previously owned by Messrs. McKenzie, Limited, of Sydney. The purchase price was £5,000. The tramline will be operated departmentally.

In Hoop and Bunya Pine, the demands exceeded the supplies, and requests for log supplies were clamorous. Prices, however, remained unaffected, the existence of a sawmillers' buying association disposing of tendencies towards competition. Forest Service upsets remained, therefore, at 23s. 6d. per 100 super. feet for 60-in. girth and over logs of mill grade delivered f.o.r. Brisbane.

Pine tops fluctuated during the year from 13s. to 14s., 60-in. girth basis. Purchasers in many cases were desirous of excluding Bunya tops under 60-in. girth. The demand for tops generally, particularly Hoop Pine, far exceeded the supply. In isolated instances up to 15s., Brisbane, was secured for Hoop Pine 60-in. plus (where removal costs exceeded Queensland Forest Service List Prices and country mills desired tops for local case trade).

In ply grades the commencing price of 28s. per 100 super. feet f.o.r. Brisbane for 60-in. plus logs was bettered by bids at auction advancing in September to the peak rate of 40s. 2d., and receding therefrom subsequently to around 30s., at which the price stood firm at the end of June, 1926.

The Crown forests furnished during Report period 39,000,000 super. feet of logs of mill grades, 12,000,000 super. feet of logs of casing qualities,



The Fraser Island Logging Tramline Purchased by the Forest Service, 1926.

and 2,000,000 super. feet of plywood classifications, a total Forest Service cut of Pine amounting to 53,000,000 super. feet, or almost precisely half the total produce for the year of Crown and private lands combined.

A shortage of trucks following upon the railway strike of 1925 affected deliveries, leaving the market momentarily bare, but advices were received from the Railway Department that 150 new timber trucks were under construction and would be in service by the end of June, 1926.

The reappraisal clause in stumpage sales was amended to provide that reappraisal upwards would be made only when Forest Service gazetted upsets exceeded the auction bid.

Kauri Pine, the supplies of which are located almost wholly in North Queensland, stood at 32s. per 100 super. feet f.o.b. Cairns for 96-in. girth and over logs. The Forest Service cut was 1,500,000 super. feet. The sawn output of this species finds its way into Northern use for linings and ceilings, and to Melbourne and Adelaide as wide boards. Sydney now absorbs little of it, Hoop Pine and New Zealand Kahikitea or White Pine taking its place on that market.

A normal inquiry for Red Cedar logs continued, mostly for public works purposes in New South Wales and Queensland. The deliveries from State Forests totalled 170,000 super. feet, mostly from the Eungella Forest, Mackay District, which now holds the chief remaining stores of this classical cabinetwood. The price rose briskly towards the mid-report period from 45s. to 54s., but at the end of the year had returned to its original position.

Maple Silkwood remained successor to Red Cedar in popular esteem, and the inquiry was extremely keen for the first half-year, the rates offering f.o.b. Cairns for 8-ft. girths, ascending sharply from 48s. per 100 super. feet to the highest peak yet reached in the history of the timber trade, viz., 62s. As suddenly the market broke and, at the end of the year, the price stood as at the beginning—at 48s. The demands were due to the Southern fashions in furniture and, in response to them, supply was over-stimulated, and the ramps and wharves of North Queensland were quickly filled with large quantities of logs, including unusual proportions of small sizes and inferior specifications. The advent of the rotary strike on top of this accumulation produced congestion, deterioration and an eagerness on the part of sellers to realise. With the resumption of waterside activities, heavy consignments were rushed south, glutting the timberyards, which, in the meantime, had been laying in stocks of Maple Silkwood substitutes from abroad, such as Pacific Maple. The market became demoralised, values receded quickly, and heavy losses in material and money resulted for Northern log supplies. The Forest Service as a participating supplier shared to a limited extent in the consequences of the depression, which extended also to Silky Oak, and, indeed, pushed numerous Northern secondary cabinetwoods right off the log market. The price of Silky Oak logs has since revived to 23s. 6d. Cairns for 8-ft. and over centre girths, and 28s. for small quantity specially picked logs suitable for ply.

In Maple Silkwood, the Forest Service cut for 1925-1926 was 1,168,000 super. feet, and in Silky Oak 1,327,000 super. feet.

In view of the heavy borer damage resulting from summer logging, operations to produce Maple Silkwood, Kauri, and Red Cedar logs were restricted to the dry months, April to September.

Red Satinay logs introduced to the trade for the first time in 1924 at 22s. 6d. found favour on the Southern markets at 26s. f.o.b. Brisbane, and an order for 250,000 super. feet of logs booked in October, 1925, was practically completed by 30th June, 1926. There is every indication that this new wood will establish itself soundly upon the Australian timber market.

Sales of Walnut Bean, of which considerable quantities exist in North Queensland, were very limited, owing to the difficulty of sawing, which is due to the presence of 1 per cent. silica in the wood. The Forest Service sawing investigations with respect to Walnut Bean were pursued during the year, and samples were referred to an English saw-manufacturing firm which, after several attempts, has now produced a saw which promises to be effective.

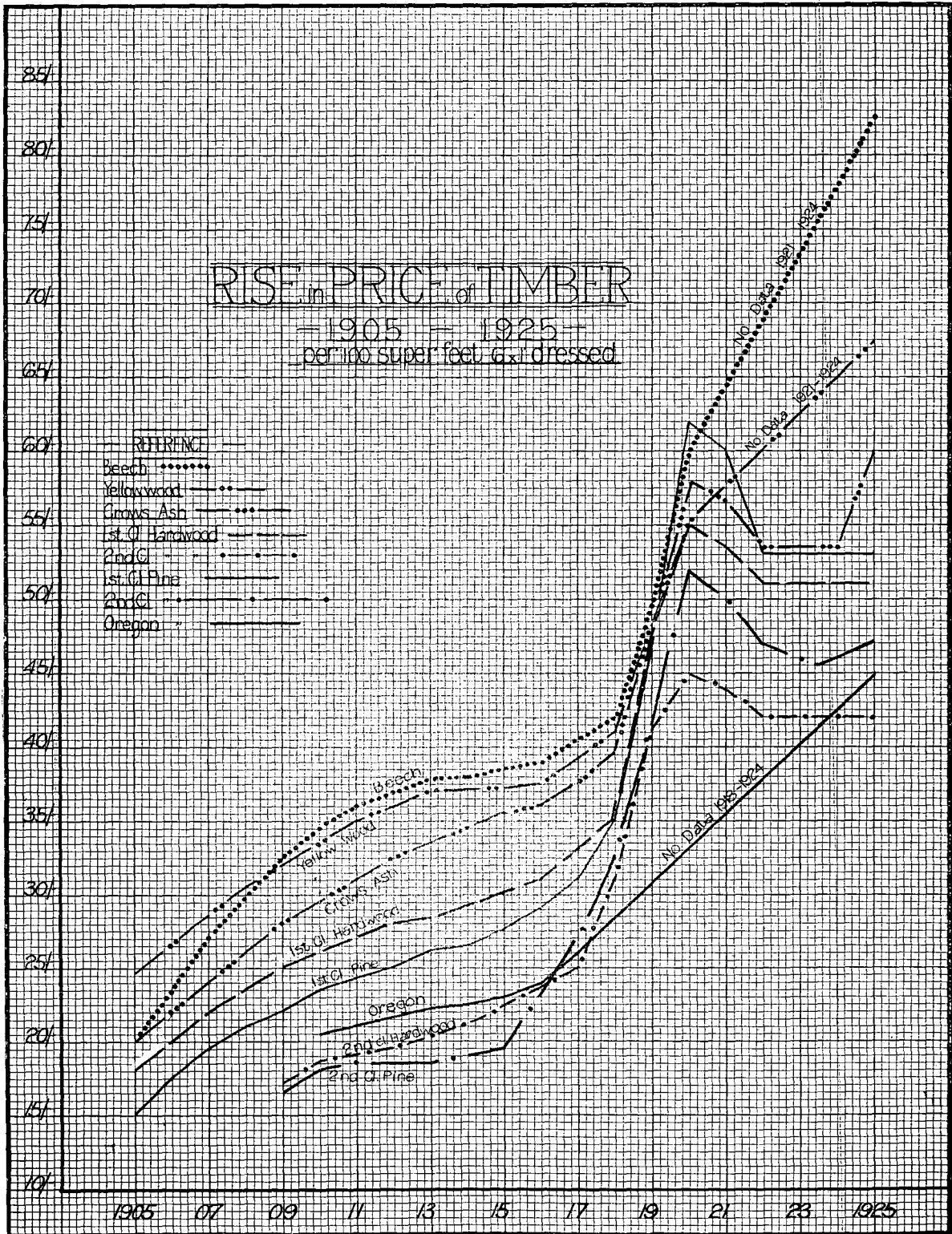
The Sandalwood market, depending upon Chinese demands, was affected by Chinese wars, which disorganised the business. Up till 1924, Sandalwood getting and selling were haphazard operations conducted by white and aboriginal getters and white and Chinese buyers, who chattered on the Chinese market and gambled upon fluctuations in exchange. In 1924, the operations north of Townsville were organised under a monopoly purchased on tender by Messrs. John Hector and Sons, Westralian Sandalwood merchants, who undertook to pay Queensland getters an assured price of £40 per ton f.o.b. Cairns and Thursday Island, and the Forest Service an assured stumpage of £4 per ton.

From the Department's standpoint and, apparently also from the standpoint of the getters, the organised operation was a success, but competing merchants found an outlet in the development of newly-discovered sandalwood resources in the Cloncurry district, which had the effect of placing large quantities on the already disorganised market.

Towards the end of the present financial year Messrs. Hector and Sons ceased operation, and the contract was cancelled. Tenders are now being called for sale of the Sandalwood monopoly of Queensland, including the resources omitted from the previous arrangement.

The prices of pole, hewn and split hardwood for railway and public works construction were subjected to full review at the beginning of the financial year, and upon the basis of cutting rates agreed upon with the Australian Workers' Union were scheduled and published. This schedule is printed in the appendix hereto and indicates a general increase in both sale and purchase rates.

Sales to the extent of £89,996 were made in respect of railway timber requirements, as against £78,292 for the year before. The turnover includes 957,000 super. feet of crossings, transoms, headstocks, &c., 191,949 lineal feet of girders, corbels, piles, and telegraph poles, &c., and



The Consumer Pays the Price of Forest Depletion.

404,037 sleeper blocks, sleepers, posts, and palings. Particulars are published in the appendix hereto. The figures showed an increase in sleeper block consumption of 274,964 blocks for 1925-1926, as against 81,972 for the previous year, and a decrease in transoms of 163,131 super. feet, as against 525,334 super. feet for 1924-1925, and of 34,441 lineal feet of girders, as against 86,197 for the preceding report period.

THE SAWN TIMBER TRADE, 1925-1926.

The activity in general building throughout the State was reflected in a widespread demand for sawn timber. Prices remained firm, and towards the end of the financial year the Board of Trade approved of increases of 1s. per 100 super. feet in the price of rough hardwood, and of 6d. in the case of pine, with 3s. 6d. per 100 super. feet extra for selected quality, and the classification for "A1" joinery grade was relaxed to admit of slight blue stain and natural discolouration. City timberyards were obliged to increase their wholesale purchase prices to the country mills owing to the keen competition for their outputs. The margin of profit for the milling operation consequently was widened during the year, whilst that of the distributing yards was reduced correspondingly.

The sharp incline of retail timber prices from 1904 to 1926 is expressed in the graph of timber prices illustrating the report. Dressed pine 6 in. by 1 in. in 1904 cost 15s., in 1926 56s. 6d.; first class hardwoods in 1904 cost 18s., in 1926 51s. The price ascent is most marked in the case of Beech (Grey Teak), and least in the case of Hardwoods.

The trend is due not alone to the depletion of supplies, but to the corresponding extension of log haulage distances outwards from the railway line. The later figures are also heavily weighted by other economic influences, such as currency variations, the tariff protection policy, labour awards, and increasing rail freights.

The year's deficit in Hoop and Bunya Pine, plus the demand for long length cheap softwood for scaffolding and other purposes, led to an amazing extension of softwood importations (principally Oregon), the total purchases abroad amounting to the value of £137,107, as against £58,876 for the preceding year.

The tendency towards large importation of foreign softwood is clearly shown in the graph of imports illustrating this section of the Report.

Over the entire State there were in operation, in 1925, 256 sawmills, with an output of 143,623,101 super. feet, valued at £2,880,601. These employed 4,464 hands, and the value of premises, land, machinery, &c., was estimated at £929,000.

STATE SAWMILLING.

A considerable business in sawn timber is transacted by the Forest Service, which, for its purpose in regard thereto, owns and manages sawmills at Taromeo, Imbil, Birimban, and Silkwood, as well as a large city distributing timberyards at Wickham Street, Brisbane. The combined undertaking was founded in 1916, and transferred under Order in Council

to the Forest Service in 1920. Its financial history up to the beginning of the present report period is disclosed by the following statement:—

Year.	Period.	Profit.	Loss.
1916	9 months ended 30th September	£ s. d.	£ s. d. 1,380 15 8
1917	9 months ended 30th June .. .. .	.. ..	532 6 4
1917-18	Financial year .. .. .	.. ..	7,116 16 0
1918-19	ditto	3,156 6 2	..
1919-20	ditto	†10,677 2 1	..
1920-21*	ditto	4,348 7 9	..
1921-22	ditto	4,881 19 1	..
1922-23	ditto	5,001 7 4	..
1923-24	ditto .. .. .	.. ..	6,479 5 8
1924-25	ditto	†5,937 10 4	..
1925-26	ditto	8,213 13 7	8,213 13 7

Net profit since inception, £26,707 2s. 8d.

* An amount of £2,707 16s. 11d. was repaid to Railway Department in 1925-1926.

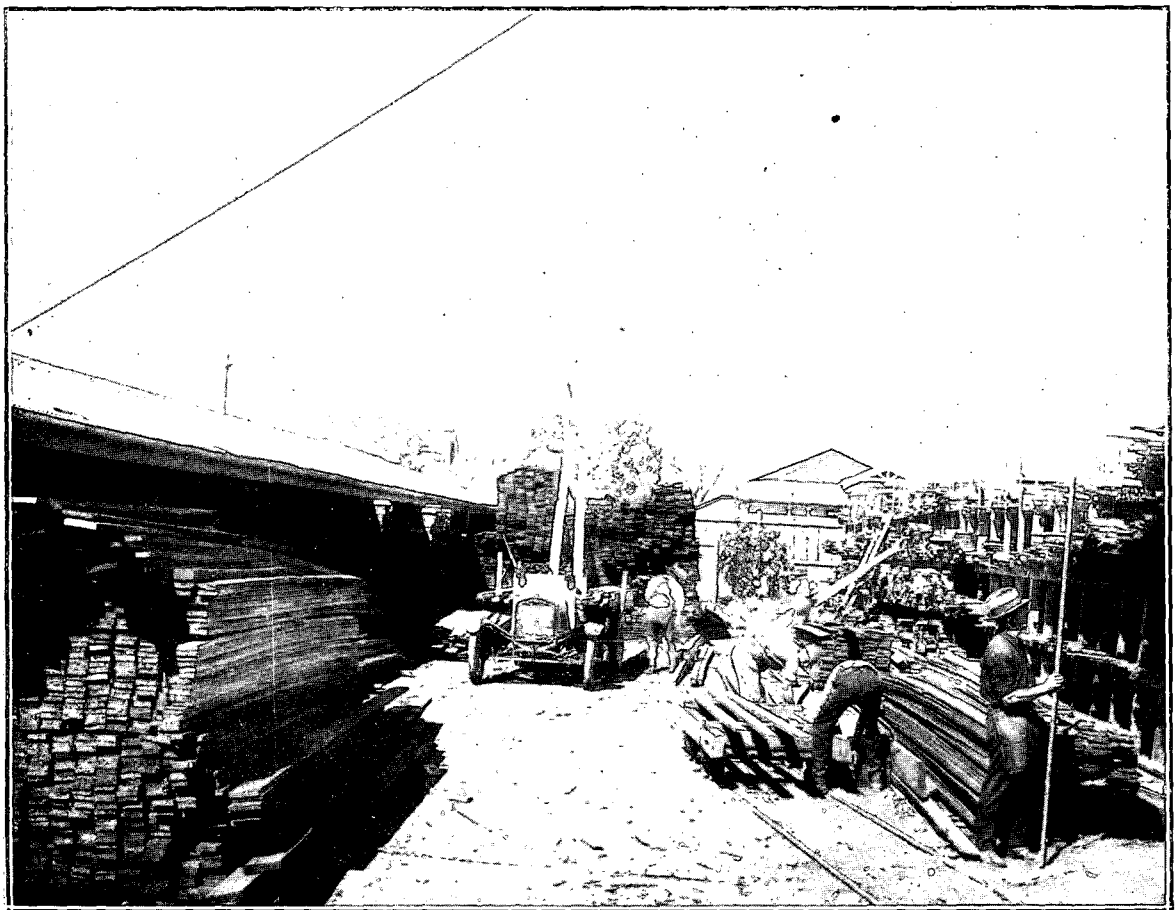
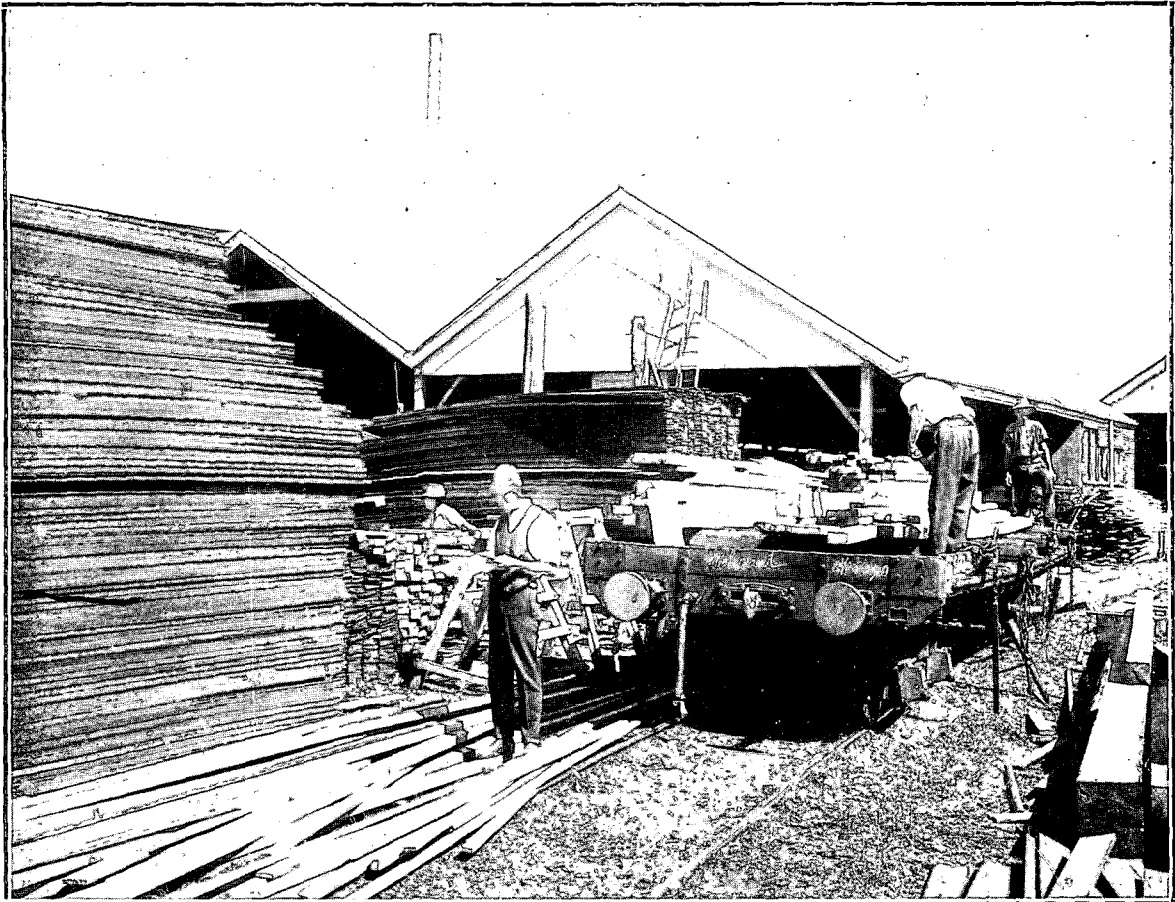
† Sawmills were taken over by Forestry from 1st July, 1920.

During the year 1925-1926 the sales of sawn timber showed a marked increase, the turnover consisting of 6,794,753 super. feet of sawn timber and 54,689 sawn sleepers, realising £158,733 11s. 9d.

The price list remained at slightly below Board of Trade fixed prices, although many adjustments up and down were made during the year in order to arrive at a more scientific pricing of the various specifications listed.

The Forest Service Sawmilling and Timberyards undertaking is conducted on strictly business lines in competition with the trade at large. The Crown's usual prerogative of priority in claims for debts has been waived voluntarily, and the Forest Service shares only on equal terms with other creditors in the insolvencies and bad debts to which every trading business is subject. The prices charged by the State forest to the State's mills for logs are precisely those charged to any other buyer, and any betterment of auction bids is automatically reflected in the purchase prices paid by the Forest Service mills for its logs. For Government business the Forest Service mills compete on level terms with the private timber merchant. The Forest Service, however, enjoys the advantage of an assured supply of logs, an advantage which is enjoyed also by private bush mills holding mill size stumpages. Its single privilege is exemption from rates and taxes.

The operations of the Forest Service Mills and Timberyards for 1925-1926 added a further net profit of £8,213 13s. 7d. to the previously accumulated profits, and including interest paid to the Treasury on Trust and Loan Funds made available to the business. This represents a return for 1925-1926 of 16 per cent. In addition to these returns, concessionary discounts to a total value of £1,200 were given to 'Workers' Dwellings and Workers' Homes Contractors.



Receiving and Distributing Sawn Timber at the Forest Service Timber Yards, Brisbane.

The reserve accounts in the books at 30th June, 1926, were as follows:—

Reserves—		£	s.	d.
Profit and Loss Appropriation	.. ..	9,612	6	2
Depreciation	.. ..	7,150	0	0
Stock Valuation	.. ..	3,400	0	0
Birimgan Mill Contingencies	.. ..	500	0	0
		<u>£20,662</u>	<u>6</u>	<u>2</u>

Note that the reserve for depreciation created at 30th June, 1923, in the sum of £6,550 has been increased to £7,150 by annual additions of £200.

Contributing to the 1925-1926 profits of £8,213 13s. 7d. were:—

		£	s.	d.
Taromeo Mill	.. ..	5,168	1	1
Imbil Mill	.. ..	2,960	5	9
Brisbane Timberyards	.. ..	1,676	19	2
Birimgan	.. ..	154	11	5

Adversely affecting these results was a loss of £1,521 5s. 6d. on the Silkwood operation, and caretaking and depreciation costs of £200 for the closed down Injune mill pending sale.

The Silkwood Mill has an unsatisfactory profit and loss history, as follows:—

		£	s.	d.
1922-23 (Loss)	.. ..	1,073	1	6
1923-24 (Profit)	.. ..	232	2	10
1924-25 (Loss)	.. ..	167	8	11
1925-26 (Loss)	.. ..	1,521	5	6

It was established in 1917, but its location is ill and its construction bad. It has been regarded as a declining investment to be continued only so long as losses were less than the costs of closure. That point was reached during the Report period, and decision to terminate the operation and realise upon the assets was reached at the end of the financial year.

The flourishing condition of the Taromeo and Imbil Mills is due largely to the shifting of the centre of profit gravity from the city to the country, owing to strong sawn pine demands upon bush mills by Brisbane timberyards, as a result of which the wholesale purchasing prices advanced. The reflex action of the market movement is shown by the narrowing of the margin of profits at the Brisbane timberyards, which, despite a considerably increased turnover for 1925-1926, yielded a profit of £1,676 19s. 2d., as against £3,235 17s. 10d. for the preceding twelve months. To meet timberyard requirements in excess of the supply capacity of the Forest Service mills in the country, wholesale purchases were made from private mills amounting to 1,251,279 super. feet of pine. For sawn hardwood stocks, the timberyards relied wholly upon purchase, buying in all 1,869,605 super. feet.

An important addition to the number of producing units was made at the end of the financial year in the acquisition, by the Board, of the Yarraman sawmilling plant, previously owned by an association of Brisbane timber merchants.

The plant is a modern band mill consisting of a 7-ft. Berlin band saw, 5-ft. Canadian circular mill, gang edger, two hand benches, case bench, three docking benches, and the necessary power resources, building, tramlines, and other appurtenances for the operation of the mill. The purchase price was £10,000. The plant has a log consumption capacity of 6,000,000 feet per annum, and its acquisition will obviate the necessity for purchase of sawn pine stocks from outside sources.

The small hardwood mill at Birimgan, which was being worked to convert the Ironbark stands of the Birimgan forests into sleepers for the Railway Department, was unfortunately partly destroyed by fire in May, 1926. The loss was covered by insurance.

As the forest had reached a more or less cut-out condition, it has been determined not to reconstruct the plant.

In order to maintain supplies of sawn Maple Silkwood for the Brisbane timberyards, Maple Silkwood logs were diverted from Forest Service sale during this year's slump in the Northern log trade both to the Silkwood mill and to sawing agencies in Brisbane. With the closure of the Silkwood mill, the question of a new entrance of the Forest Service into sawmilling ventures in North Queensland comes up for consideration. Two aspects are worth emphasising. One is the necessity of a source of supply of sawn cabinet-woods from North Queensland for the Brisbane timberyards business of the Forest Service, the other is the advantage to administration in having a convenient Departmental avenue in the North into which to divert log supplies at will. The extension of Forest Service sawmilling operations to North Queensland would be a perfectly logical development of the successful business now thoroughly established.

REFORESTATION.

ACCUMULATING NEW FOREST CAPITAL.

"Great forests, like huge temples builded high" can be planned, organised, systemised, sixty years ahead and made to yield a continuous and never-ending forest factory production of wood material in much the same way as Ford factories turn out Ford cars. But the movements afoot upon the timberland estate will yet remain ever indiscernible to the public which gazes over the timberland fence, because a billion Ford cars can be placed upon the road before an acre of Hoop Pine can be grown into chairs and tables.

Realising as we do now that there must be provided for the annual needs of every man, woman, and child in Queensland a minimum timber ration sandwich of a hundred superficial feet of sawn softwood and a hundred superficial feet of sawn hardwood, with an ample cabinet-wood filling in between, a straight line course is set us to forthwith lay in new stores of forest capital adequate to feed us in perpetuity upon this ration, on an ascending scale paralleling the $2\frac{1}{4}$ per cent. rate of present population increase.

The forest acreage accordingly to be established depends upon the mean annual increment which each species is known normally to produce in forest formation on average soils. We may calculate on 3,000 feet per acre per annum of growth in a stand of *Pinus insignis*, on 2,000 feet per acre per annum in a stand of Southern Silky Oak, on 1,000-1,500 feet per acre per annum in a stand of Hoop Pine, and on 300 feet

per acre per annum in a tended Eucalyptian woodland, and we know that at the present pace of multiplication of the people there will be 3,000,000 mouths to feed with the Queensland wood sandwich by the time the new Hoop Pine groves are ripening for the sawmills fifty or sixty years from now.

Having this knowledge and appraising all the other factors of the timber supply problem for Queensland and the world at large, we may plan a forestation programme which will yield us what we need at the appointed time.

There remains, it is true, the broad gap between our present needs and their ultimate local fulfilment, a gap indeed which can be filled only by wood-use science applied to our available timber stocks, and by supplementary imports of coniferous material.

Nature did not provide natively for our softwood wants in the full measure, pressed down and brimming over, which we might desire, but it is useless to expend our present energies in her blame, just as it is useless, unjust, and vim-sapping to recriminate the past for having so strenuously plunged into the pioneering labors of early colonisation as to have dimmed its second sight to the wood needs of its children. At least it can be said that the eyes of this generation are open and its silvan obligation is writ large over the map of Queensland in woodlands cut, hacked, and burned.

Had our forefathers not been pre-occupied with their arduous pioneering present, they may have perceived the wisdom (obvious to us in the after event) of beginning in the year 1876 a programme of silvical research and forest culture which would now have placed in our hands a fine fund of afforestation technique, and at our feet a ripening asset in new softwood formations sufficing to balance the decline in the natural stands, which to them then were anathema because they seemed to stand in the path of all rural development.

We are now forty years behind our forestation programme. During those forty years New Zealand and South Australia have been silvically busy, and to-day possess the knowledge and experience which will enable them in 1926 to develop to a mass production in wood. New Zealand last year planted 33,000 acres of new tree crops, which is much; but Japan established 320,000 acres during the same period. We made our start not much over ten years ago, with experiment and hesitancy, because for our rich range of native species there was no technique available, and the lessons of the winter rainfall countries were not appropriate to our summer rainfall land. The ten years from 1916 to 1926 have been years of data-probing and organisation-evolution, of pick and shovel foundation laying, whose manifestations outwardly were more the unavoidable dust and debris of digging, than of the painting and the silvering of the coping-stones of the "great forests like huge temples builded high" which will yet arise in Queensland from the foundations of the decade just past.

We have laboured the experimental beginning of the incline of the afforestation graph and have surmounted the difficult initial grades. The early demonstration plots at this stage are rearing themselves above the foundations as visible nuclear forests of 1,200 acres of softwood

plantation and 21,000 acres of tended hardwood stands, representing a first contribution of the Forest Service to futurity of 70,000,000 potential feet of softwood and 200,000,000 potential feet of hardwood. The programme is gaining momentum at the present rate of 500 acres of softwood and 4,700 acres of hardwood per annum, and by the year 1936, we hope to catch up to our 1926 objective of 5,500 acres per annum of softwood planting and 16,000 acres of hardwood tending.

Four years later we expect to completely overtake the past.

LOCATING THE FUTURE FORESTS.

But whilst the attainment of the acreage objective may be within our sight, the locale of the prospective plantations is something for more than chance hitting. The present considerable revenues of the Forest Service obtained by the sale of natural stands, are due fundamentally to the forethought of Nature in assembling the pine forests around our capital city, and to the wisdom of our generation in constructing railway lines which enable these timberlands to be tapped economically.

During the Californian planting boom of 1900-1910, some 50,000 acres of Eucalyptus groves were established by plantation companies operating on an acre-share basis. Now that the Eucalyptian crops are ripe for the market, however, there comes the realisation that half of them have been grown at so inconvenient a distance from the consuming centres that they are economically unharvestable even for firewood.

The economic location of the Forest Service forestation schemes in relation to the population which they are destined to supply has been given the thought which the marketing importance of the issue demands.

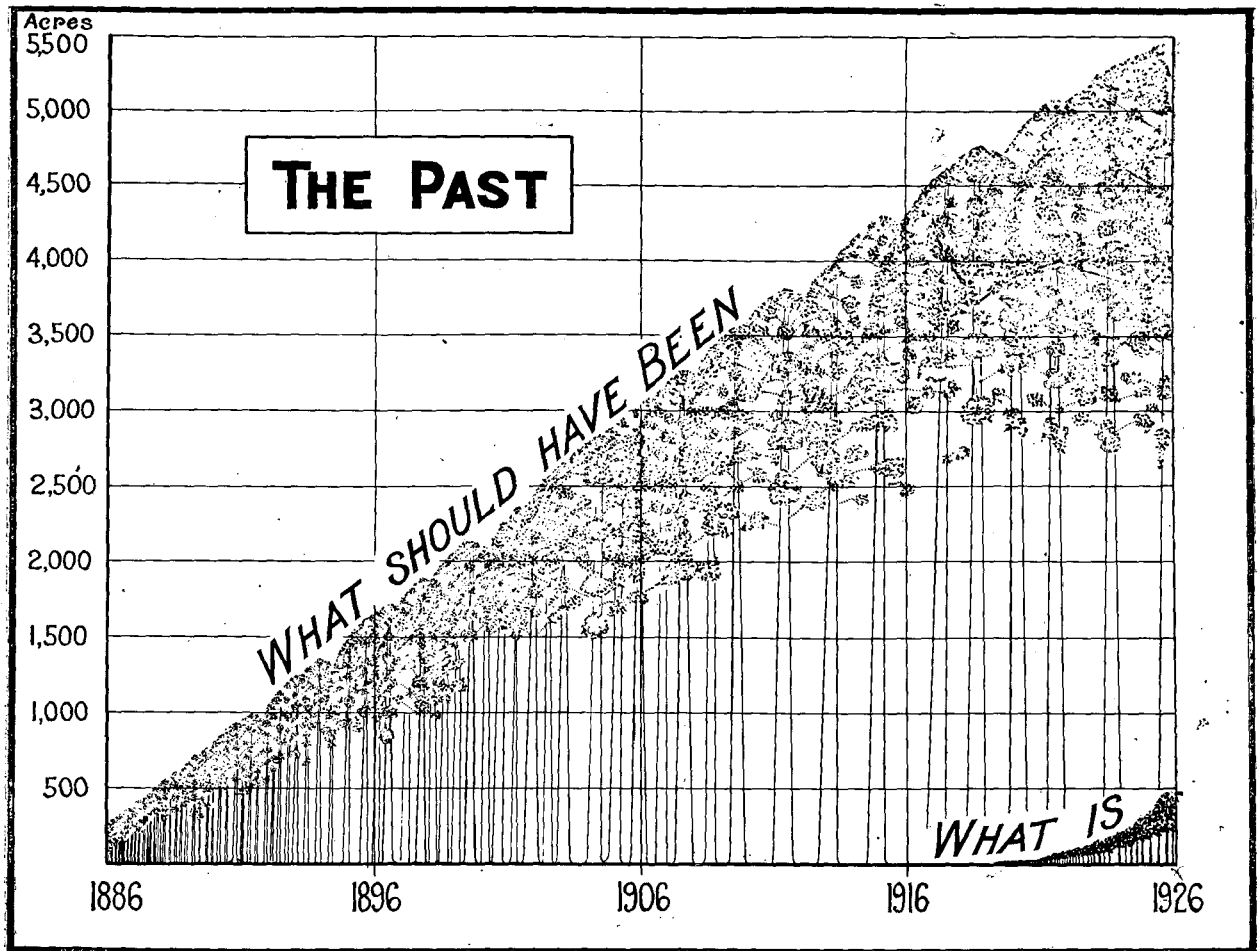
Basing population growth and distribution figures upon the three railway areas of Queensland the general arrangement of the present community is revealed as follows:—

Division.	Population.	Percentage of Total.	Softwood Plantation Area (Acres Necessary.)
Southern	570,000	71	3,550
Central	95,000	12	600
Northern	135,000	17	850
	800,000	100	5,000

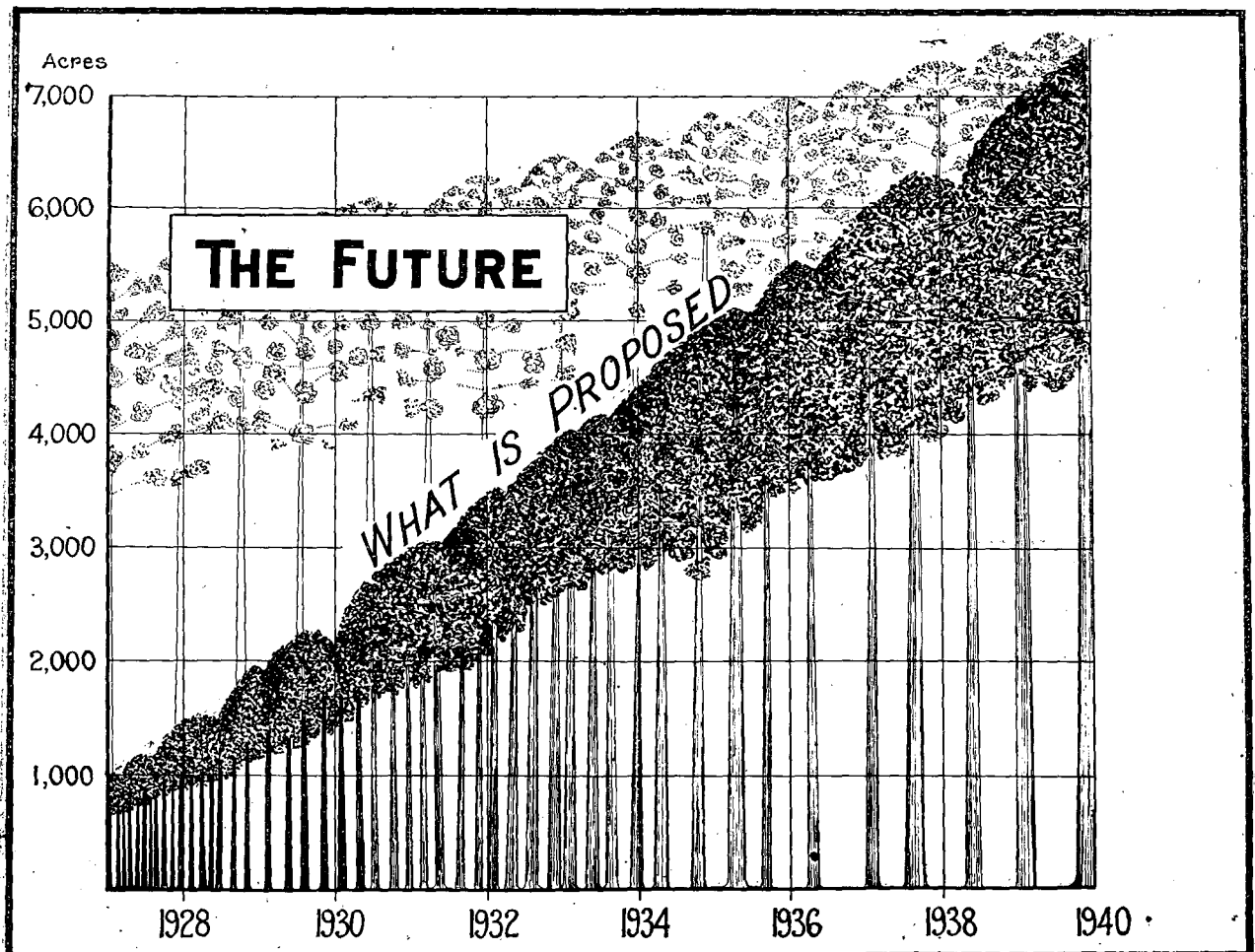
The present centre of afforestation gravity is in the South, with Brisbane as its clear focus, since Brisbane holds nearly half the southern population. The future satisfaction of the Brisbane market becomes, therefore, the first point of attack.

A summary of the planting areas available within economic distance of Brisbane, viz., within 200 rail miles or their road equivalents, modified

THE SOFTWOOD PLANTATIONS



To Supply the Softwood needs of Queensland in 1926 we should have Commenced to Plant in 1876 instead of in 1917—



But the Planting Plans for 1928 to 1940 will Redeem the Past.

suitably by application of the factors of climate and existing facilities, produces the following schedule.—

Working Plan.	Planting Area Economically Available.	Percentage of Total.	Present Annual Softwood Plantation Allotment.	Percentage of Total.
	Acres.		Acres.	
Mary Valley	40,000	23.1	850	24.0
North Coast	35,000	20.2	650	18.3
Brisbane Valley	30,000	17.2	600	16.9
Fraser Island	20,000	11.6	450	12.8
Maryborough	15,000	8.7	200	5.6
Bundaberg	15,000	8.7	200	5.6
Kilkivan	10,000	5.8	200	5.6
Nanango	4,000	2.3	150	4.2
Warwick	2,000	1.2	150	4.2
Brisbane	2,000	1.2	100	2.8
	173,000	100	3,550	100

CHOOSING THE NEW FOREST CONSTITUENTS.

There remain twenty-five annual steps towards the pit of the Queensland softwood deficit. The imminence of it supplies sufficient stimulus towards haste. In the race against time, search obviously should be made for ingredients calculated to produce wood in our forest arenas in the shortest possible space of years. The field of choice is limited. There are few trees indeed which yield white milling softwood in two and a-half decades. Baltic Pine takes a century to attain to its vigorous prime, and this is the usual age for cold country conifers. A new prize pumpkin wood, however, has arisen in New Zealand and the Southern States of Australia in the shape of the obscure Monterey Pine (*Pinus insignis*) which has created a furore in forestry circles by ripening under Australian skies in twenty or thirty years. Because of the phenomenal development of this gross and gawky tree it has been taken up (with extraordinary exaggerations) by private planting corporations for the purpose of floating large timber-cropping speculations.

The Monterey Pine is a cool climate, winter rainfall product, which cannot survive tropical competitions. Its use in Queensland plantations is greatly restricted. It has been selected, however, for the Toowoomba and Stanthorpe districts afforestation projects as a local provision against prospective case timber demands. In the Stanthorpe instance the local population is engaged largely in fruitgrowing, and considerable difficulty is being experienced in securing satisfactory box-making material at reasonable prices. The Black Cypress Pine, Apple Gum, and White Gum of the region have been tried and have been found wanting. The deficiency is becoming serious. The Provisional Forestry Board acquired during the year an area of 4,020 acres of waste granite land fronting the Amiens railway line, and here it has established a forest station, and has commenced operations to lay down 100 acres a year of *Pinus insignis* formations on a rotation of twenty years for case timber production. Estimating a mean annual increment of 1,300 superficial feet, the project will provide 2,500,000 feet of case wood a year for the Granite Belt from 1947 onwards.

Similarly, to supply the Toowoomba box timber market of the future an area of 2,046 acres was purchased on the railway line at Pechey, 29 miles north of Toowoomba, and here the operation, just begun, consists of the graduated profitable conversion of existing hardwood stands and their replacement by artificial softwood associations of *Pinus insignis* and Hoop Pine, to the aggregate extent of 66 acres a year. A mean annual increment of 2,000 feet per acre of *Pinus insignis* and 1,500 feet of Hoop Pine is anticipated, and these results in growth should culminate around 1950 in a sustained yield of new softwood stores for the Toowoomba markets of 4,000,000 superficial feet per annum.

WOOD PRODUCTION OF PINUS INSIGNIS.

In the instances above given of Queensland undertakings in *Pinus insignis*, the annual acre-growth estimates adopted by the Forest Service have been 1,300 feet and 2,000 feet respectively, with 1,500 feet for Hoop Pine. These bases of mean annual increment may be regarded as sufficiently conservative when compared with private prospectus forecasts of softwood crops galloping towards a twenty-year ahead market at the speed in wood production of 10,000 feet and over per acre per annum.

Consider a few examples of exceptional growth of *Pinus insignis* :—

(1) (v. p. 51, *Empire Forestry Journal*, July, 1924)—

“North Canterbury, New Zealand, yield of 100,000 super. feet, obtained in 42 years, 2,380 super. feet per acre per annum.

“On a rotation of 20 years this mean average increment would be much less, probably not more than 1,500 super. feet.

(2) (v. p. 51, *Empire Forestry Journal*, July, 1924)—

“South Auckland, New Zealand, yield of 150,000 super. feet, obtained in 46 years, 3,260 super. feet per acre per annum.

“Mean annual increment for a 20 years' rotation would be very much less.”

(3) (v. p. 24, *Forests and Forestry in New Zealand*). Prepared for the Imperial Forestry Conference, 1923. Ashburton County Council, New Zealand.

“1,500,000 super. feet cut from 30 acres, 27 years old, or 50,000 super. feet cut from 1 acre, 27 years old

equals 50,000 or 1,850 super. feet

27

mean annual increment, which would probably not exceed 1,500 super. feet on a rotation of 20 years.

(4) (v. p. 6, *Annual Progress Report of Woods and Forests*, Department of South South Australia, 1920-21.)

“Plantation H the most successful.

Age	.. .. .	.. ..	36 years ;
Area cut over	.. .. .	.. ..	19.2 acres.
Actual measured volume (Hoppus)	.. .. .	.. ..	1,304,310 super. feet ;
Outturn per acre	.. .. .	.. ..	68,626 super. feet
Mean annual increment (Hoppus)	.. .. .	.. ..	1,906 super. feet.”

The best of the *Pinus insignis* plantations in South Australia produced an average annual increment of only 1,906 superficial feet per acre (Hoppus) on a rotation of 36 years. On a rotation of 20 years this would probably approximate 1,200 superficial feet.

Of the examples of exceptional growth (2) gives the highest figure of 3,260 superficial feet per acre per annum over 46 years, which will probably reduce to about 2,000 superficial feet per acre per annum on a rotation of 20 years.

Obviously it is impossible for private planting companies to realise expectations of ten or twelve thousand feet per acre per annum of average growth. Even known exceptional rates of development for this species have been much below this expectation. Moreover, were the prospectus anticipations realisable, the yields of timber would be so colossal that they would swamp the Pacific Ocean with *Pinus insignis* products, resulting in a glut which would slump the hoped-for profits to infinitesimal proportions.

Softwood plantations, properly located and managed, will return satisfactory dividends without need for exaggerations. Based upon a total establishment cost of £12 per acre, the Queensland Forest Service investments in *Pinus insignis* farming at Passchendaele and Pechey should return net profits of 7½ per cent. to 9 per cent. on the capital sunk, after paying compound interest over the entire period of the rotation.

OTHER SOFTWOOD POSSIBILITIES FOR QUEENSLAND.

Pinus insignis forests, however, are not for Queensland at large, and for other districts of the State other more climatically appropriate species must be chosen. In its search for suitable softwood-producing trees of rapid growth the Forest Service has essayed to ransack the woodlands of the world. At Beerwah, which, in all essentials, resembles the climate of Florida, whence comes the commercially famous Southern Yellow Pines, the Board has obtained a forest reservation of 15,300 acres of more or less waste land adjacent to the Main North Coast Line, 48 miles from the softwood-hungry Brisbane market, and here it is taking the first steps towards materialising pineries of the Caribbean and Loblolly Pines of Florida, which on the fresh moist soils of the better wallum lands of our coast are calculated to be capable of putting on timber increment at a pace approximating that of the Californian phenomenon. The short-leaved pine of the Southern United States of America (*Pinus echinata*) has also been requisitioned, whilst from other summer rain lands of the globe have been brought for the Beerwah and for other afforestation sites in Queensland such climatically suitable softwood producers as the Remarkable Pine of Mexico (*Pinus patula*), the Mountain Pine and Mountain Cypress of Arizona (*Pinus leiophylla* and *Cupressus Arizonica*), the Montezuma Pine of Guatemala (*Pinus Montezumae*), the Parana Pine of Brazil—(*Araucaria Brasiliensis*), the Benguet and Zambalas Pines of the Philippines (*Pinus insularis* and *Pinus Merkusii*), the Pencil Cedar of Kenya (*Juniperus procera*), and finally, the Chir Pine of the Himalayas, which is already to be seen growing to large size in some of the gardens and streets of Brisbane and again of Herberton.

There are no true pines in Queensland. The Hoop and Bunya, Kauri, and Cypress "Pines" so called, come of a far more ancient botanical lineage and produce trees of more classical beauty and woods of finer grade, than the modern *Pinus* now being enlisted to supply our common wood needs. But among the 400 hundred native constituents of our colonial tree congregations are many notable wood-makers of

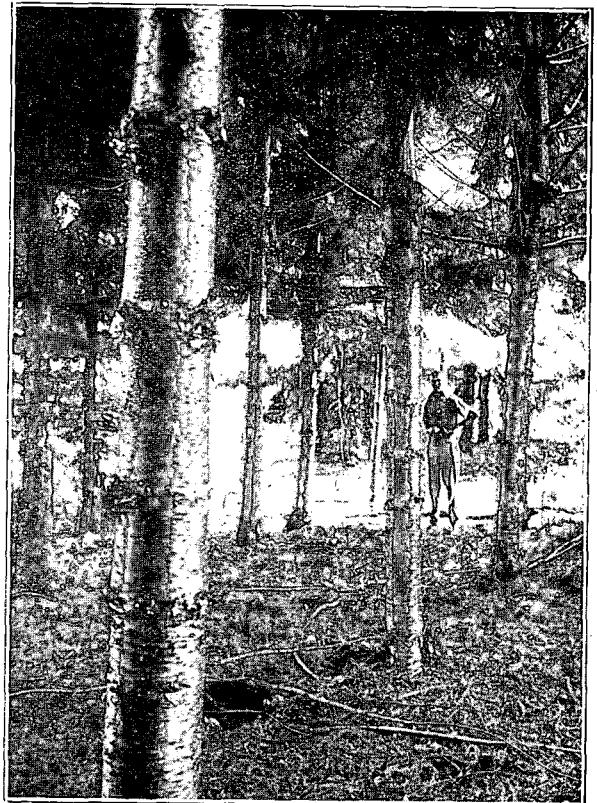
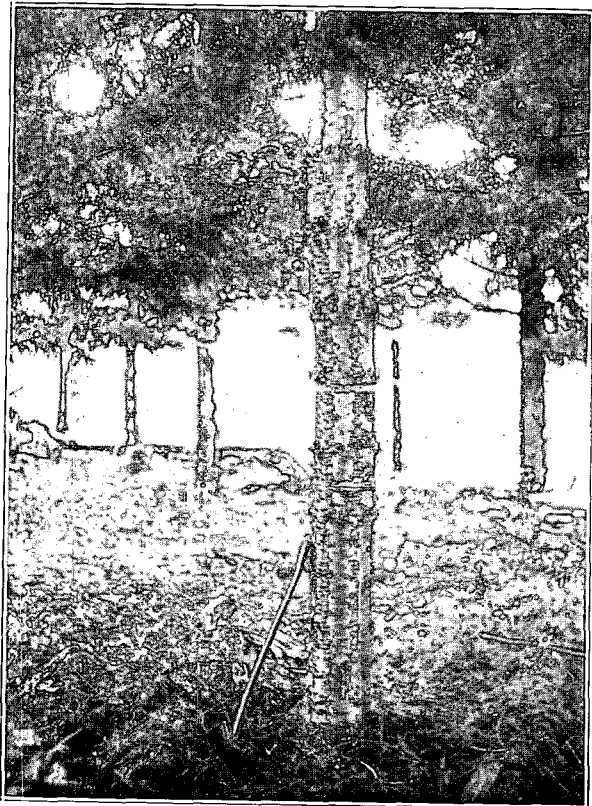
whose afforestation possibilities too little yet is known. Whilst California plants our Eucalypts, and grows to believe that they are true-born Americans, and whilst South Africa adopts our Rose or Flooded Gum and regards it as a lightning softwood-maker, we are inclined to overlook the local obvious. Our southern Silky Oak (*Grevillea robusta*) has a log utility and a rate of growth paralleling those of the *Pinus insignis* of Southern fame, yet it has no history in plantation formation. Consequently it is regarded as an investment risk for mass production, although it grows robustly by the waysides and in the streets and gardens of Brisbane, and displays its disregard of drought as an ornamental tree in our Western towns. Its demand, however, is for a rich and deep soil, and without these it ages prematurely. It is an appropriate constituent for the Benarkin-Yarraman forestation schemes, and considerable work is being undertaken with it. Alone of the plantation units of those areas it defied the drought of the 1926 establishment period by growing strongly without pause through the rainless months immediately after planting.

Red Cedar, although a frequenter of the coastal gullies, is also a remarkable drought-resister, but this valuable native species is ruled out of Forest Service plans at present because of the prevalence of its pest (*Hysiphyla robusta*) the twig borer. Maple Silkwood and Quandong offer possibilities of extension beyond their present natural range, and Grey Teak (Beech) is being availed of increasingly on frost-free sites. Finally the common coastal Cypress Pines (*Callitris arenosa* and *Callitris cupressiformis*) offer a growth response in artificial stands which should enable them to become important contributors to our softwood future.

THE EXPERIMENTAL PLOTS.

All the issues relating to the selection of the ultimate components of the standardised timber crops of to-morrow may be decided, however, only by time and experiment, and realising this, the Board has established small arboreta at focal points of the State, as in the Atherton, Dalby, Imbil, Benarkin, Rockhampton, Mackay, Warwick, and other districts.

At Imbil, acre demonstration plots have been arranged to determine the plantation possibilities of a large range of native and exotic trees, to decide optimum spacings, and to arrive at suitable mixtures of species. Twenty-two such plots were completed during the year, covering Hoop and Bunya Pines at various spacings, and pure plantings of Grey Teak (*Gmelina Leichhardtii*), Japanese Cedar (*Cryptomeria japonica*), Spanish Cedar (*Cedrela odorata*), Silver Quandong (*Elaeocarpus grandis*), Cypress Pine (*Callitris cupressiformis* and *Callitris arenosa*), Monterey Pine (*Pinus insignis*), Chir Pine (*Pinus longifolia*), and Southern Silky Oak (*Grevillea robusta*). *Cryptomeria japonica* and *Pinus longifolia* suffered from the drought, whilst Teak, Quandong, and Hoop were molested by wallabies. *Pinus insignis* and *Callitris* species promised well. At Benarkin *Pinus insignis*, Canary Island Pine, and Southern Silky Oak showed the greatest amenability to artificial handling. At Maryborough a 10-acre arboretum was established on poor wallum waste and twenty different species were set out. It is proposed to add a large range of trees in order to prove by survival which ones may be applied eventually to the reclamation of the large areas of waste wallum along the coast of Queensland. On the



○ Hoop Pine Plantations (Atherton District).

Braemar and Nudley Forests in the Dalby district a number of softwood species were set out, including *Pinus insignis*, *Pinus halepensis*, *Pinus Canariensis*, and Queensland Kauri in order to determine what trees might be introduced into Western Queensland to supplement the failing supplies of the slow-growing indigenous Cypress Pines. At Maryvale, in the Yeppoon district, experimental plantings of Hoop and Kauri Pines, and the imported Loblolly, Mexican, Caribbean, and Philippine Pines, and the Florida Cypress were continued. Hoop, Loblolly, Caribbean, and the native Cypress Pines thus far promise best on these second-class Eucalyptus soils. At Eungella (Mackay district), Hoop and Bunya Pine, Red Cedar, Silver Quandong, and *Pinus insignis* were set out in a 1½-acre demonstration plot. At Atherton similar experiments were carried on.

Mention here must also be given of the Sherwood Forest Park now being transformed by the Greater Brisbane Council into a virtual State Arboretum, wherein all the tree species of Queensland will be gathered together in a forest park of distinctive dignity and scientific worth.

A series of increment plots covering a complete range of girth classes of the principal tree species in use by the Forest Service have been established at Benarkin and elsewhere in order to determine rates of growth.

Whatever the prodigies in wood growth which may be disclosed eventually by these arboreta of the Forest Service there can be little doubt at this stage that the Kauri, Hoop, and Bunya Pines, native to Queensland, will remain the splendid main supports of our silvicultural systems, despite the longer rotations which their development demands.

The earliest Queensland Hoop Pine plantation plots at ten years of age are 40-feet high pictures in forestry, with a perfectly closed canopy overhead and a serried array of gleaming, foot-thick stems in the forest dark beneath, each clearing beautifully, the inches-deep russet carpet of fallen needles and twigs on the forest floor making for increasing growth under perfect plantation conditions. This is the case at the Wongabel Forest (in the Atherton district), and similar results are arising in the younger plots at Imbil.

The Kauri Pine sections, however, show a disposition towards an open stand, and, although the stems are cleaning of their own accord, the species does not create a satisfactory canopy by itself, and a combination with another and soil-preserving tree is clearly indicated. Hoop Pine, on the other hand, has disclosed a real capacity to flourish in pure forest, and the bushman theory that these trees must be planted under scrub and not in the open to produce logs is clearly disturbed. The Wongabel and Imbil plots at this date offer surety for the future indigenous softwood forests of Queensland.

There is this additional value to attach to our present pioneering in local silviculture, and that is that as we sublimate the original wild-wood complex by scrub fellings and plantings, and proceed to integrate the chosen species into ideal 100 per cent. commercial stands, the future reproduction problem becomes simplified and cheapened into one in which complete utilisation takes the place of costly scrub fellings, and a standardised natural regeneration process is substituted for the more expensive system of nursery propagation and plantings.

The succeeding generations of softwood crops in Queensland may well assume their share of the present-day expenditure in forest transformation.

DROUGHT CONSIDERATIONS.

The regular winter and irregular periodic droughts which beset our native vegetation in course of time have eliminated the unfit to endure from the typical forest associations of Queensland, and have forced the least hardy into the jungle lands of the heavy rainfall belts. The permutation and combinations of our silvan types are the results of drought. Drought itself is a normal condition of Queensland silviculture, and upon considerations of drought must be founded our forest technique. The Mary Valley Hoop and Bunya "scrubs" have an average rainfall of 45 inches, but in 1919 there were only 19 inches. The Kilkivan native pineries this year had only 15 inches.

Even the jungles of Atherton have their rainless months, and woe betide the constituents thereof which have not the capacity to carry on the struggle for existence when the soil is dry to the depths.

It is significant, that the tall timbers of Queensland and the foreign trees which have been introduced into our artificial forests from the summer rainfall countries of the globe both belong to the great company of the tap-rooting species whose strong inherited primal instinct is to "dig in" forthwith against the anticipated days of aridity of whose sure recurrence the living trees seem profoundly aware even whilst in the seed.

Their first care is root establishment, and within the year these treelings have grown deeper than they have grown tall. The typical operation of old-world forestry and of forestry in New Zealand and the Southern States of Australia is the open-root planting of the fibrous-rooted treelings which make up the winter rainfall forests. These fibrous roots are the keys to their planting technique. In Queensland the planting technique must perforce conform to the tap-rooting insistency of the species with which the Queensland forester has to deal. In this respect our case does not differ essentially from that of the typical forest operation of the tropics save that for us there is no falling back upon an abundance of cheap tropical labour with which to patch up our difficulties. Employing, as we do, high-grade Anglo-Saxon workmen drawing industrial award wages, mass timber production on an economic scale depends for us upon a working out to the uttermost farthing of the efficiency factor of the technique.

There is no assured planting season in Queensland. In summer, the sun beats down fiercely and insolation is an ever-present risk. The weeds which otherwise would be welcome shelter to the transplant are wont shortly to loom as overshadowing green perils above the treelings.

Underplantings in existing forests are successful, but the standing timber may constitute an eventual barricade against fast and safe development. From January to March pelting showers may be expected ordinarily, but even these fail periodically. In winter the soil is parched and the air is arid.

The first instrument of the Queensland planting method is the Forest Service planting tube, which is composed of a penny's worth of



A Ten Years Old Kauri Pine Plantation, Wongabel Forest (Atherton District).

tin automatically clasping into a cartridge 6 inches long and 2 inches wide. From this planting cartridge after four months' sojourn therein the Queensland treeing is literally "torpedoed" into Mother Earth by the unclasping of the tin. Striking the 6-inch depths forthwith, its tap root still encased in nursery soil, it starts upon its new career without shock or disturbance of its growth such as occurs in open-root planting.

These tubes are turned from square plates of the metal, by rolling machines located at the Forest Stations. The Queensland Forest Service now possesses 500,000 of these planting tubes, which, being made of 30-gauge galvanised iron can be used so many times that the capital cost per acre is reduced to inconsiderable dimensions. Against this capital cost, however, is the increase of safety in planting by unskilled casual planting labour, the lessened dependence upon weather vagaries, the extension of the possible planting season, and finally the assured survival of the great majority, and the consequent obviation of the refilling costs of open-root operations as practised under tropical skies.

Open-root planting is out of the question for Queensland. On the Maryvale forestation project, near Yeppoon, the method secured singular success until the present drought year, when open-root planting failed outright. Even the fibrous rooted *Pinus insignis* planted in the Benarkin district in March, 1925, succumbed during the establishment period. On the other hand, tubed Hoop Pine transplants 1-1 set out in plantation at Imbil in the great heat of January, 1926, met 117 days of drought forthwith, and came through with a survival of 87 per cent., whilst untransplanted tubed seedlings showed the larger mortality of 23 per cent., proving the advantage of transplanting.

THE PLANTING TECHNIQUE.

From a ten-year experience in experiment the Queensland Forest Service has culled invaluable lessons and has built up a planting technique which is special to its species. The planting stocks produced in the forest nurseries must be subjected to at least one transplanting in the nursery beds and must spend a final four months of preparation encased in the planting cartridge, which now constitutes the *toga virilis* of the junior Queensland tree before it is precipitated into the outside plantation world, to earn its own living. At planting time they must be not less than 12 inches tall in order to compete with weeds, whilst the further lesson comes this year from Benarkin that their new abodes must be dug some weeks in advance, and from Fraser Island the finishing touch that adjacent ground slash should be applied as a mulch for the newly installed treeing.

Finally, the planting-tube should be lengthened from 6 inches to 8 inches.

The planting period ordinarily has been staged subsequent to the time of greatest heat and prior to the advent of the usual winter drought. This year the rain fell inconveniently at burning-off time and left the planting ground lumbered with scorched obstacles to planting economy. At the same time it vanished inconsiderately from the plantation, time-table during the ordinary planting season of autumn. At Kilkivan only 15 inches were recorded for the year, and at Benarkin only 26, whilst both at Benarkin and at Imbil no rain fell at all in January, February, and March.

The year's experience in drought put the Forest Service planting methods to the test. Planting was deferred compulsorily and delayed until mid-winter, notwithstanding which satisfactory success was obtained, although the acreage objective for the year could not be reached, and nearly half the plant stocks available for setting out had to be transferred to next year's programme.

From Imbil, as a result of this season's work, develops a further important clause for the planting technique, which is, that using bigger plants, in larger tubes, the torrid heat of midsummer upon the bared plantation sites can be withstood, and operations may be commenced, like those of the farmer in paspalum and Rhodes grass cultivation, immediately after the burn, when the soil is steamed and slightly salted with ash, and is bursting for a new expression in vegetation.

Finally, out in the west of Queensland, on the Braemar State Forest, where coastal species are being invited to contribute their wood production *in situ*, a burning-off and planting up of the soil at a cost of 45s. per acre produced survival of 100 per cent. of plants, as against 66 per cent. for untreated soils. Whence the virtue, also, of soil cultivation for tree-planting.

The distribution of tubed planting stock from the forest nurseries is done by contract motor truck service and averages 5s. to 7s. per acre. But in further reduction of this cost, newer practice prescribes the establishment, upon the planting site itself, of temporary nursery depots, simply constructed of bough sheds and open lean-tos, with iron roof and 1,000-gallon tanks, at a total cost of £15 to £25. To these plantation depots come the untubed transplants from the central nurseries and here they are tubed with a soil mixture compounded upon the spot, which saves the previous cost of useless earth cartage in tubed plants, and makes readily available to the planting staffs the water which otherwise would have to be carted during the operation.

The new arrangements permit of an earlier and more perfect organisation for the annual plantings.

The plantation areas have usually to be wire-netted against the attacks of bush rodents which follow the planting pads, and decapitate the tree-lings. Bunya and Cypress Pines and Grey Teak are particularly susceptible to marsupial depredations, whilst Southern Silky Oak appears to be exempt—and this quality, since it obviates fencing, gives it added importance as a unit of the cheap and quick softwood production plan. An observation plot was established at Yarraman in March, 1920, in which patches of naturally regenerated Hoop Pine were both wire-netted and left unnetted. At 31st December, 1925, 87 per cent. survived in the netted section and 28 per cent. in the unnetted. At 30th June, 1926, the unnetted plants had suffered complete annihilation, but in the netted area 42 plants remained.

At intervals along the plantation fences new type Forest Service race traps are now built and these traps account for a daily haul. The erection of fences has had the additional effect of providing hunting grounds for dingoes which aid the Forest Service and the farmer in wallaby destruction, and that a price should be placed upon the head of the dingo on the coast is a matter of supreme regret to the Forest Service.

Further study is being made of the rodent problem in the hope that means may yet be found for the elimination of the costs of plantation fencing.

During the first year of planting, inkweed crops develop and these are succeeded the following year by peach-leaf poison bush, bell bush, and wattle.

Accepting the aid of winter frosts and droughts which thin out the succulent weed masses, the Forest Service defers its first plantation clearings until twelve months after planting, when any necessary refilling is made at the same time. A second cleaning in the following year usually ends the cleaning costs.

The present planting espacement standard for Australia is 8 feet apart from plant to plant and row to row. An examination of this almost universal standard suggests that the trees might be grown more closely in the lines, but that the lines might be placed further apart, as a measure of economy for the subsequent cleaning, liberation, and thinning operation. In its underplanting and interplanting work, under shelterwood, the Department already adopts a 10 or 12 foot row and an 8-foot espacement in the row, and this method permits of the slash of liberations being dumped in the wider row space without interference with the set-out plants. The same espacement is used when fields of after-burn wattle are met with, and again in the case of the planting of Hoop Pine under shelterwood in the Atherton district. That the 10ft. by 8ft. espacement or even an 11ft. by 7ft. espacement might also be adopted in the case of clear felling and planting is matter for investigations now being carried out.

The idea of planting under shelterwood in Queensland has been stimulated many times by untoward weed occurrences which have constituted themselves unasked-for shelterwoods in the plantations, the chosen constituents of which have had to be liberated through this newly superimposed barrier. If existing scrub has to be felled at a cost of £3 or £4 per acre, only to be replaced automatically by a spontaneous second crop of overhead greenery, the thought arises as to whether existing shelterwoods of logged scrubs should not have been resignedly accepted in the first place, and with them the stored-up fertility of age-old humus saved for the new crop, and the liberation activities directed wholly towards getting the rising generation of planted tree-lings through this inevitable first forest roofing instead of through the second one which the falling and the burning actually materialises. Our logging and utilisation processes, however, are not yet complete enough to sufficiently lighten the tree top lumber in the sky and the slash left upon the ground by the timbergetter. A certain fire-sweetening of the soil also seems to be called for by the succeeding crop of vegetation.

Not all our species can survive the shadows of the passing forests. Kauri Pine plants set out under the scrubs of Fraser Island in a detached reforestation enthusiasm of 1886, reached, in 1926, the dimensions of walking sticks. Kauri Pine and Southern Silky Oak, like our Eucalypts, cry out for a place in the sun, but Hoop Pine is tolerant in degree, and can subsist on a fifth ration of sunlight on scrub edges, although not upon the 1 per cent. diet available to it in the hearts of the coastal jungles.

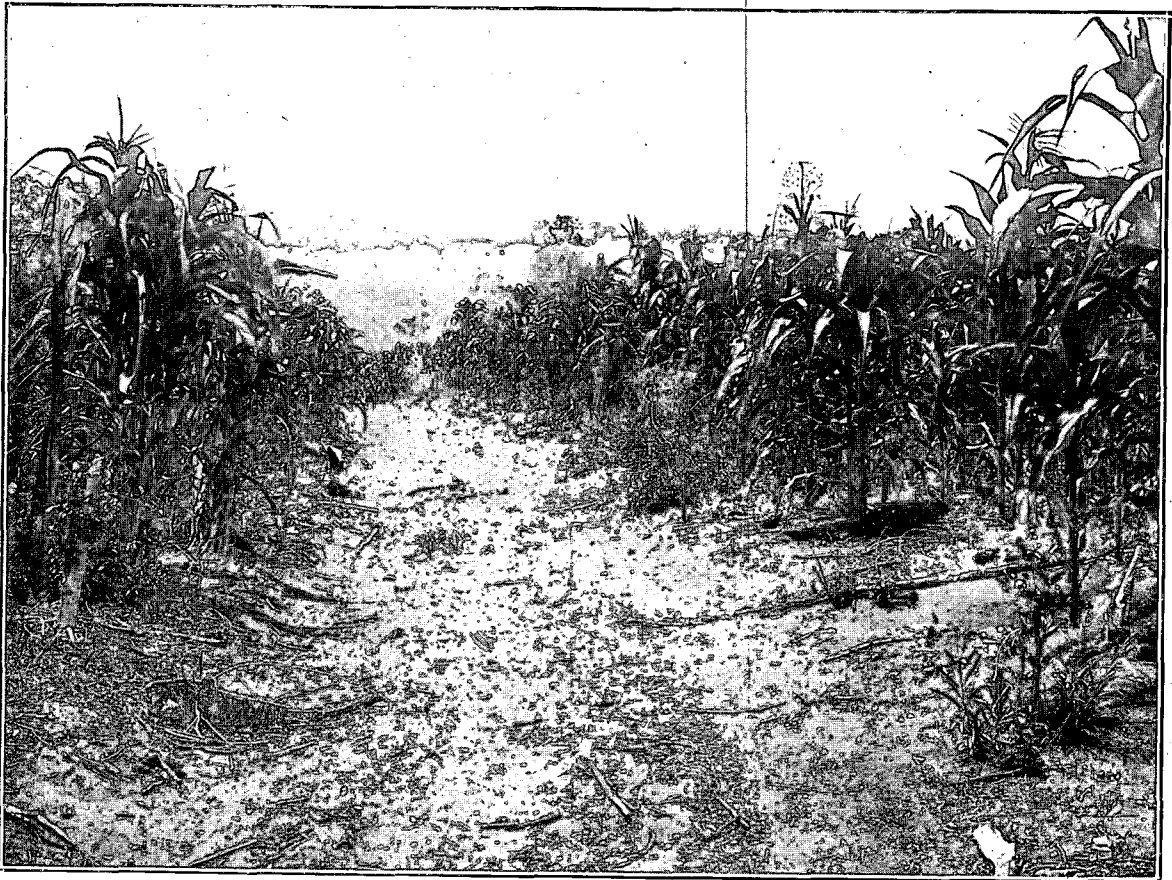
At Atherton, however, the valuable Maple Silkwood solicits the shelter of the mother trees during its babyhood and childhood, when frosts would quickly blight its tenderness. On the Gadgarra State Forest a working plan is in operation under which the top story of over-mature trees of Maple Silkwood, Rose and White Silkwood, Silky Oak, Canary Ash, and Black and Walnut Beans is lightened by logging of the secondary species and by ringbarking-poisoning of the unsaleable varieties, leaving an opened canopy with Maple Silkwood standards as seed trees. Five years is permitted to elapse before the Maple and Silkwood trees are removed, when any natural regeneration that has occurred is linked up into a completed reforestation pattern by the under-plantings of Maple-Silkwood yearlings along brushed lines 12 feet apart and 8 feet from plant to plant in the rows. Under this reduced shelterwood the Maple Silkwood flourishes, and, in some instances, has reproduced as abundantly as a Eucalyptian thicket where previously only widely scattered seedlings could be found. The removal of the shelterwood is carried out gradually after the combined natural reproduction and the artificially planted seedlings have reached sapling size.

During the year 1925 an area of 128 acres of this forest was brushed in readiness for underplanting, 50 acres of advance growth were liberated, and 10 acres were stocked with nursery seedlings.

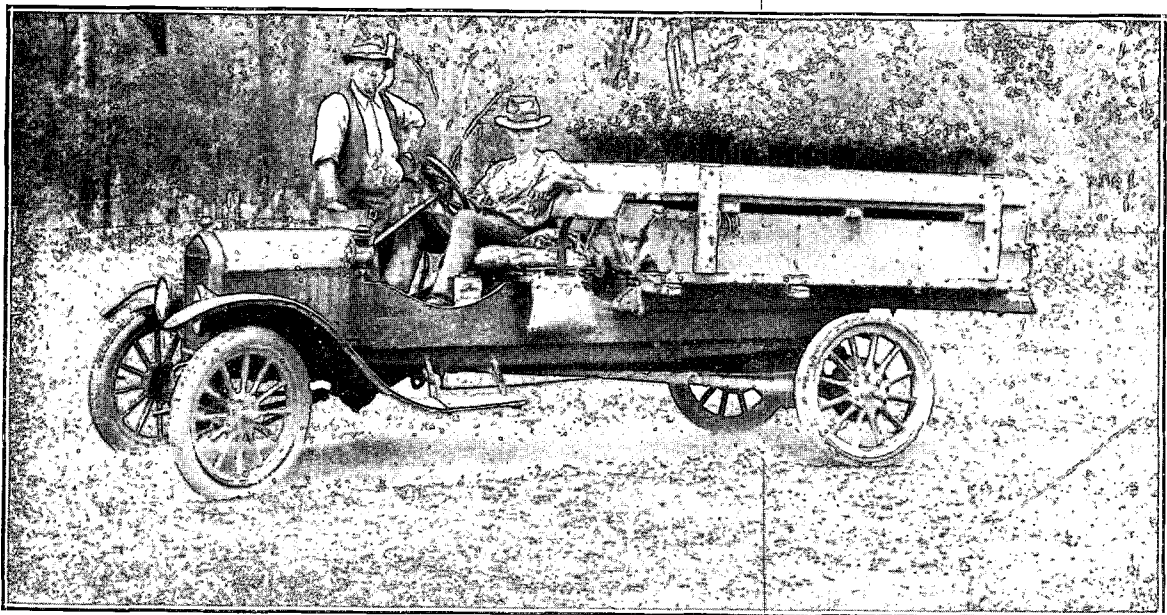
AGRICULTURAL FORESTRY.

A third alternative to weeds and shelterwoods presents itself in the idea of establishing agricultural crops upon the tree plantation sites as a preliminary measure in forestation. The method was initiated some years ago in an Atherton forest, and last year was applied in more extensive fashion in the Benarkin district in the South, where, immediately after the November burn, maize seed was hoed in on the plantation sites in rows, and in the following autumn Hoop Pine trees were planted between the rows. In tending the maize, the usual weed crops were kept down, and the Hoop Pine tubelings during the first few critical months of their establishment were protected from the sun's sweltering rays by the shelter of the corn in full leaf. One hundred acres were so treated, 34 acres on the Benarkin Forest, 46 acres on the Nanango forest, and 20 acres on the Bunya Mountains forest. The Benarkin forest maize crop was almost a failure because the sowing mistimed the rains, but in the other cases the crop expectation is 24 tons of maize, which, at the high prices current this year, will pay the costs of the nursery crop and wipe out a substantial part of the costs of establishing the Hoop Pine plantations. It is proposed to use the sites again for a second maize crop between the rows of tree seedlings, the profits being applied to reducing the costs of plantation tending. The maize will be supplied by the Forest Service to its own stock-feeding purposes to supplement the produce of the present small Departmental maize farm on the State Forest at Imbil, and any surplus will be marketed.

Agricultural forestry of this kind involves the Department in maize shed constructions costing £70, and in shotgun patrols at day-break and day-end in search of crow and cockatoo predators. The association of field and forest farming, however, is perfectly justified by the circumstances and the economies.



Agricultural Forestry.—Growing a Cover Crop of Maize for Hoop Pine Planting (Benarkin District).



From Nursery to Plantation.—Forest Service Motor-truck Distribution.

Throughout its forest areas, the Department has been obliged to establish grass paddocks for the sustenance of logging teams. These paddocks in many cases are of ephemeral character, being required only for the term of the logging operations. The returns in grass rents tend to reduce the initial clearing and grassing expenditure and to present new forestation sites of low capital and maintenance cost. Thus far the Board has not had occasion to use these paddocks for silvicultural purposes, but several of them will shortly be drawn into the planting plan, whilst others, having fulfilled their objects, are being given over to natural regeneration of Eucalypts. One such is the Derrier paddock of the Brooloo State Forest, which is fast passing over into a new stand of future girder trees of Ironbark and Irongum.

In various tropical countries where native tribes practise shifting cultivation, there has grown up a forestation method in which before passing on to fresh fields and pastures new the itinerant native landholders are required to pay rent in kind in the shape of trees planted upon the abandoned cultivated areas. In Burma, the method has become one of widespread application in silviculture, and the native name for the method has become translated to the forestry glossary as the Taungya System of forestation.

In Queensland we have an outstanding example of shifting cultivation in the case of bananas, which demand of the soil a sweet and pristine fertility, and of the site a cosy shelter, free from frost, and the western sun. On such sites bananas may be grown for a profitable period of seven years, after which the productivity falls off, and the plantation is often abandoned to the lantana infestations which follow. On the important State Forests of the Mary Valley, of Glastonbury, and of Goomborian may be found in some of the scrub recesses pocket patches of fertile soil capable of producing satisfactory banana crops. Because of the existence of such areas there has been popular demand for the revocation of the State Forests, and many excisions had been made in consequence. In 1923 the idea developed of applying the Burmese Taungya method to the growing of bananas and trees together upon the State Forest at Imbil. Among the most persistent advocates of the scheme was Mr. E. Nicholls, of Brooloo, and acknowledgment is here made of his interest in the matter. The first result was the experimental plot at Imbil, in which the trees so liked the cultivation given to the banana crop that they speedily took possession of the whole farm, and the bananas had to be abandoned. From this lesson developed the idea of giving the bananas a four or five year start, leaving the planting of the trees until towards the end of the banana rotation. During 1924 two areas averaging $8\frac{1}{2}$ acres each were demarcated on the Amamoor State Forest for Taungya operation, and made available as Special Leases having a duration of seven years. During 1925-26 seven blocks averaging 11 acres each were offered under the same conditions. They were all taken up and promise to be perfectly successful. For the ensuing 12 months the Board proposes to let Taungya leases to an aggregate extent of 200 acres. A survey of the Taungya possibilities of the Mary Valley forests has been commenced, and it is expected that a continual rotation of banana-cum-tree growing will be maintained, with some form of option renewal for satisfactory tenants to enable them to continue in land occupation for a considerable number of years on the same forest although on different

patches. Opportunity is also offered such tenants to make homes for themselves in small community settlements adjacent to their work upon the State Forests.

The average rental bid for banana leases was £2 per acre per annum with the first year rent free, so that over the lease period of seven years the lessee will have paid £12 per acre in rent. The rental so derived will be re-invested by the Forest Service in establishing upon the worked-out banana lands plantations of fast-growing softwoods which, like Grey Teak (Beech), demand frost-free sites and good soil, and are calculated to produce a wood crop in a short rotation whilst restoring to the soil its primæval fertility. In such manner a never-ending succession of alternating softwood and banana crops may be arranged, and a small rural population maintained in comfortable existence as residents upon the important State Forest areas of the Mary Valley.

Thus, in tree crop combinations with maize, with grass, and with bananas, silviculture in Queensland takes the complexion of its twin sister agriculture, and makes clear the true status of the forester as in particular a farmer of trees, but in general a manager of landed estates whose first concern is certainly wood crop production but whose second is to utilise to the uttermost advantage the spare acres of the forest domain.

ECOLOGICAL SPECULATIONS.

Appreciating the significant fact that our principal wood-producing native trees have inherent capacities for enduring drought which vary only in degree, and that the company of exotic trees which we are introducing to forestation circles in Queensland possess the same characteristic tap-roots which distinguish the total drought resisters, possibilities present themselves to the forester of altering the face of nature to economic expression by extending in all directions the natural range of these species. The Carbeen of the dead heart of the Australian continent marches to the sea edge in Queensland as Moreton Bay Ash and the Silver Leaved Ironbark of the western deserts comes visiting the scrub edges of the Hoop Pine forests of the coastal belts. The *Flindersias* appear in the Northern jungles as Maple and Silkwood, in the South as Crow's Ash, and in the heated interior as Leopard Ash. The Southern Silky Oak and White Cedar are forcibly removed by man from the 50-inch rainfall belts to adorn the streets of inland towns where once in a while the rain forgets to fall for many months. At Anakie and again at Chinchilla may be seen thriving specimens of the Hoop Pine, which flourishes also on the frost-bitten heights of the Dorrigo Plateau in New South Wales, in the drought-afflicted forests of Kilkivan and the Goodnight Scrub, and at the 7,000-foot elevation of the Mount Stanley Range in New Guinea. The Spotted Gum, which thrives on the Southern coast of New South Wales, grows wild in the south-west of Queensland, so robustly indeed that it is overwhelming and ousting in wholesale fashion the Narrow-leaved Ironbark which ordinarily is accredited to the sovereignty of the baked soils of the west.

We do not yet realise the full possibilities of our silvan ingredients. Our reputedly worst Ironbark (*Eucalyptus melanophloia*), the silver-leaved species—a gnarled, stunted and ungainly tree in its natural habitat—in India is accounted the best, reaching under irrigation a girth of 6 feet in 18 years.



The New Maple Silkwood Forests Produced by Silvicultural Treatment, Gadgarra Forest (Atherton District).

Where, then, are the limits to the extension of timber vegetation towards the centres of future consumption—east, west, north, and south? If Hoop Pine grows satisfactorily in the Kilkivan and Goodnight scrubs, it may be expected to form satisfactory forests towards the future wheat belts of the Dalby-Roma districts, which at present import by train their products from along the sea-line.

If the western Cypress Pine grows too slowly in the hot inland sands, will it yield adequate growth response if utilised in the new forest formation to be constituted on the wallum lands around Brisbane?

If Maple Silkwood is so valuable a cabinetwood asset to Queensland, is not its commercial planting justified on both economic and ecological grounds in the south as well as in the north, where nature thus far has confined it?

With the development of a planting technique which overcomes for the species the terrors of establishment, and with the advent of the forester to keep watch and ward against the bush fires which have helped to drive our most delicate trees towards the moisture basins along the coast, the possibilities of stationing unexpected silvical combinations near markets presently timberless and timber-hungry, to supply in the future wood needs hitherto furnished from elsewhere over many miles of railway lines, come now within the bounds of silvicultural anticipation.

If, for instance, large areas of suitable planting land could be obtained near western consuming centres having a rainfall approximating to that of Kilkivan or of the Goodnight Scrub, and at 45s. per acre cost of cleaning and burning, could be made to produce useful crops of wood, then forest extension westward may justify itself against the higher cleaning and establishment costs on more valuable lands coastwards, even though the rotation in the west be much longer.

Whilst these matters are yet merely at best ecological speculations, they provide food for thought, and suggest possible lines of evolution outwards from Nature's present location of our timber stands towards the satisfaction of future local needs.

THE 1925-26 PLANTING.

It had been planned to establish during 1925-26 new softwood plantations to the extent of 1,000 acres, and for the programme planting stocks had been accumulated. Owing, however, to the development of drought conditions during the usual autumn planting season the operation had perforce to be delayed and ultimately to conclude in mid-winter with only half the objective accomplished. Plant stocks available have now been transferred to next year's programme.

The 1925-1926 planting, amounting to 530 acres, however, was the largest yet carried through, and almost equals the effective area already established. The species used were Hoop Pine, Southern Silky Oak, and Grey Teak (Beech), Coastal Cypress, principally the first. Of the plantings, 191 acres were located in forests of the Brisbane Valley and Nanango Working Plan Areas, 180 acres on forests of the Mary Valley Working Plan Area, 92 acres on Fraser Island, and smaller areas at other forest stations throughout the State, *vide* the Plantation Schedule in the Appendix hereto.

Refilling of blanks was also completed, whilst considerable site cleaning was effected for the succeeding planting operations of 1926 and 1927.

Despite the drought, the planting mortality was very low. The Kauri plantation of 1924-25 on Fraser Island showed excellent growth and no refilling was necessary. The exceptions to the general success were the low survival on the small experimental open-root plantings at Maryvale, and on Fraser Island the 90 per cent. failure of small plots of *Callitris Macleayana* and *Eucalyptus microcorys*, whose craving for early shelter could not withstand the burning sands of the planting site, notwithstanding the use of the tube. Similarly, at Kilkivan the delicate fibrous-rooted Japanese *Cryptomerias* succumbed two years after establishment. On the other hand, in the Dalby District, the introduced coastal Kauri Pine grew from 12 in. to 24 in. in the year. The hardiest transplants in the Benarkin District were *Pinus insignis*, *Pinus canariensis*, and *Grevillea robusta*, *Callitris glauca* and *Callitris arenosa*.

The plantings absorbed 380,000 seedlings, but at the end of the Report period the forest nurseries still held stocks amounting to over 1,000,000 plants (see Schedule of Nursery Stocks in the Appendix), of which 80 per cent. were Hoop Pine. These figures include 13,500 natural Hoop Pine seedlings obtained from the Bowarrady Scrubs for Fraser Island nursery use, and 12,300 from Tewantin for Kilkivan nursery requirements.

There was, unfortunately, little seed fall of Hoop Pine in 1924-1925 and no fall in 1925 and 1926, and reliance had to be placed upon the seed of the 1923-24 crop, of which 3 tons had been collected and stored in charcoal-lined bins. Hoop Pine seed has only a short term viability, and it is probable that high germinative capacity cannot be retained for longer than from 18 to 21 months. The first seed storages at Imbil were made in dry scrub mould, and splendid results were secured after 22 months. The substitution of charcoal has not been a success; the 1924 December fall gave, at Benarkin, in October, 1925, only 5 per cent. germination, and at Imbil twelve months stored seed, in charcoal, only 4½ per cent. The results from the use of hermetically sealed tanks were better than those from charcoal, but the forest mould would appear yet to have the advantage.

No fall of Hoop Pine seed is forecasted for the coming year, but it is anticipated that there will be a bumper crop at the end of 1927.

In the meantime, 450 lb. of seed of Grey Teak (Beech) were collected in the Mary Valley at a cost of 6d. per lb., and sown in April; this will be available for the 1927 autumn planting.

Southern Silky Oak seed is also being resorted to more largely than previously, but the seed is a New Year's gift, opening only for a day or two around the holiday season, and spilling its contents on the wind. It is, however, a fairly reliable annual crop, and will be made use of to overcome the Hoop Pine seed deficiency of 1929.

Kauri Pine seed is even more welcome than that of Hoop Pine because the species is fast-growing, cleans itself, and produces wood with few knots, so that it can be used in the smallest log sizes. The original southern resource of Kauri has been decimated years ago and seed is

difficult to get. Only sufficient was obtained on Fraser Island last year for the propagation of 40,000 seedlings. With the opening up of the Molloy Kauri forests next year, however, abundant stores of seed of the northern species are looked for. Similarly, with Maple Silkwood, which has been a hard seed to collect, the improvement fellings now being made on the State Forests should enable better collection to be made in the future. Its congener White Ash (*Flindersia Schottiana*) is also a species to which seed collection attention is to be given.

Bunya Pine appears to seed more frequently than Hoop Pine and, failing supplies of the latter, large numbers of Bunya seedlings will be propagated. The storage of the Bunya seed, which maintains its viability for only a few months, is overcome by transformation of the seed into tubers in the nursery beds, and these may be held as such, buried in the beds until needed.

Finally, the present Hoop Pine seed shortage will be supplemented by purchases of stocks of seed of *Pinus canariensis*, *Pinus taeda*, *Pinus caribbaea*, *Pinus longifolia*, *Pinus insignis*, and other promising exotic species.

Of Eucalyptus seed and seed of the local Cypress Pines there is usually an abundance.

REFORESTING THE HARDWOODS.

Whilst interest at present is focussed sharply upon the softwood supply problems in Queensland, the Eucalyptian field of reforestation is being explored quietly and its difficulties overcome. The issue resolves itself finally into a fostering of the free exercise of the native robustness, which has enabled this distinctively Australian genus to hold the continent against all comers in face of all the onsets of time and climate.

Of the 350 species of Eucalypt extant, Queensland has 95, and these range from the softest Rose Gum to the hardest Ironbox. But save, perhaps, for that extraordinary shade-bearing exception from Cairns, Cadaghi (*E. Torelliana*), all are fit to face the sun of the open spaces from their babyhood. There are also several sheltered species such as Tallowwood, which seek the cosiness of the side protection of their tougher congeners; but the genus as a whole is distinguished by its hardihood, endurance, and persistence, in face of bush odds of drought, fire, wind, and white ants, and by a high capacity for reproducing itself.

Having these supreme tree virtues to support his efforts, the forester has little wet-nursing to provide during the establishment of a crop of Eucalypts.

Queensland needs that there should be regenerated some fifteen or twenty thousand acres of Eucalyptus forest annually. Thus far, in the history of a few years of silvical effort, we have treated 15,419 acres, of which 4,653 were dealt with during the past financial year (see Natural Regeneration Schedule in the Appendix).

The operation has been standardised to the extent of the following general specification, which has developed from Fraser Island practice, and has been extended thence to mainland propositions.

The operation is divided into—

- (a) The initial improvement ringbarking ;
- (b) Utilisation ;
- (c) The regeneration burn ;
- (d) The seeding ringbarking ;
- (e) The cleaning of reproduction and the planting of blanks.

(a) THE INITIAL IMPROVEMENT RINGBARKING—

Some years previous to the logging of the stand all undesired species of the Eucalyptian mixture are eliminated by an autumn ringbarking.

(b) UTILISATION—

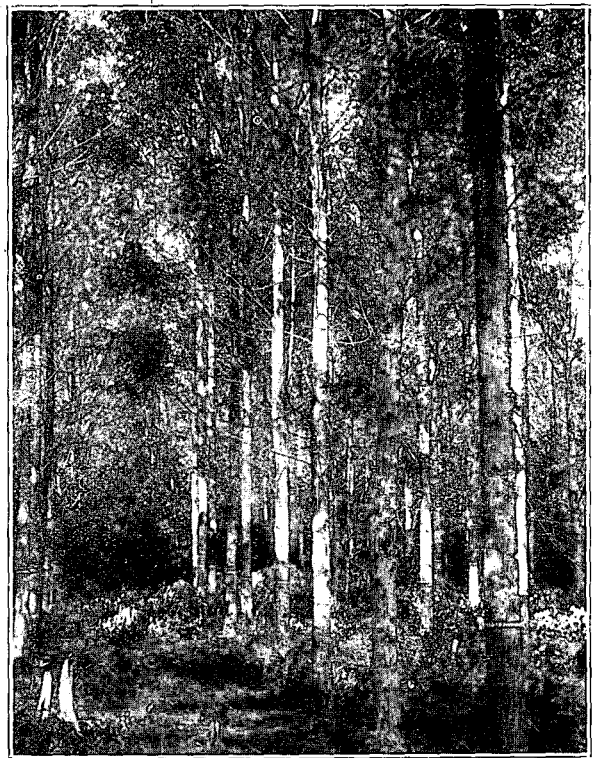
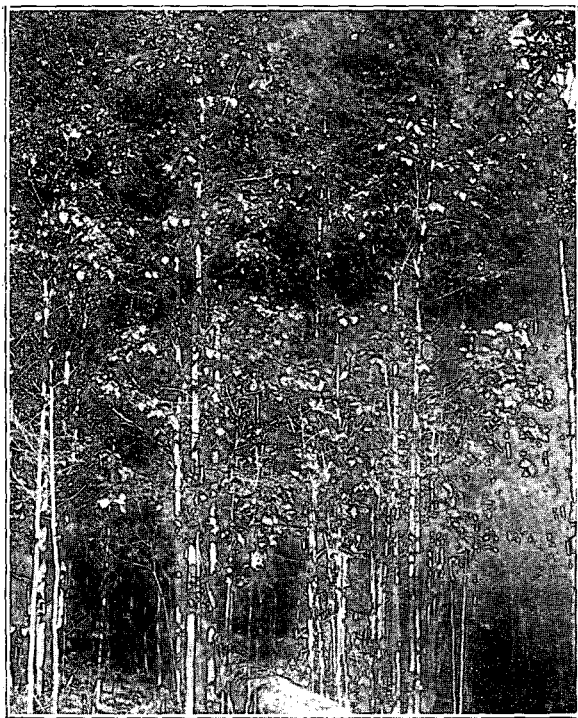
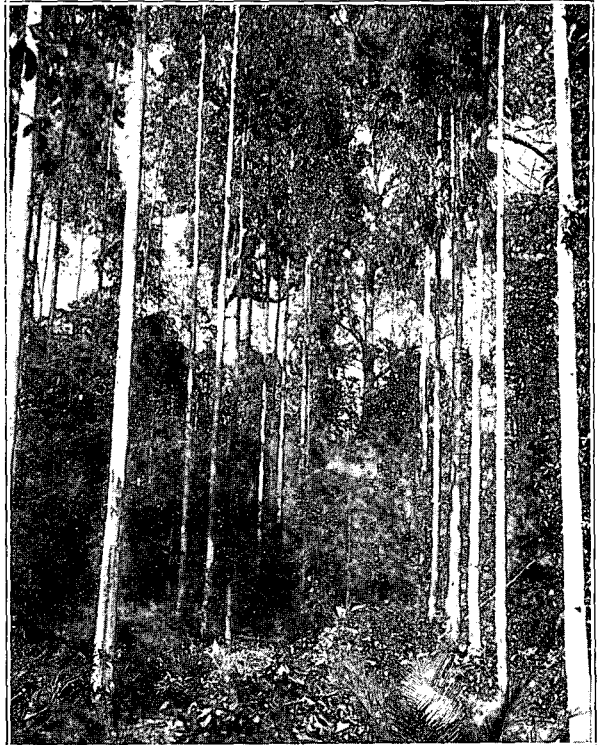
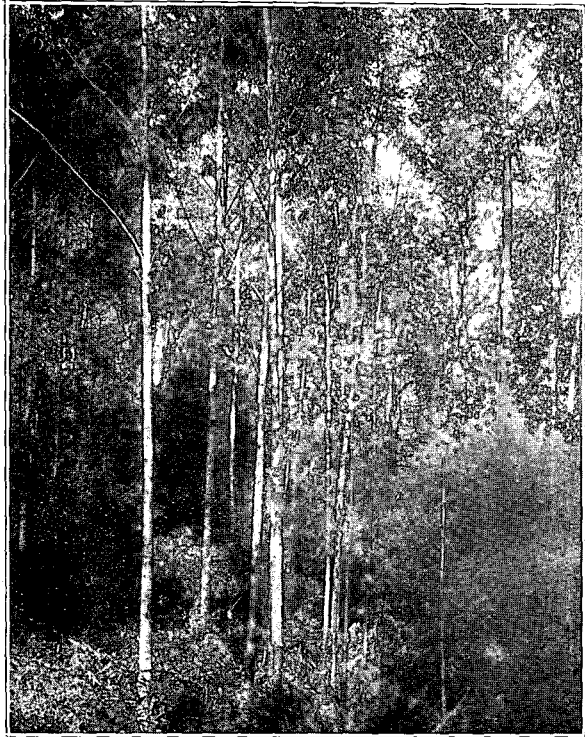
During a logging period extending up to six years from the initial improvement ringbarking, all timber which can be worked profitably is removed without restriction of girth. To enable the commercial utilisation of faulty trees, a rebate of 15s. per 100 super. feet, representing extraction and conversion costs, is allowed in respect of pipes and defects in the log up to the full stumpage value of the log. Thus hardwood, situated close to market, with a standing value of 7s. per 100 super. feet, may be converted if the pipe does not exceed 17 in. diameter in a log of 100 in. girth. In long haulage cases where the stumpage rate is only 1s. the utilisation is reduced to logs with a less pipe than 6-in. Contract haulers employed by the Forest Service are at the same time paid on the gross measurement, so that they receive remuneration for their hire in hauling the waste. The general effect is to induce a complete extraction of all timber other than that which, by reason of excess defect, costs more than it is worth to handle. By this means the objective utilisation of the Department is reached.

(c) THE REGENERATION BURN.

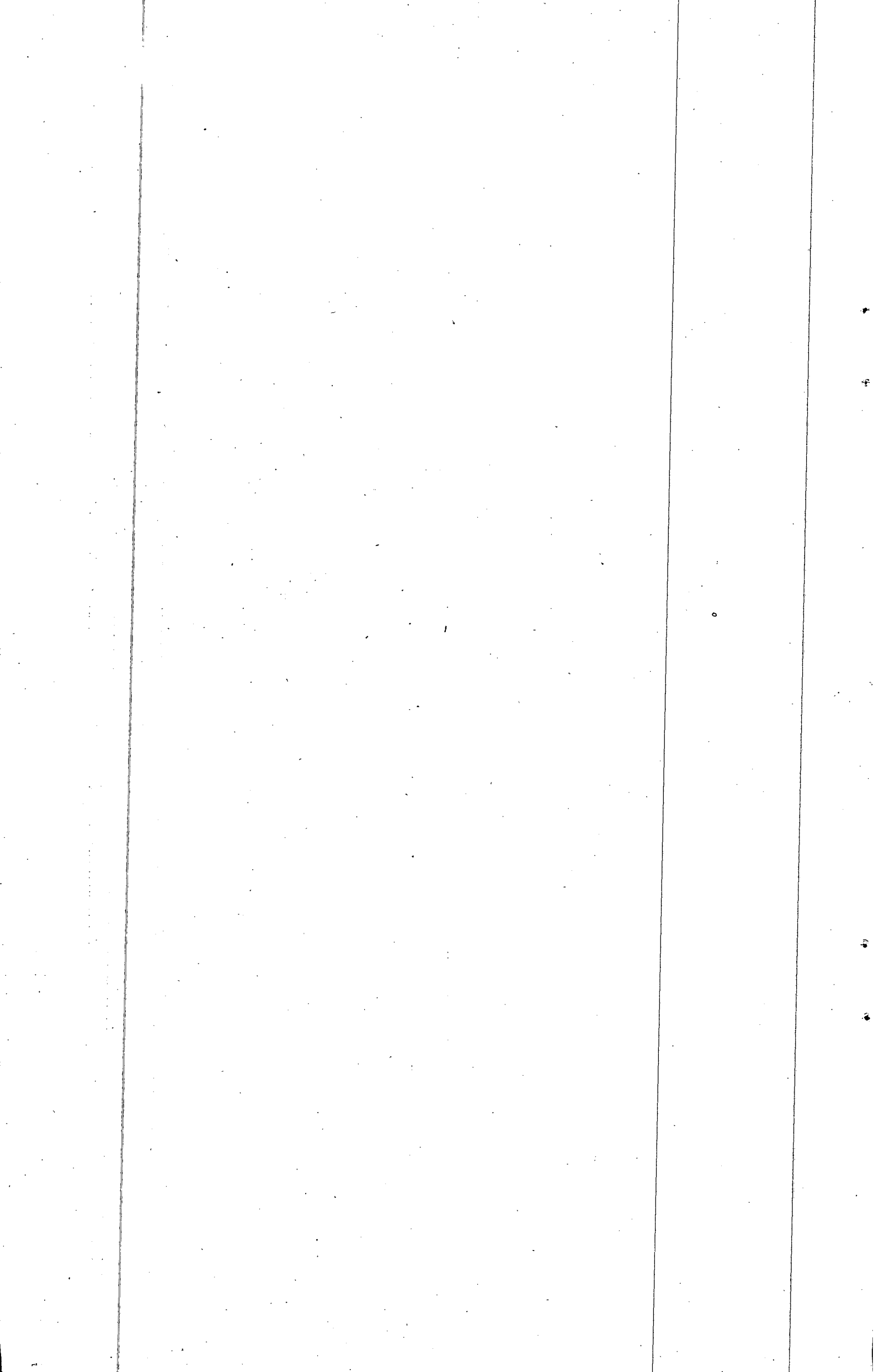
When the area to be regenerated is logged as completely as may be, leaving standing only unmarketable immature poles and commercially useless trees of the desired species plus incidental plots of advance growth, the latter, where necessary, are coppiced to ground level in order that they may escape the regeneration burn, or if of sufficient extent to justify this assistance are accorded a measure of fire protection. The undergrowth in early summer or spring is then brushed in order to afford kindling for the proper ignition of the ground slash resulting from the initial improvement ringbarking and the subsequent logging activities of the previous three, five, or six years.

(d) THE SEEDING RINGBARKING—

Eucalypt seed retains its vitality for many years, and what escapes the ants may remain stored in the soil. The trees fruit annually and, at seeding time, the Blackbutt seed falls like sand along the sea shore. The fall is expedited by the regeneration fire, the heat of which tends to open the capsules on the trees, so that fresh supplies are spilled upon the newly burned seed bed. As a further insurance a limited number of mother trees are temporarily retained in the shape of the commercially useless trees of desirable species left over from logging. If the regeneration fire of spring has been successful these seed trees are ringbarked in the following autumn, so that, dying slowly, they respond to the stimulus of death by a final fructification in order to beget their kind.



The New Hardwood Forests.—Silvicultural Results on Fraser Island.



If the regeneration fire is not successful the seeding ringbarking is put off a year.

As a final resort, the scattered immature poles left through the regeneration areas may be expected to contribute their share towards the general reproduction of the forest.

(e) THE CLEANING OF REPRODUCTION AND THE PLANTING OF BLANKS—

Three years subsequent to the successfully completed regeneration burn, the new Eucalyptian coppice, seedling, and other growth may be expected to have fully stocked the site, except for occasional unregenerated blanks. To balance off the reforestation operation, all undesired growth which dominates, suppresses, and interferes in any way with the development of the desirable reproduction must be brushed, and any stands over 20 feet in height which are too dense for satisfactory growth must be thinned out to a spacing of 15 feet apart, leaving as permanent constituents of the crop the robust dominant saplings.

At the same time all unregenerated blanks have to be located and, if large enough, planted up at an espacement of 18 ft. by 18 ft. with tubed nursery plants of Tallowwood, Red Messmate, or other choice Eucalyptian species, so that the economic composition of the hardwood forest may be bettered in the new crop.

This combined tending process is undertaken three years after the regeneration burn, and the eight or ten years' long reforestation process is then complete.

The work is cheap. On Fraser Island the costs are:—

Initial improvement ringbarking—8s. per acre;

Regeneration brushing and burning—8s. per acre;

Seeding ringbarking—4s. per acre.

On the 4,653 acres treated under this prescription during 1925-1926, 2,212 acres were contributed by the Fraser Island organisation and 1,096 acres by the Dalby Working Plan Area Forest Stations. The work involved 28 acres planting up of unregenerated blanks at Fraser Island.

On the Woongoolba and McKenzie Logging Areas, which had been treated in previous years, an abundant crop of seedling Blackbutt has established itself. On the newer areas logging is not yet complete, so that the regeneration fire is deferred for the present. The purchase by the Forest Service, during the year, of the McKenzie, Ltd., Logging Tramway will permit the finishing of the utilisation work over the next two years, when regeneration will proceed in terms of the prescription.

In the Dalby Working Plan Area, as on Fraser Island, the forest areas were not affected unduly by the otherwise State-wide drought of 1925-1926, and, following upon an excellent seed-fall, an effective germination of Spotted Gum and Narrow Leaved Ironbark took place over the areas under regenerative treatment, the first such germination indeed for several years. Improvement ringbarkings extended over 996 acres, bringing the total for the Working Plan Area to approximately 3,800 acres. Included in the product of the Nudley Forest operation among the Spotted Gum and Ironbark is an excellent showing of seedlings of Cypress Pine (*Callitris glauca*) which make an under-story to the Eucalyptian

canopy. On the Braemar Forest, the sapling Spotted Gum reproduction from the 1920 programme is now up to 30 feet in height and fully stocked. Narrow Leaved Ironbark appears as a mixture, but it is only 5 feet in height and suffering from the suppression of the more robust Spotted Gum. Spotted Gum, indeed, is ousting Narrow Leaved Ironbark from the hardwood forests of South-Western Queensland.

In the Brisbane and Gympie Districts, ^{Ju.} Eucalyptus reproduction work proceeded on the Enoggera, Yandina, and Corella forests. The former is being handled under a working plan for the production of poles, miscellaneous hardwood, and firewood for city supply, and over 300 acres were dealt with, with satisfying consequences, at a cost of less than 8s. per acre. The coppice shoots resulting from the improvement operation plus the seedlings arising therefrom will almost completely re-stock the treated area. On the Yandina forest, a mill log production proposition, the year's effort extended over 150 acres. The burning of heads of trees gave good results; a satisfactory seedling crop of Blackbutt and Red Messmate is appearing all over the area handled. On the Corella Reserve, 800 acres were disposed of, intensive work being done over half of this. Following the regeneration burn, good reproduction of Spotted Gum and Yellow Stringybark has ensued.

In the Benarkin Working Plan Area, 97 acres of Eucalyptian forest on R. 283 were completed, whilst blanks over 42 acres adjoining the Forest Station were re-stocked with nursery seedlings of Ironbark.

In North Queensland the local hardwood shortage has caused the Board to make a survey of the existing nuclear resources with the object of planning their extension to meet future Northern needs for railway, public works, and general building construction. The major hardwood assets of the North are at Cardwell and at Ravenshoe, and, of the two, that of the Ravenshoe district is the greater. But the Ravenshoe resource has for the most part been alienated, and is now held in selections by dealers in timber. Of the Crown holdings, R. 245, a small area adjacent to Ravenshoe township, and the Mount Renold Grazing Farm, adjoining the Tully State Forest, are the only two considerable sources of supply. In addition, the Danbulla reserve (R. 185) carries stocks of tall Bloodwood which, however, it is proposed to reserve for pole and girder purposes rather than to sacrifice them for sleeper blocks.

The present utilisation operations on the Ravenshoe areas are loose and wasteful. Tall young trees, potential poles and girders, are being cut into sleeper blocks, whilst second-class trees which would make sleeper blocks and overmature trees suitable for hewn sleeper production, which, on silvicultural grounds, should be removed, are being left. The Board proposes to arrange for proper silvical control of cutting and to initiate an improvement operation to encourage reproduction of the stand, supplemented by interplantings of Ironbark, Tallowwood, and Spotted Gum, and to arrange for adequate protection against the bush fires which periodically have ravaged these Northern hardwood forests and ruined the original stands. The North is capable of producing cheaply the hardwood supplies which it must have for the future and which it is importing as girders, piles, and sawn hardwood for harbour and bridge purposes at the present time at high cost from the south.

As a first measure a tentative Working Plan has been drawn up for the silvical treatment of the Ravenshoe forest as a small one-man proposition under the Ravenshoe Forest Officer.

The Sylvia Creek Forest consists of the slopes of a mountain range overlooking Atherton, the foothills of which are covered with poor Eucalypts much damaged by recurrent bush fires. Here it is proposed to improve the natural stands of hardwood by natural regeneration and fire protection methods at small cost, supplemented by interplantings with the best Eucalypts of the south, viz., Grey Ironbark on the bottoms, Tallowwood on the foothills, and Spotted Gum on the slopes, in order to produce girders, poles, and sleepers against the time of depletion of original local assets. The fact that the area stands at the boundaries of a township with a considerable market for firewood for domestic and baking purposes, during the cold winters which are met with in the Atherton Tableland has induced the Board to add to the Forest Station a small firewood milling plant, which will be run in the wet season when field work is subject to costly rainfall interruptions.

OTHER NATURAL REGENERATION ACTIVITIES.

The indigenous Cypress Pines, both those of the coastal edges (*Callitris arenosa*, &c.) and those of the inland sands (*Callitris glauca*), lend themselves as readily to natural regeneration processes as do the Eucalypts.

On Fraser Island, during 1925-1926, 174 acres of Cypress Pine forest were treated under a prescription not dissimilar from that applied to Eucalyptian stands.

Following the logging of the merchantable trees, without girth restrictions, all contending species over 6 in. in diameter are ringbarked and lesser growths are brushed and burned, existing thickets of Cypress Pine being thinned out to a spacing of 5 ft.

Three years later the reproduction which results from the operation is cleaned of unshapely, immature, useless large trees, unnecessary seed trees, and competing growths, and thinned where necessary also to a spacing of 5 ft.

Excellent regeneration of Cypress Pine has been secured by this method on Bennett's Creek Logging Area, Fraser Island, and the results in the Dalby Working Plan Area in association with Eucalyptus works are also good.

The fact that to obtain the 1,386,468 super. feet of the Dalby-Roma Cypress Pine yield of 1925-1926 we had to extend cutting over 69,000 acres of forest, or one-tenth of the existing stands, points to the urgency of enlarged operations of this kind in the west.

A natural regeneration system has been used with equal success in the case of Yellowwood (*Flindersia Oxleyana*) in the Benarkin and Mary Valley Working Plan Areas.

OILS AND TANBARKS.

There are other possibilities than those of timber production in the forestry programme of Queensland. Among the four hundred ingredients

of our silvical compositions are some species which yield commercial products in the shape of essential oils and tanbarks. The present difficulty in the way of putting them on the world's market is that scattered as they are through the natural wildwoods of the State, the costs of collection often exceed their sale price. The remedy lies in their economic congregation into readily harvested fields close by selling centres.

There is little or no lemon in lemon essence, and the culinary flavouring of our civilisation is usually a druggist's compound, manufactured largely from the oil of the Lemongrass of the Seychelles and of Southern India.

Queensland has among its forest flora three species which produce an essential oil chemically correct for the manufacture of the contents of the household lemon essence bottle. They are the Lemon-scented Ti-tree (*Leptospermum citratum*), the Lemon-scented Ironbark (*Eucalyptus Staigeriana*), and the Verbena-scented Carrol (*Backhousia citriodora*). The first is a very rare Ti-tree which is to be found occasionally in the Springbrook and Palmwoods districts of Southern Queensland. It contains, according to the research work of the Technological Museum of Sydney upon specimens provided by the Queensland Forest Service, 90 per cent. of aldehyde content, consisting of more or less equal parts of citral and citronellal. A small pinch of seed of this species was obtained by the Department five years ago, and distributed among the forest nurseries for experimental propagation. Only at Fraser Island Forest Station was success achieved, and here a dozen plants were secured which, planted as a hedge, have since produced seed with which small plots are now being established at various Forest Stations. The bush coppices well, and the indications are that, given sufficient moisture, it favours waste lands whose timber increment potentialities are insufficient to induce their use in forest plantation work. The oil is worth "3s. 6d. per lb. net c.i.f. London, packed in drums, drums free." Ultimately, and depending upon commercial confirmation of the economic capacities of the crop, the planting of Lemon-scented Ti-tree may be extended in the direction of producing annual harvests of foliage for local distillation. To cheapen costs of production, the first plantation would be established in such a place as Fraser Island, where waste lands, good rainfall, and water supplies for distillation are all to hand. The plots already established are growing well and regenerating freely.

The Lemon-scented Ironbark grows in the Palmer River district of North Queensland, and is almost as rare as the Lemon-scented Ti-tree. Seed of this species, however, has also been secured, and its economic possibilities similarly are being worked out in plantation plots at various forestry centres. The oil yields 28 per cent. to 38 per cent. of citral, and the plant, like that of the Lemon-scented Ti-tree, frequents poor soils of little value for anything else.

The Verbena-scented Carrol (*Backhousia citriodora*) occurs rarely in the scrubs of the Blackall Range and the Gympie district, as an unobtrusive tree. Its essential oil is 90 per cent. to 95 per cent. citral, again according to Technological Museum, Sydney, research. The oil is worth about 4s. 6d. per lb. c.i.f. London, in competition with Seychelles Lemongrass Oil. It requires sweeter soils than the two species previously referred to.

The tree is a shy seeder, and the seed, like that of the Christmas Bush, is contained in the ripened flowers. Small quantities of it have been collected, and plants have been propagated successfully at the Imbil Forest Nursery during the year and distributed to various planting plots. Propagation from cuttings was also found to be practicable.

The Lemon-scented Gum (*Eucalyptus citriodora*) which grows not uncommonly in North-Eastern Queensland on poor hard soils is not a lemon-essence maker. It carries an essential oil containing a 95 per cent. to 98 per cent. citronellal content, worth 5s. 6d. per lb. c.i.f. London, which, however, is only about the present cost of collection of the leaves from the natural stands of the Mount Morgan and Gladstone districts. According to the Sydney Technological Museum the oil of Lemon-scented Gum is probably the best source of citronellal extant, surpassing the present commercial oil from Java. It will grow in poor dry soils and may be coppiced at three feet from the ground in two or three years from germination of the seed. The only commercial hope for the species, however, is a plantation one. In order to use to the best advantage some of the poorer lands of its State Forests, which may be economically located for oil production, the Board is carrying out experimental planting at several centres towards a later commercial operation.

The Lemon-scented May (*Leptospermum Liversidgei*) from Stradbroke Island is distinct from *Leptospermum citratum* previously dealt with, and yields 64 per cent. of oil from dry leaves, and this oil also contains an aldehyde content, 80 per cent. citronellal.

The useless White or Scribbly Gum of the Beerburrum wallums (*Eucalyptus hæmastoma* var. *micrantha*) was found by the same investigating authority during the year to possess 2 per cent. of Eucalyptus oil, comparable with the commercial Eucalyptus oil derived from leaves of the southern *Eucalyptus dives*, which, however, provides from 3 per cent. to 4 per cent., or twice as much as the Queensland tree. If the oil can be produced economically it would form a useful commercial supplementary source of piperitone, of which it contained 41 per cent.

During 1925-1926 the Sandalwood of Northern Queensland (*Santalum lanceolatum*) was subjected to analysis by Messrs. T. G. H. Jones and F. B. Smith, of the Queensland University Department of Chemistry, from wood samples provided by the Forest Service. The content of santal oil was found to be 5 per cent. by weight. This figure is much below the oil content required by steam distillation of best East Indian Sandalwood, but equal to the yield of much of it. The oil is distinctly not that of East Indian Sandalwood, differing from it in constants, particularly in specific gravity, being of lower density, whilst the odour is less pronounced at ordinary temperature, although it is markedly fragrant and aromatic when heated and volatilised.

Sandalwood is a tree whose roots must fasten upon an underground root host for its successful development, and its adoption in market plantations depends upon the provision of a suitable mixture to furnish the host. No planting has yet been attempted, but the demand from China for the wood is good, and the price offering is higher than that paid for the Westralian product.

Messrs. Smith and Jones carried out an investigation also into the exudation of *Canarium Muelleri*, a large tree of the Atherton jungles

which yields rather copiously a water-white oleo-resin, said to be the equal of Canada balsam for mounting microscopic sections, although very slightly less viscous. The oleo-resin yields 29 per cent. of essential oil of which the principal constituent is pinene, the chief component, in fact, of commercial turpentine, for which the oil could be used as a substitute. The hard resin is recommended for use in the manufacture of varnishes.

The bark of a Native Camphor (*Cinnamomum Oliveri*) was analysed during the Report period and showed from 18 per cent. to 20 per cent. of camphor oil. The leaves yielded 80 per cent.

In tanbarks we are not as well provided for as the Southern States. The best Australian Wattles are the Golden Wattle of South Australia, and the Green Wattles of Victoria, Tasmania, and New South Wales. Western Australia uses its indigenous Mallet Bark (*Eucalyptus astringens*).

In Queensland about sixty species of native vegetation have been subjected in past years to investigation with results varying from fair to bad, the implication being that the tannic acid content decreases as the winter rainfall zone passes into the summer rainfall of the tropic areas.

A variety of *Acacia decurrens* occurring at Yandina gave 23 per cent. tannic acid and from Brisbane district up to 26.16 per cent., whilst *Acacia flavescens*, the Red Wattle of Fraser Island, returned up to 26 per cent. The latter wattle bark makes a very fair upper leather, but is said to be unsuitable for soles. Its value is estimated to be about 60 per cent. of that of the Adelaide bark.

The following results are of interest:—

- Coastal Cypress Pine (*Callitris arenosa*) bark yielded up to 31 per cent. of tannic acid;
- Yellow Messmate (*Eucalyptus Claeziana*) up to 24 per cent.;
- Yellow Satinwood (*Rhodospaera rhodanthema*), 17 per cent. to 23 per cent.;
- Spotted Gum kino, 61 per cent.;
- and Bloodwood kino, 72 per cent.

Of the Northern Mangroves, *Rhizophora mucronata* assayed 27 per cent. to 36 per cent. and *Ceriops Candolleana* 26 per cent. to 35 per cent. An analysis of specimens of Cairns Mangrove (*Bruguiera Rheedii*) shows it to be rich in tannin, possessing 35.3 per cent. The chief difficulty in utilising it is its red colour, which, however, may be eliminated by a process worked out in 1919 by the Queensland University.

The Bureau of Science and Industry is now engaged in a systematic survey of the tannic acid producing vegetation of the continent and, towards this survey, the Board is contributing a considerable amount of material from all parts of the State.

A preliminary return, made by the Bureau of Science and Industry early in 1925, showed that out of seventeen different and identified

species of Queensland Acacia barks, fifteen on analysis proved to contain a tannin content ranging from 10 per cent. to 33 per cent. The species and range in tannin content were as follows:—

<i>Acacia decurrens</i> var. <i>pauciglandulosa</i>	.. ..	33 per cent.
<i>Acacia polybotrya</i> var. <i>foliolosa</i>	.. ..	26 per cent.
<i>Acacia aulacocarpa</i>	.. ..	4.7 per cent. to 24.5 per cent.
(The higher figure refers to a "rossed" sample.)		
<i>Acacia decurrens</i>	.. ..	23.4 per cent.
<i>Acacia Bancroftii</i>	.. ..	16.8 per cent. to 22.8 per cent.
<i>Acacia salicina</i>	.. ..	18.8 per cent. to 21.2 per cent.
<i>Acacia flavescens</i>	.. ..	17.0 per cent. to 22.0 per cent.
<i>Acacia penninervis</i>	.. ..	17.0 per cent.
<i>Acacia harpophylla</i>	.. ..	14.0 per cent. to 17.1 per cent.
<i>Acacia excelsa</i>	.. ..	16.0 per cent. to 17.2 per cent.
<i>Acacia inflexa</i>	.. ..	15.8 per cent.
<i>Acacia podalyriæfolia</i>	.. ..	13.4 per cent.
<i>Acacia Cunninghamii</i>	.. ..	13.2 per cent.
<i>Acacia falcata</i>	.. ..	13.0 per cent.
<i>Acacia Maidenii</i>	.. ..	8.3 per cent. to 14.2 per cent.

The best Acacia bark of the Bureau and Science results so far is, therefore, that of *Acacia decurrens* var. *pauciglandulosa*, the Ferny-leaved Wattle of the Stanthorpe district.

Of the samples of bark of Eucalypts supplied most were found to be poor in tannic acid content.

High expectations were held with respect to the tannic acid possibilities of the Poplar Gum of North Queensland (*Eucalyptus alba*). This species is well distributed throughout tropical Australia, and bark obtained from the Kimberley district of Western Australia was found to contain 30 per cent. of tannin and to possess excellent leather-forming properties. Analysis of the Queensland bark made by the Government Analyst, Brisbane, during the year, however, gave the very disappointing return of only 5.6 per cent. Further specimens are being obtained.

There are about seventeen tanneries in Queensland, with an annual output valued at half a million pounds. To tan this output nearly 3,000 tons of tan bark are required each year. Local tanners at present are using Wattle bark imported from South Australia, but occasional parcels are brought from South Africa, which has established regular plantations of Australian Wattles for bark production and export, upon which has been raised a national industry valued at over a quarter of a million pounds per annum.

It remains for Queensland to take steps also to grow its own requirements.

Before Queensland, however, can push on safely with commercial tan bark plantations it must first complete the stocktaking of its own tan bark species and select the most suitable, both economically and silvically, for tan bark production. In order to test the tannic acid producing Wattles of the Southern States when transferred to new soils under summer rainfall conditions, experimental plots must be laid down and the bark produced subjected to systematic test. This work the Forest Service has programmed. It would be unsafe to launch Wattle plantations in Queensland until these matters are determined.

During the year tan bark experimental plots were established on State Forests at Passchendaele, Beerwah, and Fraser Island, in order to determine not merely the economic and silvical suitability of the species chosen, but also—

- (a) The best seasons for sowing and planting;
- (b) The best spacing, keeping in mind the question of thinnings;
- (c) The best time for stripping, determined by the ease of barking and by the tannic acid contents at date of barking.

It is interesting to note that Wattles, like the oil-producing plants, grow well on poor soils, particularly of sandstone formation, and this points to a dual economic utilisation of the waste acres of the forest preserves by both essential oil and tannic acid producing field plantations.

Regarding the Wattle plantation industry of South Africa, the Conservator of Forests in Natal (Mr. P. L. Sim) writes as follows:—

“It is unique as a forest industry in giving an early and full return within a few years, and keeping that up in perpetuity, and in yielding a high interest on the money invested, and that even without expert management.

“Machinery is hardly necessary and capital expenditure is very low. Wattle planting has given a higher value to certain soils unsuited for ordinary cultivation, and has raised the general land values in the Wattle districts as much as if a town had sprung into existence in the neighbourhood. In addition, it supplies cargo for steamers, while Wattle firewood and mine props form important items both to the producer and to the railway revenue. It has made steady progress, and, no over-production being in sight, there is every prospect that it will continue to do so.”

All this from the cultivation of a wayside Australian bush weed whose economic possibilities have been overlooked by the bright minds engaged in Australia in developing our “vast potentialities.” Truly a profit hath no honour in its own country!

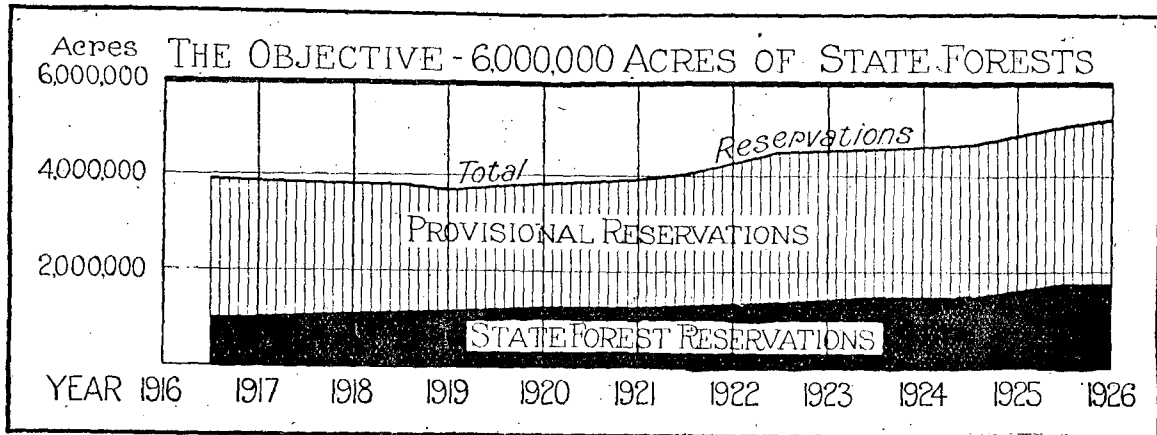
THE FOREST SERVICE ESTATE.

To enable it to farm and to produce the wood goods and forest products required of it, the Forest Service holds in working trust 5,135,536 acres of Crown lands. These consist of 3,356,187 acres of timber reserves proclaimed provisionally pending intensive classification by forest valuation surveys, and 1,778,349 acres of State Forests resulting from the close consideration of the facts of surveys already made, and upon those facts dedicated permanently as State timber farms to furnish the people's timber supply in perpetuity.

In determining the total area of land requisite for the purposes of forestry in Queensland, it is necessary to calculate the per capita wood consumption, the rate of growth of population, and the timber-carrying capacities of the chosen sites. Whilst it may take years to bring under full bearing and high productivity the State Forests thus set aside, it is clear that provision for the future land needs of the Department for timber crop production must be made, if at all, right at the commencement. The Hobart Interstate Forestry Conference of 1920, assaying the forest area requirements of Australia, allotted to Queensland the responsibility of securing and developing under wood growth a minimum timberland estate of 6,000,000 acres. The progress which we have made towards this objective is indicated by the graph of “The Forest Areas,” which shows that the State Forests thus far determined upon amount, as previously stated, to only 1,779,349 acres, plus 3,356,187 acres held

provisionally as timber reservation pending classification. The year's contribution to the State Forest figures consisted of 4,040 acres, representing 4,020 acres of the Passchendaele lands for the Stanthorpe *Pinus insignis* plantings, plus 20 acres of boundary adjustment at Nambour. A considerable number of the existing provisional reserves, however, have now been classified and these await decision as to proclamation.

GRAPH OF THE FOREST AREAS.



Details of reservation movements are given in a schedule of the Appendix. It will be noted that the largest area of reservation is in the Dalby Land Agent's district, which has 656,173 acres. The Maryborough Land Agent's district, which includes Fraser Island, contains 508,490 acres. Rockhampton, with the Blackdown forest, carries 406,553 acres. Cairns-Atherton has 358,322 acres, Gympie 361,972 acres, Mackay 264,129 acres, and Bowen 222,138 acres.

Towards the consummation of the general forest demarcation task the branch of Forest Surveys contributed in 1925-1926 the survey of 516,135 acres, of which 113,649 acres were dealt with by a forest valuation process yielding contours and data as to road access, forest subdivisions, logging, reforestation, and management. The principal undertakings were those of the Kilcoy Forest Group (17,432 acres), and the Monsildale forest (11,500 acres, Kilcoy Working Plan Area), the balance of Brooloo forest (15,270 acres, Mary Valley Working Plan Area), and the Kuranda-Mareeba forests (12,471 acres, Cairns Working Plan Area). Forest subdivision surveys into compartments were also conducted over 51,651 acres of the Barakula timberlands (Dalby Working Plan Area) and 2,820 acres of the Yandina forests (North Coast Working Plan Area), whilst an extensive reconnaissance of 500,000 acres of jungle lands between Mount Molloy and Cooktown took place, leading up to future forest demarcation and logging operations in these more remote regions.

In addition to the management of the utility timberlands of the State, the Board controls the recreational forests of Queensland as represented by 156,131 acres of National Parks. Of this quota, 131 acres in the Tambourine district were gazetted during 1925-1926. Of the National Parks, the largest are the Bellenden-Ker of 79,000 acres, the Lamington of 47,000 acres, and the Bunya Mountains of 22,500 acres. On the north-western side of the latter, remote from tourist access, were located 6,650 acres of essentially State Forest type adjoining the existing State Forest Reserve 151, and this section was found to carry 17,000,000 super. feet of over-mature Hoop and Bunya Pine trees, valued at £72,000 on stump. On the other hand, the Dalby National Park Club discovered that its place of chief resort as the Bunya Mountains National Park was actually

private land undergoing logging. The revision of the boundaries of the National Park by legislative enactment was suggested, and involved with it the purchase of the scenic areas now held under private ownership.

The devotion of large areas of Crown lands to the purposes of State timber-farming carries with it an implied obligation on the part of the Forestry Administration to yield to the Crown, prior to balance-sheet preparation, a first charge upon the forest estate of a farmer's rental for the soil it occupies. Such a rental would be that adopted usually in respect of perpetual lease. Actually the implied obligation is honoured by the administration, through its remittance to the Treasury of annual surpluses, which, from 1904 to 1926, have totalled £1,421,434. The effect of bulking, however, is to suggest that the business profits of the Department from its forest estate are much greater than they really are, and to afford a contrast of swollen revenues and deflated reinvestments, which is not a true reflex of the financial situation. Regarding forestry in its simplest presentation, as a farming and trading venture, its accounts, despite their silvical complexities, might well be presented on better profit and loss lines. This conception would involve a separation from the annual surpluses of the bulked perpetual lease rental charge for the occupation of the State forests and timber reserves. One consequence of this move should be to reduce the forest demarcation discussions to economic grounds, so that no land would be held by the Forest Service which did not justify under forestry its rental worth, and no economic objection would be aimed by the private land seeker against the occupation of the State Forests by the Crown perpetual lessee of the "Forest Estate," viz., the Forest Service.

The most valuable soils held under forest management in Queensland are those of the Mary Valley Working Plan Area. The perpetual lease rental test was applied to these soils by the Board during the year, in order to determine definitely the economic justification for their continued use in the production of timber crops. The test showed conclusively that the value of the annual growth of wood of the untreated natural stands of immature Pine trees already upon the reserves was more than sufficient to pay the perpetual lease rental, whilst the price increment for the multitude of secondary species would more than pay it again. As the relegation of the forestry holdings in the Mary Valley to any other purposes than those of tree-growing would involve both the loss of the wood interest and of price increment and the destruction of the capital assets in the form of immature timber as well, it becomes clear that the Forest Service has ample economic justification for its retention of the Mary Valley forest lands, more particularly as the increase of the wood productivity of the areas by the planting of new crops and the treatment of the natural stands is already under way. The rental responsibility, however, implies an actual use of the land under rent, and this has been arranged for under the planting programme which gives the Mary Valley Working Plan Area the largest quota of work.

At the present time certain hardwood areas are held by the Department as timber reserves on mining fields at Gympie and Blair Athol. In both cases the soil is poor, and the rental value of the land extremely low. Providing, as they do, crops of hardwood of great local utility, their permanent reservation as State Forests is clearly indicated, so that management for perpetual production may ensue. Unfortunately, the discussion of mining and possible land settlement considerations has deferred for years the question of permanent demarcation for forestry

purposes, and the areas are still languishing under untreated hardwood crops when they should be under forest management in order to yield abundantly wood for future local needs.

In these cases, a decision to treat the forestry administration as a rent-paying perpetual lessee might resolve the present *impasse*.

For purposes of general management, the lands of the Forest Service have been grouped into Working Plan Areas, which are then used as vehicles for the application of the policy of the regulated cut. Within the Working Plan Areas, the constituent forests become units of the silvical management, the vehicle of which is the Forest Working Plan itself. The preparation of the Working Plan, which is based upon the maps and reports yielded by the Forest Valuation Survey, calls for a tedious analysis of forest statistics and a studied consideration of local silvics. The net result is a plan of developmental operation extending over a number of years, and from this Working Plan arise the lesser Annual Project Plans which fix the annual task and apportion the annual funds made available under Parliamentary estimates.

During 1925-1926, General Working Plans were developed for the Working Plan Areas of Inglewood and Dalby.

These prescribed generally for the annual treatment of 2,000 acres for natural regeneration in the Inglewood Working Plan Area, and further treatment of 6,000 acres per annum for natural regeneration in the Dalby Working Plan Area.

Detailed Working Plans were completed in respect of the following forests:—

Forest.	Acres.
Fraser Island	240,000
Enoggera	1,575
Pikedale	4,020
Pechey	2,046
Woowoonga	5,600
Yandina	6,600
Woondum	21,400

The Fraser Island Plan laid down an annual task of 1,000 acres of hardwood regeneration, 200 acres of Cypress Pine regeneration, and 300 acres of softwood plantation. The Enoggera Plan prescribed the treatment of the existing Eucalyptian stand for the continued production of poles and fuel for the Brisbane market. The Pikedale Plan provided for the establishment of 100 acres of *Pinus insignis* plantation a year to supply the case timber needs of the Stanthorpe district. The Pechey Plan catered similarly for the Toowoomba district, in *Pinus insignis* and Hoop Pine planting to the extent of 66 acres a year. The Woowoonga Plan set a one-man task of 30 acres of Hoop Pine planting per annum plus forest protection duties. The Yandina Plan prescribed the gradual complete logging of the Eucalypt stands and their reforestation, whilst the Woondum Plan aspired to convert a natural mixed hardwood forest to an artificial stand of new softwoods over a period of years.

The general policy is to place under intensive treatment the forests which are closest to market, which consequently have stands of the highest cash value, and are naturally the most cut over, and finally the first to be required again to supply their product. At the other extreme are areas far distant from markets, which are yet uncut, and whose exploitation must await the approach of railways and roads. Many of

these are in the western tablelands, and have a present grazing utility demanding to be cashed. Having in mind the impossibility of soon placing these distant forests under Working Plan for intensive operation, the Board has accepted for them the policy of Special Leasing for a term of years for grazing purposes.

The same Special Leasing method is used in the case of small, inconsiderable spare lots of the forests, and for the particular instance of the Taungya operation.

During 1925-1926, 113,074 acres of forest reservation were thus specially leased for terms ranging from five years. A schedule of these leases is given in the Appendix hereto.

Structural improvements to the value of £850 were added to the Forest Estate during 1925-1926. These consisted of forest nursery extensions at Benarkin, Bunya Mountains, Nanango, Stanthorpe, Biggenden, Imbil, Eungella, Gadgarra, and Atherton Forest Stations, and of sundry housing, office, storage, and maize barn construction on Stanthorpe, Chinchilla, Eungella, Fraser Island, Bunya Mountains, Danbulla, and Beerwah forests.

The sum of £210 was expended in new water supply provisions on the Nanango, Imbil, Bunya Mountains, and Atherton forests, and new forest paddocks to the cost of £599 were established in the Pikedale, Emu Vale, Amamoor, Imbil, Fraser Island, Nudley, Gadgarra, Danbulla, Eungella, and New Cannindah forests.

Maintenance of existing paddocks cost £998, and of buildings £320.

The sum of £1,317 14s. 7d. was spent in maintenance of forest roads, and £325 16s. 7d. was expended in new construction.

Particulars of new construction and maintenance costs are furnished in schedules attached to the Appendix hereof.

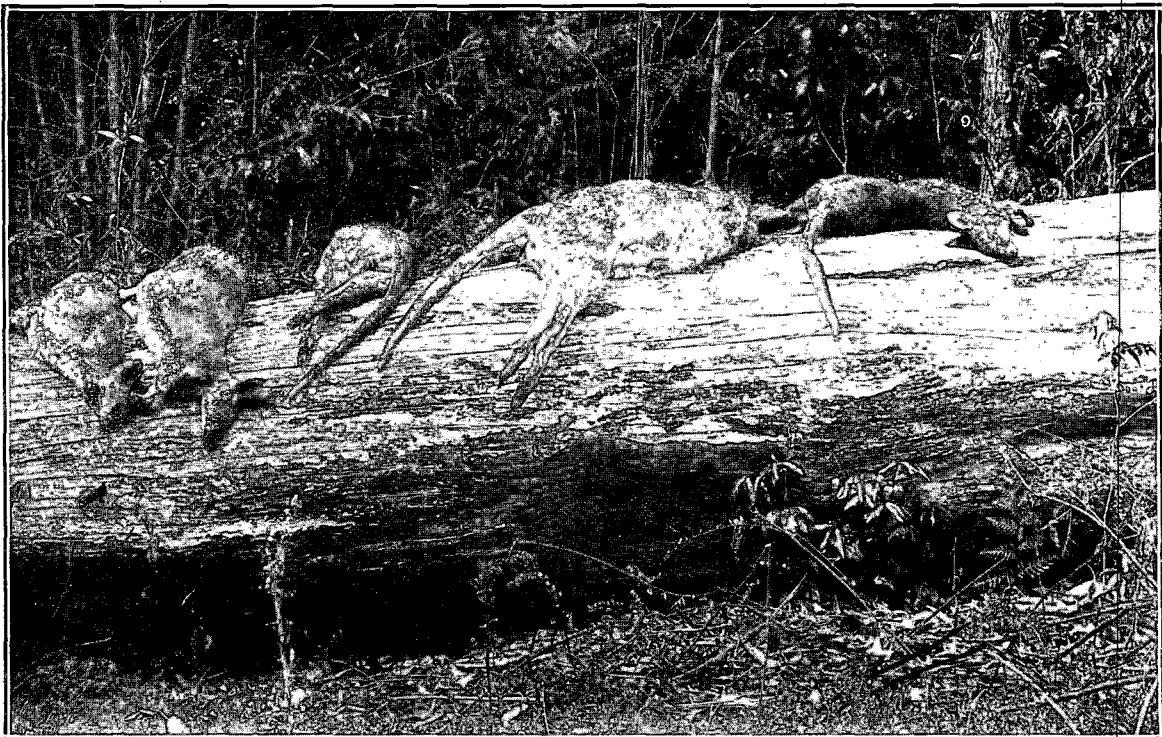
PROTECTING THE FOREST ESTATE.

The trusteeship and management of the forest estate for particular ends carry with them responsibilities for safeguarding it and its included assets from external damage by accidental visitations. The forestry year in Australia has been marked by the outbreak in Victoria and New South Wales of colossal bush conflagrations, which in the former State wiped out whole forests and settlements, some of which had been entrenched behind formidable and costly firebreaks. Following upon these outbreaks an Interstate Conference on bush and forest fires was held at Sydney in March, 1926, to consider the situation. The Conference established the following important points:—

- (1) Eighty per cent. of the loose fires which do occur originate from without and not from within the forest systems, and about 75 per cent. are caused wilfully.
- (2) The careless use of fire is general, the existing fire laws and their administration are ineffective, and action on both educational and legislative lines is required to meet the position.
- (3) In addition to education and legislation, preventive organisation and the co-operation of all public and private bodies are essential in any scheme of protection.



Trapping the Wallaby Pest.—A Typical Forest Service Race-trap.



The Morning's Catch from a Forest Service Race-trap Protecting the Plantations.

- (4) Stricter regulations are necessary to govern burning operations, the use of approved spark arrestors on engines, and regarding the sale and use of wax matches.
- (5) The periodic recurrence of devastating fires is injurious to the prestige and credit of the country.

Resolutions were adopted suggesting the extension of the scope of the fire enactments in each State, and the vesting of the general fire administration in a Board representing Lands, Forestry, Water Conservation, and Agricultural interests. Notable proposals were that in all prime forest country grazing should be under the control of the forest authority, and that in contiguous land essential for the protection of this prime forest and in maintenance and protection of forests, burning-off and grazing operations should be governed by conditions acceptable to the forest authority. External breaks of two chains width around plantations, and internal breaks one chain wide around each 25-acre sub-compartment were recommended, and spark arresters and approved ashpans were stipulated for engines in operation in the vicinity of both forests and plantations.

In the Southern States the bush fires are most likely to occur at the end of the hot summers, in Queensland at the beginning of spring, and here their incidence is rather to annul reproduction than to annihilate the adult generation of trees. The extent of injury by loose fires to standing timber is of moment, but greater still is the harm done to the soil and to its latest expression in seedling growth. The objective of the Board is to keep fire out of the forests altogether, except such controlled fire as may be applied usefully to the specific purposes of forestry. The broad ideal is not yet realisable, and the Department must be content generally with drawing its fighting line of defences around its produced assets in structures and in treated crops. This, then, is the intent of 1925-1926 policy, and its consummation has been attained for the year. The Northern jungles and the Southern Hoop Pine "scrubs" generally were exempt, but in the Inglewood and Dalby Working Plan Areas of the south-west of the State, the hardwood and Cypress Pine forests of these drier regions were subject to repeated fire attack. In the former area, 4,000 acres of unimproved timber stands on the Inglewood forest and 3,000 acres of the Eena forest were burned over before it became possible to check the flames. On the Tandan forest an outbreak was countered after strenuous efforts on the part of the overseer, and a second ignition on the Eena forest was suppressed similarly. In the Dalby Working Plan Area the Braemar forest was attacked by boundary fires which, however, were extinguished in time, but on the important Nudley State Forest stands of Spotted Gum and Cypress Pine caught alight on all sides, and fierce counter attacks with forced fire delver operations were made by the Forest Overseer, despite which the flames drove on to the last line of forest defences surrounding the areas of concentrated regeneration, which happily were saved from damage. Throughout the length and breadth of the untreated areas over which the ground fire passed on the Nudley Forest and on the forests of the Inglewood Working Plan Area, the advance growth of Cypress Pine was decimated.

In the Benarkin Working Plan Area, prompt measures applied to sporadic outbreaks limited the fire damage to odd lots of Hoop Pine trees, which were forthwith harvested and sold prior to further deterioration.

The particular costs of fire protection throughout the State amounted to only £464 15s. 8d. for the year, *vide* schedule attached to the Appendix hereof.

Forest protection includes, however, not merely protection against fire, but also against noxious weed invasions and against illicit operation of all kinds. In line with the prickly-pear destruction activities of the State, the Board has devoted considerable attention to the eradication of prickly-pear infestations upon its forests, particularly those of the Bundaberg district and of the south-west of Queensland.

Acting on the advice of the Prickly-pear Land Commission it has attacked the lightly infested areas with poison stabbing, and the heavily infested plots by means of cochineal insect distribution. During 1925-1926 it expended £1,295 16s. 1d. in the work, of which £337 was spent in the Inglewood district, £375 in the Dalby District, and £422 in the Bundaberg District.

In lantana destruction and general noxious weed extermination upon the coastal forests it expended the amount of £828 15s. 1d.

So far as illicit operations on the forest estate are concerned, the increasing monetary values of timber stumpages have proved a constant temptation to timbergetters, and many incidents of stealing have occurred during the year. The number of discovered cases was 88, and the amount of fines imposed was £150. Timber values returned under these cases amounted to £438 4s. 4d.

Bush rodents which attack the farmers' crops are in evidence upon the forest plantations. Netting has to be resorted to, and along the netting fences have been stationed race traps to capture the wallabies from within and without the planted areas.

FINANCIAL AND ADMINISTRATIVE.

FINANCIAL—

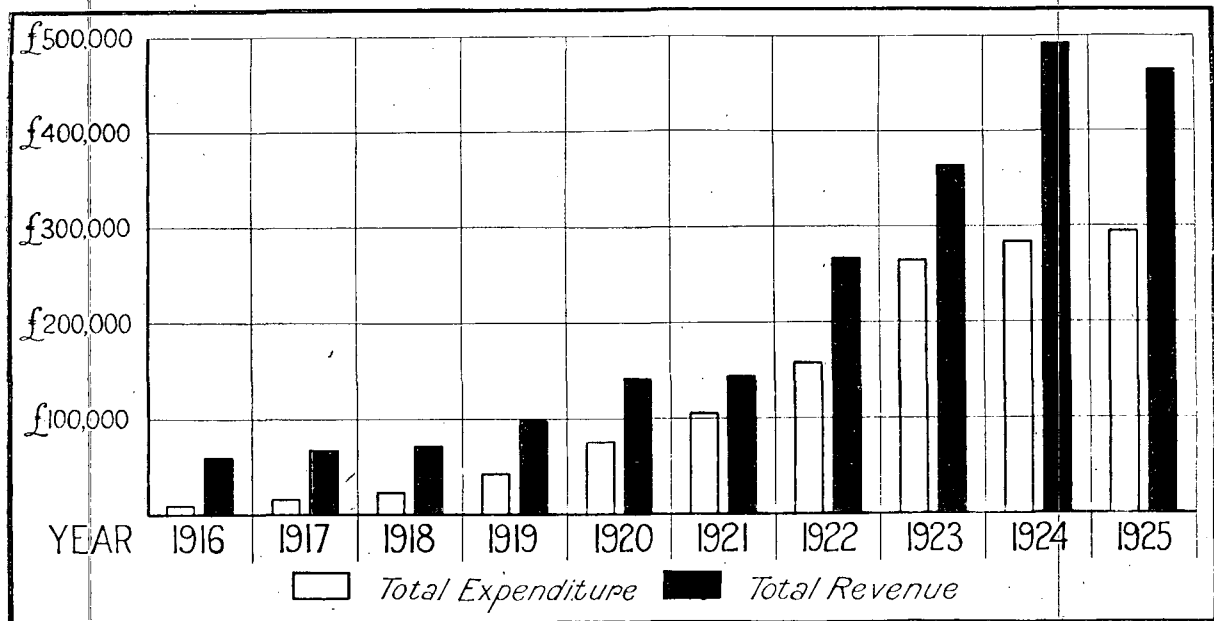
The Forest Service subsists upon trust funds for the carrying on of its trading operations in log, sawn, pole, hewn, and split timber, upon a salaries and allowances vote for conducting its general administration, and upon loan funds for completion of its reforestation works.

During 1925-1926 it called upon the Treasury for trading finance as follows:—

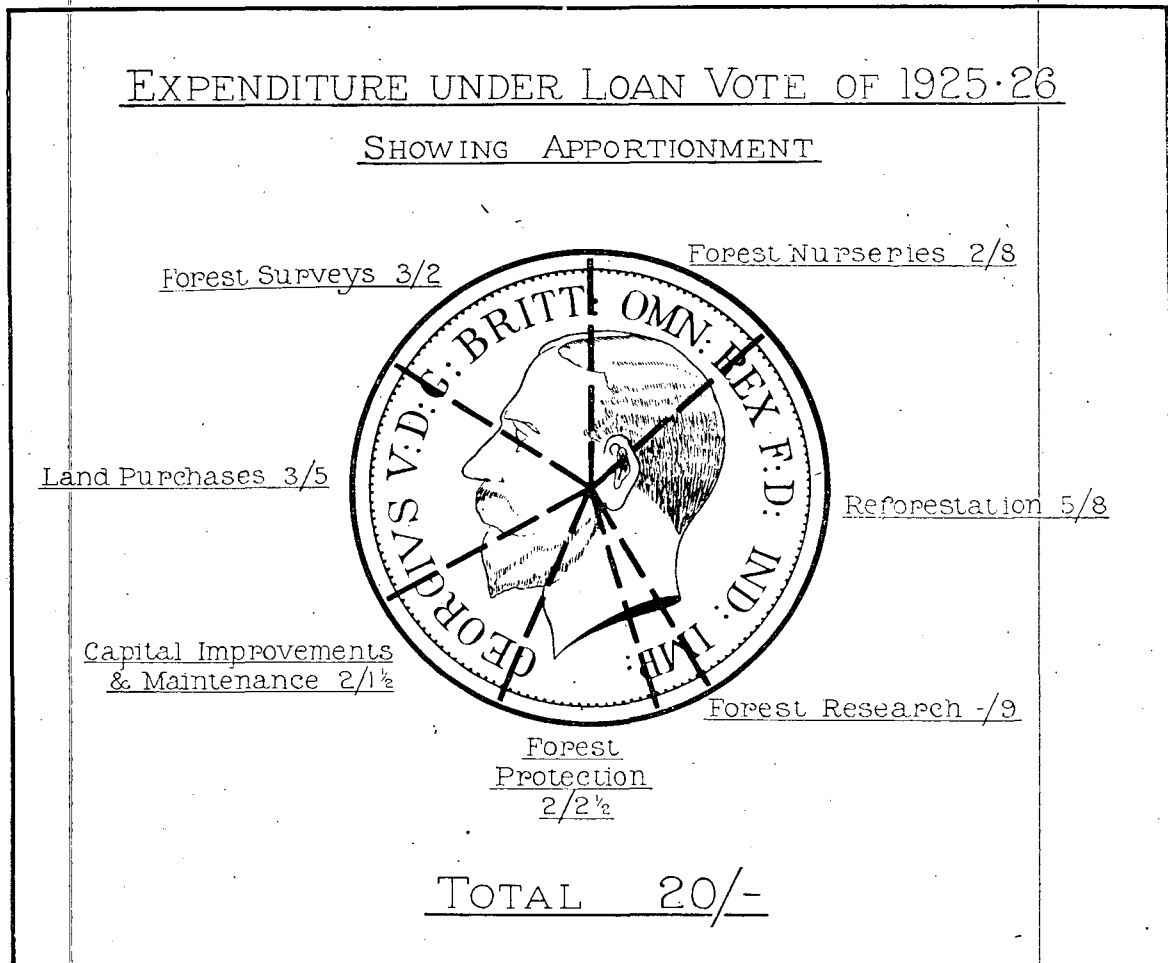
(a) Log sales costs	£138,087
(b) Hewn, split, and pole timber costs ..	89,580
(c) Sawn timber costs	148,036
	<u>£375,703</u>

Resulting from its trading activities it made gross earnings amounting to £602,399, consisting of—

(a) Log sales revenues	£374,267
(b) Hewn, pole, and split timber sales revenues	80,768
(c) Sawn timber sales revenue	147,364
	<u>£602,399</u>



Log Sales Revenues compared with General Expenditures.



How the Forestry Sovereign for 1925-26 was Spent.

The net income of the Provisional Forestry Board for 1925-1926, therefore, was £226,696, made up as follows:—

(a) Log sales	plus	£236,180
(b) Hewn, split, and pole timber ..	minus	8,812
(c) Sawn timber	minus	672
		<u>£226,696</u>

NOTE.—The deficit on the hewn, split, and pole timber votes of the Department is counterbalanced by an amount of £13,139 outstanding on the Railway Department's account, whilst the shortcoming of £672 as between revenue and expenditure on account of sawn timber sales is far more than made up by increases in stocks and in the sundry debtors' account.

The net proceeds from sales of log, hewn, split, and pole timber sales were paid into the Treasury, as the trading surplus of the Board for the year.

The expenditure for overhead salaries and allowances totalled £30,230 and this expenditure reduced the cash benefit to the Treasury to the sum of £196,466.

In return therefor, loan moneys to the extent of £42,006 were made available, and these were applied by the Board in forest reinvestments as follows:—

	£
Surveys	5,537
Construction of nurseries, water supply, paddocks, and buildings	2,362
Maintenance and working expenses, paddocks and buildings	5,879
Silviculture—Establishment of plantations and regeneration areas	10,994
Forest protection	3,860
Miscellaneous	13,374
	<u>£42,006</u>

The costing graph illustrating this chapter shows how each pound of loan investment in forestry during 1925-1926 was apportioned, viz.:—

	s.	d.
Forest nurseries	2	8
Reforestation	5	8
Land purchases	3	5
Forest surveys	3	2
Forest protection	2	2½
Capital improvements and maintenance ..	2	1½
Forest research	0	9
Total	<u>20</u>	<u>0</u>

The loan allotment to forestry purposes is now insufficient to permit of the development of the reforestation plan prepared by the

Board. For 1926-1927, and for operations each year thereafter, an increasing sum is requisite, to enable the fulfilment of Queensland's minimum forestry programme.

Each year's reforestation work entails planning several years beforehand. Sites must be organised and prepared, nurseries established, seed stores collected, and plant stocks propagated and accumulated against planting times three years distant. It is therefore important that the Board should know in advance to what extent funds are likely to be made available to it, since otherwise it may organise planting stocks and planting sites, the expenditure on which may have to be scrapped, if they unfortunately culminate in lean years, or, if over-prudence dictate the several years' preparations, the material got ready may be entirely inadequate in years of financial flush. In New South Wales, Victoria, Western Australia, Tasmania, and New Zealand, the financial problem of the Forest Departments is solved by the creation of special forestry funds, into which are placed from half to four-fifths of the annual forestry surpluses, upon the accumulations of which the forestry authorities then operate.

From 1904 to 1926, the net surplus of forestry in Queensland totalled £1,421,434, but in the absence of a Forestry Fund, the Department subsists from annual hand to mouth allotments, and thus finds its plans subject to the disabilities of an unstable financing.

The Board suggests for consideration the establishment in Queensland of a Forestry Fund, fed from annual forestry surpluses, less an annual payment to the Treasury of a sum representing the perpetual lease rental value of the forest estate.

It is necessary to point out that forest revenues in the future must decline at the same pace as the original forest resource now being harvested, and that an accumulation of funds is necessary during times of bumper earnings, in order that financial provision may be available to the forest authority for the large expenditures in stock replacements towards which the reforestation plan is now developing.

STAFF—

Owing to the partial failure of the planting season because of drought, a number of forest workmen had to be retrenched temporarily, a disadvantage of which, however, is a probable permanent loss of men who have had some degree of training and experience in reforestation work.

The personnel of the Forest Service at 30th June, 1926, numbered 375, as against 389 at 30th June, 1925, a reduction of 14, made up of 18 wages men less, and 4 salaried officers more, the latter constituting 22½ per cent. of the total staff employed. During the year, however, certain employees were transferred from the wages to the salaried staff, and the percentage of manual labour employed was not affected. Of the wages men, 43 per cent. were to be found in the Sawmills and Timberyards Branch of the Department.

It is to be regretted that financial irregularities at the sawmills involved the dismissal of two officers.

STAFF EDUCATION—

With a view to strengthening the future overhead of the Department, a special two years' course of technical training has been developed in association with the University of Queensland.

Six matriculants completed this course at the end of 1925, and five were then transferred to the Australian School of Forestry, at Adelaide, for a final year's work in pure forestry subjects. One trainee was absent on leave in England.

The Board has under consideration a proposition for the despatch abroad, next year, of several qualified officers to engage in specialistic studies and research work at the Oxford and Yale University Schools of Forestry.

Three first year's cadets were unsuccessful in the December examination of 1925, and were transferred to clerical positions in the Department. In continuation of the training scheme, however, three fresh appointments of matriculation and undergraduate standing were made at the beginning of 1926, and the appointees have now entered upon their forestry education.

A First Aid course has been included in the list of subjects prescribed, which are—

<i>First Year.</i>	<i>Second Year.</i>
Pure Mathematics (1)	(1) Elementary Surveying
Chemistry (1)	(2) Economics
Physics (1)	(3) Entomology
Botany (1)	(4) Forest Botany
Geology (1)	(5) Plant Pathology
Bookkeeping and Modern Business Methods at Central Technical College.	NOTE.—Botany (II.) includes (4) and (5) above.
	First Aid

Third Year.

(Australian School of Forestry.)

Silviculture	Forest Policy and Economics
Forest Management	Timber Physics
Forest Utilisation	Organic Chemistry
Forest Protection	Agricultural Geology.
Forest Botany	

INDUSTRIAL—

As from the 1st July, 1925, the Forestry Employees Award, insofar as employees of the Government were concerned, was superseded by the Forestry Employees' Agreement, which restored the rates prevailing prior to the reduction in 1921. This meant an all-round increase of 4s. 7d. in the Southern District and 3s. 8d. in the Northern District.

Various other amendments were made. The number of grades was reduced, the grades of "Foreman" and "Forest Factor" being eliminated, and the wages range of the Forest Overseer position extended. Rates of pay were prescribed for timber fallers. Provision was made for casual workers, and also for payment at an hourly rate in certain other cases. Sick pay was allowed for at the rate of one week full pay, one week half-pay per annum. Protection of mess accounts in Survey Camp was also arranged. The clause relating to travelling time was eliminated, the Department working under a special clause similar to that adopted by the Railway and the Main Roads Commission. Subsequently, as from 17th May, 1926, a new clause relating to travelling time was approved by the Board of Trade and Arbitration, which varied from the adopted practice,

in that pay would be made in respect of the distance over one mile travelling time both ways, instead of the time being paid for only one way for the distance over one mile up to two miles, and both ways for the distance over two miles.

The Forestry Employees' Award (as apart from the Agreement) now applies only to employees of contractors. Application was made by the Australian Workers' Union for variation of this Award on the lines of the agreement; this was opposed by the Brisbane Timber Merchants' Association, and the application was subsequently withdrawn. Further action in the matter was not taken until the new financial year.

As the Forestry Employees' Agreement provides a range of wages for certain classes of employees, a re-grading was made of the employees in these classes and increased rates were paid in certain cases. Such increases were in the direction of rectification of anomalies which had crept in, and the placing of employees doing the same class of work on equal terms as regards pay.

Consideration of the position of certain employees under the Forestry Agreement who had been providing their own equipment for use on forestry work was finalised, and allowances were made in each case.

A deputation from the employees of the timber industry at Yarraman waited on the Board on 1st December and requested—

- (1) Favoured delivery of logs to Pine Company's Mill, in order to continue men in employment;
- (2) Abolition of tender system in the employment of haulers;
- (3) Direct employment of cutters by the Department.

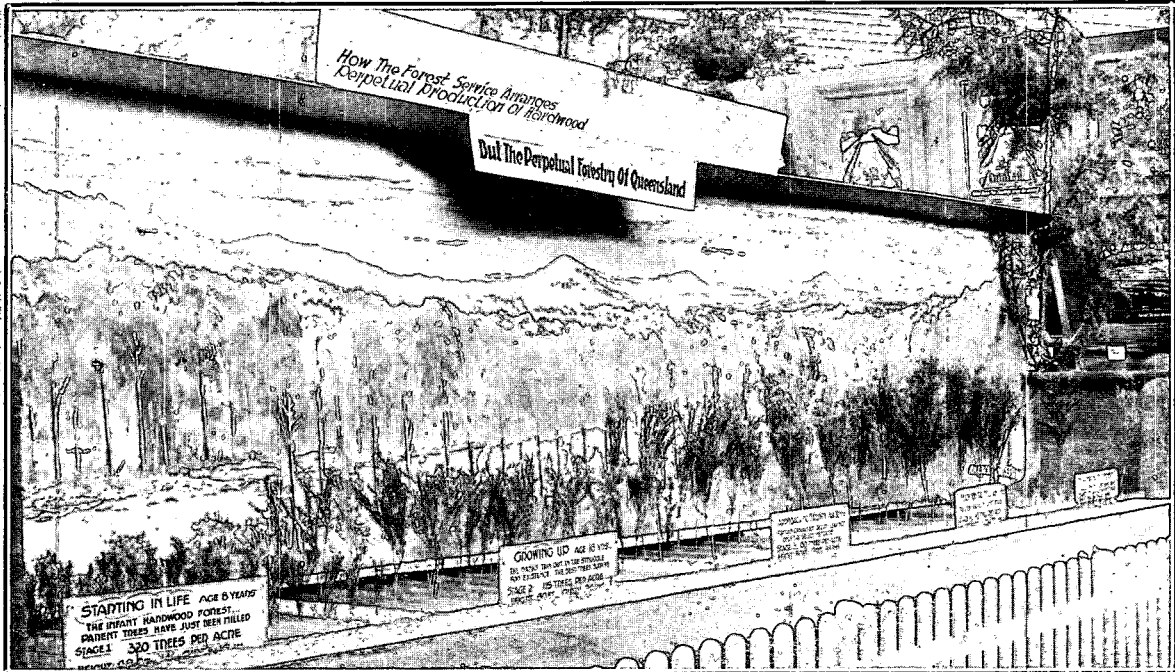
The Board pointed out that granting of the requests was impracticable.

An agreement was entered into, having effect as from 1st July, 1925, in substitution for the Government Sawmilling Award.

The principal variation was the granting of 4s. 7d. per week all-round increase, and the general fixation of rates as applied prior to reduction made in 1921.

Application by the Inland Transport Workers' Union for extension to it of Government policy of preference to unionists was refused on the grounds that its members, being contractors for timber haulage, were employers rather than employees, did not come under the Arbitration Act, and could not be catered for by any form of wages regulation.

At the outset of the financial year, however, an important agreement was made with the Australian Workers' Union in settlement of the much-vexed issue of the fixation of standard rates for cutting railway timber. The agreement attempts to establish for each cutting area the appropriate cutting price per timber specification, which will admit of the timber-getter earning the award rate for his craft plus 53 per cent. for speeding up and lost time items, &c. In this respect a material allowance was made upon the agreement of 1922, which first contained the elements of a scientific regulation of railway timber-cutting price, but lacked the finish which gives to the agreement now in force the especial honour of becoming the first of its kind in Australia as a type of industrial machinery for the settlement of labour price disputes previously uncontrollable.



The Forest Service Display at the National Exhibition, Brisbane, in 1926.

ADMINISTRATIVE AND OFFICE METHOD—

The unification of the general administration at Brisbane was completed during the year by the absorption by Head Office of the previously detached Northern Timber Sales, Survey, and Silvicultural Managements.

Procedures to conform to the new arrangements were developed and put into operation.

In line with the policy of a unified administration, the costing system was withdrawn from the district offices and centralised at Brisbane. At the same time, it was generally reviewed and redrafted to provide for a more scientific control of finance apportionments and expenditures under Annual Project Plans developing from the Forest Working Plans.

A Burroughs Calculating Machine was installed at the office of the Timberyards, and a dictaphone at Head Office for the use of the Secretarial Section. These machines have provided considerable relief in office labours.

PUBLIC RELATIONS—

During the Report period the Chairman delivered addresses upon forestry before the Forestry Association and the Real Estate Association.

Visits of inspection were made by the Chairman and Members of the Board to North Queensland, Fraser Island, Imbil, and Benarkin.

In order that the general public may have knowledge of both the work and wares of the Forest Service, it is customary to stage a popular account of the year's forestry stewardship in the form of a forestry exhibit at the annual Brisbane National Association's Exhibition, and to supplement this all-Queensland demonstration by small subsidiary displays at a few of the country centres. During 1925-1926, the Department's activity in this direction was limited to Brisbane, Townsville and Gympie. A collection of timber and forest products was despatched to the South Seas International Exhibition at Dunedin, and lesser displays were made in Sydney, New South Wales, at the Master Builders' Association Rooms, the Technological Museum, and Messrs. Grace Brothers' window. In Brisbane, shop window display was resorted to in illustration of reforestation processes for Hoop Pine, and the Forest Service was represented in the Eight-hour Procession by three decorated lorries, setting forth miniature representations of Forest Service operations in logging, sawmilling, and general forestry.

The permanent collections of the Department were staged at the Showrooms and Fancy Wood Section, located in Wickham Street, Brisbane, close by Head Office, and were open to daily inspection by the general public, the timber trade, and by visitors to the State.

The work of the Forest Products Showrooms Branch, however, is directed not merely towards a general publicity for forestry, but to the more particular end of introducing to the consumer the many forest wares which the Forest Service seeks to sell. In pursuance of this objective, stocks of secondary woods not yet established on the general market were procured, seasoned, and stored in the small Fancy Wood Timberyard attached to the Showrooms, and therefrom were fashioned for

display—articles of furniture, flooring, lining, walking sticks, fishing rods, mallets, serviette rings, nut bowls, and what not, these representing more effective and more economical forms of display than a mere assemblage of boards.

For the purposes of these activities, a small recutting sawing plant was installed.

The Showrooms distributed hand samples of the wood gratis to the number of 250, sold 114 to timber agents, exchanged 67 for samples from other countries, and presented 315 to public schools in Queensland.

There has been some immediate response to these wood propaganda arrangements. A sale of 250,000 super. feet of Red Satinay logs from Fraser Island was effected, 40,000 super. feet of sawn Rose Mahogany was sold to Victorian Railways, and an order for 30,000 super. feet of sawn Walnut Bean was received from the Federal Capital Authorities. Some few thousand feet of sawn Rose Walnut were placed in Sydney and at Townsville, and 15,000 super feet. of Rose Mahogany and Red Tulip Oak logs were disposed of in Melbourne. For fishing rod squares of Saffronheart, Satinheart, and Greenheart, there was a good demand from counter customers.

The business of introducing these new woods to the market was conducted without cost to the Department. Indeed, the net profits of the Fancy Wood Section for the year amounted to £71 11s. 1d. Stocks in hand at 30th June, 1926, were valued at £757 3s. 3d.

SURVEYING THE FORESTS.

For purposes of classification, demarcation, logging, and management, the Branch of Forest Surveys conducted surveys of the forest estate through the agency of five fully equipped camps (subsequently reduced to four) and several smaller subsidiary ones, the total costs of the work involving the expenditure of £5,876.

Resulting from these activities, 516,135 acres were subjected to general reconnaissance, of which 500,000 acres were in the region between Mount Molloy and Cooktown, 54,471 acres of the forest estate were subdivided for purposes of making into compartments, 5,900 acres were estimated by strip lines, and 59,178 acres were subjected to intensive contour and assessment survey in connection with the future preparation of Working Plans.

Summary of mileage completed by the camps is as follows:—

	Miles.	Chains.
Theodolite	6	30
Compass and Chain	402	11
Compass and Step	2	62
Strip Survey	415	44
Check Strip Survey	9	77
Levels on Boundaries (Abney)	96	73
	<hr/>	<hr/>
	933	57

Exploratory Investigation—1,380 miles.

CLASS 1.—RECONNAISSANCE OF VACANT CROWN LANDS AND TIMBER RESERVES.

Reserve Number.	Parish.	Area in Acres.
State Forest 432	Charlestown.. .. .	810
State Forest 410	ditto	2,540
State Forest 480	ditto	1,282
Timber Reserve 24	ditto	390
Timber Reserve 334	ditto	1,060
Timber Reserve 436	ditto	705
Timber Reserve 447	ditto	611
Timber Reserve 473	ditto	1,414
Timber Reserve 470	ditto	938
Portion 20v	ditto	1,280
Portions 30v, 31v	ditto	5,105
V.C.L. Cooktown, Daintree Country (approx.)	.. .. .	500,000
		516,135

CLASS 2.—ESTIMATING BY STRIP.

Reserve Number.	Parish.	Area in Acres.
Timber Reserve 243	Cambroon	5,900
Timber Reserve 212	Hazeldean and Abingdon .. .. .	..
		5,900

CLASS 3.—INTENSIVE CONTOUR AND ASSESSMENT SURVEYS.

Reserve Number.	Parish.	Area in Acres.
State Forest 207, 545	Monsildale	11,500
Timber Reserve 192	Kilcoy	5,370
Timber Reserve 509	ditto	1,298
Timber Reserve 480	ditto	1,970
Timber Reserve 467	ditto	950
Timber Reserve 469	ditto	2,920
Timber Reserve 470	ditto	2,402
Timber Reserve 209	ditto	2,522
State Forest 557	Dinden	5,471
State Forest 607	Cains, Dinden, and Grafton	7,000
Reserve 398	East Barron	1,225
State Forest 418	Danbulla	1,280
State Forest 135	Brooloo and Cambroon	15,270
State Forest 169 (part)	St. Agnes .. .. .	..
	Total	59,178

COMPARTMENT SURVEYS.

Reserve Number.	Parish.	Area in Acres.
State Forest 318 (part)	Maroochy	2,820
State Forest 16 (part)	Malcolm	36,696
Portions 45 to 48	Wongongera	14,955
		54,471

KILCOY WORKING PLAN AREA.

By 23rd July, Class 3 Survey of State Forests 137 and 342, Yabba and Monsildale, was completed, after which the adjoining State Forests 207 and 545; Monsildale, were taken in hand, and Class 3 Survey of both areas completed. On the 11th November, the camp was shifted to Yednia to carry out a Class 3 Survey of Timber Reserve 192, Parish of Kilcoy. This was subsequently followed by surveys of Timber Reserves 509, 480, 467, 469, and 470, Parish of Kilcoy, together with an area of 2,522 acres of Timber Reserve 209, Parish of Kilcoy. In addition, Portions 262, 263, 264, and 267, together with vacant Crown land to the north has been dealt with by Class 2 Survey, and is now practically complete, after which the camp will proceed to Reserve 209 and 317, Neara and Cressbrook, and finalise same.

Total mileage for the year is as follows:—

	Miles.	Chains.
Theodolite and Chain	6	30
Compass and Chain	11	35
Strip Survey	221	23
Old boundaries	74	37
Check Strip Survey	9	77
Exploratory Investigation	422	0

NORTH COAST WORKING PLAN AREA—

Compartment Survey was carried out on the eastern section of State Forest 318, Maroochy, comprising Yandina, Chambers, Cooloolabin, and River Logging Areas, by a sub-foreman and one man. An area of approximately 2,820 acres was treated, work being commenced on the 18th of May and completed by the 16th of June. In all 15 miles 50 chains of compass and chain lines were run and marked.

NANANGO WORKING PLAN AREA—

The camp was moved from Bunya Mountains to Wondai on the 1st July, where Class 1 Surveys were made of numerous small reserves in the parish of Charlestown. These were finalised by 25th July, and the camp was transferred to State Forest 69, Parish of Bunya. A Class 3 Survey was made of this State Forest in three weeks, and on the 22nd of August the camp was transferred to the Atherton District.

MARY VALLEY WORKING PLAN AREA.

Work on State Forest 135, Parishes of Brooloo and Cambroon, was continued, and, by the 15th November, the field work was completed, a total of 15,270 acres being dealt with. The camp was then shifted to Timber Reserve 243, Parish of Cambroon, where Class 2 Surveys were carried out on this reserve and adjoining scrubs in Timber Reserves 274, Cambroon.

Work was completed by the end of April, and the camp was transferred to State Forest 169, Parish of St. Agnes (Bundaberg Working Plan Area).

Mileage for Report period is as follows:—

				Miles.	Chains.
<i>State Forest 125, Brooloo and Cambroon—</i>					
Compass and Chain .. .. .	..	..	..	46	52
Strip Survey .. .. .	..	..	..	86	8
Old Boundaries (Topo Abney) .. .. .	..	..	..	7	57
Exploratory Investigation .. .. .	..	..	..	23	0
<i>Timber Reserve 243, Cambroon—</i>					
Compass and Chain .. .. .	..	..	..	19	0
Strip Survey .. .. .	..	..	..	19	77
Exploratory Investigation .. .. .	..	..	..	48	0

DALBY WORKING PLAN AREA—

In November a small camp was formed, and commenced operations in the vicinity of Barakula, in the Parishes of Malcolm, Wongongera, and Hookwood. By the end of the financial year, five 100-acre compartments had been laid out within a five-mile radius of Barakula, with the exception of part of the south-west section. In all, a total of 51,651 acres has been completed, a total of 105 compartments having been run and marked.

Details of mileage (compass and chain) are as follows:—

				Miles.	Chains.
Reserve 16, Chinchilla State Forest .. .. .	..	..	..	97	40
Portions 45-48, Wongongera .. .. .	..	..	..	31	60
Timber Reserve 14, Hookwood .. .. .	..	..	..	60	65
Total				190	5

BUNDABERG WORKING PLAN AREA—

The camp transferred from the Mary Valley arrived at State Forest 169, Parish of St. Agnes, on the 10th of May, and a compartment survey and estimate was commenced. Up to the end of the Report period, practically all logging area boundaries were run and the area was ready for strip survey. Work is proceeding.

Mileage was as follows:—

				Miles.	Chains.
Compass and Chain .. .. .	..	..	..	16	30
Old Boundaries (Topo Abney) .. .. .	..	..	..	7	61

MACKAY WORKING PLAN AREA—

Class 2 Survey was continued on Timber Reserve 212, Hazeldean and Abingdon, and field work was completed early in September, after which camp was dissolved.

Mileage for period is given hereunder:—

				Miles.	Chains.
Compass and Chain .. .. .	..	..	..	5	20
Compass and Step .. .. .	..	..	..	2	62
Strip Survey .. .. .	..	..	..	7	67
Exploratory Investigation .. .. .	..	..	..	40	0

ATHERTON WORKING PLAN AREA—

Compartment and estimate survey on State Forest 418, Danbulla, was proceeding on the arrival of the camp from the south, and by 28th September the handing over was completed. By 28th October survey had been finalised, and the camp was moved to State Forest 557, Dinden (Bogie Pocket), where the section on the Mareeba fall of Lamb Range was dealt with by Class 3 Survey. Stripping was only carried out on jungle areas, a close inspection only being made of the forest country.

Three logging areas were marked out, having a total area of 5,471 acres, and the whole completed early in December. On 18th December the camp was again moved to State Forest 607, Cairns, Dinden, and Grafton, where an area of approximately 7,000 acres has been completed, whilst a considerable area awaits completion by strip assessment surveys.

In all, approximately eight weeks were lost owing to wet weather.

Mileages for the Report period are as follows:—

	Miles.	Chains.
Compass and chain	85	74
Strip Survey	80	29
Topo Abney	6	78
Exploratory investigation	674	0

Class 3 Survey of State Forest 418, Danbulla, was continued until the arrival of the camp from the south, when camp was amalgamated.

Prior to taking over, mileage was as follows:—

	Miles.	Chains.
Compass and chain	11	65
Exploratory Investigation	22	0

On 26th October, instructions for survey of Reserve 398 (Lake Barrine), Parish of East Barron, were issued and work was finalised by the end of the year.

Mileage is given hereunder:—

Compass and Chain, 25 miles 44 chains.

Camp was then closed down.

In August, an inspection was made of the coastal country from the McIvor River to the Daintree River for the purpose of investigating the timber resources and access.

In all, an area of approximately half a million acres was covered, and a recommendation to the effect that in respect to the country from Cooktown to the Daintree River a forest survey camp be located thereon, with a view to demarcating suitable areas for reservation.

COSTS OF CAMPS, 1ST JULY, 1925, TO 30TH JUNE, 1926—

	£	s.	d.
Survey Camp, G. W. Allom	413	1	9
Survey Camp, N. D. Allom	1,747	12	6
Survey Camp, Cole	231	7	2
Survey Camp, Curry	636	14	9
Survey Camp, Saunders	1,129	16	11
Survey Camp, Twine	1,280	5	8
Compartment Survey, Barakula	375	1	11
Compartment Survey, R. 318, Maroochy	47	4	10
Soil Survey, Beerwah	0	15	8
Type Survey Warwick	49	16	5
	<hr/>		
	£5,911	17	7
	<hr/> <hr/>		

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APPENDICES.

APPENDIX "A."

Operations for half-year ended 30th June, 1926.

ADMINISTRATION.

EXPENDITURE, HALF-YEAR ENDED 30TH JUNE, 1926.

The following table gives details of the expenditures from the various Votes during the Report period :—

Item.	JANUARY TO JUNE, 1925.			Total.	Per Cent.
	Revenue.	Loan.	Trust.		
	£	£	£	£	£
Overhead Expenses—					
Salaries	11,476	..	..	11,476	..
Extra living allowance to officers	300	..	..	300	..
Travelling and incidentals	2,299	..	..	2,299	..
	14,075	..	..	14,075	10.5
Forest organisation work, surveys, research work, &c. .. .. .	..	16,795	..	16,795	12.6
Timber Trading Operations—					
Harvesting and marketing (log timber) including road work .. .. .	..	..	70,258	70,258	..
Lumbering (hewn, split, and pole timber) .. .. .	..	..	32,595	32,595	..
	..	..	102,853	102,853	76.9
Total .. .. .	..	..	..	133,723	100.0

RECEIPTS.

The gross receipts of the Forest Service for the half-year, exclusive of sawmilling, viz., £234,051, were made up as follows :—

	£
Revenue from sale of log timber (<i>less</i> refunds, £1,144) ..	189,394
Payments to Vote, Forestry and Lumbering Fund recoupments	44,657
	£234,051

INDUSTRIAL MATTERS.

FORESTRY EMPLOYEES' AWARD.

The only variation of the Forestry Employees' Award was made as from 1st June, 1925, when the award was made applicable to employees of contractors for work coming within the scope of the Forestry Employees' Award.

STAFF.

The staff at 30th June, 1925, was as follows :—

Salaried officers	82
General	180
Forest Service Sawmill employees	127

FOREST RESERVATION.

The following table indicates the alteration of the position as regards forest reservations during the half year 1st January, 1925, to 30th June, 1925 :—

STATE FORESTS.	Number.	Area in Acres.
At 31st December, 1924	145	1,533,727
Proclaimed 1st January, 1925, to 30th June, 1925	6	241,582
	151	1,775,309

TIMBER RESERVES.

	Acres.	Area in Acres.
At 31st December, 1924 (by recomputation) .. .. .	.. .. .	3,141,185
Cancelled (4) and revoked	9,029	.. .. .
Converted into State Forests	2,000	.. .. .
		11,029
Balance .. .. .	.. .. .	3,130,156
Additions to reserves	66,155	.. .. .
New reserves	50,435	.. .. .
Total additions .. .. .	.. .. .	116,590
Total reservations at 30th June, 1925 .. .. .	.. .. .	3,246,746

NATIONAL PARKS.

	No.	Area in Acres.
National Parks at 31st December, 1924	21	156,000
Proclaimed 1st January, 1925, to 30th June, 1925	Nil	.. .. .
Grand total reservations at 30th June, 1925 .. .. .	.. .. .	5,178,055

SILVICULTURE.

Throughout the State the half-year was marked by bountiful rains, the fall being especially heavy in January and February. Early frost was experienced in several centres. The weather was favourable for planting, but no general seedfall of the desired species—Hoop and Bunya Pine—having occurred for some three years, operations were limited by the resultant shortage of nursery stocks suitable for planting.

A seedfall of Hoop and Bunya Pine occurred at the end of 1924 and beginning of 1925, as a result of which some 4,300 lb. of seed of these species were secured.

Details of collection of seed follow:—

Species.	Amount.		Cost.	
	Lb.	Oz.	£	s. d.
<i>Araucaria Bidwilli</i> (Bunya Pine)	3,407	0	57	11 10
<i>Araucaria Cunninghamii</i> (Hoop Pine)	968	8	37	19 9
<i>Agathis Palmerstoni</i> (Kauri)	5	0	2	15 0
<i>Agathis robusta</i> (Kauri)	27	4	13	3 0
<i>Cupressus macrocarpa</i>	1	0	0	3 0
<i>Eucalyptus corymbosa</i> (Bloodwood)	0	2	0	2 6
<i>Eucalyptus citriodora</i> (Lemon Irongum)	0	1½	0	0 9
<i>Eucalyptus crebra</i> (Narrowleaf Ironbark)	4	13	0	9 7
<i>Eucalyptus propinqua</i> (Grey Irongum)	0	3	0	2 0
<i>Eucalyptus microcorys</i> (Tallowwood)	5	6	8	5 0
<i>Eucalyptus maculata</i> (Spotted Irongum)	0	1	0	1 9
<i>Aleurites moluccana</i> (Candlenut)	9	0	1	0 4
<i>Dysoxylon Muellieri</i>	0	11	0	4 3
<i>Flindersia Brayleyana</i> (Maple Silkwood)	0	12	1	3 0
<i>Flindersia Mazlini</i> (Silkwood)	0	8	0	18 8
<i>Gmelina fasciculiflora</i> (White Beech)	4	0	0	8 8
<i>Juniperus procera</i>	2	0	0	9 3
<i>Elaeocarpus grandis</i> (Quondong)	102	0	2	14 1
<i>Leptospermum citratum</i> (Lemon-scented Teatree)	2	12	5	10 0
<i>Symplocos spicata</i> (White Hazelwood)	7	0	0	5 0
<i>Taxodium distichum</i>	50	0	1	6 6
<i>Tristania conferta</i> (Brush Box)	5	0	5	0 0
Hickory	0	4	0	3 8
<i>Gmelina Leichhardtii</i> (White Beech)	84	14	11	0 1
Total	4,688	3½	150	17 8

NURSERIES.

The nursery stocks at 30th June, 1925, were as shown in the table appended hereto:—

NURSERY STOCK AS AT 30TH JUNE, 1925.

Species.	NUMBER OF PLANTS IN NURSERIES.													Total.	
	R. 283 Colinton.	R. 485 Amamoor.	R. 135 Brooloo.	R. 6 Eungella.	R. 3 Fraser Island.	R. 287 Woo- woonga.	R. 299 Avoca.	R. 151 Neungna.	R. 220 Kilkivan.	R. 355 Kilkivan.	R. 20 Mary- vale.	R. 194 Barron.	R. 191 Barron.		R. 310 Gadgarra.
<i>Agathis robusta</i> (Kauri Pine) .. .. .	..	..	..	..	25,208	..	..	..	..	..	3,800	..	..	..	29,008
<i>Agathis Palmerstoni</i> (Kauri Pine) .. .. .	..	..	..	..	11,250	..	..	..	..	..	..	69	500	100	11,919
<i>Araucaria Bidwillii</i> (Bunya Pine)	10,260	..	92,512	378	..	..	2,000	10,000	1,450	..	..	..	..	..	116,600
<i>Araucaria Cunninghamii</i> (Hoop Pine)	330,300	45,500	160,088	1,000	82,806	8,000	32,000	71,200	39,550	18,454	35,065	69,052	..	..	893,015
<i>Cupressus sempervirens</i>	1,935	..	..	..	300	..	..	..	..	..	..	..	..	..	2,235
<i>Cupressus macrocarpa</i> .. .. .	..	..	..	..	5,290	..	..	..	..	..	..	..	..	..	5,290
<i>Callitris Macleayana</i> (Cypress Pine) .. .. .	..	..	..	..	1,764	..	..	..	500	..	..	..	..	..	2,264
<i>Eucalyptus crebra</i> (Narrow-leaved Ironbark) .. .. .	..	..	..	..	60	..	..	..	..	..	..	4,000	..	..	4,060
<i>Eucalyptus maculata</i> (Spotted Ironbark) .. .. .	..	..	..	..	..	..	..	..	..	..	..	4,419	..	..	4,419
<i>Eucalyptus microcorys</i> (Tallowwood) .. .. .	..	..	..	..	..	..	..	..	..	..	..	5,000	..	..	5,000
<i>Flindersia Brayleyana</i> (Maple Silkwood) .. .. .	..	..	..	..	..	..	..	..	..	..	..	5,040	..	..	5,040
<i>Pinus canariensis</i>	8,000	..	..	..	40	..	..	..	..	..	..	..	..	..	8,315
<i>Pinus caribaea</i>	150	..	..	..	2,978	..	..	..	..	..	650	765	..	..	4,543
<i>Pinus halepensis</i>	2,500	..	..	..	100	..	..	..	..	..	..	..	..	..	2,600
<i>Pinus insignis</i>	11,000	..	..	50	22	..	500	..	500	..	..	..	..	..	12,755
<i>Pinus insularis</i>	500	..	..	..	1,250	..	..	..	..	..	..	..	1,280	..	4,140
<i>Pinus longifolia</i> .. .. .	..	..	..	..	..	180	..	..	830	..	..	..	..	..	2,089
<i>Pinus maritima</i>	6,000	..	..	..	1,700	..	..	..	..	..	..	..	..	..	7,700
<i>Pinus patula</i>	2,200	..	..	..	8,560	200	..	..	1,050	900	3,306	..	..	..	17,066
<i>Pinus taeda</i>	400	..	..	..	416	..	..	..	250	2,340	157	..	..	..	3,563
Other species	904	..	..	200	1,716	100	..	..	..	84	538	12	..	30	3,579
	374,149	45,500	252,600	1,628	143,460	8,480	34,500	81,200	3,072	44,130	27,153	58,354	70,844	130	1,145,200

Nursery operations during the half-year were responsible for the following expenditures:—

	£	s.	d.
Nursery construction	200	4	0
Nursery working expenses	3,754	15	2
Water supply	111	6	6
	£4,066	5	8

The establishment and maintenance of water supplies are necessitated primarily by the nursery requirements.

PLANTATIONS.

At the end of the Report period there had been established throughout Queensland an area of 1,500 acres of plantation. Details of the year's work follow:—

MARY VALLEY WORKING PLAN AREA.

Brooloo State Forest Reserve 135—Planting operations were completed on Compartments 8A and 10A, Western Creek Logging Area.

On Compartment 8A the Hoop and Bunya Pine planted in 1921-22 were freed from competing growths and the plantation was refilled with Hoop Pine and a few Maple. The Maple are reported to be doing well under the shelter of a canopy of Wattle.

Compartment 10A was treated similarly to Compartment 8A, being fully stocked with Hoop Pine plants.

On Compartment 10B, about 3½ acres were felled for planting, and during the half-year 600 Hoop Pine plants were planted on this compartment.

On State Forest Reserve 256, Imbil, about 3,100 plants of Bunya Pine were planted on Compartment 5B, Branch Gully Logging Area.

FRASER ISLAND WORKING PLAN AREA.

On Eurong Logging Area, 74 acres were prepared for planting. It is proposed to plant this area up with Hoop and Kauri Pine on the better sites, and with Eucalypts on the remaining country.

On Tahwan Logging Area the use of poison in preparation of site was tried experimentally, and liberation of former plantations was effected.

On this area, planted Kauri on the bank of Wungoolba Creek are doing well, height growth up to 6 feet in eighteen months having been recorded. Hoop Pine and other species are making steady progress.

Operations on Woolaan Logging Area were confined to liberation of plantation areas. Reports show that growth has been best in the case of the larger plants used.

Over 12,000 Eucalypts (Tallowwood—*Eucalyptus microcorys*, and Red Stringybark—*Eucalyptus resinifera*) and 1,800 mixed plants, principally *Pinus* spp. were planted on Wungoolba Logging Area.

Planting of 13,500 Kauri and 800 *Cupressus macrocarpa* has been effected during the half year on Compartment 1 of McKenzie Logging Area at a spacing of 12 ft. by 12 ft. Reports indicate that the Kauri was making good progress before the end of the Report period. The balance of this area was projected for planting during 1925-26. On Compartment 21A of the same Logging Area preparations for planting were put in hand, and during 1925-26 it is proposed to treat the whole of Compartments 21A and 22A.

On Wungoolba Logging Area 1,500 plants of Tallowwood and Red Stringybark were planted in conjunction with operations for securing natural regeneration.

BENARKIN AND BUNYA MOUNTAIN WORKING PLAN AREAS.

BENARKIN STATE FOREST—

Compartment 4A, Benarkin Logging Area, was completely planted, and is now fully stocked. Many species have been used in planting, and results are being watched with interest. On the Railway plantation (5 acres) plants were freed from competing growths and a certain amount of replanting was done. The Silky Oak plantation on Compartment 3B, Benarkin Logging Area, was cleaned, and fencing surrounding Compartments 3 and 4 was attended to.

On Compartment 10B a small experimental planting was made of Bunya in lines brushed through *Tristania conferta* growth, and 31 acres of the same Compartment were planted with *Eucalyptus microcorys* (Tallowwood) and *Eucalyptus paniculata* (Grey Ironbark). Three acres of Compartment 10D were planted with *Eucalyptus crebra* (Narrow-leaf Ironbark), and *Eucalyptus Cloeziana* (Gympie Messmate). These plantings of Eucalyptus were designed to completely stock an area previously treated for natural regeneration. The operation has been successful.

Planting of 11 acres of Compartment 6A, Rocky Logging Area, with Hoop Pine was carried out in February. Here a prolonged heat-wave followed planting and affected results.

It is interesting to note the success of plants set out in the winter months—April to June—which, being rainier than usual, were taken advantage of for planting. The results were satisfactory.

The species to do best in plantation were Hoop Pine, *Pinus insignis*, *Pinus canariensis*, and Silky Oak.

STATE FOREST RESERVE 257, COOYAR AND EMU CREEK—

Preparation of an area of 14 acres on Compartment 4A for planting was completed, whilst a further 46 acres was partly prepared. Five thousand three hundred and fifty *Pinus insignis*, 650 *Pinus longifolia* (all tubed plants), and 2,000 *Pinus insignis* (open root) were planted on this area. The tubed plants looked well at the close of the Report period, survival percentage being very satisfactory, but of the *Pinus insignis* only 5 per cent. outlived a dry spell following planting.

STATE FOREST RESERVE 289, COOYAR—

Some 5,000 tubed plants, chiefly Bunya Pine and *Pinus insignis*, were planted on Compartment 2A, Cooyar Logging Area, with 87 per cent. success.

Experiments in the use of twigs and leaves for shade purposes, and in lightly cultivating round the plants, indicated that these measures assisted the establishment of growth of the plants.

An experimental planting of Red Cedar continues to show good results; the plants are now 4 ft. high and free from twig borer.

STATE FOREST RESERVE 151, NEUMGNA AND TUREEN—

About 4 acres of this State Forest (Bunya Mountains) was fenced and planted up with exotic pines—*Pinus insignis* and *Pinus maritima*, over 1,500 plants being used; at the end of the year practically all were surviving.

STATE FOREST RESERVE 299, AVOCA—

The only operations here were preparations for fencing of an area to be planted up.

ROCKHAMPTON WORKING PLAN AREA.

Operations on this Working Plan Area are confined to the Bayfield Reserve. Here during the half-year over 16,000 trees were planted; Hoop Pine (13,000 trees) being the species principally dealt with. Other species were Red Cedar (*Cedrela australis*), *Cedrela odorata*, *Callitris arenosa*, *Pinus insignis*, *Pinus halepensis*, *Pinus longifolia*, Kauri (*Agathis robusta*), *Eucalyptus pilularis*, *Eucalyptus citriodora*, *Eucalyptus Staigeriana*, and *Eucalyptus microcorys*. The success percentage was high. The total area of plantation on this reserve is 42 acres.

MACKAY WORKING PLAN AREA.

On the Eungella Forest, an area of 5 acres was planted with Hoop and Bunya Pine and Red Cedar as an experiment. Marsupials being absent, the Bunya seed was sown *in situ*, but bush rats accounted for all of the seeds so sown. A few seedlings planted out on a scrub edge established themselves and are making fast growth. A further area of 2 acres was planted with Hoop and Bunya Pine, Red Cedar, Silver Beech, and *Pinus insignis*. Percentages of success were satisfactory, and plants looked promising at the end of Report period.

KILKIVAN WORKING PLAN AREA.

Operations on State Forest Reserve 220, Kilkivan, were confined to the planting of blanks on the 37 acres of plantation, about 500 trees being planted on State Forest Reserve 355. About 250 plants were planted out.

NORTH QUEENSLAND DISTRICT.

On Timber Reserve 194, parish on Barron, 34½ acres were planted up during the half-year with 10,000 Blackbutt, and a smaller number of Indian Teak and Tallowwood. The percentage of success was satisfactory.

Eight acres of State Forest Reserve 191, parish of Barron, were planted up, the species used being Blackbutt (3,800), Hoop Pine (800), Teak (600), and a few *Cupressus macrocarpa*, *Cedrela odorata*, and *Flindersia acuminata* (Putts Pine).

Twenty acres were treated on Gadgarra State Forest. On this area the species planted out were Queensland Maple (*Flindersia Brayleyana*)—11,000 plants—and Silkwood (*Flindersia Maz'ini*)—of which 2,700 plants were used.

The acreage of established plantations at the end of the Report period was 81½ acres.

NATURAL REGENERATION OPERATIONS.

At 30th June, 1925, throughout the State, 12,500 acres of the natural forest had been treated for the promotion of regeneration.

BENARKIN WORKING PLAN AREA.

BENARKIN STATE FOREST—

On Benarkin Logging Area 51 acres of Eucalyptus forest were treated. A small experiment was carried out to determine the most effective method of using poison in the destruction of useless trees.

Operations on Rocky Logging Area were confined to an area of about 23½ acres. The cost of experimental methods tried here was found prohibitive.

On the Mill Logging Area, an area of 14 acres of established regeneration was thinned out.

STATE FOREST RESERVE 299, AVOCA—

On Nanango Logging Area a small stand of mixed Pine and Yellowwood was treated for regeneration.

MARY VALLEY WORKING PLAN AREA.

Six acres of forest on Casey's Gully Logging Area, Brooloo State Forest, were operated on. Ironbark and Bloodwood trees were freed from competing growths.

On Amamoor State Forest 8 acres on Compartment 1A, Skyring's Creek Logging Area, and 10 acres on Compartment 7D, Zachariah Creek Logging Area, were accorded liberation treatment.

GYMPIE-KILKIVAN WORKING PLAN AREA.

On Corella Reserve about 135 acres were treated for natural regeneration by ringbarking the undesired species.

Inspections of Reserves 220 and 355 in the Kilkivan Working Plan Area indicate that operations for liberation of Hoop Pine plants covering an area of 165 acres are showing satisfactory results.

NORTH QUEENSLAND DISTRICT.

On State Forest Reserve 191, parish of Barron, 23 acres of young forest was cleaned up by destruction of stinging tree and tree weeds.

On Timber Reserve 194 an area of 16 acres was dealt with under prescription for promoting regeneration of Maple and Silky Oak.

At the end of the Report period a total area of 860 acres had been treated for natural regeneration in the North Queensland District.

BRISBANE DISTRICT.

At Reserve 318 (Yandina) the work of treating the forest by culling out the useless trees was continued, an area of 477 acres being dealt with.

Operations on State Forest Reserve 69, Bunya, covered 189 acres.

FRASER ISLAND WORKING PLAN AREA.

Compartment 3, Wungoolba Logging Area, was dealt with by brushing the heavy Wattle growths.

Compartment 11A of the same Logging Area was treated for Cypress Pine regeneration.

Stanford Logging Area—

Four hundred and nine acres of this Logging Area were dealt with during the year by ringbarking of useless species, at a cost of 8s. 4d. per acre. The cost would have been reduced but for the fact of considerable wet weather occurring.

McKenzie Logging Area—

About 115 acres of final ringbarking and 84 acres of initial ringbarking, together with brushing and burning off operations, were carried out on this Logging Area. The Forest Officer reports that regeneration is steadily becoming apparent.

Wungoolba Logging Area—

Ringbarking of undesired species on Compartment 16A for the promotion of the growth of the better-class trees, was completed.

DALBY-ROMA WORKING PLAN AREA.

Operations in this Working Plan Area were confined to ringbarking of useless species and trees for the improvement of the stands of the commercial species, viz., Ironbark, Spotted Irongum, and Cypress Pine.

On Nudley State Forest 440 acres were treated, and on Braemar State Forest 160 acres.

FOREST PROTECTION.

FIRES.

The heavy precipitation met with during the half-year period made the protection of the forests from fire an easy task, outbreaks reported being very few.

Amounts expended in the various districts during the year in fire protection were very limited, and were confined to precautionary maintenance of fire lines and the completion of the fire-break system, on forests in drier localities, such as the Dalby District, which ordinarily are subject to fire visitation.

NOXIOUS PLANT DESTRUCTION.

Principal activity under this heading was in the direction of combating the chief vegetable pest of Queensland—prickly-pear—the Roma-Dalby and Inglewood Working Plan Areas being the chief centres of operations.

On Braemar State Forest, pear on an area of 600 acres was poisoned, and 320 acres was cleared of scattered pear on Yeulba State Forest.

Cochineal insects were spread on areas containing dense pear.

Inglewood District.

The services of the Overseer in the Inglewood District were principally utilised during the Report period in pear destruction on Reserve 101, Devine. In line with the policy laid down by the Pear Commission, the scattered pear was first dealt with. About 5,400 acres of the reserve were treated by poisoning, during the half-year, at a cost of £112.

Gympie District.

In the Gympie district the chief weed pest is the lantana, the spread of which on several of the reserves caused some anxiety, and opportunity was taken to check it before the infestation became too heavy.

Over 300 acres were treated on all reserves, the greatest part of this area being dealt with on Glastonbury Reserve.

Benarkin-Bunya Mountains Working Plan Area.

In this Working Plan Area, work comprises eradication of Noogoora burr, prickly-pear, and lantana. Patches of these on the various State Forests on which there are resident gangs were dealt with during the Report period.

Bundaberg District.

The work of the Forest Overseer on the Goodnight Scrub Area was practically confined to the destruction of prickly-pear, which is spreading on to the State Forest. As a measure of prevention the Board proposes to fence this area along the Burnett River boundary and stop cattle from further spreading the pest.

FOREST ORGANISATION.

This section of forestry activity embraces the construction of roads, paddocks, buildings, and other improvements required for the working of the forests, both from the silvicultural and logging standpoints.

Hereunder is a schedule indicating expenditures under this head during the half-year.

It is worthy of note that the efforts of the Forest Service towards providing pasture on Fraser Island, on which, as it is comprised of pure sand, natural grasses do not exist, have met with some success, inasmuch as the feed bill for the half-year was £160, as against £210 for the corresponding half of 1925.

The chief item of maintenance in regard to paddocks was the destruction of suckers.

Cottages in the Benarkin and Mary Valley Working Plan Areas were painted where necessary, and a fair amount of repair work was done.

Schedule showing works undertaken follows:—

WATER SUPPLY ESTABLISHMENT.

Area.	Particulars.	Cost.
North Queensland—		£ s. d.
R. 191, Barron	Cost of establishment tank, tank stand, windmill and reticulation (part)	57 1 4
R. 194, Barron	Deepening well	43 17 7
	Erection of engine-room	29 15 8
		£130 14 7

BUILDINGS CONSTRUCTION.

Area.	Particulars.	Cost.
		£ s. d.
Dalby—		
R. 93, Nudley	Erection of Bunk hut	33 0 0
Mackay—		
R. 6, Eungella	Bunk hut No. 2 (part)	10 3 4
North Queensland—		
R. 185, Dandulla	Completion of hut	66 2 9
R. 194, Barron	Removal of hut, additions, and re-erection	149 15 10
R. 191, Barron	Repairs and additions	15 12 8
R. 418, Danbulla	Construction four-roomed hut	137 0 5
R. 310, Gadgarra	Construction tool shed	9 3 10
R. 19, Garioch	Construction bunk hut	56 10 0
Mary Valley—		
R. 435, Amamoor	Erection cottage for workman	37 7 11
Brisbane—		
R. 69, Bunya	Erection cart shed	29 5 10
R. 137, Yabba	Erection hut and office	50 10 8
		£594 13 3

BUILDINGS—MAINTENANCE.

Reserve.	Cost.	
	£	s. d.
Gympie District—		
R. 700, Gympie and Curra	4	11 0
Fraser Island—		
R. 3, Fraser Island	3	15 0
Mackay—		
R. 6, Eungella	1	8 9
Benarkin—		
R. 283, Colinton	84	11 0
R. 299, Avoca	0	10 0
Mary Valley—		
R. 135, Brooloo	89	18 2
R. 435, Amamoor	68	17 6
R. 256, Imbil	47	12 8
	£301	4 11

PADDOCKS—ESTABLISHMENT.

Area.	Particulars.	Cost.	
		£	s. d.
Fraser Island—			
R. 3, Fraser Island	Planting grasses on Compartment 4A, Wungoolba Logging Area	2	5 7
Mackay—			
R. 6, Eungella	Forest Paddock No. 1 (Extension). Fenced, and grass planted, 28 acres	55	7 6
	Forest Paddock No. 2. Fenced, grassed 27 acres, water supply improved	70	15 2
North Queensland—			
R. 185, Danbulla	Establishment Horse Paddock, 30 acres	74	7 5
R. 191, Barron	Conversion proposed Aboretum to Horse Paddock	5	14 8
R. 194, Barron	Establishment Horse Paddock, 30 acres	63	5 0
Mary Valley—			
R. 135, Brooloo	Fencing Paddock No. 8	44	1 9
R. 135, Brooloo	Establishment No. 10 Paddock (part)	1	4 0
Brisbane—			
R. 69, Bunya	Fencing No. 2 Paddock	18	5 11
R. 69, Bunya	Fencing No. 3 Paddock	25	6 6
R. 137, Yabba	Establishment Horse Paddock	29	16 0
		£390	9 6

PADDOCKS—MAINTENANCE.

Reserve.	Cost.	
	£	s. d.
Gympie District—		
R. 220, Kilkivan	4	18 11
R. 700, Gympie and Curra	9	19 7
R. 355, Kilkivan	1	18 11
R. 124, Glastonbury	20	11 10
Fraser Island—		
R. 3, Fraser Island	51	18 2
Dalby—		
R. 93, Nudley	1	11 0
R. 4, Braemar	9	8 0
Benarkin—		
R. 283, Colinton	37	19 10
R. 257, Ernu Creek	0	15 5
R. 299, Avoca	21	15 0
Mary Valley—		
R. 135, Brooloo	125	14 4
R. 435, Amamoor	83	6 0
R. 256, Imbil	33	5 11
Brisbane—		
R. 318, Maroochy	19	11 11
	£422	14 10

ROADS—CONSTRUCTION.

Road.	Work Performed.	Cost During Period.
		£ s. d.
Gympie District— Main Road, R. 393, Woondum	Clearing and bushing 330 chains; 5½ chains side cutting ..	73 2 1
North Queensland District— Road, R. 310, Gadgarra .. Subsidiary Road, R. 418, Dan- bulla	Construction Clearing small logging road	264 5 8 9 7 8
		346 15 5
Brisbane District— Foxlowe Road	Improvements, 60 chains	102 1 11
		£448 17 4

ROADS—MAINTENANCE.

Reserve or Road.	Cost.
	£ s. d.
Gympie District (North Coast and Kilkivan Working Plan Areas)—	
R. 700, Gympie and Curra	17 16 5
R. 221, Kilkivan	1 13 0
R. 355, Kilkivan	1 10 2
R. 124, Glastonbury	172 4 8
North Queensland District—	
R. 310, Gadgarra	34 1 0
R. 475, Danbulla	2 1 8
R. 194, Barron	26 6 8
Benarkin Working Plan Area—	
Reserves 120, Neumgna, 289 and 379, Cooyar, and 257, Cooyar and Emu Creek ..	109 9 11
Tarong Working Plan Area—	
General Maintenance	16 4 8
Brisbane Working Plan Area—	
R. 69, Bunya	10 1 6
Foxlowe Road	78 19 3
	£470 8 11

FOREST SURVEY.

1st January, 1925, to 30th June, 1925.

Reserve Number.	Parish.	Area in Acres.
CLASS 1.—INSPECTIONS OF VACANT CROWN LANDS AND TIMBER RESERVES.		
Timber Reserve 431	Mia Mia and Bong Bong	3,340
Timber Reserve 212 and Vacant Crown Land	Hazeldean and Abingdon	8,160
Timber Reserve 836	Maida Hill	790
		12,290
CLASS 2.—FLYING ASSESSMENT SURVEYS OF VACANT CROWN LANDS, PROCLAIMED TIMBER RESERVES AND STATE FORESTS.		
Timber Reserve 431	Mia Mia and Bong Bong	16,641
Timber Reserve 212	Hazeldean and Abingdon	3,000
		19,641
CLASS 3.—VALUATION AND ORGANISATION SURVEYS OF STATE FORESTS.		
State Forest 137 and 342	Yabba and Monsildale	14,500
State Forest 151, 395, and 438	Neumgna, Tureen, and Haly .. .. .	..
State Forest 135	Brooloo and Cambroon	7,931
Portion 1v	Cooyar	3,100
Timber Reserve 202	East Barron (Lake Eacham)	1,125
National Park Reserve 68	Tureen .. .. .	..
		26,656

BRISBANE WORKING PLAN AREA.

Survey operations in this Working Plan Area were commenced in January in the form of a Class 3 Survey of State Forests 137 and 342, parishes of Monsildale and Yabba, better known as the Foxlowe Reserve.

Twelve compartments were marked on the ground on Mill Logging Area adjacent to Hancock and Gore's sawmill, and a Forest Station was also established. Work carried out at the Station site under the supervision of the Deputy Forester in charge of the survey camp included the erection of fencing for two paddocks and nursery, together with the building of hut 18 ft. by 10 ft. with 6 ft. verandah, and provision of horse yard. The period was exceptionally wet, and time has consequently been lost. This is offset by the fact that an abundant supply of grass was available for forage for horses used.

For the half-yearly period, a total of 12,083 acres were dealt with, mileage being as follows:—

	Miles.	Chains.
Theodolite and Chain	7	2
Compass and Chain	10	73
Strip Survey	87	26
Boundary elevations	25	65
Compass and Step	0	34
Exploratory Investigations	353	0

NANANGO WORKING PLAN AREA.

BUNYA MOUNTAINS, STATE FORESTS 151, 395, AND 438, NEUMGNA, TUREEN, AND HALY, AND PORTION IV, COOYAR—

The Class 3 Survey was recommenced on the 5th January. A Class 1 inspection was also made, during the period, of Timber Reserve 836, Maida Hill. By the 23rd May, field work had been completed and it was then decided that an estimate of Pine on the National Park adjoining be made whilst the camp was in the vicinity. After a fortnight's work it was found impossible to carry on, owing to the lack of water and the inaccessible nature of the country, and the camp was closed down from 7th June, 1925, until 28th June, 1925.

Work was resumed on 29th June, 1925, the shifting of camp to Wondai not being completed by 30th June, 1925.

Mileages are given hereunder:—

State Forests 151 and 395—	Miles.	Chains.
Compass and Chain	20	44
Old Boundaries (Abney)	17	26
Strip Survey	80	68
Inspections	60	0
Reserve 68, National Park, Tureen—		
Strip Survey	6	11½
Inspections	18	0

The number of working days wet amounted to 16½, whilst a total of five flying camps were established during the half-year.

MACKAY WORKING PLAN AREA.

During the Report period, Class 2 Surveys were carried out on Timber Reserves 212, Hazeldean and Abingdon, and 431, Mia Mia and Bong Bong. In the parishes of Mia Mia and Bong Bong types varied from easy to very rough forest country. Reserve 212 is entirely composed of very rough and broken country, often inaccessible, and carries about equal areas of forest and dense tangled scrub.

A heavy wet season was experienced, the rainfall probably amounting to 70 inches, and field work was retarded accordingly.

MARY VALLEY WORKING PLAN AREA.

Class 3 Survey was continued on State Forest 135, Brooloo and Cambroon, and a total of 7,931 acres had been dealt with up to the end of Report period. In addition, an area of 29 acres was laid out into blocks for the purposes of Taungya leasing on State Forest 435 (Harry's Creek), Amamoor, towards the end of March.

The following logging areas were dealt with :—							Acres.
Yabba	..	..	..	..	..	..	2,048
Borumba	..	..	..	..	..	..	2,343
Coonoon Gibber 1	..	..	..	..	..	..	1,057
Coonoon Gibber 2	..	..	..	..	..	..	1,291
Coonoon Gibber 3	..	..	..	..	..	..	1,192
Total	..	..	..	..	..	..	7,931

On 23rd April, 1925, the camp was shifted to Coonoon Gibber Creek, the work on the northern section having been finalised. Work was retarded by rain, more especially in the earlier part of the year, a total of thirty-two wet days being experienced during the Report period.

Mileage is as follows :—

State Forest 135, Brooloo and Cambroon—							Miles.	Chains.
Compass and Chain	..	..	..	..	..	..	29	46
Strip Survey	..	..	..	..	..	..	38	5
Old boundaries	..	..	..	..	..	..	7	12
Compass and Step	..	..	..	..	..	..	1	3
STATE FOREST 435, AMAMOR (TAUNGYA LEASES)—								
Compass and Chain	..	..	..	..	..	..	4	2
Levels	..	..	..	..	..	..	0	16
Exploratory Investigation	..	..	..	..	..	..	10	0

ATHERTON WORKING PLAN AREA.

During January the northern camp was engaged upon the completion of the timber estimate of the eight compartments laid out at the end of last Report period.

On the 18th February (on the representation of the Lakes Trust, a local body formed for the purpose of developing and improving both Lake Eacham and Lake Barrine as beauty spots) camp was shifted to Reserve 202, East Barron.

Costs of the camp have been debited against the silvical funds allotted from the proceeds of timber sales. Survey work on these reserves was finished on 5th June, when the camp was shifted to State Forest 418, Danbulla, where a compartment survey was commenced.

Details of mileage are given hereunder :—

Timber Reserve 194, Barron—								
Strip Survey	..	..	..	..	..	..	5	miles
Reserve 202, East Barron—								
Compass and Chain	..	..	..	..	..	..	25	miles
Exploratory Investigation	..	..	..	..	..	..	55	miles

COSTS OF CAMPS 1ST JANUARY, 1925, TO 30TH JUNE, 1925.

Survey Camp—	£	s.	d.
Allom, N.D.	935	10	7
Cole	462	0	11
Markwell	3	14	4
Saunders	887	19	3
Twine	656	18	0
Compartment Survey, Reserve 287, Woowoonga	4	1	4
Total	£2,950	4	5

TIMBER CUT.

Attached are particulars of the Forest Service Timber Cut for the half-year January to June, 1925:—

MILLING TIMBER, HOOP AND BUNYA PINE.		
"A" Milling	.. .. .	19,715,619 super. ft.
"B" Tops	.. .. .	5,467,083 super. ft.
Kauri Pine	.. .. .	709,721 super. ft.
Cypress Pine	.. .. .	1,109,765 super. ft.
Cabinet Timbers	.. .. .	1,479,745 super. ft.
Hardwoods	.. .. .	1,187,252 super. ft.
Hardwoods	.. .. .	13,219 lin. ft.
Scrubwoods	.. .. .	775,894 super. ft.
Sleepers	.. .. .	27,136 pieces
Sleeper Blocks	.. .. .	31,547 pieces
Transoms, Headstocks, Crossings, &c.	.. .. .	75,197 super. ft.
Girders, Corbels, Piles, Sills, &c.	.. .. .	43,305 lin. ft.
Fencing Material (pieces)	.. .. .	82,991 pieces
House Blocks	.. .. .	61,717 lin. ft.
Poles	.. .. .	79,229 lin. ft.
Mining Timber	.. .. .	165,991 lin. ft.*
Miscellaneous	.. .. .	37,712 super. ft.
Fuel	.. .. .	29,288 tons 18 cwt.
Sandalwood	.. .. .	199 tons 1 cwt. 3 qr. 6 lb
Mangrove Bark	.. .. .	74 tons 15 cwt.
Charcoal (20 bags to ton)	.. .. .	19 tons 5 cwt.
Charcoal	.. .. .	500 bags
Sand	.. .. .	51 cub. yds.
Gravel	.. .. .	5 loads
Fencing Material	.. .. .	6,474 lin. ft.
Square Timber	.. .. .	37,444 super. ft.
Square Timber	.. .. .	92 lin. ft.
Slabs (Miscellaneous)	.. .. .	4,950 pieces

APPENDIX "B."

Return of Timber cut on Crown Lands for Financial Year ending 30th June, 1926.

Species.	Quantity.	Price.	
		£	s. d.
Hoop and Bunya Pine—			
Ply	2,001,691 super. ft.		
Logs	38,918,735 super. ft.	} 314,933	19 2
Tops	12,156,974 super. ft.		
Kauri Pine	1,513,878 super. ft.			7,967	8 0
Cypress Pine	2,155,956 super. ft.	1,842	16 6
Cypress Pine	9,748 lin. ft.		94 16 10
Cabinet Timbers	3,094,120 super. ft.	29,858	10 7
Hardwood	9,222,851 super. ft.	12,077	14 9
Hardwood	15,076 lin. ft.		39 14 11
Scrubwoods	3,311,228 super. ft.	8,265	3 10
Sleepers	87,070 pieces	1,046	11 1
Sleeper Blocks	190,907 pieces	3,025	19 11
Transoms, Crossings, Headstocks	655,096 super. ft.	406	17 6
Wales and Braces	5,002 super. ft.		2 18 4
Girders, Corbels, Piles, Sills	54,259 lin. ft.	1,522	1 9
Fencing Material	225,909 pieces	765	0 5
Fencing Material	4,773 lin. ft.		17 10 0
House Blocks	192,751 lin. ft.	1,999	13 9
Poles	197,744 lin. ft.	1,730	11 10
Poles	237 pieces		20 13 6
Mining Timber	161,309 lin. ft.	418	12 8
Fuel	61,387 tons 12 cwt.	2,631	1 0
Charcoal	500 bags		2 0 0
Sandalwood	144 tons 3 cwt. 14 lb.	563	16 11
Slabs	16,325 super. ft.	35	0 6
Saplings	1,075 pieces		6 15 7
Logs	2,897 lin. ft.		12 3 8
Bridge Timbers	27,301 super. ft.	23	11 6
Miscellaneous	4,061 lin. ft.	23	9 8
Gravel	2,991 cub. yds.	74	15 6
Gravel	714 tons 14 cwt.		27 17 1
Sand	150 cub. yds.		3 15 0
Sand	122 tons		3 1 3
Guano	91 tons		11 7 6
Mangrove Bark	68 tons		3 9 3
Total Value..		£389,469	9 9

The value of railway timbers has been assessed at minimum stumpage rates.

APPENDIX "C."

Annual Cut Pine from 1st July, 1925, to 30th June, 1926.

	Actual Cut.	Approved Cut.
Brisbane Valley	16,211,927	15,250,000
Kilkivan	6,458,163	10,500,000
Many Peaks	421,785	4,800,000
Mary Valley	10,380,893	8,500,000
Nanango	4,553,502	6,500,000
Kilcoy	6,112,495	5,570,000
Warwick	536,494	2,750,000
Bundaberg	990,188	2,000,000
Ipswich, Brisbane	4,235,390	3,250,000
Maryborough	1,470,918	1,500,000
North Coast	831,249	100,000
Mackay	89,180	100,000
Dalby	106,000	
	52,398,184	61,000,000

APPENDIX "D."

Revenue collected under the Timber and Quarry Regulations for twelve months ending 30th June, 1926.

District.	License Fees.		Deposits.		Royalty.		Total.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Southern Queensland—								
Benarkin								
Brisbane								
Bundaberg								
Gladstone								
Gympie								
Nanango	146	6 0	3,019	2 0	314,543	1 2	317,708	9 2
Maryborough								
Mary Valley								
Warwick								
Kilkivan								
Ipswich								
Kingaroy								
Aramac	0	15 0					0	15 0
Atherton	88	11 0	1,709	2 7	33,344	6 9	35,142	0 4
Barcaldine	11	7 0	10	0 0	113	17 8	135	4 8
Blackall	9	16 0	1	0 0	24	5 1	35	1 1
Bowen	16	4 0	50	2 4	393	5 2	459	11 6
Boulia	1	15 6			0	13 4	2	8 10
Burketown	0	5 0					0	5 0
Charleville	17	13 0	71	12 6	50	17 8	140	3 2
Charters Towers	29	6 6	68	1 8	1,402	0 11	1,499	9 1
Chillagoe	0	18 0					0	18 0
Clermont	3	12 6	38	17 6	885	10 11	928	0 11
Cloncurry	12	1 0	26	15 0	145	14 1	184	10 1
Croydon	1	1 6			3	11 6	4	13 0
Cooktown	0	8 0			68	18 0	69	6 0
Cunnamulla	5	18 0	15	13 0	1	8 0	22	19 0
Dalby	5	10 0	117	3 6	919	8 2	1,042	1 8
Emerald	2	8 0	20	0 0	539	16 9	562	4 9
Gayndah	6	15 6	12	8 0	283	1 1	302	4 7
Goondiwindi	7	11 6	44	5 0	272	14 2	324	10 8
Georgetown	3	1 6			0	5 9	3	7 3
Hughenden	19	8 6	12	10 0	509	6 6	541	5 0
Ingham	33	18 6	72	7 6	363	11 6	469	17 6
Innisfail	46	12 0	123	15 6	2,300	3 10	2,470	11 4
Inglewood	3	17 0	18	5 0	520	13 3	542	15 3
Isisford	4	8 0					4	8 0
Jundah	0	14 0			10	15 5	11	9 5
Kynuna	3	11 0			5	2 0	8	13 0
Longreach	8	19 5			86	15 6	95	14 11
Mackay	28	12 0	133	10 6	5,748	2 2	5,910	4 8
Mackinlay	1	19 6			8	7 0	10	6 6
Muttaburra	1	5 0			3	19 0	5	4 0
Normanton	0	15 0					0	15 0
Port Douglas	0	5 0			4	0 0	4	5 0
Proserpine	6	4 0			9	1 2	15	5 2
Rockhampton	17	0 0	98	12 3	2,603	10 4	2,719	2 7
Roma	1	10 0	50	12 6	353	18 7	406	1 1
Stanthorpe	0	10 0	1	0 0	11	17 6	13	7 6
Springsure	5	5 0	45	0 0	310	16 7	361	1 7
St. George	6	15 6	22	0 0	130	17 4	159	12 10
Stonehenge	1	0 0			1	0 0	2	0 0
Surat	0	15 0			3	11 0	4	6 0
Taroom	4	0 0			21	1 11	25	1 1
Tambo	4	18 6			14	16 5	19	14 11
Thursday Island	5	3 0			243	10 10	248	13 10
Thargomindah	1	4 0					1	4 0
Toowoomba	0	14 0	5	0 0	1,458	8 9	1,464	2 9
Townsville	42	17 6	120	12 11	1,444	4 6	1,607	14 11
Winton	5	19 6			7	5 0	13	4 6
Totals	629	5 5	5,907	9 3	369,167	12 3	375,704	6 11

APPENDIX "E."

Revenue collected under the Timber and Quarry Regulations for the six months ending 30th June, 1925.

District.	License Fees.		Deposits.		Royalty.		Totals.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Southern Queensland—								
Benarkin								
Brisbane								
Bundaberg								
Gladstone								
Gympie								
Nanango								
Maryborough								
Mary Valley								
Warwick								
Kilkivan								
Ipswich								
Kingaroy								
Aramac	0	10 0					0	10 0
Atherton	47	5 6	509	18 7	15,372	2 7	15,929	6 8
Barcaldine	10	16 0	2	0 0	50	19 1	63	15 1
Blackall	9	11 6	5	0 0	14	10 6	29	2 0
Boulia	0	4 0					0	4 0
Bowen	8	12 0	14	0 0	132	0 9	154	12 9
Burketown	0	7 6			0	19 2	1	6 8
Camooeal					0	16 0	0	16 0
Charleville	12	16 0	28	4 9	19	12 4	60	13 1
Charters Towers	13	18 0	18	0 0	466	6 2	498	4 2
Chillagoe	0	6 0					0	6 0
Clermont	2	15 0	1	0 0	847	13 8	851	8 8
Cloncurry	4	18 0	2	0 0	48	3 6	55	1 6
Cooktown	0	5 0			26	0 0	26	5 0
Croydon	0	2 0					0	2 0
Cunnamulla	5	5 0	1	4 5			6	9 5
Dalby	2	5 0	42	15 0	409	18 2	454	18 2
Emerald	5	0 0	35	0 0	395	18 7	435	18 7
Gayndah	4	10 6	7	0 0	343	16 4	355	6 10
Georgetown	2	9 6			1	1 8	3	11 2
Goondiwindi	4	10 0	4	0 0	259	4 4	267	14 4
Hughenden	17	16 6	87	19 6	684	8 10	790	4 10
Ingham	38	8 6	29	0 0	93	12 11	161	1 5
Inglewood	6	15 0	1	0 0	264	14 0	272	9 0
Innisfail	17	10 0	120	0 0	1,329	11 11	1,467	1 11
Isisford	0	2 0					0	2 0
Jundah	1	6 0			9	11 1	10	17 1
Kynuna	5	14 0			22	9 0	28	3 0
Longreach	4	5 0			13	8 1	17	13 1
Mackay	16	4 0	75	0 0	3,273	18 4	3,365	2 4
Mackinlay	3	14 6			6	12 1	10	6 7
Maytown					16	3 5	16	3 5
Muttaburra	3	6 8					3	6 8
Normanton	1	3 0					1	3 0
Proserpine	0	18 6					0	18 6
Rockhampton	17	12 0	65	0 0	1,213	3 1	1,295	15 1
Roma	1	0 0	18	14 4	143	9 7	163	3 11
Springsure	0	17 0			6	3 0	7	0 0
Stanthorpe			6	0 0	26	17 11	32	17 11
St. George	2	13 6	8	0 0	45	2 11	55	16 5
Surat	0	15 0					0	15 0
Tambo	2	10 6			18	17 10	21	8 4
Taroom	2	2 6			7	7 6	9	10 0
Thargomindah	1	6 0					1	6 0
Thursday Island	3	5 0			63	14 2	66	19 2
Toowoomba	2	7 6	10	0 0	109	12 6	122	0 0
Townsville	32	11 0	20	17 1	442	1 7	495	9 8
Windorah	1	14 0					1	14 0
Winton	3	6 0			0	1 0	3	7 0
Totals	£377	1 2	£3,224	12 11	£186,936	6 9	£190,538	0 10

APPENDIX "F."

Collections under the Timber and Quarry Regulations from 1st January, 1919, to 30th June, 1926.

LAND AGENTS' DISTRICTS.	1919.			1920.			1921.			1922.			1923.			1924.			1st January, 1925 to 30th June, 1925.			1st July, 1925 to 30th June, 1926.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Aramac ...																			0	10	0			
Atherton ...	1,293	6	4	3,347	12	1	7,063	2	0	23,737	16	6	34,150	10	11	32,274	4	11	15,929	6	8	35,142	0	4
Banana ...	0	15	0	4	19	6	0	7	6	0	7	6				131	0	6				135	4	8
Barcaldine ...	139	17	1	139	8	8	148	13	2	165	17	2	116	16	0	8	3	4	29	2	0	35	1	1
Blackall ...	59	13	1	49	13	5	60	3	7	57	18	2	42	5	1	2	16	6				2	8	10
Boulia ...	10	8	3	10	15	6	13	13	6	7	5	8	5	4	0	2	16	6				459	11	6
Bowen ...	193	11	3	1,700	19	10	691	1	5	967	18	10	1,365	17	1	750	9	4	154	12	9	317,708	9	2
Brisbane ...	2,788	3	4	4,611	15	5	2,957	1	0	7,220	11	1	29,761	11	9	316,344	18	1	162,920	13	5			
Bundaberg ...	3,263	8	5	5,947	13	9	6,097	14	10	3,859	18	10	2,270	18	3									
Burketown ...	13	18	0	8	6	6	32	19	0	13	13	0	13	1	7	9	15	4						
Cairns ...	768	17	11	1,218	0	9	2,657	5	10	*			1	4	0	*			0	16	0			
Camooweal ...																			60	13	1	140	3	2
Charleville ...	25	3	2	16	12	6	30	4	5	35	10	8	15	0	11	42	3	0	498	4	2	1,499	9	1
Charters Towers ...	979	7	3	1,542	1	5	927	16	2	465	0	0	641	19	0	1,079	6	1				0	18	0
Chillagoe ...																			851	8	8	928	0	11
Clermont ...	1,103	1	8	1,787	6	4	819	6	1	427	6	1	1,539	1	7	1,801	16	8				184	10	1
Cloncurry ...	131	6	10	831	2	6	70	2	1	71	16	5	70	15	11	205	18	1	55	1	6	69	6	0
Cooktown ...	145	8	11	264	3	6	205	5	10	131	16	9	56	1	0	90	15	11	26	5	0	4	13	0
Croydon ...																			0	2	0	22	19	0
Cunnamulla ...	3	2	0	10	18	2	18	15	2	35	6	4	29	18	7	21	19	6	6	9	5			
Dalby ...	989	17	2	2,251	15	8	1,317	0	10	1,021	16	5	1,222	1	3				454	18	2	1,042	1	8
Gayndah ...	73	0	6	26	9	9	70	6	8	155	2	8	173	6	6	242	7	3	355	6	10	302	4	7
Georgetown ...	4	13	0	13	10	6	8	1	9	5	12	0	0	10	0	0	11	9	3	11	2	3	7	3
Gladstone ...	1,831	1	1	2,243	18	2	2,043	13	0	11,155	13	10	11,459	19	9							324	10	8
Goondiwindi ...	60	1	5	50	18	2	143	13	0	177	5	2	194	1	1	382	10	0	267	14	4			
Gympie ...	25,606	1	0	51,924	2	3	44,622	8	8	82,741	13	7	110,401	9	0									
Herberton ...	1,307	0	6	823	10	11	462	1	5	*			*			*			*			*		
Hughenden ...	353	14	9	385	19	2	236	11	7	221	9	6	252	10	1	661	3	1	790	4	10	541	5	0
Ingham ...	502	9	10	497	9	4	158	17	7	371	12	9	596	7	9	860	4	9	161	1	5	469	17	6
Inglewood ...	752	13	10	1,178	11	3	957	18	5	1,226	15	0	1,561	14	1	1,387	13	0	272	9	0	542	15	3
Innisfail ...	155	7	10	106	17	1	226	4	8	63	18	4	358	2	9	2,670	4	11	1,467	1	11	2,470	11	4
Ipswich ...	21,775	13	4	21,974	10	11	20,626	16	3	20,893	10	11	89,076	9	11									
Isisford ...	2	6	6	1	8	0	3	2	6	2	5	3	0	11	6	1	6	10	0	2	0	4	8	0
Jundah ...	11	11	6	22	13	9	29	6	8	27	4	5	12	13	7	13	3	6	10	17	1	11	9	5
Kyuna ...																			28	3	0	8	13	0
Longreach ...	89	9	6	87	16	1	81	6	2	140	0	8	111	10	10	123	17	9	17	13	1	95	14	11
Mackay ...	382	1	7	553	14	3	542	9	4	2,305	12	11	7,506	19	2	5,582	19	4	3,365	2	4	5,910	4	8
Mackinlay ...																			10	6	7	10	6	6
Maryborough ...	3,524	3	11	5,718	17	5	6,065	9	11	5,633	13	2	5,010	16	3									
Maytown ...																			16	3	5			
Muttaburra ...																			3	6	8	5	4	0
Nanango ...	23,592	18	0	25,364	12	10	30,664	11	1	38,230	1	2												
Normanton ...	203	6	6	136	5	8	144	17	9	137	12	9	10	13	9	16	9	0	1	3	0	0	15	0
Port Douglas ...	6	6	6	0	10	0	11	9	10	0	12	0	6	4	0	0	5	0				4	5	0
Proserpine ...																			0	18	6	15	5	2
Ravenswood ...	318	11	0	593	6	5	440	1	10	7	0	6												
Rockhampton ...	3,201	0	11	3,219	0	9	1,468	19	2	1,791	8	5	1,970	18	2	3,695	6	6	1,295	15	1	2,719	2	7
Roma ...	134	7	9	772	2	3	557	5	3	766	2	1	657	2	10	383	18	6	163	3	11	406	1	1
St. George ...	55	4	2	63	14	10	112	18	9	165	13	8	86	19	10	31	8	11	55	16	5	159	12	10
St. Lawrence ...	261	3	10	514	8	0	160	15	6	275	2	2	0	7	6	0	15	0						
Springsure ...	582	3	2	1,035	14	1	1,153	12	10	536	11	2	743	17	3	468	18	6	442	18	7	923	6	4
Stanthorpe ...	0	7	6	128	7	2	224	0	9	63	9	4	71	10	4	152	14	0	32	17	11	13	7	6
Stonehenge ...																						2	0	0
Surat ...	1	11	3	1	13	9	4	6	11	16	19	10	2	14	2	5	17	0	0	15	0	4	6	0
Tambo ...	18	14	1	33	12	7	42	2	3	38	4	0	38	8	11	50	18	2	21	8	4	19	14	11
Taroom ...	43	18	8	36	0	11	84	11	9	16	12	6	18	7	5	9	2	4	9	10	0	25	1	11
Thargomindah ...	0	12	0				1	2	0	0	18	0	0	10	0	0	4	0	1	6	0	1	4	0
Torres ...	235	19	5	195	2	11	209	11	6	92	15	4	32	14	1	73	19	4	66	19	2	248	13	10
Toowoomba ...	4,538	18	4	3,272	14	1	1,802	3	2	679	2	6	1,756	17	0	1,025	17	1	122	0	0	1,464	2	9
Townsville ...	502	16	8	519	7	4	611	14	11	675	2	2	570	3	0	766	1	9	495	9	8	1,607	14	11
Warwick ...	636	6	9	523	7	3	110	9	9	129	11	5	143	19	10									
Windorah ...	3	14	6	11	10	0	6	0	3	7	8	6	3	6	2	3	10	0	1	14	0			
Winton ...	19	0	6	26	16	3	40	12	4	53	11	9	46	9	9									

APPENDIX "G."

Prices of Log Timber.

The following Schedule illustrates the fluctuation in the market price of logs during the year 1st July, 1925, to 30th June, 1926:—

Species.	Log Class.	Delivery.	Price.
Red Cedar	6 ft. to 7 ft. 11 in.	F.o.b. Mackay	45s. to 55s.
Maple and Silkwood	8 ft. to 9 ft. 11 in.	F.o.r. Brisbane	42s. for job lots
		F.o.b. Cairns	48s. to 62s. and back to 48s.
Kauri Pine	8 ft. plus	F.o.b. Cairns	32s.
White Beech (Teak)	6 ft. plus	F.o.b. Cairns	26s. to 23s. 9d.
		F.o.r. Brisbane	32s. 6d.
Red Cedar	6 ft. plus	F.o.r. Brisbane	42s.
Red Satinay	6 ft. plus	F.o.r. Brisbane	22s. 6d. to 26s.
Bolly Wood	5 ft. plus	F.o.r. Brisbane	18s. 6d.
Bolly Wood	6 ft. plus	F.o.b. Cairns	16s. 6d.
Silver Quandong	5 ft. plus	F.o.r. Brisbane	18s.
		F.o.b. Cairns	26s. to 20s. 9d.
Rose Mahogany	6 ft. plus	F.o.r. Brisbane	16s. 9d.
Yellowwood Ash	6 ft. plus	F.o.r. Brisbane	18s. to 23s. 6d.
Crow's Ash	6 ft. plus	F.o.r. Brisbane	18s. 6d.
Silver Ash	5 ft. plus	F.o.r. Brisbane	18s. 6d.
Blush Cudgerie (Pink Poplar)	5 ft. plus	F.o.r. Brisbane	10s. 6d.
Brown Tulip Oak	5 ft. plus	F.o.r. Brisbane	10s.
Red Tulip Oak	6 ft. plus	F.o.b. Cairns	20s.
Marara	5 ft. plus	F.o.r. Brisbane	(July) 12s. 3d. to 13s. 3d. (January)
Satin Ash (Water Gum)	6 ft. plus	F.o.b. Mackay	22s. 6d.
Satin Ash	8 ft. plus	F.o.b. Cairns	22s. to 18s. 9d.
Rose Walnut	6 ft. plus	F.o.r. Brisbane	16s. 9d.
Hoop Pine	Ply	F.o.r. Brisbane	29s. to 40s. 6d.
Hoop Pine	5 ft. plus	F.o.r. Brisbane	23s. 6d.
Hoop Pine	Tops—60-in. plus		13s. to 14s.
Cypress Pine	All sizes	Central-Western Lines	14s. 6d.
Silky Oak	7 ft. plus	F.o.b. Cairns	26s. to 20s. and back to 26s. (for special logs), 23s. ordinary logs.
Brown Tulip Oak	6 ft. plus	F.o.b. Cairns	20s.
Walnut Bean	8 ft. plus	F.o.b. Cairns	22s.
Satin Sycamore	6 ft. plus	F.o.b. Cairns	20s.
Silver-Silkwood (Putt's Pine)	5 ft. plus	F.o.b. Cairns	22s. 6d.
Ironbark, Spotted Gum, Tallowwood, Blue Gum, and Red Stringybark	72 in. plus	F.o.r. Brisbane, Maryborough, Bundaberg, Rockhampton, and Toowoomba	14s. to 15s.
Yellow Stringybark, Blackbutt, Flooded Gum, Grey Gum, Water Gum	72 in. plus		12s. 3d. to 13s. 3d.
Turpentine, Bloodwood, Brush Box, and Gum-top Box	72 in. plus		10s. 6d. to 11s. 6d.

APPENDIX "H."

Railway Timbers supplied during Financial year 1925-26, under Forestry and Lumbering Operations.

Class of Timber.	Quantity.	Amount Charged to Railway Department.	
		£	s. d.
Crossings	734,095 super. ft.	11,999	18 4
Headstocks and Longitudinals	22,311 super. ft.	338	3 3
Transoms	163,131 super. ft.	3,016	8 0
Wales and Braces	36,939 super. ft.	298	18 4
Pile Frame Leaders	488 super. ft.	16	8 5
Planks, 7 in. by 3 in.	336 super. ft.	5	4 9
	957,300 super. ft.		
Girders and Corbels	34,441 lin. ft.	8,403	19 0
Piles	34,235 lin. ft.	3,578	12 0
Sapped Round Stumps	38,667 lin. ft.	2,299	13 8
Sills	4,150 lin. ft.	676	15 8
Stay Logs and Telegraph Poles	55,581 lin. ft.	2,877	1 5
Unsapped Round Stumps	23,113 lin. ft.	962	1 4
Dressed Derrick Pole	30 lin. ft.	2	11 0
Drain Logs	1,732 lin. ft.	184	0 6
	191,949 lin. ft.		
Palings	19,823 pieces	225	17 0
Posts	16,987 pieces	1,049	2 10
Rails	3,499 pieces	227	8 8
Scaffold Poles	94 pieces	25	10 10
Sleepers	88,670 pieces	21,150	12 9
Sleeper Blocks	274,964 sleepers contained	32,357	15 0
	404,037	£89,996	2 9

APPENDIX "I."
Railway Timber Rates.

Class of Timber.	Dimensions.	Unit.	Southern	Western	South-West-	Central	Central-West
			District	District	ern District	District	District
			Rates.	Rates.	Rates.	Rates.	Rates.
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Sleepers—							
Squared	7 ft. by 9 in. by 5 in.	Per 100 sleepers	26 0 0	26 0 0	26 0 0	26 0 0	26 0 0
Hogbacked	.. ..	ditto	22 0 0	22 0 0	22 0 0	22 0 0	22 0 0
Sleeper Blocks	7 ft. long	Per twoer blk	0 4 3	0 4 3	0 4 4	0 4 3	0 4 9
Transoms	7 ft. 6 in. by 9 in. by 4½ in.	.. ..	1 13 3	.. ..	2 0 0	1 13 3	1 13 3
Ditto	7 ft. 6 in. by 8 in. by 5 in.	Per 100 sup. ft.	1 13 3	1 13 3	2 0 0	1 13 3	1 13 3
Crossings	9 in. by 4½ in.	ditto	1 11 3	1 11 3	1 18 0	1 11 3	1 11 3
Headstocks	9 in. by 6 in.	ditto	1 11 3	1 11 3	1 18 0	1 11 3	1 11 3
Headstocks—							
Up to 13 ft.	12 in. by 6 in.	ditto	1 13 0	1 13 0	2 0 0	1 13 0	1 13 0
13 ft. to 20 ft.	12 in. by 6 in.	ditto	1 15 0	1 15 0	2 2 0	1 15 0	1 15 0
Over 20 ft.	12 in. by 6 in.	ditto	1 17 0	1 17 0	2 4 0	1 17 0	1 17 0
Up to 20 ft.	12 in. by 12 in.	ditto	1 6 0	1 6 0	1 8 0	1 10 0	1 10 0
Over 20 ft.	12 in. by 12 in.	ditto	1 6 0	1 6 0	1 8 0	1 10 0	1 10 0
Up to 20 ft.	12 in. by 14 in.	ditto	1 6 0	1 6 0	1 8 0	1 10 0	1 10 0
Over 20 ft.	12 in. by 14 in.	ditto	1 6 0	1 6 0	1 8 0	1 10 0	1 10 0
Wales and Braces—							
Up to 13 ft.	9 in. by 5 in.	ditto	1 11 3	1 11 3	1 18 0	1 15 0	1 15 0
Over 13 ft.	.. ..	.. ..	1 11 3	1 11 3	1 18 0	1 15 0	1 15 0
Girders—							
Up to 30 ft.	15 in. diameter	Per 1 ft.	0 3 6	0 3 8	0 3 8	0 4 9	0 4 9
Up to 30 ft.	16 in. diameter	ditto	0 3 10	0 4 0	0 4 0	0 5 3	0 5 3
Up to 30 ft.	17 in. diameter	ditto	0 4 2	0 4 4	0 4 4	0 5 9	0 5 9
Up to 30 ft.	18 in. diameter	ditto	0 4 6	0 4 8	0 4 8	0 6 3	0 6 3
Corbels—							
6 ft. to 7 ft.	17 in. diameter	ditto	0 3 8	0 3 10	0 3 10	0 5 0	0 5 0
6 ft. to 7 ft.	18 in. diameter	ditto	0 3 10	0 4 0	0 4 0	0 5 3	0 5 3
Piles, Dwarf—							
Up to 30 ft.	15 in.—12 in.	ditto	0 1 4½	0 1 4½	0 1 6	0 2 1	0 2 1
Over 30 ft.	15 in.—12 in.	ditto	0 1 6½	0 1 6½	0 1 7	.. ..	.. ..
Piles, Silling—							
Up to 30 ft.	17 in.—14 in.	ditto	0 1 7	0 1 7	0 1 9	0 2 3	0 2 3
30 ft. to 40 ft.	17 in.—14 in.	ditto	0 1 9	0 1 9	0 1 10	0 2 4	0 2 4
Piles, Driving—							
Up to 30 ft.	17 in.—12 in.	ditto	0 1 7	0 1 7	0 1 9	0 2 3	0 2 3
30 ft. to 40 ft.	17 in.—12 in.	ditto	0 1 9	0 1 9	0 1 10	0 2 4	0 2 4
40 ft. to 50 ft.	17 in.—12 in.	ditto	0 2 1	0 2 1	0 2 1	0 2 7	0 2 7
Over 50 ft.	17 in.—12 in.	ditto	0 2 4	0 2 4	0 2 4	0 2 10	0 2 10
Sills, Unsapped	17 in. diameter	ditto	0 1 10½	0 1 10½	0 2 1	0 3 6	0 3 6
Ditto	18 in. diameter	ditto	0 2 1½	0 2 1½	0 2 4	0 3 9	0 3 9
Sapped Round Stumps	9 in. diameter	ditto	0 0 11	0 1 1	0 1 4½	0 1 1	0 1 1
Ditto	10 in. diameter	ditto	0 1 0	0 1 3	0 1 5½	0 1 3	0 1 3
Ditto	12 in. diameter	ditto	0 1 1½	0 1 5	0 1 7½	0 1 5	0 1 5
Unsapped Round Stumps	9 in. diameter	ditto	0 0 8½	0 0 8	0 1 0	0 0 10	0 0 10
Ditto	10 in. diameter	ditto	0 0 9½	0 0 9	0 1 0½	0 0 11	0 0 11
Ditto	12 in. diameter	ditto	0 0 10½	0 0 10	0 1 1½	0 1 1	0 1 1
Split Posts, Unmorticed	6 ft. 6 in. by 8 in. by 2½ in.	Per 100 pieces	5 5 0	5 5 0	5 15 0	6 6 0	6 6 0
Ditto	7 ft. by 8 in. by 2½ in.	ditto	5 12 0	5 12 0	6 2 0	6 13 0	6 13 0
Split Rails	9 ft. by 8 in. by 2 in.	ditto	6 0 0	6 0 0	7 10 0	7 0 0	7 10 0
Split Palings	5 ft. by 4 in. by ½ in.	ditto	1 1 6	1 1 6	1 10 0	1 4 0	1 9 0
Telegraph Poles—							
Up to 24 ft.	6 in.—10 in.	Per 1 ft.	0 0 9½	0 0 9½	0 0 10	0 0 10	0 0 10
24 ft. to 30 ft.	30 ft., 8 in.—11½ in.	ditto	0 0 11½	0 0 11½	0 1 0	0 1 0	0 1 0
30 ft. to 35 ft.	35 ft., 9 in.—13 in.	ditto	0 1 1½	0 1 1½	0 1 2	0 1 2	0 1 2
35 ft. to 40 ft.	40 ft., 10 in.—15 in.	ditto	0 1 3½	0 1 3½	0 1 4	0 1 4	0 1 4
40 ft. to 45 ft.	45 ft., 11 in.—16 in.	ditto	0 1 5½	0 1 5½	0 1 6	0 1 6	0 1 6

All rates shown above are purchase rates for timber obtained from Private Lands, and cover all costs of cutting, hauling, private stumpage, and include all charges.

APPENDIX "J."
QUEENSLAND FOREST SERVICE SAWMILLS AND TIMBER YARDS.
AGGREGATE ACCOUNT.
TRADING ACCOUNT.

	£	s.	d.			£	s.	d.
1st July, 1925.								
To Stock	34,565	15	10		By Sales	158,783	11	9
" Purchases	107,870	19	7		" Stock	39,615	16	11
" Cartage, Sawm Timber	1,643	11	0					
" Wages	23,069	16	0					
" Gross Profit	31,199	6	3					
	<u>£198,349</u>	<u>8</u>	<u>8</u>			<u>£198,349</u>	<u>8</u>	<u>8</u>

PROFIT AND LOSS ACCOUNT.

	£	s.	d.			£	s.	d.
To Salaries and Head Office Administration	3,006	3	1		By Gross Profit	31,199	6	3
Charges	1,567	11	11		" Commission	32	13	8
" Holidays	178	12	6		" Rent	336	8	7
" Sick Pay	336	0	5					
" Office Expenses	80	0	0					
" Audit Fees	1,910	9	11					
" Trade Expenses	260	14	3					
" Cartage	2,227	12	10					
" Interest	882	12	10					
" Fire Insurance	462	15	9					
" Workers' Compensation	69	8	5					
" Unemployment Insurance	1,919	5	2					
" Repairs and Maintenance	92	19	5					
" Maintenance Tramway—Birimgan	1,752	18	5					
" Depreciation	6,348	1	9					
" Discount	2,253	8	3					
" Bad Debts	6	0	0					
" Ground Rent	8,213	13	7					
" Net Profit	<u>£31,568</u>	<u>8</u>	<u>6</u>			<u>£31,568</u>	<u>8</u>	<u>6</u>

BALANCE-SHEET, 30TH JUNE, 1926.

LIABILITIES.				ASSETS.			
	£	s.	d.		£	s.	d.
H.M. Treasury Loan Account—				Land Freehold—			
To Balance, 1st July, 1925	54,410	10	2	Brisbane	3,287	0	3
Less Annual Redemption	593	4	6	Taromeo	534	1	3
	53,817	5	8	Imbil	369	18	0
H. M. Treasury Trust Account	8,277	2	0	Silkwood	135	8	9
Sundry Creditors	62,094	7	8				4,326 8 3
Reserve Stock Valuation Adjustment	8,908	16	2	Buildings—			
Reserve for Depreciation, &c.	3,400	0	0	Brisbane	3,282	10	0
Profit and Loss Appropriation Account—				Less Depreciation	197	0	0
Balance, 1st July, 1925	4,106	9	6	Taromeo Mill	377	4	7
Less Amount Repaid to Railways	2,707	16	11	Imbil Mill	907	3	1
Plus Net Profit for year	1,398	12	7	Imbil Cottages	894	0	0
	<u>8,213</u>	<u>13</u>	<u>7</u>	Less Depreciation	54	0	0
				Silkwood	1,016	0	0
				Less Depreciation	61	0	0
	9,612	6	2	Injune	110	0	0
				Less Depreciation	10	0	0
				Birimgan	450	0	0
				Less Depreciation	125	0	0
				Silkwood Quarters	93	0	0
				Less Depreciation	6	0	0
							87 0 0
				Plant—			6,676 17 8
				Brisbane	3,010	0	0
				Less Depreciation	181	0	0
				Taromeo	2,139	19	11
				Less Depreciation	128	19	11
				Imbil	2,893	0	0
				Less Depreciation	174	0	0
				Silkwood	2,024	0	0
				Less Depreciation	122	0	0
				Birimgan	1,277	0	0
				Less Depreciation	228	0	0
				Injune	614	10	0
				Less Depreciation	155	0	2
							459 9 10
				Railway Siding, Brisbane (Less Depreciation, £8 11s.)			10,969 9 10
				Tramway, Silkwood (Less Depreciation, £4 10s.)			152 0 0
				Wells, Birimgan (Less Depreciation, £73 10s. 6d.)			67 10 0
				Loose Plant (Less Depreciation, £18 10s.)			367 12 6
				Office Furniture (Less Depreciation, £15)			204 5 0
				Automatic Fire Alarm, Brisbane (Less Depreciation, £91 7s.)			115 0 0
				Live Stock (Less Depreciation, £2)			550 13 0
				Sundry Debtors	36,012	1	6
				Less Reserve	7,994	9	1
				Cash in Hand and in Transit			28,017 12 5
				Stock on Hand			601 4 5
							<u>39,615 16 11</u>
							<u>£91,665 10 0</u>

I have examined the books, accounts, and vouchers of the Forest Service Sawmills and Timber Yards to 30th June, 1926, and certify that this Balance-sheet, together with the attached Trading and Profit and Loss Accounts, agree therewith.

I. FERGUSON, F.I.C.A.,
Audit Inspector.
S. V. GARDINER, A.F.I.A.,
Accountant.

E. H. F. SWAIN, Chairman,
Provisional Forestry Board.

APPENDIX "K."

AGGREGATE ACCOUNT.

QUEENSLAND FOREST SERVICE SAWMILLS AND TIMBER YARDS.

TRADING ACCOUNT.

		£	s.	d.			£	s.	d.
To	Stock	34,767	7	5	By	Sales	139,352	3	11
"	Purchases, Logs, &c., including Royalty	82,688	3	4	"	Stock	34,565	15	10
"	Cartage (Sawn Timber)	1,490	17	7					
"	Wages	22,512	0	5					
"	Gross Profit	32,459	11	0					
		<u>£173,917</u>	<u>19</u>	<u>9</u>			<u>£173,917</u>	<u>19</u>	<u>9</u>

PROFIT AND LOSS ACCOUNT.

		£	s.	d.			£	s.	d.
To	Audit Fees	80	0	0	By	Gross Profit	32,459	11	0
"	Bad Debts	4,600	2	5	"	Commission	25	12	4
"	Cartage	243	2	5	"	Rent	339	6	5
"	Discount	5,181	17	3					
"	Depreciation	2,164	1	2					
"	Fire Insurance	937	17	5					
"	Ground Rent	12	0	0					
"	Holidays	1,243	18	2					
"	Interest	4,060	13	2					
"	Maintenance Tramway, Birimgan	171	17	9					
"	Office Expenses	220	6	2					
"	Repairs and Maintenance	1,873	12	6					
"	Reconstruction, Sleeper Mill, Birimgan	270	11	7					
"	Salaries and Head Office Administration Charges	3,108	0	3					
"	Sick Pay	130	4	4					
"	Trade Expenses	1,969	17	0					
"	Travel Expenses	33	17	3					
"	Unemployment Insurance	93	0	7					
"	Workers' Compensation	492	0	0					
"	Net Profit	5,937	10	4					
		<u>£32,824</u>	<u>9</u>	<u>9</u>			<u>£32,824</u>	<u>9</u>	<u>9</u>

PROFIT AND LOSS APPROPRIATION ACCOUNT.

		£	s.	d.			£	s.	d.
To	Transfer from Profit and Loss Account—				By	Transfer from Profit and Loss Account—			
"	Balance, 30th June, 1924	1,688	2	4	"	Net Profit for year 1924-1925	5,937	10	4
"	Refund to Commissioner for Railways (Profit at Birimgan for year 1923-1924)	142	18	6					
"	Balance	4,106	9	6					
		<u>£5,937</u>	<u>10</u>	<u>4</u>			<u>£5,937</u>	<u>10</u>	<u>4</u>

QUEENSLAND FOREST SERVICE SAWMILLS AND TIMBER YARDS.
BALANCE-SHEET, 30TH JUNE, 1925.

LIABILITIES.						ASSETS.									
		£	s.	d.	£	s.	d.			£	s.	d.	£	s.	d.
H. M. Treasury Loan Account—								Land Freehold—							
To Balance, 1st July, 1924 ..	54,975	9	8					Brisbane ..	3,287	0	3				
Less Annual Redemption ..	564	19	6					Taromeo ..	534	1	3				
								Imbil ..	369	18	0				
								Silkwood ..	135	8	9				
															4,326 8 3
H.M. Treasury Trust Account ..				54,410	10	2		Buildings—							
								Brisbane ..	3,492	0	1				
Sundry Creditors ..								Less Depreciation	209	10	1				
Reserve Stock Valuation Adjustment ..												3,282	10	0	
Reserve for Depreciation, &c. ..								Taromeo Mill ..	377	4	7				
Profit and Loss Appropriation Account—								Imbil ..	907	3	1				
Net Profit for year 1924-1925 ..								Imbil Cottages ..	951	3	1				
Less Dr. Balance, Profit and Loss Account, 30th June, 1924 ..	1,688	2	4					Less Depreciation	57	3	1				
Less Amount repaid to Railways ..	142	18	6					Silkwood ..	1,080	17	8				
								Less Depreciation	64	17	8				
				1,831	0	10						1,016	0	0	
								Injune ..	196	16	3				
								Less Depreciation	12	16	3				
												184	0	0	
								Birimgan ..	499	7	3				
								Less Depreciation	49	7	3				
												450	0	0	
								Silkwood Quarters	99	3	3				
								Less Depreciation	6	3	3				
												93	0	0	
															7,203 17 8
								Plant—							
								Brisbane ..	2,964	11	10				
								Less Depreciation	179	11	10				
												2,785	0	0	
								Taromeo ..	1,991	3	4				
								Less Depreciation	119	3	4				
												1,872	0	0	
								Imbil ..	3,078	8	9				
								Less Depreciation	185	8	9				
												2,893	0	0	
								Silkwood ..	2,154	0	5				
								Less Depreciation	130	0	5				
												2,024	0	0	
								Birimgan ..	1,437	11	1				
								Less Depreciation	160	11	1				
												1,277	0	0	
								Injune ..	937	5	4				
								Less Depreciation	56	15	4				
												880	10	0	
															11,731 10 0
								Railway Siding, Brisbane (Less Depreciation, £8 9s. 6.) ..							160 11 0
								Tramway, Silkwood (Less Depreciation, £4 10s.) ..							72 0 0
								Wells, Birimgan (Less Depreciation, £73 10s. 6d.) ..							441 3 0
								Loose Plant (Less Depreciation, £26 14s. 8d.) ..							271 0 0
								Office and Store Furniture (Less Depreciation, £24 0s. 2d.) ..							130 0 0
								Automatic Fire Alarm, Brisbane (Less Depreciation, £91 8s.) ..							642 0 0
								Live Stock (Less Depreciation, £4) ..							9 0 0
								Sundry Debtors ..	30,383	14	4				
								Less Reserve ..	7,664	0	11				
												22,719	13	5	
								Cash in hand and in Transit ..							516 10 9
								Stock on Hand ..							34,565 15 10
															£82,789 9 11
															£82,789 9 11

I have examined the books, accounts, and vouchers of the Forest Service Sawmills and Timber Yards to 30th June, 1925, and certify that this Balance-sheet, together with the attached Trading and Profit and Loss Accounts, is correct and agrees therewith.

J. T. KEENAN, F.F.I.A.,
Senior Audit Inspector.

S. V. GARDINER, A.F.I.A.,
Accountant.

E. H. F. SWAIN,
Chairman Provisional Forestry Board.

APPENDIX "L."

Summary of Seed collected during the period 1st July, 1925, to 30th June, 1926.

Species.	Quantity.		Cost.		
	Lb.	Oz.	£	s.	d.
<i>Araucaria Cunninghamii</i> (Hoop Pine)	142	8	4	7	0
<i>Agathis robusta</i> (Kauri Pine)	57	4	19	15	0
<i>Callitris Macleayana</i> (Cypress Pine)	1	7	1	13	4
<i>Eucalyptus paniculata</i> (Grey Ironbark)	8	9 $\frac{3}{4}$	13	0	0
<i>Eucalyptus citriodora</i> (Lemon Irongum)	0	2	0	1	0
<i>Eucalyptus crebra</i> (Narrow Leafed Ironbark)	22	0	4	8	0
<i>Eucalyptus peltata</i> (Brown Bloodwood)	2	4	0	4	6
<i>Eucalyptus maculata</i> (Spotted Irongum)	5	8	1	7	6
<i>Eucalyptus saligna</i> (Rose Gum)	5	4	2	10	8
<i>Callitris glauca</i> (Western Cypress)	3	8	0	7	0
<i>Flindersia Mazlini</i> (Rose Silkwood)	3	12 $\frac{3}{4}$	10	11	2
<i>Flindersia Brayleyana</i> (Maple Silkwood)	4	5	14	13	6
<i>Flindersia Oxleyana</i> (Yellowwood Ash)	0	12	0	8	3
<i>Flindersia Australis</i> (Crows Ash)	1	0	0	12	0
<i>Grevillea robusta</i> (Silky Oak)	23	3	9	14	5
<i>Pleiogygium Solandri</i> (Tulip Plumwood)	40	0	1	19	3
<i>Aphananthe philippinensis</i> (Grey Handlewood)	0	7	0	2	0
<i>Celastrus dispermus</i> (Orange Boxwood)	0	1	0	3	0
<i>Erythrina vespertilio</i> (Grey Corkwood)	0	8	0	3	0
<i>Duboisia myoporoides</i> (Yellow Aspen)	0	8	0	4	4
<i>Melia composita</i> (Tulip Cedar)	10	0	0	7	6
<i>Elaeocarpus grandis</i> (Silver Quondong)	10	0	0	5	0
<i>Gmelina Leichhardtii</i> (Grey Teak)	46	0	1	3	0
<i>Macrozamia Douglasii</i> (Zamia Palm)	3	0	0	7	0
<i>Elaeocarpus ruminatus</i> (Grey Quondong)	2	0	0	4	6
<i>Elaeocarpus foveolatus</i> (White Quondong)	2	0	0	4	6
<i>Sarcocephalus cordatus</i> (Yellow Cheesewood)	30	0	0	7	6
<i>Balanops australiana</i>	1	8	0	7	6

APPENDIX "M."
Forest Service Nursery Stocks as at 30th June, 1926.

Species.	NUMBER OF PLANTS IN NURSERY.													Total.			
	R. 283 Collinton.	R. 299. Avoca.	R. 151 Neumgna.	R. 435 Amamoor.	R. 135 Brooloo.	R. 6 Eungella.	R. 3 Fraser Is.	R. 287 Woo- woonga.	R. 220 Kilkivan.	R. 355 Kilkivan.	R. 263 Pikedale.	R. 20 Maryvale.	R. 561 Bribie.		R. 191 Barron.	R. 194 Barron.	R. 310 Gadgarra.
<i>Acacia decurrens</i> (Green Wattle)	300	..	..	..	..	..	11,500	..	1,000	..	..	1,490	4,760	..	..	4,760
<i>Agathis robusta</i> (Kauri Pine)	..	..	..	..	..	..	10,000	..	..	..	..	..	1,344	..	..	1,344
<i>Agathis Palmerstoni</i> (Kauri Pine)	..	..	..	..	..	..	1,584	..	11,060	1,600	..	..	..	..	..	100
<i>Aracaria Bidwillii</i> (Bunya Pine)	3,850	..	8,000	1,000	46,863	1,852	83,139	8,200	54,740	43,689	..	9,804	9,000	..	..	75,809
<i>Aracaria Cunninghamii</i> (Hoop Pine)	27,000	54,500	20,000	49,685	149,102	2,935	..	..	..	..	..	..	..	14,000	..	809,770
<i>Callitris arenosa</i> (Coast Cypress)	..	..	..	6,000	7,000	..	..	..	..	..	..	..	..	..	..	13,000
<i>Cupressus sempervirens</i>	1,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,000
<i>Eucalyptus alba</i> (White Gum)	..	..	..	..	..	..	60	..	..	..	..	..	2,835	..	..	2,835
<i>Eucalyptus astringens</i>	..	..	..	..	..	..	..	..	..	..	..	..	2,100	..	..	2,100
<i>Eucalyptus Stangeriana</i> (Lemon Ironbark)	200	..	..	..	..	..	..	..	..	..	..	..	1,056	..	..	1,056
<i>Flindersia Bragleyana</i> (Maple Silkwood)	..	..	..	..	..	..	..	..	..	..	..	..	..	1,500	..	1,500
<i>Gmelina Leichhardtii</i> (Grey Teak)	..	..	..	500	5,000	..	..	..	..	..	..	..	..	..	..	5,500
<i>Grevillea robusta</i> (Silky Oak)	350	..	..	..	3,680	..	..	..	..	..	..	..	960	..	..	4,990
<i>Leptospermum citratum</i> (Lemon Teatree)	..	..	..	..	..	..	10,000	..	275	530	..	..	520	..	..	11,540
<i>Pinus caribaea</i>	9,900	..	..	..	..	..	26	..	250	110	..	1,450	11,560	1,750	..	23,675
<i>Pinus echinata</i>	1,245	..	..	..	..	..	6,900	..	600	150	..	200	360	854	..	3,388
<i>Pinus halepensis</i>	694	..	..	..	..	..	570	..	1,100	500	..	..	..	..	..	3,020
<i>Pinus insignis</i>	1,700	..	..	..	..	..	70	..	450	100	5,000	..	680	..	..	71,024
<i>Pinus insularis</i>	47,400	200	4,000	..	..	..	12,624	..	40	..	..	..	2,070	..	..	9,170
<i>Pinus insularis</i>	1,090	..	..	..	..	..	..	..	..	..	..	..	1,950	..	..	2,150
<i>Pinus euphylla</i>	200	..	..	..	..	..	..	..	330	900	..	..	..	..	..	3,768
<i>Pinus longifolia</i>	2,538	..	..	..	..	..	5,388	..	190	..	..	..	..	..	..	10,793
<i>Pinus maritima</i>	5,215	..	..	..	..	..	2,000	..	34	600	..	..	860	1,880	..	5,524
<i>Pinus montezumae</i>	150	..	..	..	..	..	7,000	150	800	1,700	..	600	4,660	2,600	..	17,860
<i>Pinus patula</i>	350	..	..	..	..	..	7,380	..	..	300	..	1,670	4,320	2,010	..	17,275
<i>Pinus taeda</i>	1,530	..	..	..	..	..	..	..	..	750	..	60	1,591	..	1,600	1,600
<i>Podocarpus amara</i> (Black Pine)	..	..	..	..	..	..	1,065	..	320	..	..	..	..	135	..	1,600
Other	1,234	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	348,946	54,700	32,000	57,185	211,645	7,172	159,306	8,350	71,189	50,929	5,000	15,274	52,166	46,457	24,729	1,900	1,146,948

APPENDIX "N."
Areas Placed under Plantations.

Working Plan Area.	Reserve.	AREA PLANTED.					
		Eucalypts.		Flindersias.		Softwoods.	
		1925-26.	To 30th June, 1926.	1925-26.	To 30th June, 1926.	1925-1926.	To 30th June, 1926.
Brisbane Valley	R. 283 ..	..	..	..	..	72	138
	R. 289 ..	..	..	..	..	20	31
	R. 257 ..	..	..	..	..	17	30
Total .. .. .	..	..	..	..	..	109	199
Nanango	R. 151 ..	..	..	..	..	32	32
	R. 299 ..	..	..	..	..	50	50
Total .. .. .	..	..	..	..	..	82	82
Mary Valley	R. 135 ..	..	..	..	..	69½	299
	R. 435 ..	..	..	..	..	79½	80
	R. 256 ..	..	..	..	..	31	31
Total .. .. .	..	..	..	..	..	180	410
Fraser Island	R. 3 ..	..	911	..	..	92	330
Total .. .. .	..	..	911	..	..	92	330
Atherton	R. 194 ..	46	80½	9	9	..	..
	R. 191 ..	..	..	..	..	13	38
	R. 310 ..	..	..	10	32	..	..
Total .. .. .	..	46	80½	19	41	13	38
Kilkivan	R. 355 ..	..	..	..	..	..	7½
	R. 220 ..	..	..	..	..	..	37
Total .. .. .	..	..	..	..	..	..	44½
Maryborough	R. 287 ..	..	..	..	..	4	12
Total .. .. .	..	..	..	..	..	4	12
Rockhampton	R. 20 ..	..	..	..	..	14	58
Total .. .. .	..	..	..	..	..	14	58
Mackay .. .. .	..	..	..	..	..	1½	1½
Total .. .. .	..	..	..	..	..	1½	1½
Grand Total .. .. .	..	46	991½	19	41	534	1,225

APPENDIX "O."
Areas Treated for Natural Regeneration.

Working Plan Area.	Reserve.	AREA TREATED.					
		Eucalypts.		Flindersias.		Softwoods.	
		1925-26.	To 30th June, 1926.	1925-26.	To 30th June, 1926.	1925-26.	To 30th June, 1926.
Fraser Island	R. 3 ..	2,212	4,361	..	..	174	1,800
Total .. .. .	..	2,212	4,361	..	..	174	1,800
Dalby	R. 93 ..	996	3,800	..	..	..	..
	R. 4 ..	100	700	..	..	..	..
Total .. .. .	..	1,096	4,500	..	..	..	..

APPENDIX "O"—continued.

Working Plan Area.	Reserve.	AREA TREATED.					
		Eucalypts.		Flindersias.		Softwood.	
		1925-26	To 30th June, 1926.	1925-26.	To 30th June, 1926.	1925-26.	To 30th June, 1926.
Brisbane Valley	R. 283 ..	97	1,379	40	74	..	747
	R. 289 ..	..	32	..	..	..	25
	R. 257 ..	..	..	..	66	..	..
Total .. .. .	..	97	1,411	40	140	..	772
Nanango	R. 151 ..	..	..	..	..	..	300
	R. 299 ..	..	50	..	..	..	332
	..	..	50	..	..	..	632
Total .. .. .	..	..	50	..	..	..	632
North Coast	R. 318 ..	149	1,814	..	..	..	..
	R. 700 ..	792	2,327	..	..	..	..
	..	941	4,141	..	..	..	..
Total .. .. .	..	941	4,141	..	..	..	..
Atherton	R. 418 ..	..	..	..	206	..	..
	R. 191 ..	..	..	..	93	..	..
	R. 194 ..	..	..	..	191	..	..
	R. 310 ..	..	..	128	498	..	..
Total .. .. .	..	..	128	988	..	..
Brisbane	R. 69 ..	307	956	..	..	..	..
	..	307	956	..	..	..	..
Kilkivan	R. 355 ..	..	..	..	..	..	40
	R. 220 ..	..	..	..	..	..	155
	R. 221 ..	..	..	..	..	..	560
	R. 26 ..	..	..	..	..	..	150
Total .. .. .	..	..	..	..	..	905	
Mary Valley	R. 435 ..	..	..	..	55	..	347
	R. 135 ..	..	..	..	..	..	..
	R. 256 ..	..	..	..	..	..	..
Total .. .. .	..	..	..	55	..	347	
Mackay	R. 6 ..	62	62	..	..	..	..
	..	62	62	..	..	..	..
Grand Total .. .. .	..	4,715	15,481	168	1,183	174	4,456

APPENDIX "P."

Forest Reservations for the Year ended 30th June, 1926.

State Forests.—Two areas, aggregating 4,040 acres, were proclaimed during the year (30th June, 1925, to 30th June, 1926).

National Parks.—One area of 131 acres was reserved in parish of Cedar.

Provisional Reserves.—At 30th June, 1926, the number of Timber Reserves was 347, as against 338 on 30th June, 1925, and the area of 3,356,187 acres, as against 3,232,632 acres. (This latter area was the recomputed area, the figures previously shown being 3,246,747 acres.)

Notes on Timber Reserves.—The number of Timber Reserves proclaimed between 30th June, 1925 to 30th June, 1926, was 19, the largest being Reserve 143, Moraby and Gideon (Dalby Land Agent's District), 34,750 acres; Reserve 245, Rule, 5,280 acres; Reserve 431, Mia Mia and Bong Bong, 17,660 acres; Reserve 567, Beerwah, 6,000 acres. An area of 52,744 acres of Crown land has been added to existing Timber Reserves.

30th June, 1925, to 30th June, 1926.

STATE FORESTS.		No.	Area in Acres.
At 30th June, 1925	.. .. .	151	1,775,309
Proclaimed 30th June, 1925, to 30th June, 1926..	.. .. .	2	4,040
		<u>153</u>	<u>1,779,349</u>
TIMBER RESERVES.		Acres.	Area in Acres.
At 30th June, 1925 (by recomputation)	.. .. .	..	3,232,632
Cancelled (3) and revoked	.. .. .	3,071	..
Converted into State Forests	.. .. .	Nil	3,071
		<u>..</u>	<u>3,229,561</u>
Balance	.. .. .	..	..
Additions to reserves	.. .. .	55,449	..
New reserves	.. .. .	71,177	..
Total addition	.. .. .	<u>..</u>	<u>126,626</u>
Total reservations at 30th June, 1926	.. .. .	..	<u>3,356,187</u>
NATIONAL PARKS.		No.	Area in Acres.
National Parks at 30th June, 1925	.. .. .	21	156,000
Proclaimed 30th June, 1925, to 30th June, 1926..	.. .. .	1	131
		<u>..</u>	<u>156,131</u>
Grand total reservations at 30th June, 1926	.. .. .	..	<u>5,291,667</u>

APPENDIX "Q."

State Forests, Timber Reserves and National Parks on 30th June, 1926.

LAND AGENT'S DISTRICT.	STATE FORESTS.			TIMBER RESERVES.			NATIONAL PARKS.		
	No.	Area.		No.	Area.		No.	Area.	
		A.	R. P.		A.	R. P.		A.	R. P.
Atherton	7	46,708	1 9	4	26,510	0 0	..	..	..
Bowen	..	..	..	13	222,138	2 29	..	..	..
Brisbane	31	98,139	3 10	48	143,149	0 18	1	48,758	3 25
Bundaberg	10	57,822	1 9	28	123,596	0 6	..	..	..
Cairns	3	83,464	0 0	4	201,640	0 0	1	79,000	0 0
Charleville	..	..	..	2	19,797	0 37	..	..	..
Charters Towers	..	..	..	1	125,000	0 0	..	..	..
Clermont	1	14,500	0 0	4	136,800	0 0	..	..	..
Cloncurry	..	..	..	1	4,800	0 0	..	..	..
Cooktown	..	..	..	7	424,050	0 0	..	..	..
Dalby	5	338,000	0 0	22	318,173	1 13	..	Part 13,540	0 0
								(see Nanango)	
Gayndah	2	13,094	1 20	20	64,655	0 32	..	..	..
Gladstone	5	35,000	0 0	18	99,897	2 16	..	..	..
Goondiwindi	1	4,570	0 0	..	..	..	..	..	..
Gympie	17	152,805	3 17	32	164,167	1 0	1	106	2 7
Herberton	3	21,631	3 8	3	10,986	0 30	3	1,040	0 0
Ingham	..	..	..	5	163,220	0 0	..	..	..
Inglewood	5	97,870	0 0	5	15,592	1 0	..	..	..
Innisfail	..	..	..	1	2,966	0 38	..	..	..
Ipswich	13	95,866	1 30	32	69,298	3 25	1	224	0 0
Isisford	..	..	..	1	25,600	0 0	..	..	..
Mackay	..	..	..	13	264,129	3 23	..	..	..
Maryborough	9	409,340	0 0	27	99,150	3 20	2	1,050	0 0
Nanango	28	120,529	3 37	19	46,914	2 1	..	Part 8,960	0 0
								(see Dalby)	
Port Douglas	..	..	..	5	172,730	0 0	..	..	..
Rockhampton	3	117,640	0 0	10	288,913	0 0	1	216	2 0
Roma	1	8,695	3 0	4	22,860	1 0	..	..	..
Springsure	..	..	..	1	17,200	0 0	..	..	..
Stanthorpe	1	4,020	0 0	1	1,440	0 0	..	..	..
St. George	..	..	..	1	3,072	0 0	..	..	..
Taroom	..	..	..	1	3,403	0 0	..	..	..
Toowoomba	3	17,810	0 0	4	35,450	2 15	..	..	..
Townsville	..	..	..	1	10,250	0 0	..	..	..
Warwick	5	41,840	0 0	7	19,283	3 30	2	3,235	0 0
Windsorah	..	..	..	1	240	0 0	..	..	..
Winton	..	..	..	1	9,111	0 0	..	..	..
Totals	153	1,779,348	2 20	347	3,356,187	0 13	22	156,130	3 32

	A.	R.	P.
Total area reserved for National Parks	156,130	3	32
Total area reserved for State Forests	1,779,348	2	20
Total area reserved for Timber Reserves	3,356,187	0	13
Total	<u>5,291,666</u>	<u>2</u>	<u>25</u>

APPENDIX "R."

The Forest Area, 1900-1926.

Date.	No.	State Forests.	No.	National Parks.	No.	Timber Reserves	Total.
		Acres.		Acres.		Acres.		Acres.
31st December, 1900	1,622,855	1,622,855
31st December, 1901	2,219,177	2,219,177
31st December, 1902	3,124,160	3,124,160
31st December, 1903	3,518,520	3,518,520
31st December, 1904	3,673,331	3,673,331
31st December, 1905	3,606,709	3,606,709
31st December, 1906	3,460,826	3,460,826
31st December, 1907	..	416,872	..	..	..	3,255,706	3,672,578
31st December, 1908	..	15	5	23,175	..	3,019,919	3,836,191
31st December, 1909	..	18	7	26,645	..	2,981,111	3,817,353
31st December, 1911	..	24	7	26,645	..	2,868,337	3,714,919
31st December, 1912	..	25	7	26,645	..	3,211,855	4,093,537
31st December, 1913	..	25	7	26,645	..	3,195,688	4,108,470
31st December, 1914	..	37	8	26,751	..	3,076,159	4,065,467
31st December, 1915	..	52	9	73,751	..	2,998,851	4,076,335
31st December, 1916	..	54	9	73,751	..	2,887,646	3,968,226
31st December, 1917	..	64	9	73,751	..	2,804,967	3,947,852
31st December, 1918	..	69	14	73,980	..	2,671,139	3,867,019
30th June, 1919	..	71	14	73,980	..	2,559,717	3,785,197
30th June, 1920	..	84	14	73,980	..	2,583,450	3,918,262
30th June, 1921	..	100	15	74,316	..	2,679,091	4,027,237
31st December, 1921	..	103	16	153,316	..	2,722,835	4,196,798
31st December, 1922	..	117	21	168,809	..	3,123,072	4,702,245
31st December, 1923	..	131	22	169,539	..	3,090,077	4,763,567
31st December, 1924	..	145	22	169,539	..	3,173,058	4,876,324
30th June, 1925	..	151	21	156,000	338	3,246,746	5,178,055
30th June, 1926	..	153	22	156,131	347	3,356,187	5,291,667

APPENDIX "S."

Special Leases Granted on State Forests and Timber Reserves, 1925-26.

Number.	Reserve.	Parish.	Term	Rental per Annum.	Area.
4598, Brisbane	T.R. 499	Mudgeeraba	5	£1 per annum	A. R. P. 284 2 8
4620, Nanango	T.R. 35	Mannuem	20	£1 10s. per annum	3,220 0 0
4624, Dalby	T.R. 42	Ballon	10	£26 18s. per annum	12,912 3 0
4625, Gladstone	S.F. 60	Rundle	7	£25 per annum	16,000 0 0
4634, Nanango	T.R. 12	Cherbourg	10	£70 per annum	8,760 0 0
4677, Gympie	S.F. 502	Gympie	21	£1 10s. first 7 years	30 0 0
4678, Gympie	S.F. 502	Gympie	21	£1 11s. first 7 years	31 0 0
4679, Gympie	S.F. 502	Gympie	21	15s. first 7 years..	15 0 0
4680, Gympie	S.F. 502	Gympie	21	15s. first 7 years..	15 0 0
4681, Gympie	S.F. 502	Gympie	21	£1 first 7 years	20 0 0
4682, Gympie	S.F. 502	Gympie	21	2s. first 7 years	2 0 0
4683, Gympie	S.F. 502	Gympie	21	18s. first 7 years..	18 0 0
4684, Gympie	S.F. 502	Gympie	21	14s. first 7 years..	14 0 0
4685, Gympie	S.F. 502	Gympie	21	18s. first 7 years..	18 0 0
4686, Gympie	S.F. 502	Gympie	21	18s. first 7 years..	18 0 0
4693, Charleville	T.R. 2	Attica	14	£7 10s.	19,797 0 0
4725, Gayndah	T.R. 153	Toondahra	20	£1 first 14 years	100 0 0
4733, Gympie	S.F. 137	Yabba	6½	£15	140 0 0
4736, Dalby	S.F. 93	Nudley	20	5s. an acre	10 0 0
4737, Ipswich	S.F. 342	Yabba, Connondale, Monsil- dale	5	£15	3,120 0 0
4764, Dalby	T.R. 35	Bembil, Athlone, Delger	10	£9	4,282 0 0
4768, Inglewood	S.F. 79 and 120	Sands	15	5s. per annum	320 0 0
4786, Dalby	T.R. 35	Athlone	10	£9	4,282 0 0
4793, Atherton	S.F. 191	Barron	5	£3	42 0 0
4807, Inglewood	T.R. 118	Wyemo	7	£2 15s.	2,642 2 0
4811, Nanango	T.R. 470	Charlestown	10	£7 10s.	937 3 5
4812, Roma	S.F. 10	Forrest	14	£10	8,695 3 0
4841, Gympie	S.F. 502	Gympie	14	Nil first 3 years	40 0 0
4828, Gayndah	T.R. 45	Brovinia	10	£32	15,138 3 0
4878, Gayndah	T.R. 99	Malmaison	14	£2	1,410 0 0

APPENDIX "T."

Buildings &c., Construction, for the Year ended 30th June, 1926.

Area.	Particulars.	Cost.		
		£	s.	d.
Warwick Working Plan Area—				
R. 263, Pikedale	Erection office and storeroom (part)	11	0	0
R. 263, Pikedale	Purchase of house for removal to State Forest	90	0	0
R. 263, Pikedale	Establishment of nursery, $\frac{3}{4}$ rd. acre	91	17	9
Dalby-Roma Working Plan Area—				
Chinchilla State Forest	Erection of office 16 ft. by 12 ft. with 7 ft. veranda, 1,000 gallon tank	65	2	6
Nudley State Forest	Construction hut (part)	1	1	0
Mary Valley Working Plan Area—				
Brooloo State Forest	Erection of shades	90	19	1
Maryborough Working Plan Area—				
R. 287, Woowoonga	Additions Forest Station	2	2	0
R. 287, Woowoonga	Fencing nursery, preparing beds, and erecting shades, deepening well	53	16	9
Mackay Working Plan Area—				
R. 6, Eungella	Laying down additional seed beds, installation of tank, nursery	28	5	3
R. 6, Eungella	Erection bunk house No. 2	130	4	5
Fraser Island Working Plan Area—				
R. 3, Fraser Island	Purchase of stove, bunkhouse "F"	5	9	11
R. 3, Fraser Island	Extension of high shades, fencing, extending nursery, installing piping, &c.	79	18	8
Benarkin-Bunya Mountains Working Plan Area—				
R. 283, Colinton, &c.	Nursery construction, erection shades, laying down further beds, tube beds, &c.	253	19	11
R. 283, Colinton, &c.	Erecting plant shed with tank	30	2	0
R. 283, Colinton, &c.	Erecting maize storage shed (part)	23	6	0
R. 283, Colinton, &c.	Extension barracks (part)	0	15	0
R. 151, Neumgna	Extension to nursery, erecting shades	64	4	0
R. 151, Neumgna	Construction bath-house	6	2	9
R. 151, Neumgna	Construction stables and cart shed (part)	22	12	0
R. 299, Avoca	Extension nursery, new shades and beds	157	2	1
R. 299, Avoca	Erection maize storage	11	9	7
Gympie-Kilkivan Working Plan Area—				
R. 470, Charlestown	Purchase land and improvements, 66 acres	111	0	6
Portions 6 and 7 Chersbourg	Compensation for improvements	25	13	0
R. 334, Charlestown	Compensation for improvements	14	8	0
Atherton District—				
R. 310, Gadgarra	Additions to nursery, erection of tube shed	31	10	5
R. 418, Danbulla	Erection tool and harness room	14	3	6
R. 418, Danbulla	Construction seed testing plot	2	18	4
R. 194, Barron	Completion tube shed	0	16	8
R. 191, Barron	Extension nursery	126	0	6
R. 418, Danbulla	Erection hut (part)	15	5	2
R. 237, Ravenshoe	Erection bunk hut (part)	7	4	14
Brisbane District—				
R. 561, Bribie	Construction feed room	25	5	9
R. 561, Bribie	Construction tool room	2	1	0
R. 137, Yabba	Construction hut and office (part)	6	11	10
Total		£1,500	0	7

APPENDIX "U."

Buildings, &c., Maintenance, for the Year ended 30th June, 1926.

	£	s.	d.
Rockhampton—			
R. 20, Maryvale, &c.	18	14	2
Fraser Island—			
R. 3, Fraser Island	74	8	7
Dalby—			
Braemar State Forest	0	15	5
Yeulba State Forest	9	12	2
Maryborough Working Plan Area—			
R. 287, Woowoonga	0	14	7

APPENDIX "U"—continued.

Bunya Mountains Working Plan Area—		18 3 4
R. 287, Cooyar (Water Supply) ..	.. .. .	2 10 0
R. 289, Cooyar (Buildings) ..	.. .. .	7 15 3
R. 151, Neumgna ..	.. .. .	26 8 8
R. 267, Cooyar, &c. ..	.. .. .	56 4 2
R. 283, Colinton, &c. ..	.. .. .	20 14 6
R. 299, Avoca ..	.. .. .
Kilkivan Working Plan Area—		6 7 2
R. 100, Gympie, &c. ..	.. .. .	2 1 1
R. 105, Kilkivan ..	.. .. .
Brooloo Working Plan Area—		45 19 10
R. 135, Brooloo ..	.. .. .	9 16 7
Brisbane North Coast Working Plan Area—		
R. 161, Bribie ..	.. .. .	0 17 3
R. 69, Bunya ..	.. .. .	1 7 0
R. 318, Maroochy ..	.. .. .	3 8 5
St. Agnes Working Plan Area—		
State Forest Reserve 169, St. Agnes ..	.. .. .	1 8 1
Atherton District—		
R. 191, Barron ..	.. .. .	5 0 0
R. 194, Barron ..	.. .. .	7 5 5
R. 185, Danbulla ..	.. .. .	0 10 10
		<hr/>
		£320 2 6

APPENDIX "V"

Water Supply—Establishment, for the Year ended 30th June, 1926.

Area.	Particulars.	Cost.
		£ s. d.
Bunya Mountains Working Plan Area—		
R. 151, Neumgna ..	Sinking well for nursery purposes ..	19 18 11
R. 299, Avoca ..	Erection 1,000-gallon tank and piping, placing engine ..	38 3 2
Brooloo Working Plan Area—		
R. 135, Brooloo ..	Establishment water supply huts, Western Creek ..	9 11 11
R. 191, Barron ..	Establishment water supply (part) ..	7 0 5
R. 194, Barron ..	Establishment water supply (deepening of well to 60 ft.) ..	135 6 7
		<hr/>
		£210 1 0

APPENDIX "W."

Forest Paddocks Establishment for the Year Ended 30th June, 1926.

Area.	Particulars.	Cost.
		£ s. d.
Bikedale Working Plan Area—		
R. 100, Emu Vale ..	Establishment Forest Station paddocks—11 acres cleared and fenced into two paddocks ..	17 11 10
R. 100, Emu Vale ..	Establishment grass paddock for teams grazing ..	224 9 4
Amamoor Working Plan Area—		
R. 435, Amamoor ..	Fencing No. 8 paddock ..	5 18 8
R. 435, Amamoor ..	Construction No. 10 paddock ..	14 9 10
R. 135, Brooloo ..	Clearing up and sowing grass seed, paddock No. 10—60 acres ..	96 8 10
R. 135, Brooloo ..	17 acres felled and burned, paddock No. 2; 42 acres compartment 4A, Derrier Logging Area cleaned ..	77 11 5
R. 135, Brooloo ..	Lantana cleared, compartment 5A, Derrier, 43 acres, construction No. 8 paddock ..	12 3 10
Fraser Island Working Plan Area—		
R. 3, Fraser Island ..	94 acres brushed, ringbarked, and partly stocked, Forest paddock Nos. 1, 6, 7 ..	64 16 6
Nudley Working Plan Area—		
R. 100, Nudley ..	Establishment horse paddock (purchase of wire) ..	26 8 0
Atherton District—		
R. 318, Maroochy ..	Establishment paddock, 6 acres cleared ..	23 4 1
R. 185, Danbulla ..	Establishment paddock, 30 acres (part cost) ..	21 16 3

APPENDIX "W"—continued.

Area.	Particulars.	Cost.
Mackay District— R. 6, Eungella	Balance cost-construction forest paddock No. 2	5 0 17
Gladstone District— R. 95, New Cannindah	Establishment forest paddock No. 2, 200 acres ring-barking	14 1 1
Brisbane District— R. 69, Bunya R. 69, Bunya R. 561, Bribie R. 137, Yabba	Fencing forest paddock No. 2 (part) Fencing forest paddock No. 3 (part) Establishment horse paddock—30 acres fencing, partial clearing, and grassing Establishment horse paddock (part)	3 9 0 3 9 0 38 2 0 2 0 0
		£648 0 0

APPENDIX "X"

Maintenance Paddocks for the Year ended 30th June, 1926.

Area.	Cost.
Dalby-Roma Working Plan Area— Breamar State Forest Nudley State Forest Yeulba State Forest	£ s. d. 11 16 10 4 4 4 1 17 4
Mackay Working Plan Area— R. 6, Eungella	38 6 0
Fraser Island Working Plan Area— R. 3, Fraser Island	87 13 0
Benarkin-Bunya Mountains Working Plan Area— R. 283, Colinton R. 151, Neumgna R. 257, Cooyar, &c. R. 299, Avoca R. 289, Cooyar	126 12 8 0 9 3 40 13 6 14 11 0 4 17 3
Gympie-Kilkivan Working Plan Area— R. 220, Kilkivan R. 221, Kilkivan R. 355, Kilkivan R. 393, Woondum R. 124, Glastonbury R. 700, Gympie, &c.	1 9 11 1 1 0 16 10 0 10 14 0 83 7 5 9 19 10
Mary Valley Working Plan Area— Farm, Butler's Corner State Forest Reserve, 135 Brooloo State Forest Reserve, 435 Amamoor	100 19 5 337 17 2 4 2 2
Brisbane-North Coast Working Plan Area— R. 318, Maroochy	8 3 9
Bundaberg Working Plan Area— R. 169, St. Agnes	31 7 8
Atherton Working Plan Area— R. 194, Barron R. 418, Danbulla	9 1 2 0 19 0
Ipswich District— R. 808, St. John	5 0 0
	£999 17 6

APPENDIX "Y"

Road Construction from 1st July, 1925 to 30th June, 1926.

	£ s. d.
Improvement and alteration, Foxlowe road	159 9 1
Road construction, Yednia	101 15 3
Main road, R. 393, Woondum	41 11 3
Mary Valley Working Plan Area (subsidiary roads, R. 135, Brooloo)	23 1 0
	£325 16 7

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