

1919.

QUEENSLAND.

DEPARTMENT OF PUBLIC LANDS.

ANNUAL REPORT

OF THE

DIRECTOR OF FORESTS

FOR THE

YEAR 1918.

ANNUAL REPORT OF THE DIRECTOR OF FORESTS, 1918.

FOREWORD.

"Since it is certain and demonstrable that all arts and artisans whatsoever must fail and cease if there were no timber and wood in a nation (for he that shall take his pen and begin to set down what art, mystery, or trade, belonging in any way to human life could be maintained and exercised without wood, will quickly find that I speak no paradox), I say when this shall be well considered *it will appear that we had better be without gold than without timber.*"

The words of old John Evelyn, written in 1664, apply with unequalled force to 1919. At the beginning of an era of universal reconstruction and development, the world is face to face with a growing shortage of wood, without which, it has been said, mankind could not develop beyond the Esquimaux stage.

Queensland must be rendered self-contained. Exploitation of the natural resources must give way to conservation by right use. The future prosperity of the State depends in large measure upon its forests, and no policy of land settlement can be adjudged complete which does not include that nationalised form of farming for which Governments are held peculiarly responsible, and which is called Forestry, the key industry, be it said, of all wood-working and wood-using trades, the prop of mining, and the complement of most industrial activities.

To those who are concerned for the welfare of Queensland I commend the perusal of the Annual Report for 1918 of the Director of Forests:

J. HARRY COYNE,
Minister for Lands.

15th July, 1919.

FOREST SERVICE, QUEENSLAND.

Brisbane, 1st July, 1919.

SIR,—I submit herewith my first Annual Report upon the operations of the Queensland Forest Service during the year which ended on 31st December, 1918.

Yours faithfully,

E. H. F. SWAIN, Director of Forests.

The Hon. J. H. Coyne, M.L.A.,
Minister for Lands,
Brisbane.

THE OUTLOOK.

The important event of the year 1918 for Queensland and its timber trade, no less than for the world at large, was the cessation of a state of war and the liberation of the world's energy from activities of destruction to processes of reconstruction and rehabilitation.

The half decade from 1914 to 1918 has brought into high relief the value of national forests and the general inadequacy of national supplies to meet national needs.

PRE-WAR SHORTAGE.

In the pre-war days I estimated:

"Of the thirty-two countries of the world, only ten are exporting a timber surplus."

"The annual world deficiency in wood is 18,000,000 tons."

"Of this, Russia, Sweden, Austria-Hungary, and Canada make good 90 per cent."

"Sweden, however, is cutting already more than its forests are producing in growth."

"Canada's surplus is likely to be needed ultimately by the United States of America, which, with 534,000,000 acres of timber land, one-third permanently reserved to the Republic, is consuming even now four times the annual increment of its forests."

"Russia and Austria-Hungary, therefore, more or less dominate the world's timber outlook."

EFFECTS OF THE WAR.

In the processes of combat, whole forests were destroyed in Belgium, Northern France, Eastern Prussia, West Russia, Galicia, and Roumania.

In the absence of the resident forest staffs, unchecked fires caused considerable destruction to the woods of Germany and of other countries.

Extensive requisitions of lumber for army and trench needs made unprecedented inroads on the timber resources of Europe.

The carefully tended forests of France were sacrificed to the supreme need. Under the direction of the French and American Forest Services, large numbers of civilian French and Americans, hordes of German prisoners, as well as 12,000 skilled Canadian lumbermen, were employed actively in obtaining timber in France for the French and British armies. War and the enemy cost France altogether no less than 1,200,000 acres of fully-stocked forest. The operations of the U.S.A. authorities were extended also to Spain, where complete sections were purchased and levelled for lumber and sleepers.

Nor were the treasured tree groves of the United Kingdom exempt. Some 15,000 addi-

tional persons, including 7,000 Canadian woodsmen, were added to the forces engaged in tree-felling in 1917.

In Germany and Austria-Hungary denudation of famous timberlands proceeded on at least as vast a scale. Not merely was wood requisitioned for trench and hutment purposes, but, in the absence of importations, recourse was had to the forests for wood pulp substitutes for clothing, bedding, sandbags, leather, and multitudinous other minor articles.

In Sweden, the previous over-cutting was increased without stint, in response to high prices from Germany.

Switzerland, also formerly dependent upon her neighbours for much of her supplies, was called upon to satisfy Italian needs from her own limited stores.

Italy was obliged in some instances to destroy valuable olive groves to obtain necessary firewood. The war cost Italy 1,000,000 acres of forests.

COLOSSAL POST-WAR TIMBER REQUIREMENTS.

From the clash of armed forces in the warring nations one fact of immense importance has received its share of recognition, viz.: that coal and iron ores and timber are indispensable national assets. And not the least of these is timber. Yet throughout the world, against a shortened resource, is now opposed a multiplied demand, multiplied because war destruction and civil stagnation must inevitably be made good.

The year following the earthquake at Messina, seven hundred times as much timber as usual was imported into Sicily.

The lumber requirements for the reconstruction of devastated Europe are almost too colossal for imagination.

It would take the concentrated building energies of France not less than twenty years to repair the damage done within her own borders.

The British Government plans upon demobilisation of the army to erect a million cottages in the United Kingdom; and other communities, including Australia, have parallel prospects.

Again, there must be new industrial developments and national expansion. The paper and wood pulp products trade, for instance, is now assuming extraordinary dimensions. South and Central America; dependent upon wood imports and consequently at a standstill for four years, are entering upon a career of vigorous development; Russia, with 170,000,000 people on the verge of civilisation, ultimately will require probably 40,000,000,000 superficial feet of lumber per annum before a surplus remains for export.

Both Russia and Austria, however, are in a disorganised state, and unable to re-engage immediately in the export trade. Nor is it likely that either country will be so important a factor in the world's timber market as heretofore.

Moreover, wages have increased in Europe generally to a far greater extent than in either United States, America, or Australia. Even in Japan the cost of living has trebled, whilst wages have doubled.

On the sea, as on land, labour costs have risen. The capital value of ships has increased twofold at least. Freightage cannot conceivably recede to pre-war levels.

Because timber is a bulky commodity, its transport becomes increasingly expensive.

As a concomitant of shortened wood supplies, therefore, there is the factor of heightened price.

The careless theory of substitution when forests are exhausted stands discredited; the contrary has occurred.

In the United Kingdom, for instance, in the past sixty years, the consumption of timber per head of population, instead of declining in accordance with popular prediction, has trebled.

Further, mounting costs for coal and for labour will so increase the prices of possible wood substitutes that displacement of timber in industry is unthinkable.

By the test of war and reconstruction, forestry stands supremely justified.

Without it, the timber trade and woodwork- ing industries would cease to exist.

Its practice is necessary and now more than ever profitable.

THE AUSTRALIAN SITUATION.

The chief constituent of Australian forests is high-class hardwood, so special in its quality that before the war it competed successfully in the markets of the world against lower-priced national products.

It takes 150 superficial feet of "Oregon," (Douglas Fir) to do the work of 100 superficial feet of Ironbark. In construction, Australian hardwood can compete with steel.

Commonwealth exports in 1913 were 137,000,000 superficial feet. In 1916-17 they fell to 36,000,000 superficial feet.

During the same period, Commonwealth production fell from 685,000,000 superficial feet to 496,000,000, and imports from 455,590,000 to 200,446,000. At the end of 1918 Australia had fallen into arrears in its wood supply to the extent of 600,000,000 superficial feet in four years.

Simultaneously the limited forest area of Australia has been reduced grievously by alienation and subsequent clearing, and the neglect of forestry has resulted in serious overcutting. The imminent application of the fundamental forestry principle of a sustained yield makes a further shortening of the cut inevitable. Probably the reduction will be greatest in Western Australia, the chief exporting State.

A fast dwindling native timber resource and an increasing population will compel Australia both to enlarge her home production and to import increasingly.

Possessing a famous, if limited, hardwood resource, the Commonwealth lacks indigenous supplies of general-utility, coniferous woods, such as those of Europe and America. Timber of this class must be secured overseas, or from Queensland and New Zealand.

From 1909 to 1913 our importations nearly doubled.

Producing roundly 500,000,000 superficial feet of timber at home, we were purchasing abroad just prior to the war practically as much again, at an annual cost of £3,500,000.

For the same goods the post-war cost probably will be £6,000,000, and when Australia has

a population of 20,000,000, she will be obliged to spend in foreign markets in the purchase of essential wood supplies probably £40,000,000 per annum.

The alternative is local forestry.

QUEENSLAND'S POSITION.

Queensland's position in the local timber market differs from that of the other States in that (a) it holds in addition to an important hardwood resource, the main continental supplies of valuable cabinet timbers and high-class pine woods of the Kauri, Hoop, and Bunya types; and (b) its population is only one-eighth of the Commonwealth total, and it produces one-fourth of the Australian timber output, or one-eighth of the total Australian consumption.

It has, therefore, for the present, at all events, a surplus for export.

Practically, the whole of this surplus going to the big industrial centres in the Southern States, it enters into competition with foreign woods, chiefly from New Zealand and the United States of America, although Japan, Russia, Canada, and Sweden are also in the field.

New Zealand, in 1913, exported to Australia 64,489,000 superficial feet of pine woods. In that year the Queensland output of soft woods was 98,620,000 superficial feet. In 1916-1917 the total imports into the Commonwealth had fallen from 373,118,000 to 196,604,000 superficial feet, but the New Zealand contribution had been increased to 77,557,000 under the stimulus of an urgent demand at high prices. In the same year the Queensland output fell off by 28,000,000 superficial feet.

New Zealand, however, has been stripping its native forests ruthlessly for many years, and the end is within measurable distance. The Kauri forests are almost a tradition. Puriri and Silver Pine are scarcely procurable, and are being replaced in New Zealand by imported Australian hardwoods. White Pine for butter boxes is in insufficient supply for local demands, and Totara is very dear. Export of timber is being restricted, consequently imports into Australia from New Zealand must decline rapidly.

It is a fact that the 25,000,000 superficial feet of timber annually required by the Australian dairying industry for butter boxes must come chiefly from Queensland. So also the several million feet of pine used in the local manufacture of matches.

The United States of America, however, is a much more formidable factor in the Australian timber market.

Seventy per cent. of the Commonwealth timber imports consists of American Douglas Fir (Oregon Pine).

In 1913 Australia obtained from the United States, America, 256,331,000 superficial feet, and little more than half the aggregate from all sources.

With the revival of overseas trade, however, the United States of America may be expected to flood the Australian market with its timber wares, which are in large supply in present circumstances.

Two-thirds of the vast American lumber resources is in the hands of private companies,

whose concern is not to sustain the yield in accordance with forestry principles, but to realise immediately on their investments in order to pay interest and taxes. In view of the fact that much of the capital invested in lumber holdings has been borrowed on lumber bonds carrying 6 per cent. to 8 per cent. interest, the necessity for early liquidation of the asset is obvious. In most cases the forests were acquired originally in concessional forms, and there are now so many anxious sellers that the stumpage value (cost of production of the forest) is not a factor in the selling price; the holdings are used merely as the bases of sawmilling ventures.

The consequence is that a thick crop of large timber mills, with an aggregate milling capacity of 100,000,000 superficial feet per annum, has sprung up all over the country.

The maximum local consumption for any one year, however, is less than half the milling capacity.

The excessive timber output inevitably involved millers in cut-throat competition. Milled timber was sold at rock-bottom rates, lumber manufacture was found unprofitable, timber bonds fell into disrepute, and finally first class or "Australian quality" Oregon has been dumped on Australian shores before the war at less than cost.

Against such staggering competition the Australian timber-working trades and their key industry of forestry have made heavy way. The future of both depends upon adequate protection.

At the same time, the past four years have produced some modification of the situation.

Not merely has a huge reconstruction market developed, but fresh industrial fields have been opened, as for instance, aeroplane timber production, paper pulp products, &c. Moreover, as has been stated, the world generally, and not excluding the United States of America, is in arrears with its ordinary buildings. Australia itself needs 600,000,000 superficial feet immediately to make up the deficit of the past four years. The War Service Homes Commissioner will require probably 1,000,000,000 superficial feet during the next five years. Doubtless the United States of America output will revive to a considerable extent, but the higher cost of manufacture, owing to an almost doubled wage, will both eliminate the less profitable milling ventures and by reducing production and competition increase retail prices. Already the cost of the converted timber at the mill has increased by 4s. per 100 superficial feet since 1913. Railage rates have increased by 25 per cent. Shipping freights will be affected by the same influence; post-war rates therefore must be considerably higher than those existing in 1914.

In that year "Oregon" stood at 18s. to 21s. on the Brisbane retail market, while Queensland pine, owing to its greater merit, was being sold for 22s. to 30s.

It is obvious that the post-war retail price in Brisbane for "Oregon" will be considerably higher than that of four years ago—at all events, by 8s. per 100 superficial feet. It is equally obvious that first-class quality Queensland pine will always be worth more than Oregon, especially in view of its increasing application to the particular purposes of joinery and cabinet-making, and three-ply, butter-box, and match-making.

Low-grade, knotty Queensland pine, on the other hand, can be sold, and probably will be sold, for less than "Oregon."

It is likely, therefore, that the gap between top and bottom qualities will be widened and filled by the probable interpolation of intermediate grades.

This being so, and in view of the probability of a more effective timber tariff, except for small temporary slumps arising from panic, reduction in the 1918 timber prices cannot be anticipated.

Especially is this the case with the valuable northern cabinet woods for which no imported equivalents offer; Cedar and Maple must always top the market because of their inherent qualities.

On the other hand, a resumption of the pre-war upward trend in timber prices may be prophesied.

Queensland pine (first-class dressed, 6 in. by 1 in.) was quoted in 1905 at 15s., Brisbane; in 1908, at 23s. 6d.; in 1911, 27s. 6d.; and in 1914, 30s. At the end of 1918 the quote was 42s., the sharper rise in value being due to war conditions.

Similarly hardwood advanced from 18s. in 1905 to 29s. in 1914. It now stands at 42s., which is still very much below London par.

The general upward trend will be accelerated by reconstruction demands. During the Civil War in America, the price of timber advanced to a less extent than those of other commodities, but after the close of hostilities, when most values declined, timber continued to increase in price in response to renewed demands. During the present world war, American rates for general commodities increased to 200 per cent. and 300 per cent., but by the end of 1918 timber in the United States of America had advanced to only 150 per cent. of pre-war values. I have no doubt that history is likely to repeat itself on a world-wide scale, and that timber prices will continue to rise everywhere as a direct result of peace. The stripping of alienated timber lands is responsible in the main for advancing prices, and this same process is not peculiar to any particular locality. In the United States of America it is intensified by the competition of lumber holders anxious to realise immediately, and a sharp rise in Oregon values is likely to ensue ultimately upon the reckless cutting.

In the meantime, if Australia is to avoid the expenditure in Japan, America, Sweden, and Russia of £40,000,000 a year by growing and milling its own timber requirements, there must be both an effective tariff and a financing from the proceeds of national schemes of housing and forestry.

THE LOG MARKET.

Log values, which for several years had remained comparatively stationary owing to uncertainty engendered by war, in the second half of 1918 soared upwards.

On the Sydney timber market, Queensland pine logs reached the record figure of 28s. 6d. per 100 superficial feet, but receded towards the close of the year to 26s. 6d.

This buoyancy was reflected at Brisbane, where values for pine logs rose from 12s. 6d. at the beginning of the year to 21s. 6d. at the close.

For knotty pine tops, up to 10s. 6d. was offered.

Hardwood prices increased, but to a smaller extent. In the case of Ironbark an advance from 11s. to 14s. was recorded. Blackbutt, formerly little esteemed in Queensland, though much used in New South Wales, reached 11s., whilst White Stringybark and Grey Gum logs were quoted at 9s.

The northern cabinet woods showed the most striking advance.

Log prices on rail in the Atherton district rose from 9s. to 25s. in the case of Maple, from 8s. to 18s. in the case of Kauri, and from 6s. to 15s. in the case of Silky Oak. Alienated timber lands supplied the bulk of this trade.

Comparison with London log values shows that in 1913 merchant's price to consumers in docks, London, for Pitch Pine logs was 12s. 6d. to 21s., and for Japanese Oak logs 16s. 8d. to 29s. per 100 superficial feet. By 1917 prices had advanced to 62s. 6d. per 100 superficial feet for Pitch Pine logs and 58s. 6d. for Japanese Oak.

Stumpage returns in Queensland for standing timber were depressed in some measure by a 50 per cent. advance in extraction costs consequent upon prolonged drought and resultant scarcity of grass and water; and by a sympathetic increase in felling rates.

Nevertheless the previous record figures for Queensland hoop pine on the stump, viz.: 7s. 7d. and 6s. 10d. per 100 superficial feet on the Brooloo State Forest in 1917 were eclipsed in several instances. Up to 10s. 4d. was offered on the same area, while 9s. 8d. was secured in the Toowoomba district, and up to 12s. in the Blackbutt district, this last figure constituting the highest price ever recorded for the species.

For hardwood, a stumpage price of 2s. 6d. was received in one case in the parish of Byron, and 3s. 6d. in the Yarraman district.

Similar figures were reached for Cypress Pine at Rockhampton.

Owing to the glutting of the Northern cabinet wood market by private holders anxious to sell, full values were not realisable in the few sales made of Forest Service timber in the Cairns-Atherton districts. Up to 7s., however, was secured for Maple in the Gadgarra forest, while 6s. for White Beech and 5s. for Putt's Pine were accepted in the Malanda area. A parcel of Red Cedar was sold at the stumpage rate of 20s. per 100 superficial feet. Up to 4s. was obtained for Kauri.

The above figures represent the maximum prices.

With them compare the maximum stumpage rates for the United Kingdom in 1917, as prescribed by the "Home-Grown Timber Prices Order" of that year.

For standing Douglas Fir (Oregon Pine), 7s. 8d. per 100 superficial feet was fixed, for Larch 11s. 1d., for Sycamore 16s. 8d., and for Oak 27s. Selected Ash for aeroplane purposes, however, was placed at a maximum "royalty" of 41s. 6d.

A still more striking comparison is afforded by South Australia, where, in March, 1918, 5,000,000 superficial feet of locally grown *Pinus insignis* (equivalent to our pine "tops") sold at

Rise in Price of Timber - 1905-18

Per 100 s.ft. 6"x1" Dressed

Price
45¢

REFERENCE

- Beech
- Yellowwood - - - - -
- Crow's Ash - - - - -
- 1st Class Hardwood - - - - -
- 2nd Do. Do. - - - - -
- 1st Do. Pine - - - - -
- 2nd Do. Do. - - - - -
- Oregon - - - - -

40¢

35¢

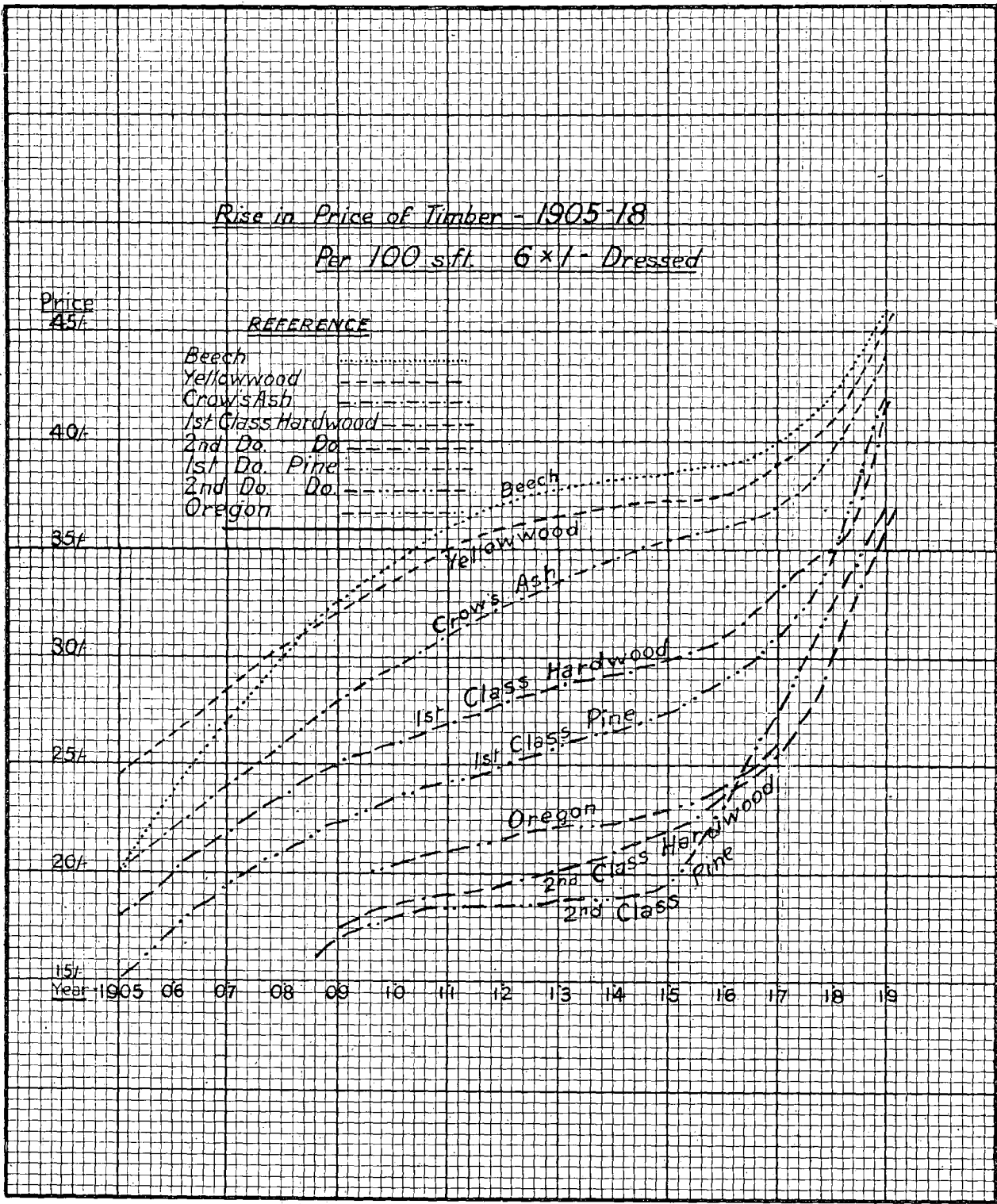
30¢

25¢

20¢

15¢

Year 1905 06 07 08 09 10 11 12 13 14 15 16 17 18 19



10s. 3d. per 100 superficial feet in the log at the stump. In the light of this instance, our own record prices may be regarded as quite moderate.

The state of the Queensland log market at the end of 1918 is indicated by the Forest Service log price list for December. There the following values were quoted on trucks Brisbane:—

	70"	60"	48"	40" Tops.
	plus	69"	59"	47"
Hoop and Bunya Pine ..	17/6	16/6	14/6	12/- 9/-
Cedar ..	40/-	37/6	32/6	..
Maple ..	35/-	32/6	27/6	..
Silky Oak and Kauri ..	27/6	25/-	20/-	..
Rosewood ..	25/-	23/6	17/6	..
Red Bean and White Cedar ..	20/-	18/-	15/6	..
White Beech and Black Bean ..	18/-	15/-	12/6	..
Crow's Ash ..	15/-	14/-	12/-	..
Yellow-wood, Bally Gum, Blue Fig, Bumpy Ash ..	14/-	13/-	11/-	..
Marara ..	12/-	11/-	9/-	..
Pink Poplar ..	11/-	10/-	9/-	..
Miscellaneous Secondary Scrubwoods ..	9/6	8/6	7/6	..
Ironbark and Tallow-wood ..	13/-	12/-	10/-	..
Spotted Gum, Red Stringy-bark and Blue Gum ..	12/-	11/-	9/-	..
Blackbutt ..	11/-	10/-	9/-	..
White Stringy-bark, Grey Gum and Scrub Box ..	9/-	8/-	7/-	..

In the case of Hoop and Bunya Pinē, purchasers offered up to 3s. advance on these upsets. There was a brisk demand.

Values for railway and mining timbers, owing to a fixed administrative arrangement, remained stationary at the minimum rates prescribed for 1911; these branches of forestry, consequently, were extremely unprofitable.

SILVICS.

CLIMATIC CONDITIONS.

The climatic conditions of 1918 were unfavourable to silviculture.

Flooding rains during late summer were succeeded by a period of drought during the rest of the year.

In the Gympie district, only 8.55 inches of rain were registered after May, and the total fall of 35.36 inches was eleven inches below the average. The year was the driest since 1902, and this disadvantage was emphasised by drying winds and heavy frosts.

At Imbil, precipitation was greater by four inches than in Gympie.

In North Queensland similar conditions prevailed, punctuated in March, however, by the most severe cyclone ever experienced. A large extent of country in the Mourilyan, Cairns, Atherton, and Herberton districts was devastated, standing scrub was levelled or beheaded, and acres of uprooted scrub and standing bare and broken poles remain on the littered forest floor as mute records of the visitation. The Forest Survey parties working in the region were caught in the storm and escaped by the narrowest margin. The cyclone was followed in July by cutting frosts on the Atherton tableland, and plant life suffered severely.

The district rainfall was 50.66 inches, of which 40 inches fell in the first four months of the year.

On Fraser Island somewhat better conditions prevailed, the precipitation of 57.07 inches being little below the average. Most of this fall, however, was recorded in the early part of the year, and a state of drought persisted from autumn to spring.

SEEDING.

The seedfall in the circumstances was subnormal.

The Hoop Pine crop of 1918 was both poor and sterile, and such cones as were fertile were completely saturated with moisture and maggot-ridden on the trees before they fell.

The succeeding male inflorescence, however, was heavy, and with a fine setting of cones promised a record fall for 1920.

On the other hand, a good crop of Bunya was recorded, and a heavy gathering of seed was secured. Crow's Ash seeded abundantly in November-December, as also did Red Cedar and Southern Silver Beech.

In the North, in January a large quantity of Kauri seed was collected, but the March cyclone was responsible, not merely for the general destruction of subsequent fruiting, but also of flowering, so that little seed can be expected before 1920.

On Fraser Island there was a record seed fall of Tallow-wood, and an extremely good one of Blackbutt, but Kauri cones in December were grub-infested, and contained few fertile seeds.

In the inland districts no fruiting of Cypress Pine and Eucalypts eventuated.

NATURAL REGENERATION.

The fine 1917 reproduction of both Eucalypti and Hoop Pine in the Southern districts suffered considerably from bush fires.

On the other hand, the natural Hoop Pine seedlings withstood both drought and frost to a remarkable degree.

In the North, excellent regeneration of Maple and Bull Oak was recorded during the early part of 1918, following upon the plentiful seeding of October-November, 1917. By the end of the year the seedlings had reached a height of from 4 to 6 inches.

Cypress Pine reproduction on Fraser Island in April was prolific, and survived the drought period most satisfactorily.

Unfortunately, large areas of Cypress Pine regrowth of previous years were completely destroyed by bush fires in sections of the island not yet included within the fire protection scheme.

OPERATIONS.

Forest Service operations in silviculture so far have been almost purely experimental, having as their prime objects the ascertainment of the silvicultural characteristics and requirements of the species and the assessment of locality factors in preparation for subsequent large scale ventures.

A complete system of observation records was installed.

The Atherton experiments were continued at a cost of £416.

Kauri Pine, grown from local seed and planted out in 1916 as 2-0 seedlings, reached a maximum height in 1918 of 16 feet, when the average height was 11 feet 9 inches. The species proved hardy, except for slight frosts tenderness. Marsupial attacks and the cyclone of 1918 accounted for most of the losses. At the end of 1918 seventy per cent. of the 1914 planting was well established and in a promising condition.

The valuable broad-leaved species showed extreme vulnerability to adverse climatic influences.

Red Cedar in open plantation suffered by inundation following the March cyclone, whilst a parcel of 806 seedlings planted out in April were affected by frost and drought. The twig borer (*Hypsiphyla robusta*) is the chief enemy of the species. This pest was not so much in evidence during 1917 as in previous years, owing probably to the failure of the seed crop, in which it breeds. Sackbanding the mother trees did not provide a barrier, for in no case were pupæ found under the lifted sacking. Experimental planting of Cedar under shelter-wood in strips, however, suggests that dominating side shelter will be found an effective protection until the saplings reach 16 to 18 feet in height, at which stage they have developed powers of resistance.

Despite the intervening droughts of 1915 and 1918, and the recurrent caterpillar attacks every year, Cedar planted under this method in 1914 is 20 feet high with 18 inches girth.

On the five-acre clean felling on State Forest 418, Danbulla, which in 1914 was planted with Red Cedar, a height growth of 25 feet and a girth of 18 to 21 inches was recorded in December, 1918. Here a natural nursing crop of Candlenut and miscellaneous brush followed the planting, and comparative immunity from grub attack was secured thereby.

The experiments with both Cedar and Maple point to the necessity of using a nursing crop in open plantations. The ordinary annual cover crop of maize or herbaceous weeds has been proved ineffectual owing to its rankness in summer and its decay in autumn.

Maple, although not subject to twig borer, proved more vulnerable to frost and drought than Cedar. In consequence, open planting failed, and although surviving plants reached a height of 16 feet in four years, only a minor percentage won through. Even a comparatively slight liberation of the 1917-1918 natural reproduction on Gadgarra forest resulted in mortality during the frosty midwinter and the arid spring. It is probable that Maple propagation will be more successful in the South than in its native habitat.

In the Atherton district the chief success was obtained with an imported species, Hoop Pine, the extraordinary drought and frost hardness of which stood it in good stead. Seedlings (2-0) planted in 1916 reach a maximum height of 7 feet 10 inches, and averaged 5 feet 8 inches in 1918. Bunya Pine (1-0), on the other hand, attained a growth of only 2 feet 6 inches. Indian Teak, as in previous years, was cut back by the frost, but coppiced robustly, and measured 4 to 5 feet at the end of 1918. *Pinus longifolia* and Cypress Pine failed.

The operations at Atherton during the year included the propagation of 8,000 Kauri pines and 3,000 Maple, and the planting of 2,000 Maple, 1,500 mixed species, and 1,560 Red Cedar.

The Fraser Island undertakings were mainly along the lines of natural regeneration. High success was achieved with Cypress Pine, despite the arid conditions. In the Eucalyptus regeneration areas, a good fire was obtained, and a subsequent heavy seedfall of Tallow-wood and Blackbutt sowed the ground abundantly. Given favourable rains, a large measure of success is assured.

In the experimental plantations, on cleared scrub sites, seedlings set out in February did well, despite unfavourable weather. *Robinia pseudo-acacia*, at the end of the year, was 10 feet 6 inches in height; Red Cedar, 8 feet 6 inches; Kauri, 4 feet 6 inches; Hoop Pine, 3 feet 2 inches; and *Taxodium distichum*, 2 feet 7 inches. Spotted Gum, an introduced Eucalypt, flourished under island conditions.

Extremely valuable silvicultural data were gathered at the Imbil Forest Experimental Station during the year in continuance of minute records maintained from the inception of work in 1917.

Hoop Pine natural seedlings planted in April, 1917, developed an average height increment of 37 inches, of which 10 inches accrued in the last three months of 1918. Others set out two months earlier added 63 inches to their stature, with 75 as the maximum. Bunya of the same planting advanced 27 inches, of which 6 inches were added from 1st September, 1918, to 31st December, 1918. *Pinus taeda* (1-1) averaged 30 inches, with a 1918 growth of 16½ inches, and showed surprising accommodation to arid conditions. *Pinus insignis* (¾-0) increased by 90 inches (best 101 inches). *Pinus maritima* failed, while Red Cedar, in most cases, succumbed to frost and drought and twig borer attacks.

The Hoop Pine planting of January, 1918, showed 82 per cent. success at the end of the year, when 2-0 Hoop Pine reached 24 inches in height (9 inches to 12 inches increment). *Pinus taeda* showed 90 per cent. result and a growth of 10 inches to 12 inches. Yellow-wood disclosed a demand for shelter, suffering severely in the hot, dry weather. The cost of planting (only) in this case was £1 2s. 6d. per acre.

In October a "cut out" scrub area of five acres was logged and clean felled for experimental planting. Some 48,000 superficial feet of timber were secured, representing a stumpage value of £51 18s. 3d. The clean felling cost £2 1s. 3d. per acre.

Four acres of hardwood country were dealt with similarly, at a cost of £2 13s. per acre for felling and 5s. 9d. for brushing.

Three acres of Hoop Pine liberation fellings cost 38s. per acre.

Regeneration fellings for Hoop Pine were carried out over 65 acres on Western Creek in anticipation of a promising 1919-1920 seedfall. The cost of felling in this instance was £1 4s. 10d. per acre, but in the process 88,215 superficial feet of valuable timber were obtained from what was supposedly cut-out country.

Regeneration fellings for hardwood cost £1 8s. 8d. per acre for five acres.



CYPRESS PINE—ASSISTED NATURAL REGENERATION.

Seedfall of 1915-16. Fraser Island: Ground prepared by cleaning and burning, leaving seed trees.
Seed germinated April, 1916. Photo. taken May, 1919. Soil extremely poor.



BLACKBUTT—FIVE YEARS FROM SOWING.

Sown *in situ* 26th January, 1914. Fraser Island: Photo. taken May, 1919. Height, 64 feet;
girth, 21½ inches. Sandy soil with some humus. Rainfall, 60 inches.

Nursery operations included the sowing of 14 tons of Bunya seed, with high success. Hoop Pine seed proved infertile, as also did that of *Pinus insignis*, but the transplanting of 6,000 Hoop Pine natural 1917-1918 seedlings gave a 70 per cent. result.

Four acres were cleared and stumped for additional seed bed, the cost being £25 0s. 3d. per acre. The whole was fenced with vermin-proof netting, and two acres were ploughed.

Logging and Foam-bark harvesting produced a gross revenue for the Station of £513 9s. 4d.

On the Biggenden Forest, twelve acres of Hoop Pine regeneration fellings were carried out. Fisherman's Pocket (Gympie) was also the scene of small silvicultural experiments.

FOREST RESEARCH.

A large number of botanical specimens were added to the forest herbaria during the year, the Gympie district being represented most abundantly.

Acknowledgment is due to the Government Botanist (Mr. C. T. White) for their identification.

My thanks are owing also to Dr. Cleland, M.D., Ch.M., of Sydney, for the identification of the following fungi found to infest timber trees in the Southern districts:—

Fomes Yucatenensis—On *Araucaria Cunninghamii*.

Schizophyllum eumune—on *A. Bidwillii* seed.

F. badius—On *Acacia aulacocarpa* (Gympie District).

F. robustus—On *A. Cunninghamii*.

F. Yucatenensis—on *A. aulacocarpa*.

Polystictus Cinnabarinus—on *A. aulacocarpa*, *Tristania conferta*, *Eucalyptus maculata* (Gympie District).

Trametes lactinea—on *E. paniculata*.

Polyporus rhipidium—on *E. propinqua*.

The tanning qualities of the Mangrove barks of North Queensland formed the subject of inquiry, and the assistance of the State University was obtained in this regard. The investigation is not yet complete.

Analyses of wood-ash and of barks for tannin contents were made by the Agricultural Chemist (Mr. J. C. Brunnich), with the following results:

ANALYSES OF ASHES OF TIMBERS.

Variety of Timber.	% OF TIMBER.			ANALYSIS OF PURE ASH.												
	Moisture.	Crude Ash.	Pure Ash.	Al ₂ O ₃ .	Fe ₂ O ₃ .	CaO.	MgO.	Na ₂ O.	K ₂ O.	MnO.	P ₂ O ₅ .	SO ₃ .	Cl.	SiO ₂ .	H ₂ O.	
<i>Tristania conferta</i> ..	14.74	.932	.842	..	.29	18.80	11.27	4.32	10.96	1.03	.57	.59	2.44	50.23	..	
<i>Casuarina torulosa</i> ..	13.39	.681	.437	..	.36	64.64	10.28	4.24	11.90	.90	1.65	3.58	1.59	1.18	..	
<i>Sideroxylon Pohlmanianum</i> ..	14.07	.822	.589	..	.68	45.84	22.16	.86	19.87	.91	3.43	4.24	.49	1.51	..	
<i>Euroschinus falcatus</i> ..	23.82	.926	.629	.29	.25	37.76	13.82	1.65	33.88	.90	2.92	1.09	.94	1.50	..	
<i>Flindersia Oxleyana</i> ..	12.84	.446	.325	.27	.47	45.23	17.14	3.02	14.47	2.45	2.25	10.16	.44	3.51	..	
<i>Tarrietia argyrodendron</i> ..	12.92	1.494	.921	..	.30	52.62	22.25	1.33	15.50	.73	2.42	3.29	.03	1.62	..	
<i>Amoora nitidula</i> ..	16.78	1.452	.952	.01	.23	51.45	27.21	1.25	9.96	1.02	2.70	4.96	.06	1.02	..	
<i>Weinmannia lachnocarpa</i> ..	18.69	1.444	.902	.14	.21	51.45	27.21	1.25	9.96	1.02	2.70	4.96	.06	1.02	..	
<i>Myrtus Hillii</i> ..	13.85	2.043	1.125	.02	.20	64.42	24.37	1.02	6.65	.07	1.85	.93	.07	.44	..	
<i>Vitex lignum-vitæ</i> ..	18.17	1.135	.706	.02	.19	54.71	9.56	2.57	26.26	.14	4.15	1.29	.06	1.06	..	
<i>Dissiliaria baloghoides</i> ..	12.77	1.035	.708	.38	.29	52.56	7.95	4.68	23.36	.83	2.62	1.01	.20	6.13	..	
<i>Flindersia Schottiana</i> ..	8.25	.781	.517	.12	.20	51.88	15.77	2.40	20.54	1.68	2.25	1.56	.21	3.40	..	
<i>Polyalthia nitidissima</i> ..	8.36	.768	.678	.28	.43	28.31	28.31	8.31	13.81	2.81	12.23	2.62	.24	2.65	..	
<i>Maba fasciculosa</i> ..	8.51	2.792	1.859	.72	.39	62.78	21.78	1.40	8.32	.87	1.77	1.50	.06	.42	..	
<i>Eucalyptus microcorys</i> ..	13.18	.131	.103	2.16	1.55	26.98	34.16	3.31	3.95	.38	.97	3.34	.18	23.06	..	
Apple— <i>Angophora</i> sp. ..	..	..	..	..	..	62.88	..	..	9.33	..	6.70	..	..	..	1.65
<i>Eucalyptus tessellaris</i> ..	..	..	..	..	..	55.75	..	..	8.61	..	15.65	..	..	..	1.77
<i>Cedrela australis</i> ..	9.14	1.102	.840	1.05	.73	39.21	14.37	6.61	19.73	.20	9.39	1.31	.72	6.69	..	
<i>Araucaria Cunninghamii</i> ..	18.50	1.071	.685	1.19	1.03	48.60	10.38	10.45	17.89	.06	1.05	2.13	1.24	5.91	..	
<i>Cinnamomum camphora</i> ..	11.24	1.300	1.011	1.58	1.65	23.04	19.49	5.04	36.31	..	6.35	1.88	.19	4.47	..	
<i>Tristania conferta</i> ..	31.54	.970	.830	.65	..	31.13	9.10	6.83	7.90	.46	.34	.70	5.15	38.90	..	
<i>Eucalyptus resinifera</i> ..	32.42	.054	.047	1.61	4.79	17.30	4.81	14.41	9.16	.25	.76	6.24	.49	40.18	..	
<i>Syncarpia laurifolia</i> ..	32.66	.367	.367	1.26	..	1.88	1.03	4.08	1.20	.08	.39	.82	..	89.74	..	
<i>Eucalyptus pilularis</i> ..	30.99	.119	.098	2.06	..	3.11	14.36	11.05	18.73	15.92	.79	2.74	3.51	.69	27.05	..
<i>Eucalyptus corymbosa</i> ..	24.90	.089	.075	1.73	4.18	12.50	6.96	14.64	12.74	.42	1.98	3.40	.68	40.66	..	
<i>Eucalyptus corymbosa</i> var. ..	33.11	.194	.115	.17	3.66	13.05	18.01	11.68	25.93	.09	.84	1.67	.71	24.19	..	
<i>Eucalyptus microcorys</i> ..	22.73	.251	.183	1.09	..	52.15	25.58	6.84	2.41	.18	.40	1.93	.38	8.96	..	
<i>Euc. siderophloia</i> ..	17.53	.085	.078	3.33	2.78	22.80	8.39	12.10	6.44	1.38	3.87	5.75	.47	32.60	..	
<i>Euc. tereticornis</i> ..	19.74	.140	.131	3.34	2.74	19.18	3.62	11.68	9.14	1.21	14.04	3.77	.46	30.85	..	
<i>Euc. corymbosa</i> ..	20.99	.070	.065	3.34	2.39	17.79	8.70	8.38	13.13	.52	5.04	10.01	.15	30.54	..	
<i>Euc. microcorys</i> ..	20.66	.083	.079	1.14	3.38	8.91	9.09	7.26	6.88	.31	2.10	2.65	.22	57.84	..	
<i>Euc. acuminata</i> ..	19.95	.065	.060	3.81	4.53	9.49	4.38	10.98	9.49	.34	2.08	3.17	.23	51.51	..	
<i>Euc. propinqua</i> ..	17.57	.180	.162	2.96	2.31	28.88	7.74	9.08	11.39	.79	6.51	4.12	.87	25.36	..	

ANALYSIS OF BARKS AND KINOS FOR TANNIN CONTENTS.

Description.	District.	Moisture.	Tannins.	Nontannin.	Soluble Ash.
<i>Acacia Bakeri</i> (Bark) ..	Gympie	11.68	9.11	5.34	.71
<i>Acacia Bakeri</i> var. (Bark) ..	Gympie	10.69	14.43	7.45	1.48
<i>Rhodosphæra rhodanthema</i> (Bark) ..	Gympie	13.11	22.99	8.28	2.05
<i>Alphitonia excelsa</i> (Bark) ..	Bundaberg	26.87	6.02	7.57	.76
<i>Acacia Arundelliana</i> (Bark) ..	Brisbane	52.36	10.41	3.29	.77
<i>Eucalyptus corymbosa</i> (Kino) ..	Brisbane	14.73	72.04	8.38	2.32
<i>E. corymbosa</i> (Kino) ..	Gympie	18.85	49.83	4.79	.04
<i>E. corymbosa</i> (Kino) ..	Gympie	84.42	4.90	10.44	.24
<i>E. maculata</i> (Kino) ..	Brisbane	20.15	61.61	9.69	1.44
<i>E. siderophloia</i> (Kino) ..	Brisbane	21.19	59.40	18.28	.62
<i>Angophora lanceolata</i> (Kino) ..	Gympie	22.55	40.53	3.35	1.14

Wood samples of secondary species not yet on the market were submitted to the Ipswich Workshops and various manufacturers for testing. Favourable reports were forthcoming in a number of instances, notably in the case of Silky Elm for axe-handles and casks. Suitable timbers for butter-boxes, bowls, wood-wool, saddle-trees, clothes pegs, artificial limbs, and toys, &c., were found.

The production of vegetable fibre from *Macrozamia* growths on Fraser Island also formed the subject of investigation.

Five tons of Foam-bark obtained from several species of *Cupania* were harvested and disposed of profitably in substitution for the imported saponaceous bark of *Quillaia*, which is used in the preparation of cordial headings.

Additional increment observation plots to the number of three were established during the year, the total number now in existence being fifty.

Periods of flowering and seeding of forest trees were registered.

The Cedar twig borer infestation was investigated further.

The publication "An Australian Study of American Forestry" (156 pp.), by E. H. F. Swain, was issued in July.

FOREST ORGANISATION.

FOREST STATIONS.

Offices and lecture room at Imbil for administrative and forest school purposes were erected and partially furnished under the supervision of the Department of Works.

An office was purchased at Yarraman for forestry purposes, at a cost of £125.

Residences were provided at Imbil, Yandina, Bunya, and Benarkin Forest Stations, for the housing of the resident officers, the rental being charged on the basis of 7½ per cent. of the capital value.

Three workmen's huts were built on Fraser Island, at a cost of £11 10s. each.

The Forest Service also undertook the construction of a combined timber drying shed and workshop at Woongoolver Forest Station (Fraser Island). The cost was £151. In addition an office was erected at a cost of £73, and a wharf store shed at a cost of £26. In all these structures, secondary woods not yet marketable were used with success.

The fencing of a 300-acre grass paddock on Brooloo State Forest (Casey's Gully) was commenced.

Four acres at Imbil Forest Station were grassed for the purpose of a horse paddock.

A grazing area was laid out on Timber Reserve 235, Amamoor, and preparatory timber-getting was undertaken. Four acres in patches were burnt and then sown with grass seed.

On Fraser Island trial sowings of Rhodes grass were made, in the endeavour to solve the problem of providing feed for bullock teams engaged in the transport of timber from the forest to the wharves.

ROADS.

Forest Service road construction proved particularly successful. In the Gympie district work taken over by the Service on a Shire estimate of £295 was done for £128 17s. 3d., and the

road is now carrying loads of 3,000 superficial feet of pine where formerly it was impossible to ride a horse. Graveling and corduroying costs were reduced by 40 per cent. to 50 per cent.

On Fraser Island, Bennet's and Woongoolver Creeks were bridged at a cost of £54 and £15 respectively, including approaches.

Several small-scale roadmaking and maintenance propositions were carried out under Forest Service control in terms of timber sale agreements.

A trial road survey from Kilkivan to Gron-gah State Forest, a distance of seventeen miles, was carried out by the Public Estates Improvement Branch, at a cost to the Forest Service of £304.

GENERAL.

The Forest Service motor launch "Heather," on the Fraser Island service, was fitted with a new engine of the Invincible type.

FOREST ENGINEERING.

Increasing costs and general unreliability of bullock haulage forced consideration of other modes of log transport.

Data have been gathered with regard to motor truck and tramway logging.

A form of engineering survey was combined with the forest valuation surveys which are in progress, and possible road and rail routes were located and planned for the important Mary Valley reserves, and forest stations also were laid out in the course of the work.

FOREST DEMARCATION.

At the beginning of the year five camps were engaged in the immense task of demarcation, three on topographical survey, and one on engineering and valuation survey, a fifth forming a flying timber estimation camp for outlying work.

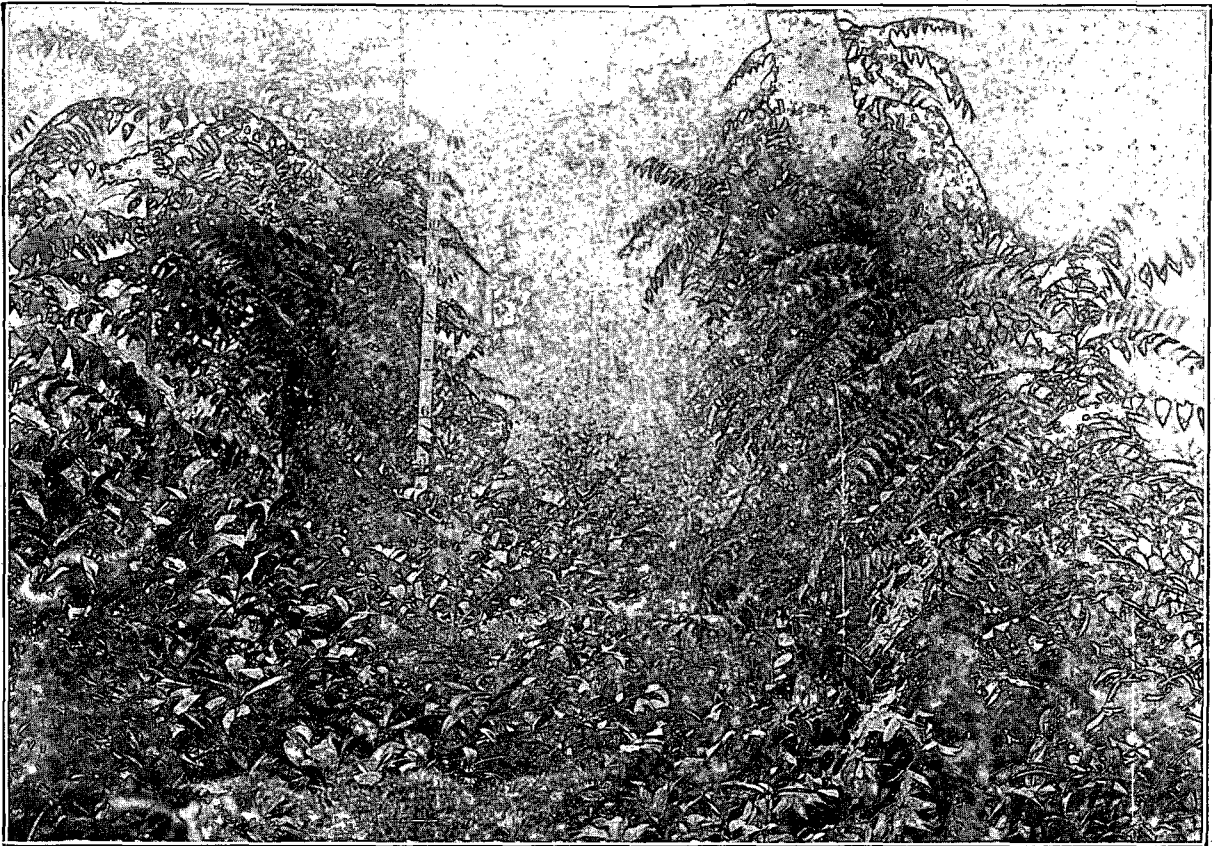
The following areas were inspected and demarcated:—

(a) Topographical Survey—	Area.
State Forest R221, Kilkivan	6,400 acres
Portions ph. of Widgee and Manumbar and Yarrol Holding	18,230 acres
Timber Reserve 405, Gladfield	6,750 acres
Crown Lands, parishes of Dinden and Danbulla	24,500 acres
Timber Reserves and Crown Lands in parishes of Barron, East Barron, and Herberton	35,200 acres
	<hr/>
	91,080 acres

(b) Engineering and Valuation Survey—	Area.
Timber Reserve R256, Imbil and Kandanga	24,700 acres
Timber Reserve R235, Amamoor	5,100 acres
	<hr/>
	29,800 acres

(c) Flying Valuation Survey—	Area.
Reserves 67 and 83, Gron-gah	12,000 acres
Crown Lands, Boondooma	106,170 acres
Timber Reserves 102 and Crown Lands, Blair Athol	72,000 acres
Timber Reserve 370 and Crown Lands, Durundur	24,920 acres
	<hr/>
	215,090 acres

At the end of the year, two additional Forest Valuation Survey Camps were established, and one flying and one topographical camp was dispensed with.



A YEARLING RED CEDAR—KAURI AND HOOP PINE PLANTATION.
 Planted February, 1918. Fraser Island: Photo. taken May, 1919. Soil, sand and humus. Rainfall, 60 inches.



HOOP AND KAURI PINE.
 Planted out February, 1918. Fraser Island: Ten 9 inches high. -Photo taken May, 1919.

FIRE PROTECTION.

The droughty conditions which prevailed during the greater part of the year were favourable to bush fires, which caused extensive damage to reproduction, and in many cases destroyed ready-made plantations entirely.

Until fires can be controlled in the forest, restocking is bound to be a futile effort, and degeneration both of the stand and of the soil must continue.

In the absence of a field organisation, the fires generally were unchecked.

Biggenden State Forest, however, enjoyed immunity, owing to the existence of a fire-line system, designed and constructed by District Forester Simon. Five trial methods were employed in this case, and the cheapest was found efficacious under whole-hearted supervision.

On Fraser Island 126 chains of firebreaks, constructed at a cost of from 2s. 1d. to 6s. 1d. per chain, were found equally effective. Where they did not exist, fire fighting failed, and a large extent of natural regrowth was destroyed.

In most cases incendiarism was responsible, the fire being the means to the improvement of the grazing capacity of the soil, and it is obvious that Forest Service control of agistment on timber reservations must form part and parcel of the fire protection plan.

To this end, legislation is requisite.

THE TIMBER CUT.

The timber cut has decreased since 1914.

Heavy enlistment among timbergetters and the unusually large sales of bullock teams in response to tempting prices from the beef market, as well as a general hesitation to build, have contributed to this result.

The combined mill log production of the Forest Service and private holders for the years 1914 and 1917 is compared below:

TOTAL LOG CUT, 1914 AND 1917—

	1914.	1917.
	sup. feet.	sup. feet.
Softwoods	141,557,000	98,651,000.
Hardwoods	110,679,000	68,059,000
Cedar	836,000	247,000
Total	253,072,000	166,957,000

The output for 1917 was only 66 per cent. of that of 1914.

The actual Forest Service log cuts in the periods were:

FOREST SERVICE CUT, 1914-1917—

	1914.	1917.
	sup. feet.	sup. feet.
Softwoods	50,906,000	37,864,000
Hardwoods	14,858,000	7,390,000
Cedar	335,000	173,000
Total	66,099,000	45,427,000

The 1917 production was 68. per cent. of that of 1914.

The Forest Service provided 27 per cent. of the total log cut of 1917, and 73 per cent. came from timber lands alienated in the past and now in private possession.

Of softwoods, the Forest Service furnished 38 per cent. in 1917, as against 35 per cent. in 1914, and of cedar 70 per cent., as against 40 per cent.

In the case of hardwood, it contributed only 13 per cent. in 1914, and 10 per cent. in 1917, most of the accessible Crown hardwood areas having fallen into private hands.

The production of railway, mining, and miscellaneous split, round, and hewn timber diminished to a much greater extent than the log cut, owing largely to the suspension of railway construction.

Forest Service operations in 1914 and 1917 yielded the following quantities respectively:—

	1914.	1917.
Sleepers and Transoms (No.)	951,500	226,230
Piles and Girders (lin. ft.)	387,550	71,940
Telegraph Poles and House Blocks (lin. ft.)	236,400	99,520
Posts, Rails, and Palings (No.)	150,900	82,530
Fuel (tons)	26,000	50,570
Sandalwood (tons)	523	454
Mining Props (lin. ft.)	941,700	

During 1918 production was directly hampered by early flood conditions making the roads impassable, followed quickly by prolonged drought, which resulted towards the end of the year in an almost general suspension of felling, &c., owing to lack of grass and water. The flow of logs to the market was disturbed, partial unemployment in the mills was a direct consequence, thus emphasising an ever-present need for the adoption of modern methods of logging and engineering.

These disabilities notwithstanding, the Forest Service cut in 1918 reached a fair average, as is shown by the summary following:—

FOREST SERVICE TIMBER CUT, 1918—

	sup. feet.
<i>Mill Logs.</i>	
Hoop and Bunya (logs)	31,111,162
Hoop and Bunya (tops)	4,377,519
Kauri	1,438,610
Cypress	710,878
Bally Gum	46,444
Beech	437,377
Silky Oak	121,124
Putts' Pine	5,117
Yellow-wood	56,748
Other	438,388
Total Softwoods	38,743,067
Red Cedar	172,373
Hardwoods	7,141,934
Grand Total	46,057,374

Railway, Mining, and Miscellaneous.

Sleepers and Transoms	116,723 pcs.
Posts, Rails, and Palings	68,267 pcs.
Piles and Girders	101,214 l. ft.
Telegraph Poles and House Blocks	92,289 l. ft.
Mining and Miscellaneous	1,305,171 l. ft.
Fuel	50,921 tons
Sandalwood	406 tons
Mangrove	88 tons
Guano	560 tons
Foam bark	5 tons

The out-turn of Hoop and Bunya Pine especially suffered reduction. While the pre-war (1914) cut amounted to 44,681,000, the 1918 log production totalled only 31,111,000 superficial feet. On the other hand, "tops" were utilised in quantity for the first time, and contributed 4,377,000 superficial feet, bringing the total cut of Hoop and Bunya to 35,488,381, being practically the level of the previous two years.

The Nanango and Gympie districts supplied two-thirds of this total, *i.e.*, 11,447,000 and 7,784,000 superficial feet respectively. Ipswich followed with 7,221,089 superficial feet. The Gympie out-turn represented a decrease of 2½ million superficial feet on the previous year.

The cut of Cypress Pine (710,000 superficial feet) was only two-thirds of that of 1917, or one-fifth of that of 1914, a result attributable to drought, which was felt particularly in the western districts, where Cypress Pine supplies the principal building timber.

The figures for Cedar and miscellaneous hardwood remained stationary at little more than half those of 1914. Fraser Island State Forest provided 50 per cent. of the hardwood cut.

All the Kauri and most of the valuable cabinet woods came from the Cairns-Atherton-Herberton districts, where the log production from Crown forests amounted to 2,163,000 superficial feet, as against about 15,000,000 superficial feet from denationalised timber lands, mostly alienated for settlement purposes eight or ten years ago, synchronously with the extension of the railway line from Atherton. The combined export from Cairns for 1918 was 15,124,000 (in log measurement).

The cut of sleepers and transoms showed a decline, the output being 116,000, as against 226,000 in 1917 and 951,000 in 1914. Nearly half the number came from the Blair Athol and Chinchilla State forests. The production of piles and girders increased from 71,940 lineal feet in 1917 to 101,214 lineal feet in 1918.

The decline in Crown timber cut owing to war and drought since 1914 probably reached its lowest point in 1917. Hereafter a steady rise in production may be anticipated up to the limits of the Forest Service reservations.

The combined private and Forest Service log cut for 1918 amounted to 179,402,000 superficial feet, as against 166,957,000 superficial feet for 1917. It was made up as follows:—

	1918.
Pine	107,152,000
Hardwoods and other timbers	71,855,000
Cedar	395,000
Total	179,402,000

The Forest Service cut for 1918 of 46,057,000 superficial feet represents 25.7 per cent. of this total, so that temporary private sources now furnish 74.3 per cent. of the raw material required annually by the 221 sawmills of Queensland.

The problem to be faced by the Forest Service is how to increase its output as alienated lands become exhausted from the present 25 per cent. to the ultimate 100 per cent.

PROGRESS OF UTILISATION.

Increasing shortage of supply and the resultant rising prices of the best woods of Queensland so reacted upon the timber market during 1918 as to encourage—in fact, to necessitate—more effective utilisation of forest products by the trade.

An average Southern pine “scrub” is composed of some fifty or sixty distinct species.

Only five or six, such as Hoop and Bunya Pine, Cedar and Beech, &c., have been utilised. These occur to the extent of about 3,000 superficial feet (log measurement) per acre amid a miscellany of other and smaller trees. A sample measurement made during the year on the Brooloo State Forest (Western Creek) revealed an average stand of all sizes of 10,000 superficial feet per acre of secondary scrubwoods with most of which the Queensland timber trade is not yet familiarised. Undoubtedly of lesser quality than the prime woods, this secondary class stand is utilisable and is capable of being placed on the market cheaply. A sample in which were prominently represented Silky Elm, Ironwood, Lignum Vitae, Pink Poplar (Maidens' Blush), and Marara, was approved by a Melbourne firm recently in the following terms:—

“I would recommend these timbers as being *first class* for the manufacture of chairs and chair work, *selected* for coopering such as bent work staves, tool handles, &c., and no end could be turned to account in toy manufacture.”

In the Northern forests the secondary timbers are in even greater abundance than in the South, and include such valuable woods as Calophyllum (Rose Satinwood), Candlenut, Northern Bally Gum, &c.

The local market, however, is negligible; the present costs of extraction and of transport to the South are so high (about 20s. per 100 superficial feet in the log from stump to city) that only select cabinet woods such as Cedar, Maple, Silky Oak are handled. The result is that the bulk of the Northern forest stand remains unexploited, or in the processes of settlement is reduced impatiently to smoke and ashes.

On Fraser Island, 71 distinct timber species have been recorded, but the only classes exploited to 1918 were Tallow-wood, Blackbutt, and Red Stringybark, Kauri and Hoop Pine.

Large stocks of Scrub Box and Turpentine are held on the island, but despite the fact that these woods achieved endorsement in New South Wales some twenty years ago, their rejection by the timber trade of Queensland has continued until the current year.

The history of forest utilisation in this State is a history of strict limitation to a narrow range of prime woods well known and highly appreciated in the architectural and building worlds.

With the valour of ignorance in regard to our own native wares, the primitive needs and rudimentary industries of our pioneering population provided an excuse both for restricted use and unrestricted waste of the forest wealth of Queensland.

Purchasing our axe handles in America, our brushware in Sweden, our clothes pegs in Europe, our toys in Germany, and to some extent our furniture woods in Japan, we have selected from our own forests only the finest products, and have applied them to the basest purposes.

Beginning with Red Cedar, a progressive culling ensued, and as each species became scarce and higher-priced, Kauri, Hoop and Bunya Pine, and White Beech of the soft woods

successively found favour, while of the hardwoods, Ironbark, Tallow-wood, Spotted and Blue Gum, and Red Stringybark came in for a measure of approval.

Not ten years ago Hoop Pine was condemned out of hand as wholly unsuitable for butter-boxes, for which purpose it is largely used to-day, and Maple and Silky Oak, which, as cabinet woods, have succeeded Red Cedar, now almost extinct, were used only for studding, flooring, and fence posts. Now Maple is disappearing; investigation made by the Forest Service during 1918 disclosed the facts that only five years' supply on the basis of current demand is visible at this date, and that most of it is in alienated forests which are undergoing rapid clearing.

Yellow-wood (an allied species of *Flindersia*), however, is coming into use in many directions in place of Maple, and an accelerated demand for this important timber may be anticipated.

Queensland has still an asset in the lesser scrubwoods, for which the Forest Service is anxious to find a market quickly, as under present conditions they are serious obstacles in the path of sylvicultural development.

Considerable attention was given the matter during the year.

Several hundred pounds were expended in experimental logging, conversion, and trial of untried species.

Both at Imbil and at Fraser Island the Forest Service has applied these woods in the construction of its buildings and offices. Turpentine, Scrub Box, Ironwood, and Marara have been used as weatherboards with success, Silky Elm has been applied to flooring and seed bed-frame construction, and Crow's Ash to shingles. Careful studies have been made of the product from the log through the mill to the job, and considerable data have been acquired. Sample stocks of boards have been accumulated for later use and experiments.

The Forest Service has distributed samples to the timber trade and exhibited specimen boards to likely buyers, and has itself undertaken to fulfil orders for trial lots of logs.

A gratifying measure of success resulted from this effort.

In 1917 the sale of timbers other than pine and hardwood in the Gympie district amounted to 23,828 superficial feet; in 1918 the output of pine and hardwood declined, but the cut of other woods increased to 200,811 superficial feet. Of secondary scrubwoods the sales increased from 9,583 superficial feet in 1917 to 91,000 superficial feet in 1918.

The gross receipts earned by the Imbil Forest Experiment Station in the harvesting and marketing of these and other forest products amounted to about £500.

By a large sale of Fraser Island Turpentine and Scrub Box to H. McKenzie, Limited, of Sydney, the timber rights of 10,000 acres were disposed of for a term of ten years at an initial stumpage price of 9d. per 100 superficial feet. The work of constructing tramline, sawmills, and jetty was begun immediately upon completion of the sale contract in April, and was prosecuted

with such vigour that the active conversion of the secondary hardwoods of the island should be initiated towards the middle of 1919.

The secondary softwoods of the island, although of scattered distribution, are of promising quality. A species of *Alphitonia* (a pink cedar wood type), Whitewood (*Schizomeria avata*, the "crabapple" of the Dorrigo, New South Wales), *Beilschmedia obtusifolia*, *Litsea ferruginea*, *Persea Baileyana*, *Cryptocarya glaucescens* (Brown Beech of New South Wales), and *Sideroxylon laurifolium* (all of the Bally Gum order), are especially worthy of mention. None of these is yet being handled.

Of the unused woods of the mainland, probably Silky Elm (Crow's Foot) is the most plentiful. This species, after long exclusion, secured a footing during the year in displacement of imported Oak for beer and oil barrels, and found some favour among axe and tool handle manufacturers. I have no doubt that this neglected species is on the market to stay, and will be utilised increasingly in the future.

Marara also entered the field in a small way, ranking as a second-grade hardwood. It is, however, so specially adapted for making planes, mallets, chisel handles, golf heads, &c., that it must eventually find a higher place.

Pink Poplar (Maiden's Blush) also came into unwonted prominence, and, provided seasoning difficulties can be overcome, it must secure ready sale as an easily worked softwood.

Of the miscellaneous scrubwoods, many are suitable for such purposes as flooring and weatherboards, &c., but a preliminary grouping of them into classes under one trade name is essential before they can be handled effectively.

Of the hardwoods, Blackbutt advanced in public favour, and Flooded Gum gained tardy recognition. The future of Turpentine and Scrub Box is now assured.

The tendency to closer utilisation has been much less observable in the case of mining and railway timbers. In respect of those classes of timber, the Forest Service has been bound to an out-of-date royalty schedule, and naturally the users could not be expected to accept second-grade timber whilst first-grade timbers were purchasable at the same price.

Operations under these headings are the most wasteful of all those controlled by the Forest Service, and some amelioration is imperative. The conversion of prospective girder Ironbark, for instance, into mining props or roundback sleepers continued, but the co-operation of the Departments concerned is being sought with a view to more adequately preventing loss and safeguarding the future supply.

In the milling business, the effect of conservative timber-getting was marked. Until 1918, practically only clear Hoop and Bunya logs were saleable, the knot-containing lengths above the first whorl of branches being left in the forests to decay. The timber thereby lost to the community represented 40 per cent. of the total pine cut. Rising values, however, have attached to pine "tops" a price virtually equal to that at which prime logs were sold two years ago, and a strong demand from the case trade resulted in the disposal of a considerable quantity of this class of timber. In previous years

the cut of knotty pine logs was entirely negligible. During 1918, however, the quantity sold amounted to 4,377,219 superficial feet, or 12½ per cent. of the total pine cut. Towards the end of the year the utilisation of the knotty lengths was made compulsory in all Forest Service sales where the cost of extraction did not exceed the realisable prices.

The Queensland Pine Company, during the year, recommenced paper pulp production from Hoop Pine waste.

The three-ply industry, born of the war, continued to flourish, using first-class, clear Hoop and Bunya Pine for the manufacture of its product, for which 6s. per sheet was obtained in Sydney in the retail market, as against 15s. for Japanese oak ply.

TIMBER SALES POLICY.

The function of Forestry, sylviculturally, is to sow and to grow; commercially, to harvest and to market, the State's timber crop.

To the forester the sylvical aspect has been always of more absorbing interest than the commercial; and it is natural, therefore, that it should have secured the greater measure of his attention. But not the most academic of sylviculturists can afford to neglect indefinitely the commercial side of forestry, for the timber market more or less determines the trend of forest practice. Thus, sylviculture depends upon intensive utilisation; but intensive utilisation depends upon the log buyer, and the progress of forestry in the final analysis depends upon forest revenues.

Hitherto, forestry in Queensland has operated commercially along the crude lines of stumpage auctions. Beyond that it has relied upon the theory of competition for the adjustment of values.

In practice, however, competition has been neither equal nor unrestricted.

The timber-sales policy was commercialised during the year, and provision was made for departmental harvesting and marketing. Contracts were arranged with the State sawmills for the delivery at the mills of 4,000,000 superficial feet per annum of pine logs at ruling rates.

Forest Service log price lists (upsets) were prepared, and are now being issued periodically in accord with market movements.

The administration of timber sales in the Maryborough, Atherton, and Bundaberg districts was taken over from the Land Commissioners by the Forest Service during the latter part of the year.

THE TIMBER RESOURCES.

The timber industry of Queensland is obtaining 74 per cent. of its raw material from alienated forests in the process of clearing them.

For reserve supplies when these private areas are exhausted and the demand increases in ratio with growth of population, the timber trade looks to the Forest Service.

At the end of 1918, the total forest reservation for the State was 3,793,268 acres, including ten new State Forests added during the year.

The total area of Queensland is 429,000,000 acres, and the above reservation represents eighty-eight hundredths of 1 per cent. of the territorial extent.

Thus, less than 1 per cent. of the State, composed for the most part, be it said, of the poorest and most mountainous sections of Queensland, has been set apart so far for the maintenance of the fourth greatest industry, upon whose continuance depends also the prosperity of the mining and farming industries and the future of the railway system.

For this result a short-sighted or selfish public opinion is wholly responsible.

Through a long procession of Annual Reports, my predecessors have uttered warnings, always unheeded, against the deliberate dissipation of the forest asset. Reiteration no longer carries emphasis. Suffice it to say that the most arduous task of the Forest Service is not that of securing added reservations, but of resisting persistent and pressing aggression by private and public bodies and citizens upon the remnant timber lands which the Forest Service so far has succeeded in retaining for the future benefit of the wood-working and wood-using industries of the State.

Since the population of Queensland at this stage is less even than that of Sydney, with its suburbs, it is instructive to compare the forest allotments of more densely populated countries where both requirements in timber and demand for land must be immeasurably more intense than in so sparsely peopled a territory as our own.

Forest allotments in Queensland and other countries (including Communal and Permanent Private Forests so far reserved) :—

	Per cent. of total area.
Queensland	00.88
Japan	59.00
Sweden	48.00
Germany	25.80
Austria-Hungary	30.00
France	18.50

Compared with the States of New South Wales and Victoria the position is:

Forest Reservation in New South Wales, Victoria, and Queensland :—

	Per cent. of total area.
Queensland	0.88 per cent.
New South Wales	3.00 per cent.
Victoria	7.56 per cent.

The forestry position in the two Southern States has occasioned acute alarm, yet Queensland's present situation is very much graver.

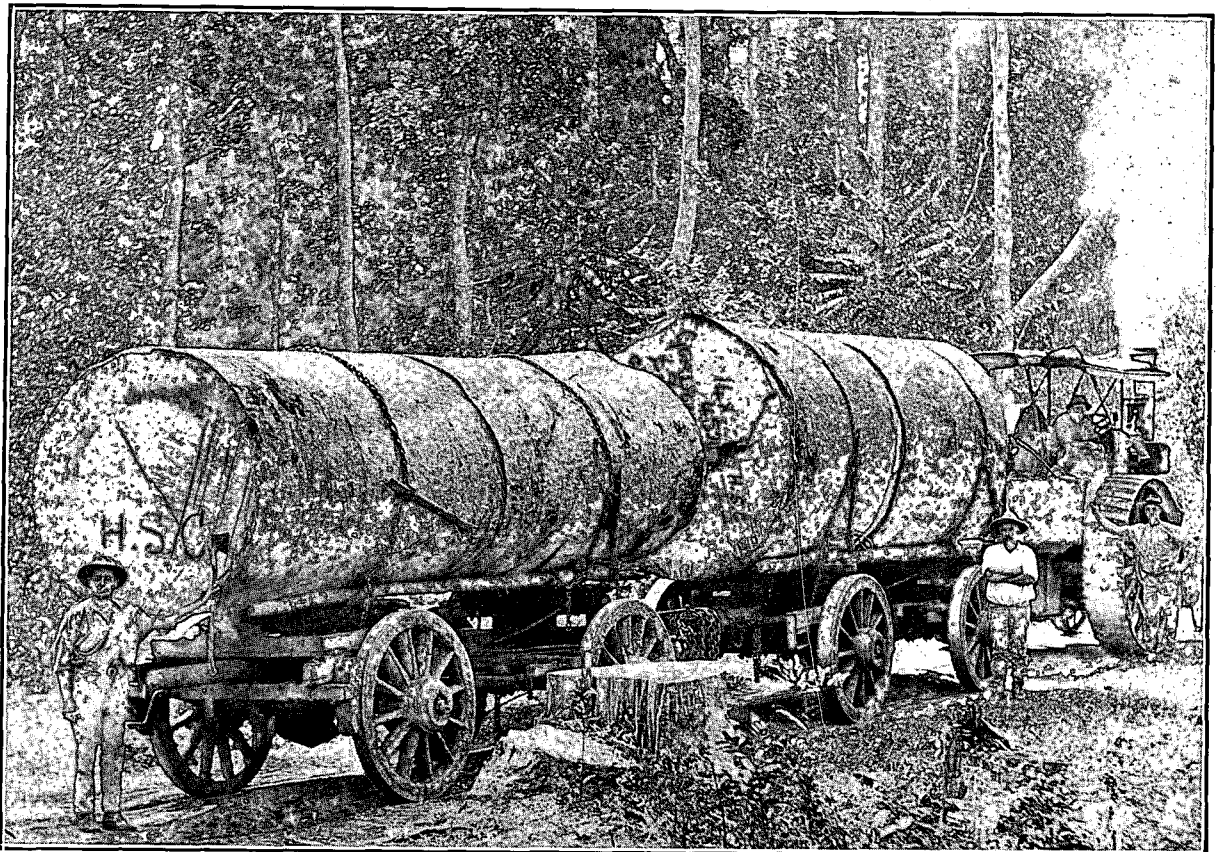
Mr. D. E. Hutchins, a distinguished forester, who visited Australia in 1914, set down Queensland's forest wants at a permanent reservation of 43,000,000 acres.

The New South Wales minimum of 3 per cent., which is much below the margin of safety, if applied to Queensland would provide 12,000,000 acres.

A comparison with actual reservation of 3,793,268 acres should induce some realisation of the seriousness of our case.



LOGGING CABINET WOODS—ATHERTON DISTRICT.



KAURI PINE LOGS—ATHERTON DISTRICT.

Details are appended.

Forest Reservation 31st December, 1918.—

State Forests—	No.	Area. Acres.
31st December, 1917	64	1,069,134
Proclaimed during 1918	10	52,995
Total	74	1,122,129

Timber Reserves.	Area.	Total area (Acres).
At 31st December, 1917		2,804,967
Made State Forests, 1918	49,120	
Cancelled in 1918	101,795	
Decrease by recomputation	7,473	
Total decrease	158,388	2,646,579
Added during year		24,560
Total at 31st December, 1918		2,671,139
Total Forest Reservation, 31st December, 1918		3,793,268
National Parks (at present under Forest Service control)		73,751
		3,867,019

As against 3,947,852 acres at the end of 1917, there was a decrease of 80,833 acres.

The new State Forests include the Gadgarra reservation (Cairns district) of 37,850 acres of rough and broken mountain land forested with cabinet woods, and an area of 8,100 acres of hardwoods in the Dalby district.

Two important hardwood proposals in the Clermont and Gympie (Curra) districts have been held up owing to objections lodged by the Department of Mines.

The areas released for alienation include 57,720 acres in the Dalby district, 5,765 acres in the Brisbane district, 13,585 acres in the Maryborough district, 5,113 acres in the Nanango district, and 2,226 acres in the Warwick district.

FINANCIAL.

REVENUE.

An increase of £5,281 in the forest receipts and a surplus of £49,604 are recorded for the year.

Forest Service revenues for 1918 totalled £71,985. Refunds of guarantee deposits and excess payments made on previous sale, how-

ever, amounted to £504, leaving a gross revenue of £71,481.

Sales of timber only are represented in this amount. Receipts on account of forest agistment, &c., are included, under the subsisting procedure, in ordinary land revenues.

The Southern Division yielded £59,038, or 82 per cent., of the total; the Northern Division £8,093, or 11.2 per cent.; and the Central Division £4,853, or 6.8 per cent.

The five most important forest regions of the State, viz.: Nanango, Gympie, Ipswich, Brisbane, and Maryborough, together produced £51,494, i.e., 87.2 per cent. of the total for the Southern Division, or 71.7 per cent. of the earnings for the whole State. In 1917 and also in 1916 the figures were 93 per cent. and 77 per cent. respectively.

Innisfail, Cloncurry, and Mackay registered decreases in revenue, the receipts being only 39 per cent., 66 per cent., and 70 per cent. of those of 1917. Clermont, Gympie, and Rockhampton registered 86 per cent. of the previous year's earnings.

On the other hand, extraordinary additions were secured in the Herberton, Warwick, Toowoomba, and Dalby districts, where the receipts were 425 per cent., 353 per cent., 227 per cent., and 217 per cent., respectively, of those of 1917. The figures for Bundaberg, Atherton, Emerald, Thursday Island, and Gladstone were 143 per cent., 140 per cent., 136 per cent., and 132 per cent.

The full effect of enhanced timber values was not felt in 1918, and a further substantial increase in the Forest Service income may be expected during the ensuing year.

Even in 1918 Queensland's forest income is the highest of any of the Australian States.

EXPENDITURE.

An increase of £7,947 in expenditure resulted from the preliminary reorganisation of the Forest Service and the extension of its operations in the early part of the year.

The disbursements for 1918 amounted to £21,877, as against £13,930 in 1917; and was distributed nearly equally between overhead expenses and the capitalisation of improvements, viz.:—

OVERHEAD EXPENSES.

	1917.	% of Total.	1918.	% of Total.
Salaries	£ 4,225	..	£ 6,021	..
Travelling Allowances and Incidentals	2,101	..	3,898	..
	£6,326	45.4	£9,919	45.4

CAPITAL IMPROVEMENTS.

	1917.	% of Total.	1918.	% of Total.
Forest Organisation and Sylviculture	£ 4,697	..	£ 7,910	..
Forest Station Establishment	2,905	..	834	..
Improved Roads to Timber Areas	2	..	2,574	..
Repurchase of Timber Lands	..	..	640	..
	7,604	54.6	11,958	54.6
	£13,930	100.	£21,877	100

The following statement provides a comparison of the Forest Service revenues and expenditures for each year from 1904 to date; of course, excluding income from forest agistment, &c., credited to Department of Public Lands:—

COMPARATIVE STATEMENT OF FOREST REVENUE AND EXPENDITURE—YEARS 1904-18.

	Expenditure.	% of Revenue.	Revenue.	Surplus to Consolidated Revenue.
	£		£	£
1904	837	7.3	11,441	10,606
1905	712	6.2	11,577	10,865
1906	1,331	9.1	14,560	13,229
1907	1,549	7.0	22,236	20,687
1908	2,132	7.6	27,979	25,847
1909	2,448	7.0	35,200	32,752
1910	2,548	6.4	39,645	37,097
1911	2,930	5.4	53,840	50,910
1912	5,397	8.5	63,447	58,050
1913	7,386	11.7	62,973	55,587
1914	7,653	10.2	74,729	67,076
1915	7,416	10.6	69,793	62,377
1916	9,473	15.7	60,401	50,928
1917	13,930	21.0	66,200	52,270
1918	21,877	30.6	71,481	49,604
Totals	£87,619	12.8	£685,502	£597,883

Prior to 1904, for the years 1876-1880 and 1882-1903, the revenue was £170,428; no record of the expenditure is available over this period.

In fifteen years (1904-1918) the forest revenue of Queensland, excluding receipts for grazing, &c., has been nearly three-quarters of

a million pounds, and the expenditure for all purposes has been but little more than the gross receipts in 1918.

The following summary compares the latest available financial statements of the Forest Departments of the six States of Australia:—

	Year.	Revenue.	Expenditure.	Surplus + or Deficit, —
Queensland	1918	71,481*	21,877	+49,604
New South Wales	1917-18	70,969	77,688	-6,719
Victoria	1916-17	55,917	68,556	-12,639
South Australia	1917-18	14,278	21,381	-7,103

* Excludes receipts for forest grazing and miscellaneous.

ADMINISTRATION.

STAFF.

In April, Mr. N. W. Jolly, B.A., B.Sc., Director of Forests from 1911, resigned his post to accept appointment to the New South Wales Forestry Commission.

Tribute is due to him for his seven years' valuable service on behalf of Queensland forestry. Notable among his achievements were his pioneering of the principle of the sustained yield and his studies in the technology of our native woods.

World-wide advertisement was resorted to by the State in the selection of Mr. Jolly's successor, who was appointed in April, 1918.

In July a preliminary reorganisation and regrading of the Forest Service staff were effected; in the aggregate, forty-one persons were added to the staffs during the year.

The constitution and strength of the Forest Service personnel at the beginning and end of 1918 are compared below:—

OFFICERS AND EMPLOYEES OF THE QUEENSLAND FOREST SERVICE, 1917-1918.

31st, December, 1917.

Administrative Staff.	
Director	1
Draftsman	1
Clerks	2
	4
Field Staff.	
District Forest Inspectors	4
Forester	1
Forest Officers	3
Forest Rangers	12
	20
Labourers, &c.	
Overseers	2
Survey Assistants	2
General	7
	11
Total	35

Summary.

	Per cent. of total.
Administrative Staff	11 per cent.
Field Staff	57 per cent.
Labourers, &c	32 per cent.
Total	100 per cent.

31st December, 1918.

Administrative Staff.	
Director	1
Draftsman	1
Clerks	4
	6
Field Staff.	
District Foresters	4
Assistant Foresters	11
Forest Rangers	5
Forest Guards	10
Cadet	1
	31
Labourers, &c.	
Overseers	5
Survey Assistants	6
General	22
Roads	5
Carrier	1
	39
Total	76

Summary.

	Per cent. of total.
Administrative Staff	8 per cent.
Field Staff	41 per cent.
Labourers, &c.	51 per cent.
Total	100 per cent.

Among the new appointees were two Assistant Foresters specialising in Forest Survey and Engineering. In each case a returned soldier was appointed.

Applications were called from candidates for the post of Instructor and Investigator in Forestry, but selection was not completed at the end of the year.

One cadet was added to the staff, and the appointments of five others were approved.

The clerical staff at Head Office was strengthened by the attachment to it of a forest clerk and an additional typist.

The number of overseers and labourers was increased from 11 to 39.

CLERICAL.

The volume of incoming correspondence was double that of 1916.

In order to keep the field staff *au fait* with development, a policy of circularising information and instructions was adopted.

Modern cost-keeping and filing systems were initiated.

Improved district office accommodation was secured at Nanango, Gympie, and Maryborough.

Head Office accommodation remained insufficient, and recourse had to be made to adjacent corridors to relieve the congestion. The Forest Museum exhibits were stored temporarily in a small building in William street.

FOREST OFFENCES.

Proceedings on account of breaches of the Forest Regulations or of the Acts were instituted in four instances, in three of which the offenders were convicted and fined. The fourth case was dismissed on a technicality concerning the date of laying of the information.

Twenty-two seizures of timber illegally obtained were also made. In eight cases material seized was confiscated and sold, and in the remaining fourteen instances a settlement was effected.

DIRECTOR'S MOVEMENTS.

During the year the Director of Forests visited the North on a tour of inquiry with a view to reorganisation of forest administration in that region.

Visits were made also to Fraser Island and Gympie district.

Pressure of administrative duties rendered a more extensive programme out of the question.

FOREST POLICY.

The unfortunate obsession that forests stand in the way of settlement has brought the State within measurable distance of forestry disaster.

Faulty and ignorant public opinion has been and is still the chief obstacle to forest development.

The rapid dissolution of the original timber resource, combined with the increasing cost of timber for buildings, is tending to induce a change of front.

Recent events in Europe, the renaissance of forestry in Britain, and the passing of modern forest laws in New South Wales, Victoria, and West Australia during the last year or two, are significant signs of the times.

The world development of a public forest-consciousness was shared to some extent by Queensland during the past twelve months, and the official visit of inspection of some of the more considerable timber areas of the State made by their Excellencies the Governor-General, Sir Ronald Munro Ferguson, and the State Governor, Sir Hamilton Goold-Adams, conducted materially to this result by directing public attention to the "Cinderella" among industries.

The several pronouncements upon forestry by the Minister for Lands, the Honourable J. H. Coyne, M.L.A., were received with evident public interest and approbation.

During the year the writer delivered an address on "Forest Development" at Gympie before a gathering representative of the several public bodies of that important timber district.

Modern forestry is the business of wood production and supply. So far as Queensland is concerned, the original inherited crop has yet to be reaped and sold. The processes involved in that undertaking include road-making and maintenance, grassing, home-building, and all the other tasks that fall ordinarily to the lot of the new selector.

The phase of forest production follows as the beginning of the next cycle. Forestry, in fact, is nothing more or less than a form of land settlement, essentially a nationalised form, because private enterprise will not usually bother with a crop that takes a lifetime to mature.

Before the war, the German forests yielded £22,000,000 per annum from their 35,000,000 acres, and employed directly 10 per cent. of their industrial population. The sum of £8,000,000 was being spent each year in maintenance.

In 1830 the yield per acre per annum in the German forests was 240 superficial feet. Seventy-five years later it had been increased by effective management to an average of 780 superficial feet, and in some states to 1,140 superficial feet or quadrupled.

France spends 4s. per acre per annum on her forests, and gets 7s. 3d. in receipts. Wurttemberg spends twice as much, and her forest earnings are fourfold.

Mr. D. E. Hutchins, I.F.S., a distinguished forester, recently calculated the normal yield to be expected of a New Zealand kauri forest under

effective management. The estimate compared with the results actually obtained from dairying on adjacent lands is as follows:—

DEFINITE YIELD—FOREST v. DAIRYING.

	Living Area per Family.	Average Yearly Wage earned.			Yield of Land after deducting Wages		
	Acres.	£	s.	d.	£	s.	d.
Forest—Normal yield in perpetuity	75	160	0	0	10	16	0
Dairying (successful farmers only)	201	145	11	0	Nil.		

Forest users live in the cities. The tree after it leaves its native habitat becomes the raw material which sustains a long series of industrial enterprises.

Following, I quote figures illustrating, for instance, the accumulating money values of employment offered the community by the circulating of the products of the hardwood forests of the parish of Parker (Brisbane district):—

Obtained by the Crown—	£
Stumpage value	23,625
Value of Employment afforded—	£
Cutting	5,250
Hauling	26,250
Loading	2,625
Railway Freight	5,250
Carting	5,250
Milling	36,750
Distribution	13,125
Building	63,000
Total	£181,125

While the practice of forestry in Queensland may not have appeared a lucrative proposition ten years ago, when first-class pine logs were sold on the stump in the Brooloo forest for 6d. per 100 superficial feet, there is no gainsaying the fact that it has become an alluring financial enterprise now that 12s. per 100 superficial feet is realisable for the same class of timber in a similar situation. Whether it be or be not a profitable business, however, timber is an elemental necessity of life "from the cradle to the coffin," and it is the imperative duty of the State to assume the function of maintaining a sufficient supply for the use of the community both in the present and in the future.

The elemental needs of the forestry situation in the State to-day are—

1. Constitution of a definite and sufficient forest estate.
2. A strong forest redemption policy.
3. Reinvestment in forestry of forest surpluses.
4. A modernised Forestry Act.
5. Establishment of an independent Forestry Service.
6. Strengthening of the forest staff, particularly on the technical side.
7. A Forest Products Laboratory.

E. H. F. SWAIN,
Director of Forests.

1st July, 1919.

TABLE No. 1.

PROGRESS OF THE SAWMILLING INDUSTRY FROM 1913 TO 1918.†

	1913.	1914.	1915.	1916.	1917.	1918.
Number of sawmills in operation	247	252	247	230	227	221
Number of hands employed	4,621	4,359	4,311	3,734	3,441	3,543
Value of machinery, plant, land, &c. £	565,474	601,119	568,458	567,356	545,184	562,531
Pine cut	98,620,299	101,112,427	89,726,215	75,231,339	70,465,436	75,006,691
Cedar cut	Super. feet	882,092	668,997	433,536	290,738	197,783
	Value, £	15,964	14,329	11,085	6,343	3,893
Hardwood and other timbers cut	Super. feet	57,131,224	66,674,215	54,790,162	46,328,581	40,999,378
	Value, £	510,967	614,853	531,981	491,903	435,427
Planing, Moulding, &c. £	154,778	33,786	49,682	35,748	107,279	119,800
Value per 100 sup. feet*—	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Pine	15 8	16 7	17 2	17 6	18 3	21 9
Cedar	36 5	42 10	51 3	43 8	39 4	47 1
Hardwood and other timbers	17 11	18 5	19 5	21 3	21 3	23 9

* The prices are the average local prices for all classes of the timber referred to.

† These figures, supplied by the State Government Statistician, refer to timbers cut in the State, both on Crown and private lands.

TABLE No. 2.

FORESTRY.

RETURN OF TIMBER RESERVES IN THE STATE ON 31ST DECEMBER, 1918.

Land Agent's District.	Number of Reserves.	Area in Acres.	Area Proclaimed, 1913, included in Previous Column.
			Acres.
Atherton	5	22,599	...
Bowen	6	75,383	...
Brisbane	49	211,329	8,097
Bundaberg	17	72,355	1,290
Cairns	2	28,700	...
Charters Towers	1	125,000	...
Clermont	2	164,350	...
Cooktown	4	411,080	...
Dalby	17	231,744	...
Gayndah	8	30,218	8,240
Gladstone	13	137,663	...
Gympie	35	234,862	77
Herberton	4	18,490	3,600
Ingham	4	101,578	...
Inglewood	10	94,138	...
Innisfail	1	18,000	...
Ipswich	23	65,255	...
Mackay	12	196,186	...
Maryborough	22	90,188	1,250
Nanango	9	35,612	...
Port Douglas	5	209,876	...
Rockhampton	5	36,307	...
Roma	2	6,171	2,006
Springsure	1	3,240	...
Toowoomba	5	15,095	...
Warwick	10	35,480	...
Windorah	1	240	...
Totals	273	2,671,139	24,560

TABLE No. 3.

FORESTRY.

RETURN OF STATE FORESTS AND NATIONAL PARKS IN THE STATE ON 31ST DECEMBER, 1918.

Land Agent's District.	STATE FORESTS.		NATIONAL PARKS.	
	Number of Reserves.	Area in Acres.	Number of Reserves.	Area in Acres.
Atherton	4	4,384	...	...
Brisbane	14	36,110	7	47,553
Bundaberg	5	64,516	...	...
Cairns	1	37,850	...	...
Dalby	4	347,080	...	...
Dalby and Nanango ... ..	...	...	1	22,500
Gladstone	5	38,427	...	...
Gympie	8	59,457	1	106
Herberton	2	731	1	270
Ipswich	4	64,937	...	...
Maryborough	6	257,775	1	100
Nanango	11	57,653	...	...
Rockhampton	2	48,320	1	216
Springsure	1	69,000	...	...
Toowoomba	1	8,260	...	...
Warwick	1	27,400	2	3,225
Totals	69	1,121,900	14	73,980

TABLE No. 4.

COLLECTIONS UNDER THE TIMBER AND QUARRY REGULATIONS FOR THE YEAR 1918.

Place.	Licenses.			Sales of Timber.			Sales of Confiscated Timber.			Totals.			
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
Aramac	4	12	6	7	15	8				12	8	2	
Atherton	7	4	0	2,700	12	9				2,707	16	9	
Banana													
Barcaldine	24	8	0	103	5	2				127	13	2	
Birdsville	0	5	0							0	5	0	
Blackall	11	4	0	21	17	11				33	1	11	
Boulia	4	13	0	0	3	0				4	16	0	
Bowen	42	19	6	105	4	11				148	4	5	
Brisbane	11	1	0	2,419	12	5				2,430	13	5	
Bundaberg	44	13	6	1,643	5	8				1,687	19	2	
Burketown	9	1	0	14	1	0				23	2	0	
Cairns	28	0	0	953	14	8				981	14	8	
Camooweal	4	13	0	0	7	6				5	0	6	
Charleville	11	19	0	9	7	6				21	6	6	
Charters Towers	80	18	6	825	6	4	3	0	0	909	4	10	
Chillagoe													
Chinchilla													
Clermont	3	10	0	725	14	0				729	4	0	
Cloneurruy	85	0	0	515	8	6				600	8	6	
Cooktown	8	1	0	154	7	1				162	8	1	
Coen													
Croydon	4	7	0	18	15	0				23	2	0	
Cunnamulla	1	19	0	0	15	0				2	14	0	
Dalby	4	2	0	961	14	3	10	0	0	975	16	3	
Emerald	7	2	0	470	3	7				477	5	7	
Gayndah	13	12	6	75	0	10				88	13	4	
Georgetown	0	17	0	0	3	8				1	0	8	
Gladstone	12	0	0	1,246	12	2				1,258	12	2	
Goondiwindi	6	7	6	97	10	8				103	18	2	
Gympie	21	9	6	13,455	4	2				13,476	13	8	
Herberton	2	10	0	904	7	5				906	17	5	
Hughenden	42	8	0	300	13	1				343	1	1	
Hungerford													
Ingham	25	5	0	88	1	10				113	6	10	
Inglewood	18	11	0	568	2	8				586	13	8	
Innisfail	1	12	6	62	5	4				63	17	10	
Ipswich	5	10	0	11,150	4	5				11,155	14	5	
Isisford	1	8	6							1	8	6	
Jundah	5	13	6	11	16	3				17	9	9	
Kynuna	4	13	6							4	13	6	
Longreach	20	7	0	37	16	9				58	3	9	
Mackay	40	12	6	289	15	1				330	7	7	
Mackinlay	1	6	0							1	6	0	
Maryborough	43	12	6	4,906	2	2				4,949	14	8	
Maytown													
Mitchell	0	9	6	0	16	8				1	6	2	
Mount Morgan	1	11	0							1	11	0	
Mount Perry	1	15	0							1	15	0	
Muttaborra	6	5	0							6	5	0	
Nanango	14	0	0	19,311	15	4	155	8	9	19,481	4	1	
Nerang													
Normanton	4	10	0	26	12	9				31	2	9	
Pentland													
Port Douglas	7	7	6	28	11	0				35	18	6	
Ravenswood	9	6	0	49	15	6				59	1	6	
Rockhampton	49	13	6	1,964	4	9				2,013	18	3	
Roma	7	19	6	186	6	9				194	6	3	
St. George	5	2	6	48	5	11				53	8	5	
St. Lawrence	0	15	0	69	1	3				69	16	3	
Springure	3	0	6	2	0	0				5	0	6	
Stanthorpe	0	5	0	3	0	0				3	5	0	
Stonehenge	3	17	6							3	17	6	
Surat	0	7	6	10	11	3				10	18	9	
Tambo	6	16	0	7	1	3				13	17	3	
Taroom	3	12	0	45	19	8				49	11	8	
Thargomindah	0	2	0							0	2	0	
Thornborough	1	0	0							1	0	0	
Thursday Island	16	1	0	456	7	3				472	8	3	
Toowoomba	8	7	6	2,950	12	11				2,959	0	5	
Townsville	29	1	0	145	2	0				174	3	0	
Warwick	1	12	0	801	6	7				802	18	7	
Windorah				0	15	8				0	15	8	
Winton	7	17	0	4	15	0				12	12	0	
Totals	£	858	3	0	70,958	9	11	168	8	9	71,985	1	8

TABLE No. 5.

COLLECTIONS UNDER THE TIMBER AND QUARRY REGULATIONS FROM 1911 TO 1918.

LAND AGENTS' DISTRICTS.	1911.		1912.		1913.		1914.		1915.		1916.		1917.		1918.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Atherton	3,105	6 11	2,444	15 3	1,252	2 3	867	1 2	1,227	13 0	941	13 6	1,890	11 9	2,707	16 9
Banana	2	0 0	1	15 0	6	9 4	8	1 9	0	15 0			2	17 0		
Barcaldine	33	19 6	76	2 8	62	9 0	63	1 8	42	1 11	21	19 1	25	12 9	140	1 4
Blackall	32	4 6	26	15 6	17	12 11	24	1 0	18	1 4	11	12 5	22	4 8	33	1 11
Boulia	7	2 0	2	14 0	6	17 6	5	16 9	7	8 4	6	4 9	7	6 6	5	1 0
Bowen	424	1 10	479	6 9	97	12 11	183	1 6	156	0 11	190	6 4	108	16 5	148	4 5
Brisbane	5,101	9 0	6,748	1 2	6,026	4 5	3,908	15 11	2,698	16 1	2,052	10 10	2,078	8 9	2,430	13 5
Bundaberg	2,297	13 7	2,444	14 0	2,358	9 2	2,988	11 4	2,155	11 1	1,126	11 0	1,181	11 11	1,689	14 2
Burketown	130	14 9	23	5 0	2	5 1	4	5 0	2	10 0	4	12 2	4	16 4	28	2 6
Cairns	842	14 5	1,402	0 4	1,190	6 7	1,286	12 8	1,036	18 4	895	10 5	748	10 9	982	14 8
Charleville	72	15 1	43	6 3	46	11 10	25	19 5	26	14 9	19	3 8	31	19 11	21	6 6
Charters Towers	1,252	10 3	1,650	12 11	982	3 4	1,263	6 8	1,108	16 8	916	5 0	692	19 10	909	4 10
Clermont	488	17 7	1,150	6 6	901	13 8	1,276	12 7	1,185	10 0	628	16 9	877	6 1	729	4 0
Cloncurry	176	7 0	124	15 5	520	7 2	424	10 11	627	2 9	760	7 3	901	17 9	600	8 6
Cooktown	80	19 11	87	1 7	67	13 4	143	8 6	190	7 0	88	16 8	160	17 9	162	8 1
Cunnamulla	30	0 2	51	7 6	50	6 0	42	16 2	4	12 6	19	8 9	7	4 10	2	14 0
Dalby	3,561	12 7	3,569	9 0	3,040	0 8	2,639	8 7	2,103	18 2	838	1 10	450	2 0	975	16 3
Gayndah	71	2 5	221	17 4	260	16 9	79	10 5	74	13 2	93	8 1	76	19 2	88	13 4
Georgetown	32	8 6	246	7 0	6	11 6	3	2 0	6	12 7	6	0 6	3	10 0	1	0 8
Gladstone	2,057	6 10	1,569	13 9	1,410	0 11	1,527	11 7	1,040	17 9	772	13 11	947	10 8	1,258	12 2
Goondiwindi	88	9 5	37	5 0	136	18 2	94	16 1	19	2 5	14	14 0	92	8 5	103	18 2
Gympie	6,882	4 3	9,570	15 1	8,451	18 5	10,635	4 11	14,975	7 2	16,628	5 11	15,857	11 4	13,476	13 8
Herberton	319	18 1	1,612	3 0	858	11 4	1,285	0 4	487	0 5	358	3 9	213	3 4	906	17 5
Hughenden	189	5 2	383	7 1	310	11 2	488	6 0	446	17 6	375	11 10	264	13 8	343	1 1
Ingham	396	13 10	337	6 7	525	0 3	634	10 4	574	18 11	283	10 11	96	15 1	113	6 10
Inglewood	998	2 8	1,469	6 1	1,616	15 11	917	8 10	1,258	2 4	734	2 2	559	16 4	586	13 8
Innisfail	583	7 11	387	19 3	276	19 4	238	1 1	271	1 11	378	17 8	167	4 6	63	17 10
Ipswich	4,386	8 5	3,122	15 9	5,234	15 9	9,073	11 11	10,422	12 9	8,792	5 6	11,525	19 9	11,155	14 5
Isisford	3	14 6	7	16 8	6	18 6	7	1 0	4	15 6	8	16 4	2	7 0	5	6 0
Jundah	4	5 6	58	12 8	8	4 0	7	17 9	6	17 0	4	2 0	7	19 0	17	9 9
Longreach	107	48 3	67	11 10	73	18 10	51	9 8	42	6 6	26	5 10	36	19 6	64	8 9
Mackay	596	2 10	739	9 1	536	7 6	597	13 0	609	19 3	441	12 8	474	10 4	330	7 7
Maryborough	1,996	3 8	2,957	14 4	2,918	0 2	3,433	14 9	2,940	9 7	3,554	15 3	4,316	8 2	4,949	14 8
Nanango	11,323	3 0	12,676	15 7	17,692	8 10	23,547	12 10	19,110	10 0	15,934	19 1	17,691	15 9	19,481	4 1
Normanton	4	2 0	40	19 0	31	2 7	16	10 2	49	11 9	96	13 6	69	9 0	54	4 9
Port Douglas	137	13 4	37	11 6	194	17 8	174	0 2	115	2 2	163	5 0	127	12 9	35	18 6
Ravenswood	191	8 5	199	15 2	86	4 5	212	16 11	200	3 4	188	5 1	45	2 7	59	1 6
Rockhampton	1,290	5 7	1,669	2 6	2,070	2 1	2,947	15 7	2,918	12 8	1,668	16 7	2,355	15 0	2,015	9 3
Roma	697	14 3	944	13 3	381	17 8	703	4 6	345	19 10	190	16 3	227	9 4	195	12 5
St. George	115	10 2	139	16 3	240	19 8	317	16 11	105	5 11	49	15 2	8	15 0	53	8 5
St. Lawrence			2	0 0	12	15 6	2	5 6	1	15 7	30	19 5	46	17 7	69	16 3
Springsure	202	6 10	387	11 9	424	13 11	467	5 9	357	13 10	388	2 4	388	13 0	482	6 1
Stanthorpe	18	5 7	0	11 6	14	14 7	20	3 8	24	4 1	14	6 2	19	11 1	3	5 0
Surat	3	5 0	10	15 9	7	12 6	12	19 3	20	8 2	5	9 0	6	3 7	10	18 9
Tambo	17	18 0	21	15 4	32	2 7	18	12 8	17	11 9	8	16 1	33	15 10	13	17 3
Taroom	16	16 2	22	17 9	47	2 5	35	9 4	38	1 9	53	5 7	27	9 7	49	11 8
Thargomindah	1	7 0	229	10 6	3	0 0	1	9 0	0	18 0	0	12 0	0	6 0	0	2 0
Torres	122	10 3	73	14 10	127	1 4	167	1 4	281	0 8	277	5 11	346	12 5	472	8 3
Toowoomba	2,239	5 9	1,637	16 7	771	10 3	1,609	2 5	642	13 1	351	8 11	1,067	17 7	2,959	0 5
Townsville	170	19 0	340	15 10	264	12 8	457	11 6	419	1 3	208	5 10	94	9 7	174	3 0
Warwick	503	14 2	1,859	4 7	1,263	17 1	344	14 3	253	6 8	215	4 5	227	7 0	802	18 7
Windsorah			0	2 0	5	1 7					2	5 3	3	11 0	0	15 8
Winton	30	2 2	35	7 8	39	13 3	30	16 9	14	1 6	20	12 0	34	5 4	18	11 6
Totals	53,840	8 0	63,446	16 8	62,973	4 3	75,317	19 9	70,690	14 7	60,864	10 4	66,660	0 3	71,985	1 8