PROVINCE OF BRITISH COLUMBIA

REPORT

OF

THE FOREST BRANCH

OF

DEPARTMENT OF LANDS

HON. N. S. LOUGHEED, *Minister*

H. CATHCART, *Deputy Minister* - P. Z. CAVERHILL, *Chief Forester*

FOR THE YEAR ENDED DECEMBER 31ST

1930

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1931.

VICTORIA, B.C., February 25th, 1931.

To His Honour ROBERT RANDOLPH BRUCE,

Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the Forest Branch of the Department of Lands for the year 1930.

N. S. LOUGHEED,

Minister of Lands.

The Hon. N. S. Lougheed,

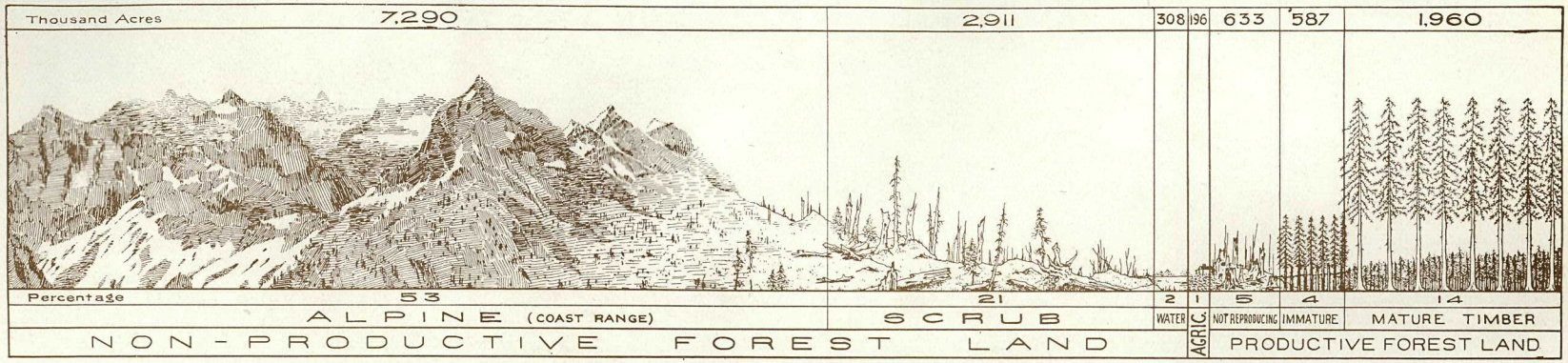
Minister of Lands, Victoria, B.C.

SIR,—There is submitted herewith the Annual Report on activities of the Branch during the calendar year 1930.

P. Z. CAVERHILL,

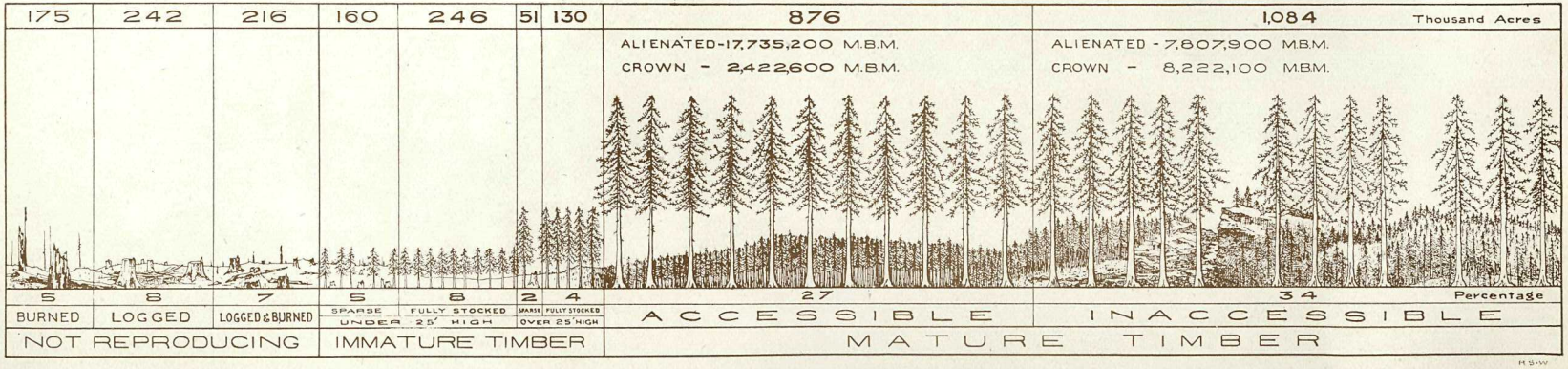
Chief Forester.

FOREST RESOURCES OF SOUTHERN MAINLAND COAST.



CLASSIFICATION OF TOTAL LAND AREA – 13,885,000 ACRES

Scale – 0 5 10 15 20 100,000 Acres



CLASSIFICATION OF PRODUCTIVE FOREST SITES ONLY — 3,180,000 ACRES

Scale – 0 1 2 3 4 100,000 Acres

REPORT OF THE FOREST BRANCH,

DEPARTMENT OF LANDS.

ORGANIZATION AND PERSONNEL.

The taking-over of the Dominion lands within the Railway Belt and the Peace River Block, and the assuming of the responsibility for their administration and protection, have required several changes and additions to the staff in Kamloops and Pouce Coupe. The curtailment in logging, on the other hand, allowed the closing-up of some offices, such as those of the Supervisor at Thurston Bay and the Ranger at Waldo.

The death of G. H. Smith, Supervisor, deprived the Service of a valued employee; also, the resignations of several technical men and one Ranger were recorded during the year. The loss is regrettable, especially of the technical men, who, after a period of training, become more valuable to the Department, and much of the advantage of experience is lost through their resignations.

The backbone of the Forest organization at the present time and for many years to come is the Forest Ranger. He must be a many-sided person. On him we rely for fire-control, cruising and evaluating timber for sale, reporting outbreaks of forest insects and such-like enemies of the forest, and many other jobs incidental to management. To carry on this work satisfactorily he must have a working knowledge of cruising, surveying, and logging. He is required to organize, feed, and manage large crews of fire-fighters, and to use judgment as to when a fire should be attacked energetically and when the expenditure of money is useless. He must be observant of conditions in and about the forest, with some knowledge of botany, entomology, and pathology. He must be able to keep accurate accounts, to explain the forest regulations to our numerous clientele, to write intelligent reports on the work done by him, and, above all, be a diplomat.

DISTRIBUTION OF FORCE, 1930.

Forest District.	Permanent.													Temporary.				
	Chief Forester, Assistant Chief Forester, and Foresters.	Grazing Commissioner and Assistants.	Lumber Commissioner and Assistants.	District Foresters.	Supervisors of Scalers and Assistants.	Scalers and Assistant Scalers.	Asst. Foresters, Asst. Dist. Foresters, and Junior Foresters.	Inspectors, Royalty, Mechanical and Export.	Supervisors of Rangers and Fire Inspectors.	Rangers.	Draughtsmen.	Clerks, Stenographers, and Messengers.	Wireless Telephone Operators.	Assistant Rangers.	Patrolmen, Lookout-men, and Dispatchers.	Launch Crews and Repairmen.	Cruisers, Compass-men and Packers.	Total.
Cariboo	...	....	...	1	....	....	1	...	....	4	...	2	....	7	6	....	....	21
Kamloops	...	....	....	1	....	....	1	...	....	3	....	3	....	8	19	....	....	35
Fort George	....	....	....	1	1	....	1	...	...	7	...	4	....	9	18	....	....	41
Prince Rupert	....	....	....	1	....	3	2	....	1	8	....	7	...	6	11	5	....	44
Southern Interior	....	...	....	1	1	....	3	....	4	18	1	13	....	26	74	....	...	141
Vancouver	....	....	....	1	3	30	3	1	4	18	1	25	1	23	40	15	....	165
Victoria	4	1		....	....	....	12	2	....	....	8	34	....	....	....	....	59	120
Toronto	...	....	2	....	....	....	....	....	...	....	....	....	....	....	....	....	....	2
Totals	4	1	2	6	5	33	23	3	9	58	10	88	1	79	168	20	59	569

The examination system of selection of the Ranger staff has done much to better the type of Ranger entering the Service, but some method of further training is needed to build up the field force to meet the standard required of them. Four correspondence courses were prepared during the summer of 1930. These courses cover simple surveying, forest protection, forest management, and mensuration, and about 90 per cent. of the Ranger staff and a few members of the office staffs have taken advantage of them. The courses were prepared and given by

senior officers of the Service. In Europe, Quebec, and many other countries the Ranger School has fulfilled this service. Such a school would be welcomed by members of the Forest Service of British Columbia.

PROVINCIAL FORESTS.

No new forests were reserved during the year.

The transfer to the Province of Dominion lands in the Railway Belt included fourteen National Forests reserved for the perpetual production of timber, and one, the Fraser Canyon Forest, for the protection of scenic values along the Fraser Canyon Highway through the area. The Fraser Canyon Forest covers approximately 1,427,000 acres. The others are as follows:—

Name of Forest.	Area. Acres.
Yoho	81,500
Glacier	67,900
Larch Hills	27,600
Mount Ida	27,800
Fly Hill	140,400
Martin Mountain	21,600
Monte Hills	116,600
Niskonlith	199,500
Tranquille	177,800
Long Lake	167,900
Nicola	321,300
Arrowstone	161,100
Hat Creek	216,000
Shuswap	208,600
Total	1,935,600

The policy of making forest surveys and stock-taking on areas under reserve or suitable for reserve as Provincial Forests was continued. Because, in British Columbia, for many years title to forest lands has been maintained in the Crown for the public benefit, there is a direct responsibility upon the Forest Service to keep informed as to the forest resources of the Province and the productive capacity of those lands which will be required to provide timber for forest industries in the future. To date, the total area dedicated as Provincial Forests is only about 9 per cent. of the area capable of commercial forest growth and unsuitable for tillage.

Forest Surveys.

In the Interior.—Compilation of estimates and mapping of the *Okanagan Forest*, on the west side of Okanagan Lake, were completed. The Forest was found to contain the following:—

Area capable of producing Commercial Timber—

	Acres.	Acres.
Mature timber—		
Alienated	11,100	
On vacant Crown land	209,100	
		220,200
Immature timber—		
1–20 years old	48,400	
21–40 years old	41,700	
41–60 years old	149,100	
61–80 years old	22,100	
Part-logged uneven-aged timber	26,300	
		287,600
Burns not yet reforested	10,900	
Bush or non-commercial cover	13,000	
		23,900
Total sites of productive quality		531,700

Incapable of producing Commercial Timber—

	Acres.
Rough and poor-quality soils producing scrub-growth only	67,500
Alpine and barrens	31,200
Grazing range	9,500
Swamp and water	2,700
Total non-productive sites	110,900

The standing mature timber was estimated as follows, in 1,000 board-feet, with a minimum breast-high diameter for yellow pine of 17 inches; fir, cedar, and larch, 11 inches; lodgepole pine, 9 inches; spruce and silver fir, 7 inches:—

Species.	Crown.	Alienated.	Total.
	M.B.M.	M.B.M.	M.B.M.
Engelmann spruce	410,000	700	410,700
Douglas fir	358,700	21,300	380,000
Lodgepole pine	204,000	200	204,200
Silver fir (balsam)	117,000	200	117,200
Yellow pine	81,900	20,700	102,600
Western larch	8,800	.....	8,800
Cedar	100	.....	100
Totals	1,180,500	43,100	1,223,600

Of this total it is estimated that 394,700,000 F.B.M. are readily accessible and have a present market value as saw-timber. There is also accessible tie-timber from which 354,000 fir ties could be hewn. An additional volume of 133,000,000 F.B.M., though less accessible, is expected to find a market as saw-timber or hewn ties with normally increasing future demand. The remainder of the mature timber is inaccessible under present conditions. It is suitable for pulp but no market for it exists. Among this there is timber suitable for an estimated total of 17,400,000 hewn ties, 90 per cent. lodgepole pine. The future value of much of this upland timber is doubtful owing to the general infestation of lodgepole pine by bark-beetles in this Forest.

The Forest supplies timber to six small portable mills, cutting intermittently for resaw in local mills at Kelowna and Summerland, and also a small quantity direct to these mills. Most of the wood goes into fruit-boxes and low-grade lumber. Small quantities of railway-ties, cedar poles, and fuel are taken out. The total cut is approximately 2,400,000 F.B.M. per annum, which is less than the annual growth increment. From accessible areas the Forest could support a sustained annual yield of 4,800,000 F.B.M. sawlogs, in addition to 13,000 hewn fir ties. Ultimately, when a market is created for all classes of material produced and regulation of the cut has become effective, the Forest is capable of providing a sustained annual yield of 6.100,000 F.B.M. of sawlogs, 15,000 hewn fir ties, and 54,000 cords of pulp-wood. These estimates are based on rates of growth and production under existing conditions in the forest; if all productive areas were fully stocked, the yield would be correspondingly greater.

The survey of the *Elk Forest*, commenced last year, was completed. A total area of 1,550,000 acres was mapped in this vicinity, the large area being made possible by the adoption, with field checks in some cases, of previous topographic surveys by the Dominion Government. The survey itself did not extend above the timber-line. As the Elk River watershed includes some of the western slopes and spurs of the Rocky Mountains, a large proportion is not productive of commercial timber, but is magnificent park land. It includes the Elk River Game Reserve. The boundaries of productive forest land in such a territory are very irregular and administrative boundaries must of necessity follow heights of land or other natural features, since the cost of extensive land surveys would not be justified. The area was found to include:—

Capable of producing Commercial Timber—

	Acres.	Acres.
Mature timber—		
Alienated	57,600	
On vacant Crown land	102,100	
		159,700

Capable of producing Commercial Timber—Continued.

	Acres.	Acres.
Immature timber—		
1–20 years old	116,200	
21–40 years old	92,000	
41–60 years old	50,200	
61–80 years old	8,000	
81–100 years old	4,700	
		271,100
Burns and logging, not yet reforested		180,400
Bush or non-commercial cover		6,400
Total sites of productive quality		617,600
Incapable of producing Commercial Timber—		
Alpine and rough scrub-covered land		923,700
Swamp and water		7,200
Grazing and highland meadow		4,300
Total non-productive sites		935,200

The mature saw-timber, irrespective of accessibility, with a minimum breast-high diameter of 11 inches is estimated to be, in 1,000 board-feet:—

Species.	Crown.	Alienated.	Total.
	M.B.M.	M.B.M.	M.B.M.
Engelmann spruce	559,100	395,500	954,600
Lodgepole pine	151,000	73,800	224,800
Douglas fir	148,200	61,200	209,400
Silver fir (balsam)	65,600	32,400	98,000
Western larch	43,100	36,100	79,200
Cedar	32,300	46,100	78,400
Yellow pine	13,000	11,600	24,600
White pine	600	3,400	4,000
Hemlock	3,400	400	3,800
Totals	1,016,300	660,500	1,676,800

At present this timber supplies the local coal-mines and one small mill. A 35,000 F.B.M. sawmill at Dorr was destroyed by fire during the year. Logging from the Forest produces 7,000,000 F.B.M. saw-timber, 13,000 cords of mine-timbers, and 106,000 lineal feet of cedar poles per annum. In addition, 100,000 cedar fence-posts and a small quantity of hewn ties are taken out. Ninety per cent. of the timber is accessible, and the high percentage of spruce should make it attractive to the pulp industry in the future. The area within the boundaries recommended for forest reserve includes the Bull River, on which the Canadian Pacific Railway Company recently completed its logging operations. This valley is quite unsuitable for agriculture, and natural reproduction is restocking the logged areas, except where subsequent fires have destroyed it. The whole Forest could support a sustained annual yield of 16,000,000 board-feet of saw-timber, logging to 11 inches minimum diameter, or, if a market for pulp-wood should develop, it could supply 40,000 cords annually from areas now satisfactorily stocked, in addition to 1,000,000 F.B.M. of saw-timber from stands of yellow pine, fir, and larch not suitable for pulp. Ultimately, when the cut is fully regulated, this Forest will yield annually 53,000 cords of pulp and mine-timber and 3,200,000 F.B.M. for the sawmill, from natural increment in stands now existing, if logged in accordance with a proper forest plan and protected from fire.

The survey commenced last year of the proposed *Momich Forest*, in the Adams Lake and Seymour River watersheds, was completed. There was found to be:—

Area capable of producing Commercial Timber—

	Acres.	Acres.
Mature timber—		
Alienated	23,800	
On vacant Crown land	212,100	
		235,900

Area capable of producing Commercial Timber—Continued.

	Acres.	Acres.
Immature timber—		
1–20 years old	82,900	
21–40 years old	31,300	
41–60 years old	52,900	
61–80 years old	15,800	
81–100 years old	900	
		183,800
Burned or logged, not yet restocking	104,200	
Bush or non-commercial cover	3,900	
		108,100
Total sites of productive quality		527,800
Incapable of producing Commercial Timber—		
Alpine, barren, and scrub sites		456,400
Grass and meadow		1,100
Swamp and water		11,700
Total non-productive sites		469,200

The mature timber was estimated to be:—

Species.	Seymour Watershed.	Adams Watershed.	Total.	Including Alienated.
	M.B.M.	M.B.M.	M.B.M.	M.B.M.
Engelmann spruce	159,000	591,000	750,000	29,000
Cedar	270,000	212,000	482,000	147,000
Hemlock	311,000	167,000	478,000	124,000
Silver fir (balsam)	103,000	191,000	294,000	9,000
Douglas fir	77,000	126,000	203,000	35,000
White pine	42,000	42,000	84,000	15,000
Totals	962,000	1,329,000	2,291,000	359,000
Cedar poles (lin. ft.)	11,900,000	16,200,000	28,100,000	4,500,000
Hewn fir ties (pieces)	.....	590,000	590,000	38,000

The more accessible timber, amounting to 16 per cent. of the total, including 4,500,000 lineal feet of pole-timber, is alienated. Of the total timber, 1,498,000,000 F.B.M. lies on the lower levels of the Seymour River and Upper Adams River Valleys. It is an overmature cedar-hemlock type and should be logged as soon as possible. Unfortunately, the cost of logging would be high because of the low quality of the decadent cedar and the large proportion of less desirable species. The stand averages only about 12,000 F.B.M. per acre of merchantable quality, although, before decadence commenced, there were probably 25,000 F.B.M. per acre. If not logged, the cull will increase gradually, until the entire stand becomes valueless. The rest of the timber lies on the upper slopes and is a pulp type, which is inaccessible until there is considerable advance in pulp prices or improvement in logging methods.

The Lower Adams Valley has been logged and is now practically all reproducing satisfactorily. Most of the 104,000 acres in this Forest which are not restocking are in the Seymour watershed, where there have been comparatively recent large burns.

A sustained yield plan would not be applicable to this Forest for the present. The mature saw-timber should be cut as soon as possible. In forty years' time the young growth, if protected, will be in condition for the Forest to support a sustained annual yield of 23,000,000 F.B.M. saw-timber on a rotation of 110 years. At this age it is estimated, from similar types of the same age in the Shuswap Forest, that 12,000 F.B.M. per acre will be produced. In addition, the pulp types, when regulated, could support a sustained annual yield of 15,000 cords on a rotation of 130 years. These areas are at present all mature with an estimated volume of 2,000,000 cords.

Natural Young Stands in the Momich Forest.

Compartment No.	Area (Acres).	Age (Years).	Number of Trees per Acre.							Average Height (Feet).	Average D.B.H. (Inches).	Estimated future Volume (F.B.M.).
			Cedar.	Hemlock.	White Pine.	Fir.	Lodgepole Pine.	Spruce and Silver Fir.	Total.			
4 (*a*)	4,680	28	625	600	150	435	.....	90	1,900	25	1.2	56,200,000
4 (*b*)	3,180	22	2,500	1,390	240	155	.....	50	4,335	15	1.0	38,200,000
4 (*c*)	900	25	2,520	920	70	840	.....	.....	4,350	22	2.0	10,800,000
5 (*a*)	2,725	65	1,090	2,130	30	200	.....	.....	3,450	40	6.0	32,700,000
5 (*b*)	975	55	330	255	40	85	.....	.....	710	70	8.0	11,700,000
6	14,975	13	810	370	125	95	.....	25	1,425	6	....	179,700,000
10	3,595	40	260	740	120	480	.....	.....	1,600	40	4.1	43,100,000
15	950	8	4,640	8,380	300	510	.....	220	14,050	2	....	11,400,000
16	3,190	45	640	760	25	480	290	.....	2,195	35	3.0	38,300,000
19	8,230	50	800	310	25	280	55	.....	1,470	50	4.0	98,800,000
21	3,545	55	.....	.....	.....	40	440	85	565	62	5.0	21,200,000
23	3,770	*	6,730	3,060	.....	3,920	5,710	.....	19,420	*	*	45,200,000
25	1,135	60	5	15	25	350	75	60	530	60	6.5	13,600,000
26	2,375	55	210	185	20	430	.....	45	890	40	4.0	28,500,000
28	5,960	50	155	155	25	355	350	70	1,110	40	4.5	71,500,000
29	1,030	*	50	.....	40	90	450	.....	630	*	*	6,200,000
30	5,430	40	205	25	10	185	400	325	1,150	30	3.3	65,200,000
31	3,845	70	420	190	.....	500	80	140	1,330	50	4.0	46,200,000
33 (*a*)	7,720	13	85	5	.....	365	290	.....	745	9	....	92,600,000
33 (*b*)	2,350	35	55	.....	.....	110	55	.....	220	35	4.9	8,400,000
34	1,320	45	95	130	.....	140	100	.....	465	40	4.0	7,900,000
40	3,780	45	230	.....	.....	260	270	505	1,265	40	4.5	45,400,000
41	7,295	45	100	.....	.....	270	30	310	710	33	4.0	87,500,000
45	3,660	40	55	.....	.....	120	1,360	125	1,660	25	4.4	43,900,000
46	4,570	40	90	5	.....	320	115	10	540	32	4.0	38,400,000
49	590	90	335	.....	.....	85	125	.....	545	60	5.4	7,000,000
50	3,020	30	1,010	250	15	1,220	350	.....	2,845	22	3.0	36,200,000
50 (*a*)	2,950	35	340	435	25	310	195	25	1,330	30	2.4	35,400,000
51	3,845	65	180	20	30	510	130	10	880	45	4.2	46,100,000
53	4,930	70	270	225	40	570	255	35	1,395	70	4.2	59,200,000
59	1,220	25	970	580	60	140	.....	20	1,770	20	1.0	14,600,000
62	16,390	20	820	240	110	490	130	140	1,930	15	0.9	196,700,000
66	3,400	25	1,465	3,200	250	1,605	80	390	6,990	10	0.8	40,800,000
67	32,880	10	765	235	100	170	50	.....	1,320	4	....	394,600,000
71	2,820	50	220	145	25	460	20	75	945	37	3.9	33,800,000

* Seedlings.
An estimated total future volume of 2,007,000,000 F.B.M.
Figures based on measurements made on 18,300 chains of examination strip; 3,480 chains tallied.

Since the completion of logging operations in the Lower Adams Valley six years ago, the chief utilization of this Forest has been cedar-pole cutting, of which recently about 600,000 lineal feet have been taken out per annum.

The table on page 10 shows the distribution and condition of established young growth in this Forest. The enormous potential volume of timber (estimated at 2,007,000,000 F.B.M.) existing in these immature stands justifies the setting apart of the area for forestry.

A forest survey was made of the *Flathead River* watershed, in the extreme south-east of the Province. This is a forested valley with little agricultural value owing to its proximity to the summits of the Rocky Mountains; the valley-floor is from 4,000 to 6,500 feet in elevation. A total area of 391,000 acres is being mapped and estimates of standing timber and yield are being computed.

A forest survey was made of the *Barriere River* and adjacent watersheds. This is one of the larger tributaries of the North Thompson River, which it joins 40 miles north of Kamloops. Logging has been carried on for many years and large quantities of cedar poles and fir ties produced. It is a rough country, with little agricultural possibilities, except in the narrow river-valley, but with a large proportion of productive forest land. Maps are being made and estimates of standing timber and capacity for sustained yield computed.

On the Coast.—The examination of forest lands in the *Powell River* vicinity, commenced last year, was completed. The area has been classified as follows:—

	Acres.	Acres.
Capable of producing Commercial Timber—		
Mature timber—		
Alienated	40,400	
On vacant Crown land	42,600	
		83,000
Immature timber—		
1–20 years old	26,300	
21–40 years old	22,100	
41–60 years old	8,100	
61–80 years old	200	
		56,700
Logged or burned, not yet restocking	49,900	
Bush or non-commercial cover	3,400	
		53,300
Total sites of productive quality		193,000
Incapable of producing Commercial Timber—		
Alpine, barren, and scrub sites		205,700
Swamp and water		44,900
Total non-productive sites		250,600

The mature timber is estimated, in 1,000 board-feet, to be:—

Species.	Crown.	Alienated.	Total.
	M.B.M.	M.B.M.	M.B.M.
Red cedar	322,000	598,000	920,000
Douglas fir	256,000	475,000	731,000
Western hemlock	363,000	312,000	675,000
Silver fir (balsam)	135,000	152,000	287,000
Yellow cedar	53,000	26,000	79,000
Sitka spruce	15,000	8,000	23,000
White pine	6,000	3,000	9,000
Totals	1,150,000	1,574,000	2,724,000
Additional: Cedar shingle-bolts (cords)	143,000	22,000	165,000

All this timber is considered to be accessible for utilization within a reasonable period. There is, in addition, 152,000 M.B.M. which is inaccessible.

As usual in our Coast forests, there is a shortage of middle age-classes, 85 per cent. of the young growth being under forty years old. The Forest could provide a sustained annual yield of 42,600,000 board-feet from accessible areas, based on a 100-year rotation, at which age it is estimated that this type can produce 27,000 F.B.M. per acre on an average site. After regulation of the cut has been effected and all productive areas on which natural reproduction has failed have been restocked by planting, an ultimate yield of 52,250,000 F.B.M. per annum will be obtained.

An examination was made of *Quadra Island* in order to ascertain its forest value. The total area, exclusive of 9,700 acres in surveyed lots under cultivation or with agricultural possibilities, is 56,600 acres, classed as follows:—

	Acres.	Acres.
Capable of producing Commercial Timber—		
Mature timber—		
Alienated	4,100	
On vacant Crown land	4,300	
		8,400
Immature timber—		
1–20 years old	9,500	
21–40 years old	700	
		10,200
Burned or logged, not yet restocking		16,000
Bush or non-commercial cover		600
Total sites of productive quality		35,200
Incapable of producing Commercial Timber—		
Alpine, barren, and scrub sites		18,000
Swamp, meadow, and water		3,400
Total non-productive sites		21,400

A map is being made and estimates of standing timber and yield are being computed.

An extensive forest reconnaissance was made of the watersheds of the lower *Lillooet River, Harrison Lake, Upper Stave and Pitt Rivers.* This area was found to contain the following:—

	Acres.	Acres.
Capable of producing Commercial Timber—		
Mature timber		151,800
Immature timber—		
Under 25 feet high, fully stocked	300	
Over 25 feet high, fully stocked	1,900	
Over 25 feet high, sparse	7,800	
		10,000
Logged, not restocking	11,200	
Logged and burned, not restocking	1,400	
Burned, not restocking	23,200	
		35,800
Total sites of productive capacity		197,600
Incapable of producing Commercial Timber—		
Alpine and barrens		759,500
Rough sites producing scrub only		334,200
Swamp and water		75,500
Total non-productive sites		1,139,200

This is a mountainous region with heavy stands of timber in the valleys. There is little land suitable for agricultural development, some 6,400 acres only, of which about 500 are now

under cultivation. The uplands are of considerable scenic value and adjoin Garibaldi Park on the west. The standing timber is estimated to be, in 1,000 feet, board measure:—

	M.B.M.
Douglas fir	1,746,600
Cedar	1,305,400
Hemlock	507,900
Silver fir (balsam)	339,900
Yellow cedar	40,300
White pine	46,300
Spruce	39,600
Other species	3,800
Total	4,029,800

PROVINCIAL FOREST INVENTORY.

The forest atlas and estimates of the Southern Mainland Coast region were completed. The tables on pages 14–16 give the classification of land area and timber estimates. This region covers the Coast from the International Boundary to Cape Caution. With Vancouver Island, the estimated forest resources of which were published recently, it forms the Vancouver Forest District. For inventory purposes the Southern Mainland Coast has been divided into fifteen drainage-basins, subdivided into 107 watersheds.

A forest atlas has been made on a scale of 1 inch to the mile and coloured in accordance with a standard legend so as to distinguish the fifteen types of cover given in the table. This classification is shown diagramatically on the frontispiece. The inventory is based on carefully checked figures taken from timber-cruisers' reports, Government forest surveys and reconnaissance, and maps and estimates made over a period of three years by the Forest Rangers of the Vancouver Forest District. Acknowledgement is made of the great assistance given by the owners of timber in this region, their agents, and forest engineers in private practice. Many hundreds of cruise reports and estimates have been given freely for this inventory, which, largely on this account, is believed to be as comprehensive and accurate as any published for a territory of this kind.

With regard to the area of logged or burned land without adequate natural reproduction, it should be stated that the estimates of the success or failure of natural reproduction after logging and fires are based on examination strips run by forest engineers over 261,000 acres, 21 per cent., of the logged and burned areas in this region; for the remaining 959,000 acres estimates have been based on observation and reconnaissance by Forest Rangers during the course of their duties and mapped by them during the last three years. The proportion of satisfactorily restocked areas computed from their maps, however, is very similar to that found on the surveys, and it is believed that the total figures given are reasonably accurate. In noting that 52 per cent. of these areas have not restocked, it should be remembered that all recent burns are included among these, and it would be incorrect to assume that none of them will again produce timber without being replanted, though undoubtedly many of these areas are in that condition.

The merchantable timber estimates have been divided into three classes of ownership—on Crown-granted lands, on timber licences and leases, and on vacant Crown land. They have also been divided into two classes of accessibility, those stands of which the quality and logging facilities are considered to be sufficiently good to be of interest to loggers within the next decade or so without any great increase in values, and the remaining stands which are of inferior quality or of which the logging would be too expensive for such utilization. This distinction has been based on examination and reports of forest engineers and Government forest officers.

It may be observed that the total estimate of saw-timber in this region, 35,700,000,000 F.B.M., is a decrease of 39 per cent. from the estimate of 59,700,000,000 F.B.M., published by the Dominion Commission of Conservation in 1917, an average reduction of 3 per cent. per annum. The decrease is especially noticeable in Douglas fir, from 18,596,000,000 F.B.M. to 8,720,000,000 F.B.M., a 53-per-cent. reduction in thirteen years.

PROVINCIAL FOREST INVENTORY.

Classification of Areas (in Acres) in Southern Coast Region (excluding Vancouver Island).

Drainage Basin.	Merchantable Timber.	Immature Timber.				Total Immature Timber.	Not Restocking.			Total Productive Forest Land.	Non-productive.			Total Non-productive.	Agriculture.		Total Area.
		Over 25 Feet.		Under 25 Feet.													
		Fully Stocked.	Sparse.	Fully Stocked.	Sparse.		Logged.	Burned.	Logged and Burned.		Barren.	Scrub.	Swamp and Water.		Cultivated.	Open Grazing.	
Skagit	17,160	33,160	.....	.....	.....	33,160	.....	3,750	.....	54,070	59,120	114,110	.....	173,230	.....	8,540	235,840
Fraser Canyon	36,084	11,690	.....	.....	.....	11,690	.....	18,380	.....	66,154	493,375	251,750	8,920	754,045	.....	.....	820,199
Fraser South	64,826	21,700	39,500	11,830	19,800	92,830	42,470	25,720	40,450	266,296	326,090	256,698	36,530	619,318	109,700	.....	995,314
Pitt–Stave–Burrard, E.	109,638	5,400	.....	9,360	12,020	26,780	43,435	8,030	66,620	254,503	386,825	108,310	43,180	538,315	18,500	2,600	813,918
Lillooet–Harrison	199,288	3,450	8,220	2,500	2,400	16,570	16,030	47,596	1,740	281,224	1,348,810	497,200	82,416	1,928,426	26,895	3,990	2,240,535
Burrard, W.–Howe Sound	228,499	3,500	640	29,450	21,400	54,990	24,640	11,850	14,890	334,869	579,520	264,590	10,510	854,620	6,820	8,200	1,204,509
Jervis Inlet	242,701	15,330	.....	52,800	10,430	78,560	27.535	14,380	19,785	382,961	347,120	288,402	18,978	654,500	4,810	.....	1,042,271
Powell–Texada	78,948	20,100	.....	13,780	10,180	44,060	8,820	6,220	33,830	171,878	142,850	117,975	36,240	297,065	3,280	.....	472,223
Toba Inlet	164,449	7,837	.....	26,562	13,430	47,829	8,440	7,420	10,225	238,363	608,467	109,366	6,555	724,388	170	.....	962,921
Bute Inlet	61,722	.....	2,480	600	17,300	20,380	10,185	12,390	1,640	106,317	1,033,180	125,280	8,990	1,167,450	.....	.....	1,273,767
Loughborough Inlet	114,067	.....	300	16,370	13,330	30,000	9,800	128	7,550	161,545	156,690	87,490	4,790	248,970	200	.....	410,715
Quadra–Hardwicke	73,150	740	.....	50,890	17,280	68,910	14,780	7,045	11,840	175,725	1,010	53,995	6,960	61,965	680	.....	238,370
Knight Inlet	154,472,	4,320	.....	5,640	12,250	22,210	14,545	10,250	5,050	206,527	882,450	288,390	19,665	1,190,505	.....	830	1,397,862
Kingcome–Gilford	209,788	2,078	.....	22,471	8,530	33,079	14,205	1,830	450	259,352	666,620	111,932	7,270	785,822	480	550	1,046,204
Drury and Belize Inlets	205,385	.....	.....	3,920	1,850	5,770	7,540	.....	1,950	220,645	257,560	235,424	17,330	510,314	50	.....	731,009
Totals	1,960,177	129,305	51,140	246,173	160,200	586,818	242,425	174,989	216,020	3,180,429	7,289,687	2,910,912	308,334	10,508,933	171,585	24,710	13,885,657
	.....	22%	8.7%	42%	27.3%	100%	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	61.6%	.....	.....	.....	.....	18.5%	7.6%	5.5%	6.8%	100%	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69.4%	27.7%	2.9%	100%	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	22.9%	.....	.....	.....	75.7%	1.2%	0.2%	100%

PROVINCIAL FOREST INVENTORY—*Continued.*

ACCESSIBLE MERCHANTABLE TIMBER IN SOUTHERN COAST REGION (EXCLUDING VANCOUVER ISLAND).

Drainage Basin.	Merchantable Acreage.	Saw-timber (in M.B.M.).												Cedar Poles (Lineal Feet).
		F.	C.	H.	S.	B.	Pw.	Py.	Pl.	Cy.	Cot.	Dead and Down.	Total.	
Skagit	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fraser Canyon	22,424	117,900	115,700	50,700	6,000	26,500	6,400	.....	.....	4,800	7,000	.....	335,000	1,245,700
Fraser South	46,022	410,500	242,600	76,900	200	28,700	500	.....	.....	.....	9,700	.....	769,100	214,600
Pitt–Stave–Burrard, E.	70,938	335,900	686,000	330,700	26,100	138,600	6,900	500	.....	29,000	.....	30,200	1,583,900	1,627,900
Lillooet–Harrison	110,118	1,239,900	746,600	349,500	9,800	244,800	47,300	600	1,100	31,000	1,300	40,800	2,712,700	11,162,800
Burrard, W.–Howe Sound	58,652	336,100	547,500	259,800	3,800	181,400	6,400	.....	4,500	38,500	.....	9,400	1,387,400	1,841,200
Jervis Inlet	106,513	1,005,900	1,054,400	509,600	17,900	204,400	7,000	.....	600	34,600	.....	61,200	2,895,600	1,570,000
Powell–Texada	33,915	235,000	316,700	231,500	7,300	104,900	4,100	.....	.....	25,800	.....	5,200	930,500	291,000
Toba Inlet	51,566	352,100	393,000	230,000	62,000	90,200	.....	.....	.....	2,700	.....	8,300	1,138,300	436,900
Bute Inlet	16,671	57,000	175,000	48,300	27,900	8,500	.....	.....	30,000	.....	600	.....	347,300	206,000
Loughborough Inlet	40,108	119,500	383,400	208,700	14,700	75,400	300	.....	.....	4,400	.....	.....	806,400	288,700
Quadra–Hardwicke	25,650	315,500	157,000	165,600	1,200	15,100	8,500	.....	.....	600	.....	2,100	665,600	236,800
Knight Inlet	71,390	164,800	895,500	515,600	47,000	239,600	12,900	.....	.....	69,800	400	8,100	1,953,700	158,600
Kingcome–Gilford	114,593	16,300	1,411,400	614,800	89,900	301,200	6,100	.....	.....	50,700	.....	1,600	2,492,000	836,500
Drury and Belize Inlets	107,899	700	1,185,200	325,700	39,500	210,800	.....	.....	.....	119,300	.....	12,200	1,893,400	2,596,700
Vacant Crown lands	115,380	660,900	799,700	582,000	41,700	215,400	16,600	200	10,000	74,100	.....	13,100	2,413,700	1,365,200
Timber licences and leases	710,739	3,816,600	7,204,400	3,210,600	225,000	1,592,200	88,400	600	25,100	334,200	18,400	166,000	16,681,500	21,319,100
Crown-granted lands	50,340	229,600	305,900	124,800	86,600	62,500	1,400	300	1,100	2,900	600	.....	815,700	29,100
Totals	876,459	4,707,100	8,310,000	3,917,400	353,300	1,870,100	106,400	1,100	36,200	411,200	19,000	179,100	19,910,900	22,713,400

Abbreviations—F=Douglas fir. C=Red cedar. H=Western hemlock. S=Sitka spruce. B=Silver fir (balsam).
Pw=White pine. Py=Yellow pine. Pl=Lodgepole pine. Cy=Yellow cedar. Cot=Cottonwood.

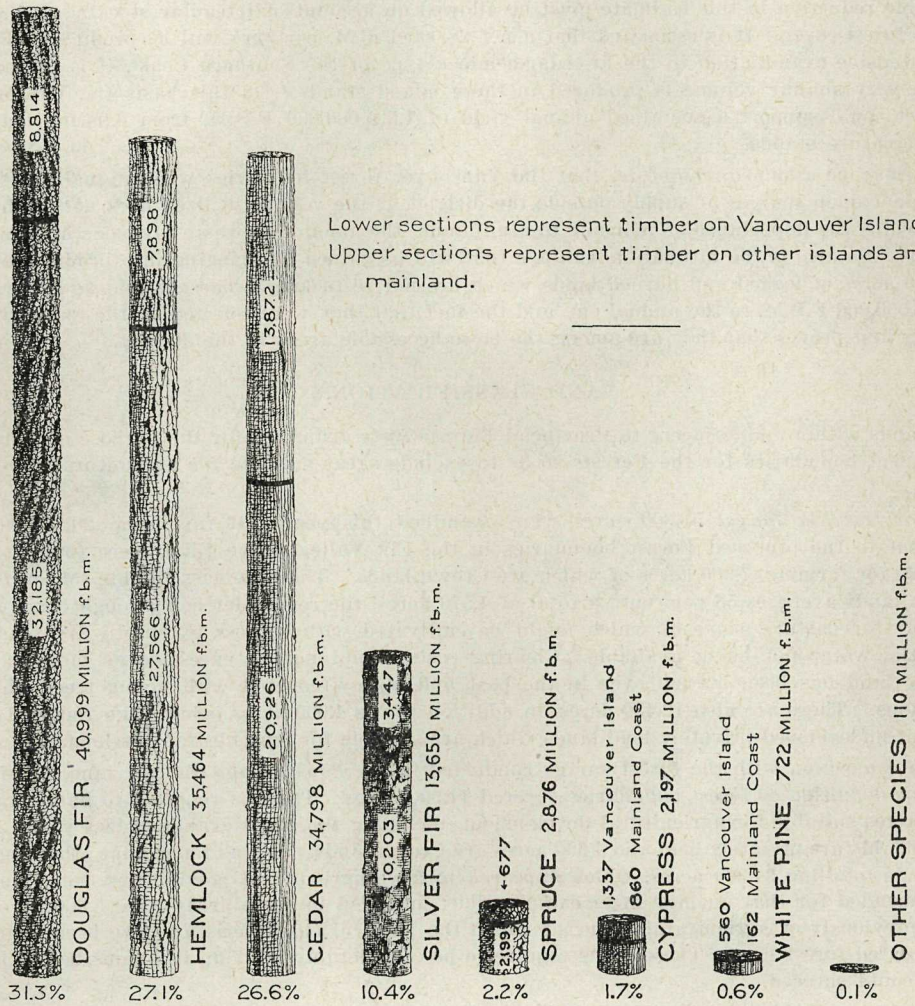
PROVINCIAL FOREST INVENTORY—*Continued.*

Total Merchantable Timber of Southern Coast Region (excluding Vancouver Island).

Drainage Basin.	Merchantable Acreage.	Saw-timber (in M.B.M.).												Cedar Poles (Lineal Feet).
		F.	C.	H.	S.	B.	Pw.	Py.	Pl.	Cy.	Cot.	Dead and Down.	Total.	
Skagit	17,160	83,800	59,500	19,500	6,000	19,600	.....	.....	8,900	.....	4,800	.....	202,100	300,000
Fraser Canyon	36,084	196,000	170,400	80,600	6,000	42,900	6,400	.....	.....	16,100	7,000	.....	525,400	1,245,700
Fraser South	64,826	453,400	278,000	134,600	200	63,000	500	.....	.....	700	9,700	400	940,500	214,600
Pitt–Stave–Burrard, E.	109,638	464,600	908,000	513,000	39,300	198,900	8,400	500	.....	41,800	2,000	36,600	2,213,100	2,266,600
Lillooet–Harrison	199,288	2,021,000	1,121,900	480,100	14,500	278,000	76,100	600	6,000	31,000	1,300	40,800	4,071,300	12,241,800
Burrard, W.–Howe Sound	228,499	926,700	1,313,200	958,800	12,400	660,900	17,200	.....	8,500	103,700	3,600	11,500	4,016,500	3,776,600
Jervis Inlet	242,701	1,696,000	1,770,900	1,158,500	21,700	459,000	10,700	.....	1,100	178,800	.....	63,000	5,359,700	2,848,800
Powell–Texada	78,948	524,800	429,600	362,400	20,100	151,100	8,500	.....	.....	36,600	.....	5,400	1,538,500	382,400
Toba Inlet	164,449	957,600	952,700	590,400	113,500	205,100	2,000	.....	6,000	7,300	.....	9,200	2,843,800	436,900
Bute Inlet	61,722	293,700	384,300	190,800	58,900	35,900	.....	.....	30,000	.....	600	.....	994,200	260,000
Loughborough Inlet	114,067	245,800	765,100	494,500	54,700	175,100	300	.....	.....	14,700	.....	1,100	1,751,300	405 700
Quadra–Hardwicke	73,150	565,600	295,700	345,400	2,500	17,300	12,000	.....	.....	1,000	.....	2,100	1,241,600	236,800
Knight Inlet	154,472	264,700	1,196,200	997,400	154,900	357,800	13,500	.....	11,600	83,200	6,800	8,100	3,094,200	158,600
Kingcome–Gilford	209,788	25,800	2,132,700	959,400	116,100	445,100	6,200	.....	.....	95,500	.....	2,100	3,782,900	983,500
Drury and Belize Inlets	205,385	900	1,848,300	612,100	56,700	337,500	.....	.....	500	250,200	.....	13,300	3,119,500	3,296,000
Vacant Crown lands	791,335	2,702,900	3,483,200	2,818,600	263,400	965,300	27,800	200	43,400	276,100	13,400	15,100	10,609,400	2,749,300
Timber licences and leases	1,085,187	5,594,500	9,803,900	4,895,700	360,300	2,439,400	130,600	600	28,100	563,700	20,600	177,700	24,015,100	25,525,000
Crown-granted lands	83,655	423,000	339,400	183,200	53,800	42,500	3,400	300	1,100	20,800	1,800	800	1,070,100	779,700
Totals	1,960,177	8,720,400	13,626,500	7,897,500	677,500	3,447,200	161,800	1,100	72,600	860,600	35,800	193,600	35,694,600	29,054,000

Abbreviations—F=Douglas fir. C=Red cedar. H=Western hemlock. S=Sitka spruce. B=Silver fir (balsam).
Pw=White pine. Py=Yellow pine. Pl=Lodgepole pine. Cy=Yellow cedar. Cot=Cottonwood.

The total amount of standing timber in the whole Vancouver Forest District, including Vancouver Island, is estimated to be 130,816,000,000 F.B.M. The volume of each species is shown in the accompanying diagram.



FOREST RESOURCES OF VANCOUVER FOREST DISTRICT

130,816,000,000 f. b.m.

The average annual cut of the Vancouver Forest District during the last five years has been 2,359,000,000 F.B.M. The average annual loss by fire during the same period has been 14,506,000 F.B.M. Therefore the total depreciation of the stands by logging and fire has averaged 2,373,506,000 F.B.M. Assuming that the whole of the standing timber will become accessible as need arises, there is evident a supply sufficient for fifty-five years at the present rate of cutting. The most important species is Douglas fir, of which the average cut during the last five years has been 1,383,000,000 F.B.M. per annum. At this rate of cutting, therefore, the old-growth fir will last for thirty years only, and a further increase in the annual cut is not unlikely. The present cut is two and one-half times what it was ten years ago, the 1920 cut being 553,400,000 F.B.M. fir in a total cut of 1,119,800,000 F.B.M. of all species in the Vancouver Forest District.

From yield studies made in British Columbia fir stands, checked by comparison with the results of extended research by the United States Forest Service in Washington and Oregon, it has been found that on a site of medium quality fully stocked fir stands will produce 35,000 F.B.M. per acre of timber 12 inches diameter and over in 100 years. For large acreages considerable reduction in this estimate must be allowed on account of irregular stocking and gaps in the forest-cover. It is estimated that a net 28,000 F.B.M. per acre will be produced. From less intensive examination in the fir-cedar-hemlock type of the Southern Coast, it is estimated that a very similar volume is produced in these mixed stands. On this basis the Vancouver District could support a sustained annual yield of 1,524,000,000 F.B.M. from existing mature and immature stands.

It may be assumed, therefore, that the Vancouver forest industries will gradually become dependent upon sources of supply outside the district, if the volume utilized does not diminish. Meanwhile, the importance of reducing to a minimum the amount of waste in woods and mill is obvious. So also is the ultimate advantage that will be gained by bringing into production the 737,000 acres of logged and burned lands which are not restocking. These would add upwards of 200,000,000 F.B.M. to the annual cut, and the fact that they were selected by the industry for logging first proves that they are among the more accessible areas in the district.

LAND CLASSIFICATION.

Lands within and adjacent to Provincial Forests were examined for the purpose of defining permanent boundaries for the Forests so as to exclude areas suitable for agricultural development.

For the *Elk Forest* 58,300 acres were examined this year. Of this area, 20,350 acres, adjacent to the proposed Forest boundaries in the Elk Valley above Elko, were found to be suitable for farming, 7,900 acres of which are Crown lands. The first-class tillable soil on these Crown lands averages 58 per cent., a total of 4,570 acres, the remainder being rough bench-land suitable for pasture, some of which might be cultivated with success except in dry seasons, irrigation-water not being available. Clearing costs would not be excessive as most of the tillable land has been burned over in the past and is now covered with young trees, chiefly deciduous. There are also 12,450 acres, in addition to the 4,000 acres below Elko reported last year, of undeveloped privately held lands which are suitable for agricultural development.

In connection with the forest survey conducted in the *Powell Lake* district, land classification for definition of forest boundaries covered 11,900 acres. There is reported to be a total of 6,700 acres suitable for agricultural development, including the areas examined last year; 2,100 acres of this are privately held and 4,600 acres are Crown lands. It was found that other logged-off lands totalling 34,200 acres, which appeared to have agricultural possibilities, could not be recommended for that purpose after examination; included in these areas were 5,300 acres of soils, previously of agricultural value, of which the physical characteristics have been changed by repeated forest fires. These lands require to be considerably built up in humus before farm crops could succeed.

AREAS EXAMINED FOR MISCELLANEOUS PURPOSES OF "LAND ACT," 1930.

Forest District.	Applications for Crown Grants.		Applications for Grazing and Hay Leases.		Applications for Pre-emption Records.		Applications to Purchase.		Miscellaneous.	
	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
Cariboo	..	.....	68	13,206	45	6,367	30	2,716	17	2,321
Fort George	..	.....	2	320	50	7,540	57	8,438	34	5,919
Kamloops	..	.....	1	1,760	34	4,240	14	2,064	11	1,042
Prince Rupert	1	26	3	277	21	3,086	39	6,816	70	3,309
Southern Interior	..	.....	2	920	15	1,756	65	12,590	17	2,188
Vancouver	1	80	..	.....	18	1,094	81	9,588	68	11,709
Totals	2	106	76	16,483	183	24,083	286	42,212	217	26,488

CLASSIFICATION OF AREAS EXAMINED IN 1930.

Forest District.	Total Area.	Agricultural Land.	Non-agricultural Land.	Merchantable. Timber Land.	Estimate of Timber on Merchantable Timber Land.
	Acres.	Acres.	Acres.	Acres.	M.B.M.
Cariboo	24,610	2,291	22,319	.....	.....
Fort George	22,217	9,983	12,234	1,775	36,311
Kamloops	9,106	1,592	7,514	.....	.....
Prince Rupert	13,514	3,468	10,046	15	448
Southern Interior	17,454	3,547	13,907	302	2,630
Vancouver	22,471	3,036	19,435	399	4,817
Totals	109,372	23,917	85,455	2,491	44,206

FOREST RESEARCH.

More satisfactory progress has been made in research and reforestation during 1930 than in any previous year. Difficulties and delays encountered in the selection and training of research officers have been largely overcome, and the Forest Service now has a well-organized research staff which is devoting attention to the problems underlying the application of scientific forestry to the timber lands of the Province.

Mr. C. G. Riley, Superintendent of the Cowichan Lake Experiment Station, resigned during the year to accept a position in Eastern Canada, and the loss of this able technical officer is to be regretted.

A feature of the work during 1930 was the co-operation of the Dominion Forest Service in our rate-of-growth studies. Two Dominion parties were placed in the field in British Columbia as part of the National Forest Inventory which is being conducted in Canada through the joint efforts of Provincial and Federal authorities. One of these parties operated in the mixed forests of fir, cedar, and hemlock in the Johnstone Strait region, and the second in the cedar-hemlock type south-east of Ocean Falls.

Two experiment stations of the Service are now permanently established and in future no major expenditures will be required for their development. Satisfactory progress also has been made in the preparation of the new Green Timbers Forestry Station on the Pacific Highway near New Westminster; and preliminary field surveys have been made to locate an area suitable for reforestation experiments among the extensive tracts of logged-off lands in the district between Comox and the Salmon River.

COWICHAN LAKE FOREST EXPERIMENT STATION.

This Station, established in 1929, is proving to be a most satisfactory field centre for research-work in the Douglas fir region and for demonstrations of intensive forestry practice on a small scale.

During 1930 a second building was constructed as quarters for the field staff and necessary improvement-work was carried out to complete the experimental fire-line and to extend the trails required within the Station forest.

The thinning experiment, undertaken last year, was continued during 1930, three additional plots being established. The initial field-work on this project has now been completed and a detailed report is in course of publication. An experiment was conducted in pruning a 20-year-old stand of Douglas fir to remove the dead branches which frequently exist in large numbers on the lower parts of the trunks of young trees of this species. Such branches produce the knots which lower the quality of lumber cut from second-growth timber. The purpose of this experiment is to determine the cost of pruning to various heights, and the effect of such an operation on tree-growth and the quality of lumber produced. Three plots were established, for trials of light, medium, and heavy pruning, in addition to a check-plot.

Minor activities at the Station included re-examinations of plots established in previous years for studies of seedling survival and reforestation by seeding. Herbarium specimens were collected for local purposes, and additional work was done on the use of chemicals for destroying weeds on fire-lines and thus reducing the fire-hazard from inflammable dead vegetation. Sets of little-used native woods were prepared, both for our own collections and in response to various requests.

Visitors to the Cowichan Lake Station during 1930 included Mr. A. D. Hopkinson, of the British Forestry Commission; Mr. E. H. Finlayson, Director of the Dominion Forest Service; Dr. K. M. Müller, Bavarian State Forest Research Institute; and a party of twenty-six forestry students from the University of Washington, under the guidance of Professor J. L. Alexander.

Aleza Lake Forest Experiment Station.

Routine measurements were continued on the main series of plots established in 1926 for the purpose of determining the conditions necessary for regeneration of spruce in the Central Interior. These plots now have been under observation for five seasons and a report on the results obtained up to date is in course of publication. One new plot was established to test the rate of regeneration on the land cut over in 1929. On a second new plot the mineral soil was exposed under a typical stand of spruce and balsam, in order to test the effect of this treatment in securing satisfactory new growth, on a larger scale than the small sample plots employed up to the present for the same purpose.

A bulletin was issued, in co-operation with Yale University, describing in detail the results of certain phases of our investigations at Aleza Lake, together with more intensive studies conducted in the Yale laboratories.

The principal improvement-work at Aleza Lake in 1930 consisted of the final grading and gravelling of the Station road. The trail system was extended and miscellaneous finishing and painting work was done on the headquarters buildings.

The depressed condition of the local lumber industry unfortunately made it necessary to postpone our plans for the annual logging required under the management plan of the Station forest. The desired annual cut is approximately 1,000,000 board-feet. However, a small sale was made of 100,000 feet and the necessary cutting was completed.

Reproduction Studies.

History Maps.—This study of natural reforestation in the South Coast types is being developed gradually, and during the past season work was done on five of the representative logging operations which are under observation. Five hundred and fifty new plots were staked and tallied in an extension of the study-areas at Campbell River, and 300 plots were established on four other operations as part of the work necessary to balance the previous data and to replace plots burned during the past year. The office-work on this project is well advanced and an article on the subject has been published.

Permanent Experimental Plots.—The object of permanent plots in our reproduction studies is to provide data on the fundamental principles of forest regeneration and to check the information obtained in general surveys. During 1930 twenty-seven plots were re-examined and four new plots were located. Three of these are for the purpose of making a trial of seeding with Douglas fir on slash burns at Cowichan Lake; the fourth has been established near Union Bay to find what happens to seed of native conifers after it leaves the trees and is disseminated by the wind.

Engelmann Spruce Reproduction Survey.—The results of a study of natural reforestation following fires in the spruce region of the Upper Fraser River were published in the *Forestry Chronicle* in 1929, but this project has not been referred to in previous reports.

The field-studies were made on seventeen plots and thirty-nine transects, located on thirty-one areas which had been burned from four to seventy-five years previously. Aspen and birch were found to be always associated with the coniferous species in the second growth, these broad-leaf trees apparently preparing the seed-bed for the coniferous seedlings, later providing necessary shade for the young trees, and finally succumbing when overtopped by the spruce and balsam when the latter are about eighty years old.

Seventy-five per cent. of the burns are considerably understocked, the cause apparently being lack of germination on the poor seed-beds which result from hot fires. Spruce averaged less than 800 per acre on all burns.

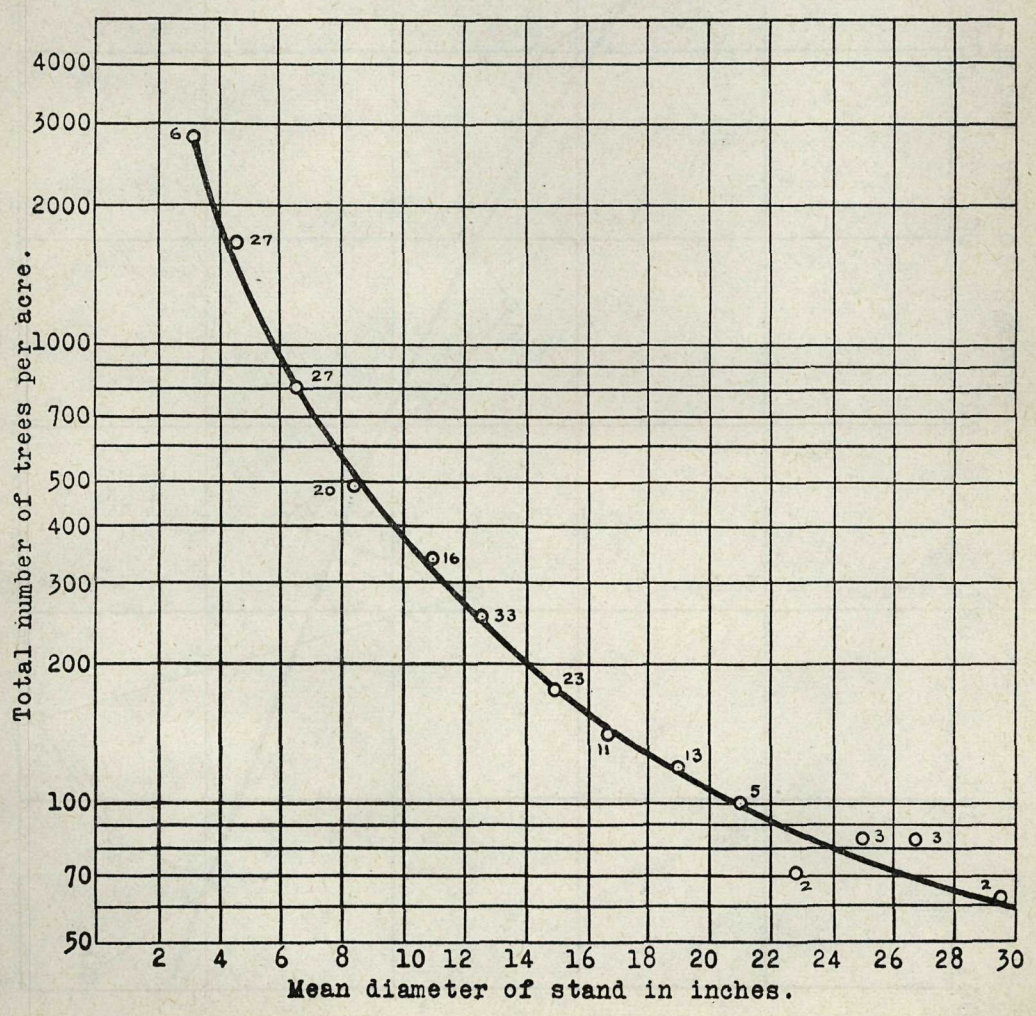
Forest Mensuration.

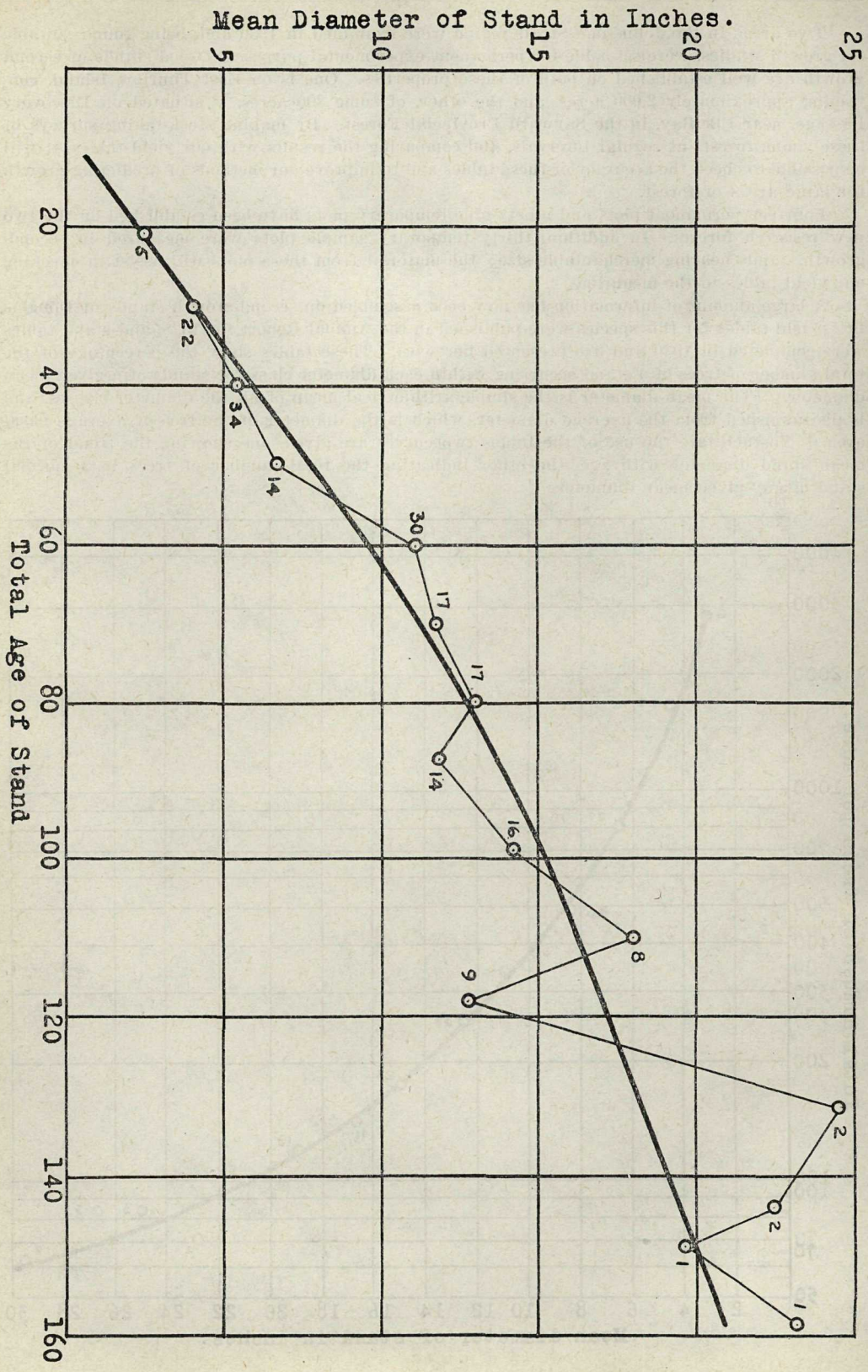
Practically all our research-work in mensuration during the past year has been confined to the forests of the Central Coast. In this region the main species is hemlock, with Douglas fir as the usual associate towards the south and Sitka spruce towards the north. Western red cedar occurs throughout the type.

Two areas in the Johnstone Strait region were examined in 1930 and, being found suitable for growth studies, were set aside for permanent experimental purposes. Good stands of second growth are well established on both of these properties. One is on East Thurlow Island, containing approximately 2,000 acres, and the other, of some 300 acres, is situated on Discovery Passage, near Elk Bay, in the Sayward Provincial Forest. By making stock-taking surveys of these young forests at regular intervals, and comparing the results with our yield tables, it will be possible to check the accuracy of these tables and to improve our methods of predicting growth for large areas of forest.

Fourteen permanent plots and ninety-nine temporary plots have been established on the two new research forests. In addition, thirty temporary sample plots were measured in second-growth stands nearing merchantable size; the material from these plots will assist in checking our yield tables in the meantime.

A large amount of information has now been assembled on second-growth stands of Douglas fir. Yield tables for this species were published in the Annual Report for 1928, and stand tables were completed in 1930 and are presented herewith. These tables show the percentage of the total number of trees of a stand occurring within each diameter class for stands of a given mean diameter. (The mean diameter is the simple arithmetical mean of all the diameter classes, and is distinguished from the average diameter, which is the diameter of the tree of average basal area.) To facilitate the use of the tables two curves are given, one showing the trend of the mean stand diameter with age, the other indicating the total number of trees in a normal stand of any given mean diameter.




Mean Diameter of Stand in Inches.
5
10
15
20
25
Total Age of Stand
20
40
60
80
100
120
140
160
5
22
34
14
30
17
17
14
16
8
9
2
2
1
1

Stand Tables for Douglas Fir.

(Based on the mean stand diameter and expressed by diameter classes in per cent. of the total number of trees.)

Actual Diameters found in the Stand.	Mean Diameter of the Stand under Consideration.													
	6″.	8″.	10″.	12″.	14″.	16″.	18″.	20″.	22″.	24″.	26″.	28″.	30″.	35″.
	Proportion of Trees found in each Actual Diameter Class in the Stand, in Per Cent.													
(Inches.)														
1	1.2	0.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	3.8	1.2	1.2	0.6	0.4	0.2	.....	.....	.....	.....	.....	.....	.....	.....
3	9.0	2.8	.....	.....	.....	.....	.....	0.3	0.2	0.2	0.1	0.1	0.1	.....
4	15.0	5.5	5.3	2.9	1.4	0.7	0.6	.....	.....	.....	.....	.....	.....	.....
5	18.0	9.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	18.0	13.5	14.5	7.5	4.2	2.1	1.2	1.2	0.8	0.6	0.5	0.4	0.3	0.2
7	12.0	15.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	7.5	14.0	22.0	14.0	8.5	5.5	3.2	.....	.....	.....	.....	.....	.....	.....
9	5.0	11.0	.....	.....	.....	.....	.....	4.3	2.8	1.9	1.3	1.0	0.8	0.4
10	3.7	8.0	21.0	18.0	13.0	9.5	6.0	.....	.....	.....	.....	.....	.....	.....
11	2.5	5.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	1.9	4.0	16.5	18.0	16.5	12.0	9.0	9.7	6.7	4.3	3.1	2.5	1.8	1.0
13	1.3	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	0.7	2.5	9.5	17.0	16.5	14.0	11.5	.....	.....	.....	.....	.....	.....	.....
15	0.3	1.7	.....	.....	.....	.....	.....	14.5	11.0	8.5	6.3	4.5	3.2	1.9
16	0.1	1.1	5.5	10.5	14.5	15.0	13.5	.....	.....	.....	.....	.....	.....	.....
17	.....	0.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	.....	0.4	2.7	5.5	10.5	13.0	13.0	18.0	15.0	12.0	9.5	7.0	5.5	3.0
19	.....	0.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	.....	1.3	3.3	7.0	11.0	12.0	.....	.....	.....	.....	.....	.....	.....
21	.....	.....	.....	.....	.....	.....	.....	18.0	16.5	14.5	12.2	10.0	8.3	4.5
22	.....	.....	0.5	1.7	4.0	7.5	10.0	.....	.....	.....	.....	.....	.....	.....
24	.....	.....	.....	0.7	2.1	4.7	8.0	15.0	16.0	16.0	14.0	12.5	11.0	6.5
26	.....	.....	.....	0.3	0.9	2.8	5.5	.....	.....	.....	.....	.....	.....	.....
27	.....	.....	.....	.....	.....	.....	.....	10.0	13.5	14.8	15.0	13.5	12.5	8.5
28	.....	.....	.....	.....	0.5	1.3	3.5	.....	.....	.....	.....	.....	.....	.....
30	.....	.....	.....	.....	.....	0.5	1.8	5.5	9.5	11.5	13.5	14.0	13.0	10.0
32	.....	.....	.....	.....	.....	0.2	0.8	.....	.....	.....	.....	.....	.....	.....
33	.....	.....	.....	.....	.....	.....	.....	2.5	5.0	8.2	10.8	12.5	12.5	11.0
34	.....	.....	.....	.....	.....	.....	0.4	.....	.....	.....	.....	.....	.....	.....
36	.....	.....	.....	.....	.....	.....	.....	0.8	2.1	4.5	7.2	9.5	11.0	11.0
39	.....	.....	.....	.....	.....	.....	.....	0.2	0.7	2.1	4.0	6.5	8.5	11.0
42	.....	.....	.....	.....	.....	.....	.....	.....	0.2	0.7	1.8	3.5	5.7	10.0
45	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.2	0.5	2.0	3.5	8.0
48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.2	0.5	1.6	6.0
51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.5	4.0
54	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.2	2.0
57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.8
60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.2
Totals	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Compiled by Charlier's Type A equation.

Thus, if it should be desired to determine the composition of a stand of a given mean diameter at some time in the future, the mean diameter at that time may be estimated by reference to the diameter-age curve. The mean diameter at the present age will not necessarily agree with the diameter given by the curve owing to differences in site. In such a case the future diameter is estimated by determining the percentage relationship between the stand diameter and the curved diameter at present, and assuming that the same relationship will exist at any time in the future. After having determined the mean diameter at the desired age-limit, the number of trees per acre in a normal stand may then be determined from the second curve, which shows the number of trees in a stand of a given diameter, and these trees then can be segregated into their respective diameter classes by means of the stand tables. In cases of

abnormal stands—that is, when the number of trees per acre are greater or less than the number given by the curve for the same mean diameter—a good deal of personal judgment is required in estimating the future number of trees. In overstocked stands a conservative estimate may be obtained by treating the stand as though it were normal, disregarding the degree of overstocking. Understocked stands tend to approach the normal condition as time goes on, and if there is a greater number of trees at present (than normally called for when the stand shall have reached a diameter corresponding to the age for which a prediction is being made), then it is reasonable to presume that the stand will have become normal at this time, and the number of trees as given by the curve could be used. Having determined the future composition of the stand in this way, the expected yield may then be quite easily worked up in any desired form.

Attention has been given to the results of the 1929 study of growth in the Yahk Provincial Forest. The data from this work have been compiled and a paper is in course of publication.

Reforestation.

Seed Collections.—Reports received from the Rangers on seed conditions throughout the Province indicate that the 1930 crop has been below medium expectation. Douglas fir, though below the general average, was good in the Lower Fraser Valley and above the average in the Southern Interior. Cedar was poor on the Coast, fair in the Southern Interior, and good in the Upper Fraser country. The latter district also had a good crop of hemlock-seed. Production of Sitka spruce was poor on the Queen Charlotte Islands, which for some years have been the main source of export shipments of this species. Spruce-seed was more plentiful on the South Coast. Yellow pine was abundant in the Cariboo, fairly plentiful in the Southern Interior, but poor in the Kamloops country. There was a moderate production of balsam (*Abies grandis*) on the Coast, the first crop of any consequence in years.

For all species, the yield of seed per bushel of cones was poor and many of the cones were damaged by insects.

Seed collections were made for export to the Imperial Forestry Commission, in co-operation with the Dominion Forest Service, and for the requirements of our own nurseries. Some 730 bushels of cones were collected, principally Douglas fir and balsam, with small quantities of other species.

Forest Nurseries.—At the Shelbourne experimental nursery near Victoria 205 seed-beds were sown, mainly with Douglas fir and Sitka spruce. Experiments with sand cover, as compared with ordinary nursery soil, indicated that the latter is better for soils similar to that in our nursery. Chemical sterilization of the seed-bed surface, on the beds using a cover of ordinary nursery soil, reduced damping-off to a minimum. The present stock in the nursery comprises some 800,000 healthy trees, about half of which are Douglas fir. These will be transplanted to the Green Timbers nursery in the spring of 1931.

Green Timbers Forestry Station.—The clearing for the nursery at this station has been extended, and over 6 acres are now ready for seed-beds and the reception of stock from the Victoria nursery. In 1930, 80,000 seedlings were set out in transplant beds and a few trial seed-beds were sown. Permanent improvements included fencing, land-drainage, road-construction, and miscellaneous development-work. A site has been prepared for the buildings proposed for 1931.

Forest plantings during the spring of 1930 covered 65 acres on the Green Timbers area adjacent to the nursery; two-year-old stock from the Victoria nursery was used and set out at the rate of 1,000 per acre. Some losses have been suffered, apparently due to drying-out of the seedlings during the severe weather conditions of last winter, and some of the new plantations have been injured by rabbits. Growth of the young trees on the Green Timbers area during the 1930 season shows the site to be well suited to reforestation by Douglas fir and Sitka spruce.

FOREST ENTOMOLOGY.

It was found necessary to again undertake control measures in the yellow- and lodgepole-pine bark-beetle infested areas south of Merritt. A small crew treated 3,161 trees in April and May at a cost of $4,878.

Previous Annual Reports describe the progress of this work in past years and the epidemic seemed to have been permanently checked. Both species of *Dendroctonus* beetles involved attack the yellow pine, but only one (*monticolæ*) attacks the lodgepole pine. Control-work in the past was concentrated on the yellow pine, being the more valuable tree, and also because most entomologists claimed that beetles emerging from lodgepole pine did not attack the yellow pine. Recent experiments conducted by Mr. Hopping and his assistants now prove *Dendroctonus monticolæ* will, on emerging from one species of pine, enter either of them.

Unfortunately, a fresh epidemic is now under way, the extent of which, combined with the knowledge that the *Dendroctonus monticolæ* accepts an interchange of host-tree species, indicates the impracticability of further control-work, especially as infestations in the lodgepole pine are widespread.

In fact, bark-beetles of the genus *Dendroctonus* are doing widespread damage to the three species of pine and to Douglas fir throughout the Southern Interior of the Province. The tussock-moth has also appeared, confining itself as yet to two or three localities, and chiefly affecting the Douglas fir.

The extent of the damage inflicted every year in the Interior by forest insects is viewed with considerable apprehension. Representatives of the Dominion Entomological Branch are watching the situation, studying the life-habits of the various insects and giving valuable advice to the Department wherever control measures appear practicable.

LUMBER TRADE EXTENSION.

Trade-extension work in the Eastern Canadian market was continued, the Lumber Commissioner working with architects, engineers, and builders, placing the merits of British Columbia woods before them. An exhibit was again prepared for the Canadian National Exhibition at Toronto, which received very favourable comments. It is encouraging to note that the results of this work are becoming more noticeable each year. British Columbia products are gradually being recognized at their true value, and are entering into many phases of building and manufacturing where previously foreign woods were used.

Co-operation between the Government and the lumber industries made possible the sending of a Lumber Commissioner to Australia. The depressed financial condition and the increase in Australian tariffs militated against immediate results, but this work is largely educational, such as the breaking-down of trade prejudices and the building-up of a sentiment for trading within the Empire. Such work, to be lasting, must be carried on over a term of years and can be done under present conditions as effectively as in prosperous times.

Four bulletins, on Douglas Fir, Western Red Cedar, Western Hemlock, and Spruce, were published to set out in concise form the merits of these woods and where they should be used. The Department is indebted to the British Columbia Lumber and Shingle Manufacturers, Limited, to the Forest Products Laboratory, and to Major L. R. Andrews for assistance in preparing the text of these bulletins.

THE FOREST INDUSTRIES.

The general depressed conditions throughout the world were reflected in the timber industries, and the production in all lines except pulp shows a decline. The value of products constantly receded during the year and in the last six months was below the cost of production. Drastic curtailment during the latter part of the year, however, has helped to meet the situation. Stocks have decreased and prices become firmer. With any revival in building trade, advances should be recorded.

These slump conditions are reflected in the industrial tables given herewith. The decline has been more marked than during any period in the history of the Branch, except 1915 and the post-war slump of 1921–22. The value of the industry reflects both a curtailment of 27 per cent. in cut of sawn lumber and a decline of $2.50 per thousand in the value of the product. A similar decline and lower prices prevail in the shingle business. Pulp and paper, on the other hand, show an increase, accruing through the expansion of the Powell River Company's plant. Newsprint production was up 24,000 tons, or 12 per cent.

Water-borne shipments held up well, considering prevailing conditions, and amounted to 712,299 M.B.M., a reduction of 11.1 per cent. against a reduction of 20.7 per cent. in the shipments from the Pacific Coast.

Estimated Value of Production, including Loading and Freight within the Province.

Product.	1924.	1925.	1926.	1927.	1928.	1929.	1930.
Lumber	$41,800,000	$41,350,000	$42,516,000	$40,487,000	$48,346,000	$50,140,000	$32,773,000
Pulp and paper	13,938,000	14,466,000	16,315,000	18,505,000	16,755,000	14,400,000	16,520,000
Shingles	10,000,000	10,000,000	10,500,000	6,800,000	10,000,000	8,300,000	4,161,000
Boxes	2,272,000	2,200,000	3,000,000	1,707,000	2,501,000	2,437,000	2,287,000
Piles, poles, and mine-props	2,100,000	2,400,000	2,792,000	4,030,000	4,684,000	5,500,000	4,726,000
Cordwood, fence-posts, and mine-ties.	1,400,000	1,800,000	1,414,000	1,405,000	1,633,000	1,734,000	1,596,000
Ties, railway	2,242,000	1,990,000	1,420,000	1,440,000	1,873,000	2,116,000	1,253,000
Additional value contributed by the wood-using industry	2,100,000	2,100,000	2,100,000	2,100,000	2,200,000	2,100,000	2,387,000
Laths and other miscellaneous products	550,000	1,617,000	1,500,000	2,000,000	2,100,000	2,400,000	1,500,000
Logs exported	4,300,000	3,870,000	3,170,000	4,561,000	3,580,000	4,124,000	2,492,000
Pulp-wood exported	.....	148,000	75,000	52,000	115,000	50,000	42,000
Totals	$80,702,000	$81,941,000	$84,802,000	$83,087,000	$93,787,000	$93,301,000	$69,737,000

Pulp (in Tons).

Pulp.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.
Sulphite	92,299	68,502	86,894	99,878	89,839	92,514	108,381	119,005	120,413	112,925	130,462
Sulphate	16,380	6,519	9,674	9,932	14,403	16,856	15,000	13,700	15,050	15,647	13,055
Ground wood	108,665	89,725	100,759	107,266	112,001	121,363	136,123	163,548	170,005	151,066	172,539

Paper (in Tons).

Product.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.
Newsprint	136,832	110,176	124,639	142,928	136,281	148,201	176,924	214,010	225,477	201,009	224,928
Other papers	9,792	6,934	7,945	7,709	9,653	9,261	10,389	13,745	15,960	19,492	20,446

Water-borne Lumber Trade (in F.B.M.).

Destination.	1924.	1925.	1926.	1927.	1928.	1929.	1930.
Australia	34,848,783	40,228,887	36,809,373	53,502,046	29,843,132	41,493,476	33,076,587
New Zealand	12,169,230	12,619,730	16,201,328	10,847,545	8,531,322	8,559,208	6,416,105
South America	752,906	2,168,921	1,160,947	2,168,973	10,304,032	2,449,494	1,774,697
China	25,595,993	10,783,086	4,615,921	9,178,973	16,902,137	43,323,398	55,224,104
Japan	79,107,984	67,671,449	177,193,559	191,597,552	219,361,557	192,411,505	150,869,880
United Kingdom and Continent	41,527,008	53,845,679	41,575,593	36,427,449	67,075,872	69,903,655	98,037,621
South Africa	10,681,208	8,875,544	17,651,788	18,562,680	13,625,781	15,889,002	17,685,896
India and Straits Settlements	2,228,150	3,359,869	1,653,675	3,566,713	411,577	243,807	241,129
United States and Atlantic Coast	313,104,821	361,016,940	400,347,692	392,074,528	384,107,908	351,526,590	259,093,570
Philippine and Hawaiian Islands	134,690	56,863	221,378	1,734,314	56,681	.....	122,744
West Indies and Cuba	544,604	667,012	8,792,765	16,023,319	8,356,571	14,347,317	12,781,209
South Sea Islands	3,454,183	2,610,143	3,791,670	1,884,632	5,496,319	5,508,978	3,230,759
Mexico	.....	.....	.....	.....	333,660	623,766	550,018
Egypt	6,883,150	12,820,848	2,573,529	2,649,559	1,149,573	4,744,180	.....
Foreign, unclassified	229,608	835,317	154,038	12,047	.....	50,494,046	73,195,238
Totals	531,262,318	577,560,288	712,743,256	740,230,330	765,556,122	801,518,422	712,299,557

Timber scaled in British Columbia in 1930. (By Months and Districts.)

		Cariboo.	Kamloops.	Fort George.	Southern Interior.	Prince Rupert.	Vancouver.	Total, F.B.M.	Total Lineal Feet.	Total Cords.	Total Hewn Ties.
January	F.B.M.	104,365	189,482	2,217,331	15,921,765	2,490,377	97,347,717	118,271,037	.....	.....	.....
"	lineal ft.	.....	112,833	22,886	893,892	195,229	482,815	.....	1,707,655	.....	.....
"	cords	169	145	28	4,711	271	2,373	.....	.....	7,797	.....
"	hewn ties	3,101	.....	26,880	3,982	130,964	620	.....	.....	.....	165,547
February	F.B.M.	178,042	2,245,928	4,648,386	4,370,475	1,291,206	152,642,371	165,376,408	.....	.....	.....
"	lineal ft.	.....	1,010,605	4,800	730,343	360,377	537,556	.....	2,643,681	.....	.....
"	cords	151	681	285	3,417	143	3,626	.....	.....	8,253	.....
"	hewn ties	4,840	10,827	17,922	6,397	11,118	1,199	.....	.....	.....	52,303
March	F.B.M.	509,924	163,297	6,535,975	6,757,325	4,474,031	183,621,639	202,062,191	.....	.....	.....
"	lineal ft.	.....	187,359	29,115	707,110	37,280	432,225	.....	1,393,089	.....	.....
"	cords	182	86	183	5,140	85	6,189	.....	.....	11,865	.....
"	hewn ties	22,070	250	137,902	33,757	52,433	914	.....	.....	.....	247,326
April	F.B.M.	448,796	105,825	5,117,391	6,222,827	6,788,042	256,652,326	275,335,007	.....	.....	.....
"	lineal ft.	.....	92,840	12,960	516,485	31,742	699,949	.....	1,383,976	.....	.....
"	cords	13	32	178	5,009	440	5,708	.....	.....	11,380	.....
"	hewn ties	20,825	19,993	126,704	118,124	94,956	10,613	.....	.....	.....	391,215
May	F.B.M.	334,495	363,934	795,854	23,672,748	12,130,422	208,401,020	245,698,473	.....	.....	.....
"	lineal ft.	.....	263,351	39,770	1,452,555	157,675	671,193	.....	2,584,544	.....	.....
"	cords	.....	.....	111	6,296	2,248	4,065	.....	.....	12,720	.....
"	hewn ties	7,844	7,441	62,578	115,407	45,833	2,404	.....	.....	.....	241,507
June	F.B.M.	135,797	2,959,488	9,332,874	20,503,470	18,677,859	261,284,433	312,893,921	.....	.....	.....
"	lineal ft.	3,089	950,171	140,430	2,576,202	382,652	790,915	.....	4,843,459	.....	.....
"	cords	64	751	256	4,432	768	2,001	.....	.....	8,272	.....
"	hewn ties	5,799	28,365	7,392	230,905	150,814	10,181	.....	.....	.....	433,456
July	F.B.M.	266,796	2,765,622	9,252,739	17,520,603	13,180,078	176,186,413	219,172,251	.....	.....	.....
"	lineal ft.	1,192	1,476,648	59,625	1,898,811	135,421	1,176,707	.....	4,748,404	.....	.....
"	cords	100	371	48	4,335	703	8,394	.....	.....	13,951	.....
"	hewn ties	.....	52,306	22,197	84,971	49,130	22,243	.....	.....	.....	230,847
August	F.B.M.	93,760	294,207	7,213,541	20,220,272	27,332,486	128,616,099	183,770,365	.....	.....	.....
"	lineal ft.	8,275	500,870	.....	1,236,888	442,586	1,567,424	.....	3,756,043	.....	.....
"	cords	.....	26	.....	2,760	367	4,660	.....	.....	7,813	.....
"	hewn ties	.....	13,317	28,269	28,122	87,628	5,081	.....	.....	.....	162,417
September	F.B.M.	....	183,503	3,338,689	28,307,229	26,570,633	109,171,011	167,571,065	.....	.....	.....
"	lineal ft.	46,250	361,173	290,255	1,447,196	509,276	1,245,674	.....	3,902,824	.....	.....
"	cords	.....	72	193	2,336	778	3,310	.....	.....	6,689	.....
"	hewn ties	.....	15,476	724	20,884	104,073	.....	.....	.....	.....	141,157
October	F.B.M.	230,137	178,997	1,179,352	8,565,940	8,133,972	96,789,380	115,077,778	.....	.....	.....
"	lineal ft.	47,750	1,170,433	71,930	1,348,108	423,787	832,881	.....	3,894,889	.....	.....
"	cords	131	218	8	2,315	593	3,942	.....	.....	7,207	.....
"	hewn ties	.....	15,107	20,444	11,615	24,632	1,924	.....	.....	.....	73,722
November	F.B.M.	103,180	1,046,250	757,202	6,218,775	14,144,881	136,969,159	159,239,447	.....	.....	.....
"	lineal ft.	2,345	216,240	139,184	1,475,232	101,486	938,978	.....	2,873,465	.....	.....
"	cords	30	62	.....	2,853	7,242	1,677	.....	.....	11,864	.....
"	hewn ties	.....	1,505	.....	1,516	71,410	.....	.....	.....	.....	74,431
December	F.B.M.	206,105	554,828	331,046	6,156,654	2,811,742	157,265,620	167,325,995	.....	.....	.....
"	lineal ft.	.....	625,761	103,829	697,644	71,366	1,089,411	.....	2,588,011	.....	....
"	cords	116	372	35	3,807	498	8,925	.....	.....	13,753	.....
"	hewn ties	.....	11,821	213	30,453	21,039	.....	.....	.....	.....	63,526
Totals for year	F.B.M.	2,611,197	11,051,361	50,720,380	164,438,083	138,025,729	1,964,947,188	2,331,793,938	.....	.....	.....
"	lineal ft.	108,901	6,971,284	914,784	15,010,466	2,848,877	10,465,728	.....	36,320,040	.....	.....
"	cords	956	2,766	1,325	47,411	14,236	54,870	.....	.....	121,564	.....
"	hewn ties	64,479	176,408	451,225	686,133	844,030	55,179	.....	.....	.....	2,277,454

Total scaled in F.B.M. = 2,663,752,338.

SPECIES CUT (IN F.B.M.).

Forest District.	Fir.	Cedar.	Spruce.	Hemlock.	Balsam.	Yellow Pine.	White Pine.	Jack-pine.	Larch.	Cottonwood	Miscel.	Totals.
Cariboo	4,554,816	490,403	107,322	.....	.....	.....	.....	18,161	.....	.....	669,200	5,839,902
Fort George	4,605,921	5,038,666	44,894,431	.....	2,354,028	.....	.....	12,952,154	.....	.....	477,400	70,322,600
Kamloops	8,592,091	38,676,625	1,464,688	.....	49,427	1,904,898	257,337	1,490,625	32,300	690	882,700	53,351,381
Southern Interior	52,341,167	88,810,332	32,555,964	5,106,752	2,536,210	28,558,117	15,666,020	15,132,579	20,553,333	570,924	28,438,315	290,269,713
Totals, Interior	70,093,995	133,016,026	79,022,405	5,106,752	4,939,665	30,463,015	15,923,357	29,593,519	20,585,633	571,614	30,467,615	419,783,596
Prince Rupert	6,581,639	33,877,718	66,845,764	33,567,624	11,855,990	.....	.....	25,774,963	.....	757,016	9,350,600	188,611,314
Vancouver	1,242,417,931	403,178,171	39,828,596	290,772,754	48,718,127	.....	12,106,169	.....	.....	1,583,968	16,751,712	2,055,357,428
Totals, Coast	1,248,999,570	437,055,889	106,674,360	324,340,378	60,574,117	.....	12,106,169	25,774,963	.....	2,340,984	26,102,312	2,243,968,742
Grand totals, 1930	1,319,093,565	570,071,915	185,696,765	329,447,130	65,513,782	30,463,015	28,029,526	55,368,482	20,585,633	2,912,598	56,569,927	2,663,752,338
Grand totals, 1929	1,660,527,087	746,556,671	220,827,354	394,748,152	71,980,723	32,917,115	21,740,327	77,033,230	39,082,808	4,714,361	76,016,459	3,346,144,287
Grand totals, 1928	1,604,941,926	738,626,482	204,110,500	353,268,734	68,264,722	31,919,089	23,073,267	75,567,367	24,386,323	5,234,832	77,512,224	3,206,905,466
Grand totals, 1927	1,411,296,248	656,030,374	188,234,622	306,859,508	70,013,721	34,165,320	35,157,414	63,578,562	27,607,809	1,927,889	58,830,995	2,853,702,462
Grand totals, 1926	1,306,615,563	705,409,476	248,706,996	332,691,280	90,419,605	29,368,123	30,079,384	45,565,603	40,696,415	.....	88,566,757	2,918,119,202
Grand totals, 1925	1,016,931,573	761,424,202	209,036,148	305,659,173	69,757,874	41,116,018	30,653,478	56,350,628	46,715,296	.....	73,622,137	2,611,266,527
Grand totals, 1924	1,036,019,000	610,201,000	267,899,000	322,715,000	66,069,000	38,354,000	25,243,000	75,895,000	56,896,000	.....	50,409,000	2,549,700,000
Grand totals, 1923	1,139,149,000	573,615,000	209,017,000	332,217,000	71,538,000	61,790,000	31,183,000	53,491,000	44,887,000	.....	4,848,000	2,521,735,000
Grand totals, 1922	846,171,000	461,265,000	149,247,000	238,891,000	38,904,000	43,630,000	34,405,000	43,774,000	39,759,000	.....	3,112,000	1,899,158,000

TOTAL AMOUNT OF TIMBER SCALED IN BRITISH COLUMBIA DURING YEARS 1929–30.
(F.B.M.)

Forest District.	1929.	1930.	Gain.	Loss.	Net Gain.	Net Loss.
Cariboo	4,585,341	5,839,902	1,254,561	.....	.....	.....
Fort George	134,945,087	70,322,600	.....	64,622,487	.....	.....
Kamloops	69,925,708	53,351,381	.....	16,574,327	.....	.....
Southern Interior	313,499,102	290,269,713	.....	23,229,389	.....	.....
Totals, Interior	522,955,238	419,783,596	1,254,561	104,426,203	.....	103,171,642
Prince Rupert	177,288,674	188,611,314	11,322,640	.....	.....	.....
Vancouver	2,645,900,375	2,055,357,428	.....	590,542,947	.....	.....
Totals, Coast	2,823,189,049	2,243,968,742	11,322,640	590,542,947	.....	579,220,307
Totals for Province	3,346,144,287	2,663,752,338	12,577,201	694,969,150	.....	682,391,949

TOTAL SCALE SEGREGATED, SHOWING LAND STATUS. (IN F.B.M.)

Forest District.	Timber Licences.	Timber Leases.	Hand-loggers' Licences.	Timber-sales.	Pre-emptions S.R., and Miscellaneous.	Crown Grants.				Dominion Lands.	Totals.
						To 1887.	1887–1906.	1906–1914.	1914 to Date.		
Cariboo	.....	.....	.....	4,813,563	323,123	15,400	33,000	59,925	594,891	.....	5,839,902
Fort George	22,915,960	.....	.....	31,841,138	5,781,556	.....	.....	4,731,865	5,052,081	.....	70,322,600
Kamloops	4,387,910	.....	.....	9,179,381	1,471,200	.....	22,425	745,743	1,153,392	36,391,330	53,351,381
Prince Rupert	34,309,808	9,670,163	5,280,605	103,026,621	7,991,695	2,028,552	3,144,320	11,657,498	8,067,064	3,434,988	188,611,314
Southern Interior	74,530,022	.....	.....	63,753,510	3,666,858	3,822,795	103,229,603	26,550,415	10,181,089	4,535,421	290,269,713
Vancouver	308,573,622	411,056,996	132,545	108,615,787	6,596,128	882,653,148	120,404,785	25,999,450	19,441,028	141,883,939	2,055,357,428
Totals, 1930	444,717,322	420,727,159	5,413,150	321,230,000	25,830,560	888,519,895	226,834,133	69,744,896	44,489,545	186,245,678	2,663,752,338
Totals, 1929	575,187,828	374,329,611	5,912,880	383,375,816	25,117,698	1,223,710,572	287,184,092	99,437,752	59,209,983	312,678,055	3,346,144,287
Totals, 1928	601,586,290	410,384,094	5,249,856	324,618,812	40,523,494	1,103,204,936	264,833,742	89,743,869	63,531,354	303,229,019	3,206,905,466
Totals, 1927	575,430,088	383,905,689	5,195,168	291,505,941	28,844,603	905,838,664	249,714,968	74,197,517	52,915,769	286,154,055	2,853,702,462
Totals, 1926	553,819,858	424,159,254	7,505,570	296,134,949	35,988,023	860,781,276	269,782,298	118,581,259	58,143,748	293,222,967	2,918,119,202
Totals, 1925	530,863,844	342,943,804	10,542,541	315,669,296	60,664,065	615,470,589	281,322,987	106,202,808	44,850,733	302,735,860	2,611,266,527

Logging Inspection.

Forest District.	Operations.				No. of Inspections.
	Timber-sales.	Hand-loggers' Licences.	Leases, Licences, Crown Grants, and Pre-emptions.	Totals.	
Cariboo	106	...	30	136	366
Fort George	246	...	163	409	1,013
Kamloops	98	...	108	206	519
Prince Rupert	661	97	372	1,130	2,085
Southern Interior	432	...	580	1,012	2,302
Vancouver	389	3	609	1,001	2,574
Totals, 1930	1,932	100	1,862	3,894	8,859
Totals, 1929	1,907	99	2,002	4,008	9,512
Totals, 1928	1,623	50	2,023	3,696	9,596
Totals, 1927	1,584	133	1,873	3,590	8,661
Totals, 1926	1,475	84	1,921	3,453	7,921
Totals, 1925	1,262	54	1,730	3,046	7,321
Totals, 1924	1,245	69	1,853	3,167	7,466
Totals, 1923	1,010	166	2,140	3,316	6,892
Totals, 1922	914	159	1,579	2,652	4,654
Totals, 1921	691	186	1,331	2,208	4,053
Totals, 1920	605	220	1,961	2,796	2,703

Trespasses.

Forest District.	No. of Cases.	Areas cut over (Acres).	Quantity cut.				No. of Resulting Seizures.	Amount.
			Feet B.M.	Lineal Feet.	Cords.	Ties.		
Cariboo	4	8	8,302	.....	100	592	..	$ 96 05
Fort George	9	190	292,795	18,260	3	2,629	1	1,324 19
Kamloops	11	50	7,067	45,564	20	305	..	1,184 95
Prince Rupert	10	109	.....	.....	292	4,454	..	495 51
Southern Interior	50	609	521,442	68,207	1,042	1,632	3	3,699 02
Vancouver	12	34	139,745	33,698	....	....	..	734 29
Totals, 1930	96	1,000	969,351	165,729	1,457	9,612	4	$ 7,534 01
Totals, 1929	99	370	984,309	88,997	569	5,906	9	$ 5,431 07
Totals, 1928	105	878	5,867,052	98,279	4,713	16,599	12	$17,787 10
Totals, 1927	83	399	2,290,926	47,871	2,862	9,660	9	$ 9,097 53
Totals, 1926	84	541	1,972,843	144,357	433	10,233	6	$ 9,457 64
Totals, 1925	87	645	3,486,609	98,456	1,563	16,820	4	$14,534 94
Totals, 1924	68	570	2,182,808	54,068	767	7,646	2	$ 8,539 86
Totals, 1923	105	1,015	6,712,868	121,202	1,598	20,082	8	$27,860 08
Totals, 1922	98	1,059	3,002,881	98,903	2,591	27,022	16	$16,406 30
Totals, 1921	98	1,938	3,222,673	209,395	1,639	21,605	10	$15,924 22
Totals, 1920	73	1,788	4,904,079	104,048	1,882	6,716	10	$17,119 85

Areas cruised for Timber-sales.

Forest District.	Number cruised.	Acreage.	Saw-timber (M.B.M.).	Poles and Piles (Lineal Feet).	Shingle-bolts and Cordwood (Cords).	Railway-ties (No.).	Car Stakes & Posts (No.).
Cariboo	44	4,743	3,749	43,750	2,873	75,862	.....
Fort George	141	34,472	41,010	685,110	455	176,688	.....
Kamloops	67	10,734	9,202	1,407,630	4,190	91,586	9,300
Prince Rupert	236	39,965	86,954	1,135,532	2,335	252,565	24,100
Southern Interior	265	69,889	185,421	6,089,620	9,813	113,439	586,700
Vancouver	190	37,262	199,925	984,180	6,765	21,500	.....
Totals, 1930	943	197,065	526,261	10,345,822	26,431	731,640	620,100
Totals, 1929	1,061	214,874	500,420	13,043,603	17,629	1,305,110	185,740
Totals, 1928	1,111	233,889	754,095	9,623,599	43,266	2,056,604	447,630
Totals, 1927	844	225,191	974,626	7,092,844	21,027	1,747,441	35,600
Totals, 1926	819	142,515	369,717	4,236,881	15,248	1,299,826	20,200
Totals, 1925	819	119,436	353,225	9,113.052	57,441	1,389,604	14,477
Totals, 1924	942	179,609	451,476	8,465,924	41,554	1,873,954	.....

Pre-emption Inspection Records, 1930.

Pre-emption records examined by districts are :—

Cariboo	349
Fort George	424
Kamloops	102
Prince Rupert	213
Southern Interior	355
Vancouver	236
Total	1,679

Timber Sales awarded by Districts, 1930.

District.	No. of Sales.	Acreage.	Saw-timber (Ft. B.M.).	Poles and Piling (Lineal Feet).	No. of Posts.	No. of Cords.	No. of Ties.	Estimated Revenue.
Cariboo	47	9,332	1,812,000	71,186	.....	1,304	84,383	$ 12,425 98
Kamloops	66	12,119	1,541,000	2,216,438	.....	480	54,740	55,675 74
Fort George	99	21,956	7,121,000	794,881	.....	1,239	110,636	43,645 64
Southern Interior	248	45,502	51,648,000	2,709,514	380,150	8,057	60,891	199,278 95
Prince Rupert	216	34,542	62,111,000	3,070,680	18,000	1,870	180,552	1:8,355 02
Vancouver	190	38,591	75,252,000	1,100,465	.....	7,047	3,000	250,099 96
Totals, 1930	866	162,043	199,485,000	9,963,164	398,150	19,997	494,202	$689,481 29
Totals, 1929	974	216,222.28	691,973,000	9,356,837	374,065	23,197	1,505,951	$1,908,100 70
Totals, 1928	1,033	194,929.37	525,250,760	6,537,002	880,000	48,728	1,996,457	$1,344,273 93
Totals, 1927	821	258,097.26	1,611,612,079	7,332,939	736,100	22,057	1,380,553	$2,666,678 32
Totals, 1926	687	118,815.23	295,486,743	5,497,707	207,190	13,455	1,044,999	$1,038,536 69
Totals, 1925	613	94,015.25	189,022,314	6,629,449	12,877	40,334	566.142	$ 795,802 20
Totals, 1924	769	146,652	302,813,267	6,336,071	.....	47,640	2,418,633	$1,226,460 87
Totals, 1923	852	163,464	516,397,438	6,234,342	.....	23,150	2,304,161	$1,513,970 84
Totals, 1922	671	108,501	249,572,808	3,304,254	.....	41,580	880,307	$ 862,888 49
Totals, 1921	531	91,614	188,971,774	2,479,095	.....	34,291	993,417	$ 646,487 65
Totals, 1920	594	121,690	440,649,755	2,811,095	149,300	86,726	6,415,349	$1,799,039 03
Totals, 1919	356	61,809	245,209,300	2,899,000	5,000	52,557	957,804	$ 654,372 09
Totals, 1918	227	34,257	159,659,000	378,080	20,000	18,478	701,654	$ 380,408 33
Totals, 1917	255	44,914	240,307,057	1,517,450	40,000	43,756	381,200	$ 483,281 50
Totals, 1916	133	23,318	136,345,000	435,810	.....	26,666	92,000	$ 259,765 12

Average Sale Price by Species.

Saw-timber.	Figures for 1930.		Figures for 1929.		Figures for 1928.		Figures for 1927.	
	Board-feet.	Price Per M.	Board-feet.	Price Per M.	Board-feet.	Price per M.	Board-feet.	Price per M.
Douglas fir	55,490,000	$1 52	100,886,000	$1 65	55,958,000	$1 51	57,144,445	$1 63
Cedar	21,558,000	1 46	59,142,000	1 62	48,565,266	1 61	30,839,900	1 68
Spruce	35,082,000	1 48	306,370,000	1 25	110,797,541	1 65	146,694,173	1 71
Hemlock	37,972,000	91	70,737,000	82	49,423,655	85	26,344,700	96
Balsam	17,973,000	89	26,622,000	80	26,034,838	83	31,931,100	66
White pine	4,709,000	2 39	8,229,000	2 44	4,553,000	2 98	4,992,940	3 15
Western soft pine	7,132,000	1 74	8,949,000	1 47	9,316,780	1 77	12,354,[illegible]00	1 73
Tamarack	5,501,000	1 05	5,547,000	1.01	6,448,800	1 23	5,617,505	1 07
Other species	5,075,000	68	7,277,000	.97	9,917,880	1 09	2,175,116	1 12
Totals	*190,492,000	$1 32	†593,759,000	1.29	‡321,015,760	$1 40	§318,094,079	$1 53

* Note.—8,993,000 board-feet pulp saw-timber not included in 1930 totals.
† Note.—98,214,000 board-feet pulp saw-timber not included in 1929 totals.
‡ Note.—204,335,000 board-feet pulp saw-timber not included in 1928 totals.
§ Note.—1,293,518,000 board-feet pulp saw-timber not included in 1927 totals.

Timber cut from Timber-sales during 1930.

Forest District.	Feet B.M.	Lineal Feet.	Cords.	Ties.	Posts.
Cariboo	2,233,191	88,476	772.00	50,893	.....
Kamloops	1,095,928	1,694,498	30.00	82,497	8,204
Fort George	21,462,678	561,526	527.50	289,938	19,200
Southern Interior	24,503,629	5,169,626	8,644.09	209,967	342,529
Prince Rupert	75,354,313	3,809,843	1,204.76	683,444	17,781
Vancouver	102,369,878	636,086	5,997.82	24,687	1,035
Totals, 1930	227,019,617	11,960,055	17,176.17	1,341,426	388,749
Totals, 1929	266,016,942	7,966,223	24,663.46	1,554,870	332,038
Totals, 1928	203,208,331	7,672,294	24,389.35	1,714,709	376,253
Totals, 1927	214,209,921	6,368,269	27,508.54	1,359,902	86,109
Totals, 1926	242,973,524	4,974,620	16,676.45	1,198,922	83,763
Totals, 1925	251,141,398	4,885,352	20,808.14	1,077,414	.....
Totals, 1924	230,148,575	4,541,371	17,294.00	1,543,915	.....
Totals, 1923	207,473,848	2,753,532	17,666.55	856,628	.....
Totals, 1922	187,217,151	1,523,744	37,345.91	495,672	.....
Totals, 1921	179,780,056	2,169,550	10,483.00	831,423	.....
Totals, 1920	168,783,812	1,638,549	17,703.00	654,829	.....
Totals, 1919	107,701,950	672,699	12,208.00	573,286	.....
Totals, 1918	113,927,610	499,589	15,539.00	146,807	.....
Totals, 1917	99,078,832	545,429	14,862.00	34,937	.....
Totals, 1916	63,055,102	225,799	8,425.00	.....	.....

Saw and Shingle Mills of the Province.

Forest District.	Operating.				Shut Down.			
	Sawmills.		Shingle-mills.		Sawmills.		Shingle-mills.	
	No.	Estimated Daily Capacity, M.B.M.	No.	Estimated Daily Capacity, Shingles, M.	No.	Estimated Daily Capacity, M.B.M.	No.	Estimated Daily Capacity, Shingles, M.
Cariboo	21	93	..	....	17	71	..	....
Fort George	31	754	..	....	2	65	..	....
Kamloops	7	72	..	....	6	237	..	...
Prince Rupert	19	430	..	....	24	772	1	200
Southern Interior	69	1,311	1	28	50	950	3	500
Vancouver	154	8,360	42	7,136	42	1,109	13	1,195
Totals, 1930	301	11,020	43	7,164	141	3,204	17	1,695
Totals, 1929	354	11,896	53	7,881	95	2,200	15	1,726
Totals, 1928	314	11,919	56	8,280	120	2,459	15	2,710
Totals, 1927	375	12,176	65	12,042	110	2,549	22	2,740
Totals, 1926	391	12,962	87	15,614	102	1,675	6	460
Totals, 1925	363	11,475	82	15,322	109	2,121	9	625
Totals, 1924	359	11,986	78	15,636	103	2,618	20	1,780
Totals, 1923	352	11,273	107	16,144	72	1,493	16	745
Totals, 1922	292	9,683	108	15,544	90	2,054	8	680
Totals, 1921	289	8,912	79	10,885	78	2,029	6	788
Totals, 1920	341	10,729	109	13,426	37	909	2	30

Export of Logs. (In F.B.M.)

Species.	Grade No. 1.	Grade No. 2.	Grade No. 3.	Ungraded.	Totals.
Fir	5,786,196	66,141,643	25,102,497	.....	97,030,336
Cedar	5,762,876	19,891,198	14,570,942	.....	40,225,016
Spruce	22,409	346,891	432,152	.....	801,452
Hemlock	.....	.....	.....	23,330,910	23,330,910
Balsam	.....	.....	.....	8,899,954	8,899,954
Yellow pine	.....	.....	.....	1,951,532	1,951,532
White pine	.....	.....	.....	514,319	514,319
Cottonwood	.....	123,258	42,250	.....	165,508
Totals, 1930	11,571,481	86,502,990	40,147,841	34,696,715	172,919,027
Totals, 1929	13,015,146	133,997,595	60,002,711	29,978,125	236,993,577
Totals, 1928	20,563,249	106,084,161	47,994,423	37,305,398	211,947,231
Totals, 1927	36,545,972	144,942,558	51,584,928	48,510,833	281,584,291
Totals, 1926	32,195,991	105,322,879	53,113,521	33,845,324	224,477,715
Totals, 1925	34,501,748	96,701,737	40,312,806	38,901,670	210,417,961
Totals, 1924	23,416,816	111,801,016	49,549,135	55,763,860	240,530,827

SHIPMENTS OF POLES, PILING, MINE-PROPS, FENCE-POSTS, RAILWAY-TIES, ETC.

Forest District.	Quantity exported.	Approximate Value, F.O.B.	Where marketed.		
			United States.	Canada.	Japan.
Kamloops—					
Poles and piling.....lineal ft.	1,678,783	$201,869	1,351,305	327,478	.....
Mine-props.....lineal ft.	18,870	2,453	.....	18,870	.....
Fence-posts.....cords	30	347	.....	30	.....
Railway-ties.....No.	54,950	33,108	....	54,950	.....
Fort George—					
Poles and piling.....lineal ft.	880,740	114,496	325,290	555,450	.....
Fence-posts.....cords	628	3,768	.....	628	.....
Railway-ties.....No.	354,602	219,027	.....	354,602	.....
Prince Rupert—					
Poles and piling.....lineal ft.	3,752,762	525,386	3,537,297	215,465	.....
Fence-posts.....No.	30,430	5,172	.....	30,430	.....
Railway-ties.....No.	702,603	438,375	.....	702,603	.....
Vancouver—					
Poles and piling.....lineal ft.	10,061,317	1,307,971	9,613,225	.....	448,092
Cordwood.....cords	957	3,830	957	.....	.....
Pulp-wood.....cords	5,241	41,932	5,241	.....	.....
Southern Interior—					
Poles and piling.....lineal ft.	10,809,075	1,667,746	9,137,941	1,671,134	.....
Mine-props.....cords	9,800	93,284	.....	9,800	.....
Fence-posts.....cords	11,514	97,869	2,448	9,066	.....
Railway-ties.....No.	346,333	188,812	.....	346,333	.....
Total value, 1930.....	.....	$4,945,445	.....	.....	.....
Total value, 1929.....	.....	$5,333,303	.....	.....	.....

TIMBER-MARKING.

TIMBER-MARKS ISSUED FOR THE YEARS 1928, 1929, AND 1930.

	1928.	1929.	1930.
Old Crown grants	108	108	90
Crown grants, 1887–1906	118	120	84
Crown grants, 1906–1914	177	121	97
Section 53A, "Forest Act"	302	290	212
Stumpage reservations	34	35	90
Pre-emptions under sections 28 and 29, "Land Act"	21	13	16
Dominion lands (general)	40	30	26
Dominion lands (timber berths)	22	9	13
Dominion lands (Indian reserves)	13	7	8
Timber-sales	1,033	974	866
Hand-loggers	5	9	11
Special marks	.....	.....	.....
Rights-of-way	3	4	1
Pulp licences	5	9	1
Totals	1,881	1,729	1,515
Transfers and changes of marks	276	238	242

HAND-LOGGERS' LICENCES.

	1928.	1929.	1930.
Number issued	53	51	64

ANALYSIS OF ROUTINE WORK.

Draughting Office, Forest Branch.

Month.	Number of Tracings made.						Blue-prints from Reference Maps.
	Timber-sales.	Timber-marks.	Examination Sketches.	Hand-logger Licences.	Miscellaneous.	Totals.	
January	44	83	51	..	9	187	5
February	34	102	39	3	8	186	14
March	38	89	56	12	12	207	5
April	33	56	45	20	39	193	..
May	25	83	42	5	25	180	4
June	31	50	31	3	9	124	5
July	13	64	36	2	10	125	18
August	26	37	31	7	6	107	14
September	24	55	42	2	6	129	28
October	29	54	51	4	8	146	52
November	12	62	61	3	22	160	13
December	25	48	89	1	6	169	12
Totals	334	783	574	62	160	1,913	170

CROWN-GRANT TIMBER LANDS.

	Area-of-Private Timber Lands (Acres).	Average Value per Acre.
1919	883,491	$9.48
1920	867,921	11.62
1921	845,111	10.33
1922	887,980	11.99
1923	883,344	11.62
1924	654,668	15.22
1925	654,016	40.61
1926	688,372	39.77
1927	690,438	39.01
1928	671,131	38.62
1929	644,011	38.41
1930	629,156	44.74

The extent and value of timber land in the various assessment districts are shown by the following table:—

Assessment District.	Acreage, 1930.	Increase or Decrease in Acreage over 1929.	Average Value per Acre.	Change in Value per Acre since 1929.
Alberni	92,104	- 4,856	$67 63	+$11 54
Comox	130,500	- 7,759	54 44	+ 7 72
Cowichan	72,593	- 5,539	79 61	+ 14 23
Fort Steele	37,167	- 2,479	10 02	+ 0 17
Galiano Island	268	- 60	18 34	+ 3 36
Golden	33,4[illegible]8	- 176	9 55	+ 0 04
Kettle River	9,673	+ 2,664	7 46	- 3 30
Nanaimo	81,549	+ 796	57 25	+ 13 17
Nelson	8,390	- 3,679	9 58	+ 1 25
Fort George	13,696	+ 6,475	19 72	+ 1 70
Prince Rupert	21,140	+ 4,579	21 77	- 0 60
Revelstoke	37,201	.....	15 23	.....
Slocan	60,685	+ 129	10 77	+ 0 30
Vancouver	2,508	- 1,728	118 72	+ 18 34
Victoria	28,274	- 3,222	44 97	+ 9 37
Totals	629,156	- 14,855	$44 74	+$ 6 33

FOREST REVENUE.

	12 Months to Dec. 31st, 1930.	12 Months to Dec. 31st, 1929.	12 Months to Dec. 31st, 1928.	12 Months to Dec. 31st, 1927.	12 Months to Dec. 31st, 1926.	12 Months to Dec. 31st, 1925.
Timber-licence rentals	$854,560 87	$931,545 72	$1,015,705 19	$892,914 98	$1,063,812 90	$1,130,556 52
Timber-licence transfer fees	2,180 00	1,775 00	4,285 00	2,000 00	2,400 00	3,465 00
Timber-licence penalty fees	27,861 53	23,245 73	33,035 56	27,639 13	32,549 14	28,017 75
Hand-loggers' licence fees	1,575 00	1,300 00	1,400 00	1,275 00	2,250 00	2,775 00
Timber-lease rentals	72,117 52	79,873 89	79,396 72	95,236 93	90,010 89	92,485 38
Penalty fees and interest	607 44	901 43	520 70	88 93	254 91	283 33
Timber-sale rentals	35,035 94	30,162 64	40,649 01	32,494 57	20,537 75	17,045 45
Timber-sale stumpage	518,309 48	634,048 95	551,102 88	608,765 14	572,324 74	512,399 28
Timber-sale cruising	7,565 12	12,844 92	10,943 97	10,936 58	7,173 84	6,296 67
Timber-sale advertising	1,256 69	1,951 28	1,646 65	1,681 85	1,498 82	1,403 43
Timber royalty and tax	1,456,330 42	1,688,803 67	1,774,417 41	1,825,909 80	1,779,553 60	1,658,043 07
Scaling fees (not Scaling Fund)	1,204 07	1,407 92	1,147 84	1,778 02	1,344 75	1,044 25
Scaling expenses (not Scaling Fund)	150 01	191 74	103 74	156 75	98 17	253 24
Trespass penalties	5,825 68	9,161 16	12,058 89	6,481 83	11,677 12	17,841 58
Scalers' examination fees	105 00	320 00	275 00	235 00	350 00	160 00
Exchange	591 70	1,711 29	271 09	345 16	693 04	520 12
Seizure expenses	1,406 64	3,152 88	589 71	703 90	300 50	1,097 95
General miscellaneous	4,137 56	2,754 36	4,444 25	3,767 83	3,651 95	4,699 66
	$2,990,820 67	$3,425,152 58	$3,531,993 61	$3,602,411 40	$3,590,482 12	$3,478,387 68
Grazing fees	12,251 88	10,918 49	12,541 98	16,529 20	12,328 54	14,114 89
Taxation, Crown-grant timber lands	422,274 04	375,923 32	388,860 46	424,023 04	410,684 46	398,393 85
Total revenue from forest sources	$3,425,346 59	$3,811,994 39	$3,933,396 05	$4,042,963 64	$4,013,495 12	$3,890,896 42

Revenue from Logging Operations, 1930.

(Amounts charged.)

Forest District.	Royalty and Tax.	Trespass Penalties.	Seizure Expenses.	Government Scale.		Scaling Fund.		Stumpage.	Total.
				Scaling Expenses.	Scaling Fees.	Scaling Expenses.	Scaling Fees.		
Vancouver	$ 993,057 94	$ 897 42	$ 616 60	$ 66 57	$1,049 66	$20,233 93	$ 96,814 21	$175,173 59	$1,287,909 92
Cariboo	3,977 81	126 17	....	14 75	.....	.....	.....	6,203 96	10,322 69
Prince Rupert	159,084 78	.....	162 96	59 25	130 87	1,410 53	9,739 13	180,765 77	351,541 58
Southern Int'r.	201,105 85	3,785 44	98 77	.....	.....	.....	.....	157,859 74	362,849 80
Fort George	67,218 65	932 73	723 43	.....	84 80	.....	.....	74,670 93	143,630 54
Kamloops	35,922 13	869 61	.....	.....	.....	.....	.....	43,349 80	80,141 54
Totals	$1,460,367 16	$ 6,799 66	$1,601 76	$ 140 57	$1,265 33	$21,644 46	$106,553 34	$638,023 79	$2,236,396 07
Totals, 1929	$1,851,535 62	$ 4,191 84	$1,555 56	$ 175 83	$1,215 22	$22,127 43	$118,481 18	$711,213 82	$2,710,496 50
Totals, 1928	$1,794,819 93	$20,867 17	$2,103 57	$ 156 58*	$1,194 89	$20,277 64	$123,169 81	$635,292 44	$2,597,882 03
Totals, 1927	$1,767,710 60	$ 7,343 44	$ 789 47	$ 163 57	$2,032 43	$17,169 14	$114,979 79	$631,948 72	$2,542,137 16
Totals, 1926	$1,774,494 75	$ 1,589 83	$1,142 38	$ 98 34	$1,147 41	$17,279 88	$119,704 75	$613,365 09	$2,528,822 43
Totals, 1925	$1,754,605 06	$59,804 57	$ 913 29	$ 197 08	$1,254 80	$18,794 39	$116,682 68	$651,486 17	$2,603,738 04
Totals, 1924	$1,542,070 96	$10,860 22	$ 708 24	$ 548 37	$2,179 42	$14,760 12	$103,691 71	$597,071 65	$2,271,890 69

FOREST EXPENDITURES, FISCAL YEAR 1929–30.

Forest District.	Salaries.	Temporary Assistance.	Expenses.	Total.
Headquarters	$ 99,019 71	$ 475 58	$ 23,929 28	$123,424 57
Cariboo	9,013 09	190 00	3,570 43	12,773 52
Kamloops	6,759 58	110 00	3,081 30	9,950 88
Fort George	17,091 22	974 39	5,988 69	24,054 30
Prince Rupert	23,551 20	.....	21,408 46	44,959 66
Southern Interior	43,955 34	2,011 93	23,316 66	69,283 93
Vancouver	54,261 52	492 26	45,948 86	100,702 64
Totals	$253,651 66	$4,254 16	$127,243 68	$385,149 50

Lumber-trade extension (including $2,500 from Vote 127—General Investigation)	20,988 68
Reconnaissance, etc	32,968 34
Insect-control	157 41
Grazing: range improvement	6,687 18
Grazing: stock account	1,231 19
Grand total	$447,182 30

SCALING FUND.

Balance brought down, April 1st, 1929	.....	$21,584.03
Expenditure, fiscal year 1929–30	.....	142,359.06
Charges, fiscal year 1929–30	$138,332.05	.....
Balance, March 31st, 1930	25,611.04	.....
	$163,943.09	$163,943.09
Balance brought down, April 1st, 1930	.....	$25,611.04
Expenditure, 9 months, April–December, 1930	.....	97,636.98
Charges, 9 months, April–December, 1930	$101,399.31	.....
Balance	21,848.71	.....
	$123,248 02	$123,248.02

FOREST RESERVE ACCOUNT.

Balance brought forward, April 1st, 1929	.....	$27,313.65
Amount received from Treasury, April 1st, 1929	.....	71,828.64
Moneys received under subsection (4), section 30 (*a*)	.....	369.99
Expenditure, fiscal year 1929–30	$62,569.84	.....
Balance	36,942.44	.....
	$99,512.28	$99,512.28
Balance brought forward, April 1st, 1930	.....	$36,942.44
Amount received from Treasury, April 1st, 1930	.....	68,030.43
Moneys received under subsection (4), section 30 (*a*)	.....	694.90
Expenditure, 9 months to December 31st, 1930	$65,627.27	.....
Balance, December 31st, 1930	40,040.50	.....
	$105,667.77	$105,667.77

FOREST PROTECTION FUND.

The following statement shows the standing of the Forest Protection Fund as of December 31st, 1930:—

Balance (deficit), April 1st, 1929		$102,584.79
Expenditure, fiscal year 1929–30		918,286.82
		$1,020,871.61
Collections, fiscal year 1929–30	$151,631.79	
Collections under special levy	23,194.47	
Government contribution	300,000.00	
		474,826.26
Balance (deficit)		$546,045.35
Balance (deficit), April 1st, 1930		$546,045.35
Expenditure, 9 months (April–December, 1930)		710,947.50
		$1,256,992.85
Collections, April–December, 1930	$176,473.30	
Collections, special levy, April–December, 1930	143,865.39	
Government contribution	360,000.00	
		680,338.69
		$576,654.16

A further sum of $360,000 is payable by the Government, being its proportion of special levy.

There is an amount of approximately $62,000 repayable by Forest Protection Fund to Vote 112 to cover expenses of permanent employees, maintenance of motor-cars and launches, etc.; also $82,000 to cover proportion of salaries of Rangers, etc., payable by the fund.

FOREST PROTECTION FUND EXPENDITURE.

	Fiscal Years.							
	1922-23.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1928-29.	1929-30.
Patrols and fire prevention	$202,994	$254,792	$334,532	$377,427	$356,462	$358,835	$407,790 94	$373,416 71
Tools and equipment	91,812	81,408	25,418	33,976	30,663	30,409	31,258 82	45,401 56
Fires	508,992	75,503	258,034	650,138	514,845	84,600	75,221 43	494,645 42
Improvements and maintenance	37,609	21,667	5,690	11,890	14,172	22,482	33,428 67	22,570 79
Totals	$841,407	$433,370	$633,674	$1,073,431	$916,142	$496,326	$547,699 86	$936,034 48

EXPENDITURE BY DISTRICTS FOR TWELVE MONTHS ENDED MARCH 31ST, 1930.

District.	Patrols and Fire-prevention	Tools and Equipment.	Fires.	Improvements and Maintenance.	Total.
Cariboo	$ 20,032 04	$ 2,196 62	$ 2,781 54	$ 672 92	$ 25,683 12
Kamloops	25,444 90	2,384 64	4,768 28	5,433 88	38,031 70
Fort George	28,247 93	3,266 56	4,536 92	4,128 46	40,179 87
Prince Rupert	26,308 74	3,034 43	8,959 74	1,611 69	39,914 60
Southern Interior	115,729 22	22,988 70	457,556 79	7,729 44	604,004 15
Vancouver	119,964 12	9,919 72	16,042 15	2,994 40	148,920 39
Victoria	37,689 76	1,610 89	.....	.....	39,300 65
Totals	$373,416 71	$45,401 56	$494,645 42	$22,570 79	$936,034 48

FOREST PROTECTION.

The 1930 forest-fire season, if not severe, was one of extreme hazard. Unlike 1929, where the centre of hazard was over the Central Interior, Eastern Washington, and Idaho, this year the centre of extreme conditions swung farther north, and abnormal weather prevailed throughout the Province. Rainfall records show that for 42 days at Prince George, 78 at Vanderhoof, and 97 at Telkwa no single rain reached 0.2 inch, and the total rainfall for these periods was 0.25 at Prince George, 0.83 at Vanderhoof, and 1.04 at Telkwa.

There is no doubt that in this northern region the fire-hazard was more severe than for any year since 1922. Moreover, a scattered population and lack of communication made difficult the organization, transporting, and maintaining of fire crews adequate to control the situation. It was in this region that our most extensive fires occurred and the greatest damage was sustained. Fifty-one per cent. of the area burned over, 77 per cent. of the timber destroyed, and 76 per cent. of the damage were reported from the eastern section of the Prince Rupert District.

Another feature of the season was the abnormal number of lightning-fires, a total of 892 or 39 per cent. being recorded. This is the greatest number ever experienced in the history of the Forest Branch, comparing with 632 or 25 per cent. in 1925 and 246 or 10 per cent. in 1922, years of comparable hazard.

The large number of fires occurring each year, the continuing fire losses, and the drain for control expenditures, naturally raise the question of the efficiency of fire-control. Are the results obtained compatible with the moneys expended? The question is difficult for direct reply with stated facts. We know the losses in spite of our best efforts for control; what they would have been without that effort is only conjecture.

Fire-hazard increases with industrial activities, the greater use of the forest for recreational purposes, and the greater proportion of cut-over lands and young stands. These factors have been, in many countries, definitely estimated through the rates on forest insurance. Thus, the completion of an automobile-road through forest property increases the base rate from 13 to 40

per cent. If the property is situated near a large centre of population, the rate is increased 13 to 66 per cent.; if a fishing-stream runs through the property, 13 to 26 per cent. The rate also increases as the stand recedes from maturity and, during the first fifteen years, is as much as four times that for mature timber.

In spite of the greater industrial activity and the much heavier tourist travel in British Columbia, man-caused fires show a decided decrease. Comparing years of severe hazard, we find that in 1922 we had 1,709 fires definitely assigned to human causes; in 1924, 1,630; in 1925, 1,655; in 1926, 1,434; in 1929, 1,514; and in 1930, 1,354.

The decline in industrial fires is more definitely marked. In 1922 there were 203; in 1923, 170; in 1924, 134; in 1925, 137; in 1926, 104; in 1927, 50; in 1928, 80; in 1929, 65; and in 1930, 39.

It is a fact recognized by meteorologists that weather moves in cycles of relatively wet and dry periods. These cycles have been traced backward through weather records, through fire-scars and the date of establishment of young stands following fire, and through a study of rates of growth of trees for several hundred years. The cycles vary from ten to forty years in duration, and from records made at Spokane it would seem that on the Pacific Coast we are now passing through the driest period of the most severe cycle that has occurred in the past 250 years. Further proof of this fact is indicated by the drying-up of lake areas and the scarcity of water on our interior plateaus, and by the increasing severity of lightning-fires as shown by the following figures: In 1922 there were 246 lightning-fires; in 1923, 274; in 1925, 632; in 1926, 577; in 1928, 322; in 1929, 638; and in 1930, 892. This increasing hazard makes comparison with past years doubtful, if not unreliable.

The League of Industrial Democracy of New York has recently published a bulletin on "The Social Management of American Forests." In this bulletin they give the results of forest protection on the Federal reserves *vs.* private holdings, where protection is only partially organized or no protection is undertaken. In the United States reserves, where the expenditure has been 3 to 4 cents per acre of gross area, they point out that the average area burned annually has been reduced to 0.28 per cent. of the acreage patrolled, while in the areas without protection it has averaged 8 per cent. of the area, or thirty times as great. In British Columbia we have spent over the past five years about 1 cent per gross acre patrolled, and have been able to keep the losses down to 0.38 per cent. of the gross area, or 0.5 per cent. of the productive timber area.

During the decade 1913–22, 35.9 per cent. of the fires occurring reached major proportions, i.e., fires over 10 acres. With the increased expenditure and in spite of a greatly increased number of fires, we have been able to reduce this percentage of major fires to 24 per cent. in 1929 and 25 per cent. in 1930. Had we only maintained the same efficiency as prior to 1922, some 250 additional fires would have reached major proportions, and, on the basis of the average acreage burned per major fire, an additional 350,000 acres would have been destroyed per year. No one can review these statistics without coming to the conclusion that the annual loss, without forest protection, in British Columbia would increase to several million dollars per year, and that the increased appropriations made available from time to time have been responsible for saving many times that amount in property.

The season as compared with others may be indicated by a series of index numbers. The average of the past nine years is used as the index 100. Major factors in the fire season are shown in relation to this 100, and each year's statistics are then represented as percentages. Any year may be compared with any other year, the small numbers being readily comprehended. The first column gives the basis for the subsequent calculations for number of fires, cost of fire-fighting, gross area burned over, and gross damage done. From this it will readily be seen that 1930 was a year of rather high fire-occurrence, high cost, moderate acreage, but considerable damage. Altogether, it would appear that the season was one verging on the extreme in hazard, closely resembling 1926.

Base, 100; 9-year Average.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.
Number of fires, 2,038	127	75	107	124	107	63	80	107	111
Cost of control, $347,380	147	22	74	187	148	24	22	142	134
Area burned over, 614,700 acres	255	25	65	166	107	17	17	148	98
Damage done, $1,319,740	168	52	91	208	127	16	15	88	132

Fire Detection.

A new steel lookout tower 80 feet high, with enclosed observation tower, was erected near Courtenay, on Vancouver Island. Two temporary lookout points were established in the near vicinity, one at Bainbridge Mountain near Alberni and the other at Rosewall Mountain near Deep Bay. These three points co-ordinate well with each other and with other points previously established.

Standard lookout buildings were built on Pocohontas Mountain and Upper Campbell Lake sites in Vancouver District; at McBride Mountain and Tsinkut Mountain in the Prince George District; and on Mount Glory in the Southern Interior District. Temporary lookouts were partially developed at Thompson Mountain near Creston in the Southern Interior; Tumtum Mountain, Hellroar Peak, Mount McLennan, and Raft River Peak in the Kamloops District; and at Deadman's Peak in the Cariboo District.

Further experiments were made with wireless communication from Campbell River Lookout, but we are not yet satisfied that an entire success has been achieved. Aeroplane patrol was again carried out in the Kootenay, Trout and Arrow Lakes section during the hazardous season from June 15th to September 15th.

Hazard Reduction.

The fall of 1930 was not so favourable for slash-burning as some previous seasons, but nevertheless intentional slash fires to reduce the hazard were set and a total of 8,159 acres was satisfactorily burned over. Permits issued during the close season covered a further acreage of 4,084 and accidental fires accounted for 15,904 acres. The grand total acreage upon which slash was destroyed thus amounted to 28,147 acres.

Comment must again be made upon the satisfactory co-operation of the Public Works Department in disposing of slash along highways. Railway right-of-way burning was extensively carried out in all parts of the Province.

Fire occurrences by Months, 1930.

District.	March.	April.	May.	June.	July.	August.	September.	October.	Total.
Cariboo	....	6	42	7	63	51	15	....	184
Kamloops	....	1	5	17	84	20	13	....	140
Fort George	....	10	47	15	99	101	20	1	293
Prince Rupert	....	18	75	16	46	38	17	....	210
Southern Interior	1	30	33	60	304	386	87	2	903
Vancouver	....	4	60	32	172	152	120	1	541
Total	1	69	262	147	768	748	272	4	2,271
Per cent	0.4	3.04	11.54	6.47	33.82	32.94	11.98	0.17	100.00
Dominion Railway Belt	....	3	27	17	177	172	46	2	444
Per cent	....	0.68	6.08	3.83	39.86	38.74	10.36	0.45	100.00

Number and Causes of Fires in Province, 1930.

Forest District.	Lightning.	Campers.	Railway Operation.	Railways under Construction.	Smokers.	Brush-burning not Railway-clearing.	Public Road-construction.	Industrial Operations.	Incendiary.	Miscellaneous (Known Causes).	Unknown Causes.	Total.	Per Cent. of Total Fires in Province.
Cariboo	50	39	..	....	17	12	3	....	54	2	7	184	8.10
Kamloops	107	7	2	....	7	5	4	....	3	3	2	140	6.17
Fort George	55	65	6	....	20	38	3	....	92	4	10	293	12.90
Prince Rupert	30	58	..	....	26	49	3	5	35	2	2	210	9.25
Southern Interior	529	68	112	....	114	29	4	3	28	16	..	903	39.76
Vancouver	121	107	29	....	110	38	12	31	50	41	2	541	23.82
Totals	892	344	149	....	294	171	29	39	262	68	23	2,271	100.00
Per cent	39.28	15.15	6.56	....	12.95	7.53	1.27	1.72	11.54	2.99	1.01	100.00	....
Dominion Railway Belt	132	32	81	....	59	20	1	10	90	6	13	444	....
Per cent	29.73	7.21	18.25	....	13.29	4.50	0.22	2.25	20.27	1.35	2.93	100.00	....

FIRES, 1930, CLASSIFIED BY PLACE OR ORIGIN AND COST OF FIRE-FIGHTING.

Forest District.	Total Fires.	Originated on Vacant Crown Land and Lands paying F.P. Tax.	Originated on Lands not paying F.P. Tax.	Extinguished without Cost.			Cost Money to extinguish.								Total Cost of fighting Fire.		Average Cost per Fire.
				No.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in Province.	No.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in Province.	Cost less than $100.	Cost $100 to $1,000.	Cost $1,000 to $5,000.	Cost $5,000 to $10,000.	Cost over $10,000.	Dollars.	Per Cent. of Total spent in fighting Fires in Province.	Dollars.
Cariboo	184	148	36	106	57.61	4.66	78	42.39	3.43	54	20	3	1	....	26,171.56	5.64	142.23
Kamloops	140	109	31	71	50.71	3.13	69	49.29	3.04	54	13	2	....	....	8,818.22	1.90	62.98
Fort George	293	164	129	109	37.30	4.80	184	62.80	8.10	123	53	8	....	....	39,531.04	8.51	134.91
Prince Rupert	210	96	114	102	48.57	4.49	108	51.43	4.76	59	37	8	2	2	73,928.69	15.92	352.04
Southern Interior	903	726	177	274	30.34	12.07	629	69.66	27.70	399	168	56	4	2	244,387.08	52.61	270.63
Vancouver	541	250	291	221	40.85	9.73	320	59.15	14.09	220	78	16	6	....	71,619.23	15.42	132.38
Totals	2,271	1,493	778	883	....	38.88	1,388	....	61.12	909	369	93	13	4	464,455.82	100.00	204.51
Per cent	100.00	65.74	34.26	38.88	....	....	61.12	....	....	40.03	16.25	4.09	0.57	0.18	.....	....	.....
Totals, 1929	2,188	1,192	996	831	....	37.97	1.357	....	62.03	947	279	111	9	11	492,581.68	100.00	225.12
Per cent	100.00	54.48	45.52	37.97	....	....	62.03	....	....	42.28	12.76	5.08	0.41	0.50	.....	....	.....
Totals, 1928	1,642	878	764	794	....	48.36	848	....	57.64	663	163	21	1	....	73,939.02	100.00	45.08
Per cent	100.00	53.47	46.53	48.36	....	...	51.64	....	....	40.38	9.92	1.28	0.06	....	.....	....	.....
Dominion Railway Belt	444	.....	.....	175	....	....	269	....	....	174	73	21	1	....	73,819.00	....	.....

Cost to Forest Branch $464,455.82; cost to other parties $34,029.16.

Fires, 1930, classified by Size and Damage.

Forest District.	Total Fires.		Under ¼ Acre.			¼ Acre to 10 Acres.			Over 10 Acres in Extent.			Damage.		
	No.	Per Cent. of Total Fires in Province.	No.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in this Class.	No.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in this Class.	No.	Per Cent. of Total Fires in District.	Per Cent. of Total Fires in this Class.	Under $100.	Between $100 and $1,000.	Over $1,000.
Cariboo	184	8.10	50	27.17	5.13	36	19.57	4.97	98	53.26	17.07	160	20	4
Kamloops	140	6.17	83	59.29	8.53	36	25.71	4.97	21	15.00	3.66	127	9	4
Fort George	293	12.90	97	33.11	9.97	110	37.54	15.19	86	29.35	14.98	249	33	11
Prince Rupert	210	9.25	64	30.48	6.58	68	32.38	9.40	78	37.14	13.59	161	32	17
Southern Interior	903	39.76	385	42.64	39.57	324	35.88	44.75	194	21.48	33.80	808	70	25
Vancouver	541	23.82	294	54.34	30.22	150	27.73	20.72	97	17.93	16.90	509	22	10
Totals	2,271	100.0	973	....	100.0	724	....	100.0	574	....	100.0	2,014	186	71
Per cent.	100.0	....	42.85	....	...	31.88	....	....	25.27	....	....	88.68	8.19	3.13
Totals, 1929	2,188	100.0	908	....	100.0	753	....	100.0	527	....	100.0	1,918	144	126
Per cent.	100.0	....	41.50	....	...	34.41	....	....	24.09	....	....	87.67	6.58	5.75
Totals, 1928	1,642	100.0	808	....	100.0	564	....	100.0	270	....	100.0	1,508	102	32
Per cent.	100.0	....	49.20	....	...	34.35	...	....	16.45	....	....	91.84	6.21	1.95
Dominion Railway Belt	444	....	166	37.39	....	180	40.54	....	98	22.07	....	349	73	22

Damage to Property other than Forests, 1930.

Forest District.	Forest Products in Process of Manufacture.	Buildings.	Railway and Logging Equipment.	Miscellaneous.	Total.	Per Cent. of Total.
Cariboo	$ 180	$ 725	$ 25	$1,695	$ 2,625	0.78
Kamloops	6,010	1,256	.....	20	7,286	2.15
Fort George	17	1,506	.....	.....	1,523	0.46
Prince Rupert	6,318	10,610	4,600	1,549	23,077	6.83
Southern Interior	3,088	17,592	26,626	1,732	49,038	14.51
Vancouver	129,034	75,015	49,025	1,286	254,360	75.27
Totals	$144,647	$106,704	$80,276	$6,282	$337,909	100.00
Dominion Railway Belt	.....	.....	.....	.....	$105,130	.....

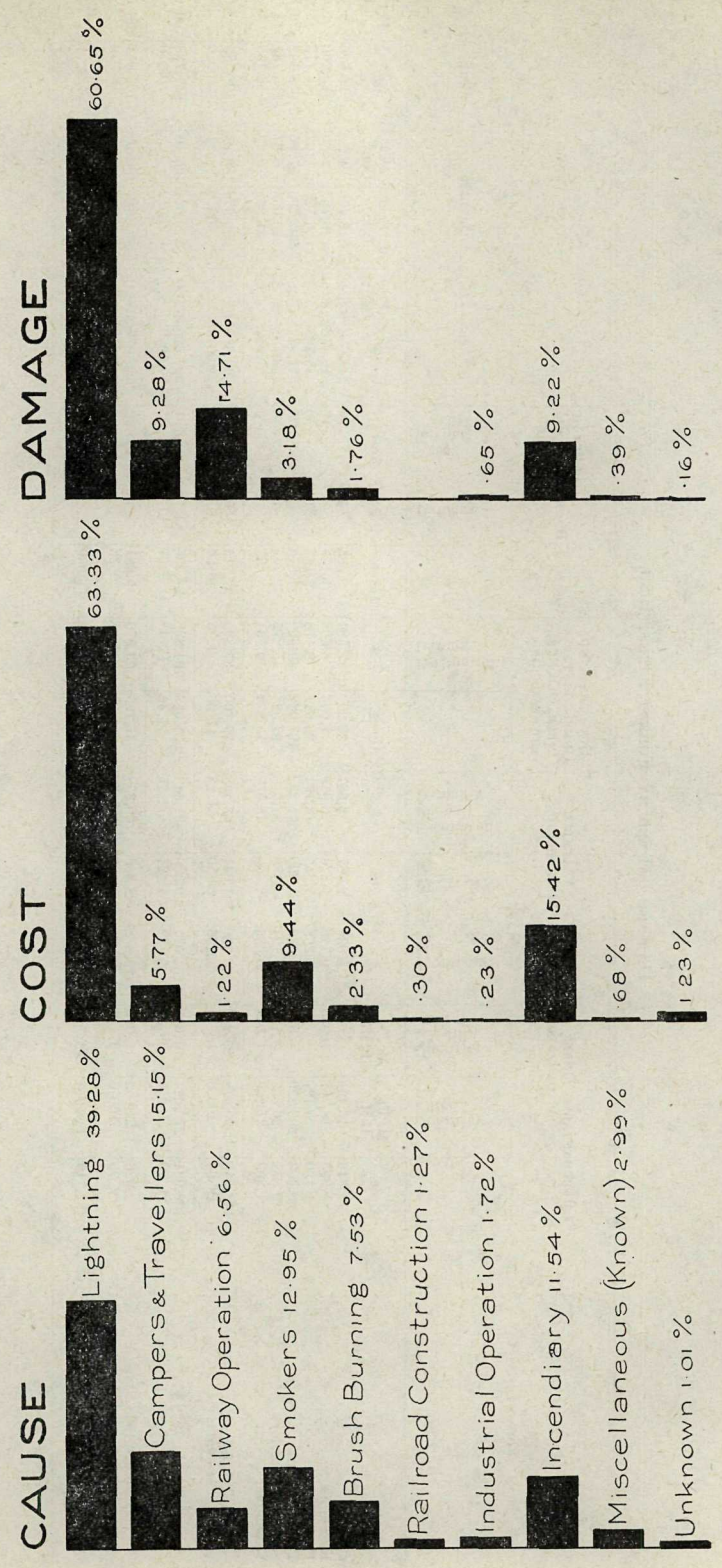
Causes, Cost, and Damage, 1930.

	No.	Cost.	Damage.
Lightning	892	$294,173	$1,058,893
Campers	344	26,783	161,853
Railways operating	149	5,673	256,738
Smokers	294	44,095	55,557
Brush-burning, not railway-clearing	171	10,818	30,609
Road, power, telephone, and telegraph	29	1,410	693
Industrial operations, logging, etc.	39	1,061	11,328
Incendiary	262	71,611	160,873
Miscellaneous known causes	68	3,154	6,777
Unknown causes	23	5,678	2,771
Totals	2,271	$464,456	$1,746,092

Damage caused by Forest Fires, 1930.

Forest District.	Merchantable Timber destroyed or damaged.				Valuable Reproduction.		Cut-over Land, Unmerchantable Timber, Old Burn, not restocking.		Grazing Range.		Area of Slash burned.	Grand Totals.					
	Area.	Quantity killed.	Quantity salvable.	Net Stumpage Loss.	Area.	Estimated Present Damage.	Area.	Estimated Damage.	Area.	Damage.	Area burned.	Area.		Quantity.		Damage.	
	Acres.	M. Ft. B.M.	M. Ft. B.M.	$	Acres.	$	Acres.	$	Acres.	$	Acres.	Acres.	Per Cent.	M. Feet B.M.	Per Cent.	$	Per Cent.
Cariboo	1,816	16,495	10	18,095	2,087	3,587	36,200	17,584	8,585	410	70	48,758	8.09	16,495	4.22	39,676	2.81
Kamloops	1,295	18,767	9,035	9,719	5,224	6,918	7,663	6,622	1,149	7	117	15,448	2.56	18,767	4.80	23,266	1.66
Fort George	1,150	5,127	8	4,268	15,245	43,194	25,641	8,178	2,767	133	500	45,303	7.52	5,127	1.32	55,773	3.96
Prince Rupert	96,909	303,290	5,925	417,039	81,896	611,252	107,002	49,600	21,876	251	3,806	311,489	51.68	303,290	77.56	1,078,142	76.56
Southern Interior	9,831	26,063	4,173	27,194	40,489	82,510	97,324	45,275	2,745	152	3,346	153,735	25.51	26,063	6.67	155,131	11.02
Vancouver	1,309	21,236	6,065	30,065	2,700	15,977	15,270	10,134	593	19	8,070	27,942	4.64	21,236	5.43	56,195	3.99
Totals	112,310	390,978	25,216	506,380	147,641	763,438	289,100	137,393	37,715	972	15,909	602,675	100.0	390,978	100.0	1,408,183	100.0
Per cent	18.64	100.0	6.44	35.96	24.50	54.23	47.96	9.75	6.26	0.06	2.64	100.0	.....	100.0	.....	100.0	.....
Totals, 1929	100,961	272,024	107,649	284,571	229,309	491,043	531,653	164,336	32,536	1,788	15,161	909,620	100.0	272,024	100.0	941,738	100.0
Per cent	11.10	100.0	39.35	30.22	25.21	52.15	58.45	17.45	3.57	0.18	1.67	100.0	.....	100.0	.....	100.0	.....
Totals, 1928	2,926	24,069	9,060	18,578	28,836	60,358	47,139	23,570	9,984	495	18,092	106,977	100.0	24,069	100.0	103,001	100.0
Per cent	2.73	100.0	37.64	18.04	26.96	58.60	44.07	22.88	9.33	0.48	16.92	100.0	.....	100.0	.....	100.0	.....
Dominion Railway Belt	32,715	143,086	32,714	394,483	15,923	62,663	5,493	.....	8,900	.....	.....	.....	.....	.....	.....	.....	.....

FOREST FIRES, 1930.



Comparison of Damage caused by Forest Fires in the Last Ten Years.

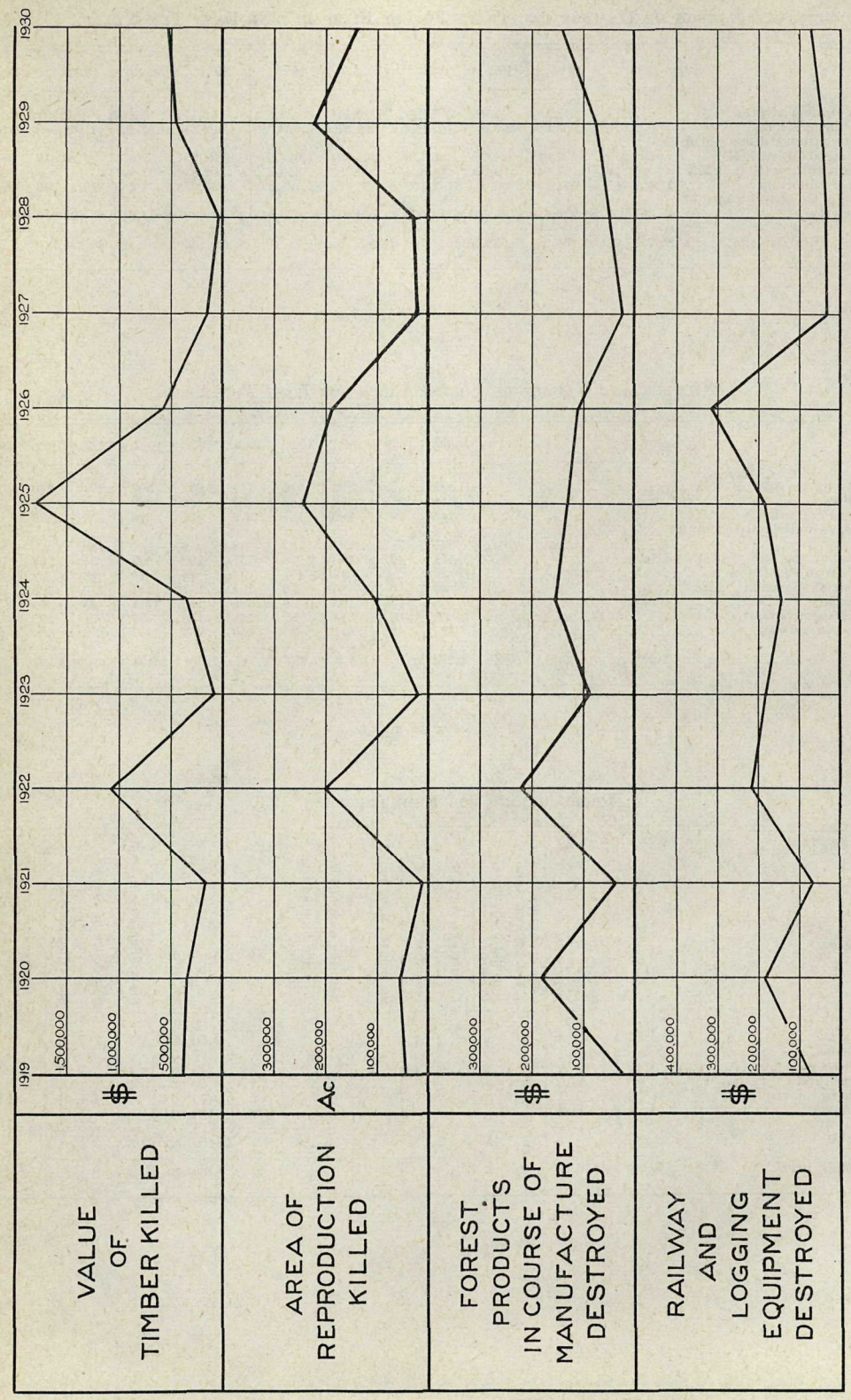
	1930.	1929.	1928.	1927.	1926.	1925.	1924.	1923.	1922.	1921.
Total number of fires	2,271	2,188	1,642	1,284	2,147	2,521	2,174	1,530	2,591	1,330
Area burned (acres)	602,675	909,620	106,977	101,944	659,871	1,023,789	402,214	157,601	1,568,585	145,838
Standing timber destroyed or damaged (M. ft. B.M.)	390,978	272,024	24,069	86,176	398,694	1,024,508	207,651	87,371	729,941	68,476
Amount salvable (M. ft. B. M.)	25,216	107,049	9,060	44,834	109,385	350,770	102,832	37,891	117,006	39,553
Damage to forests	$1,408,183	$ 941,738	$103,001	$141,102	$ 930,373	$2,121,672	$ 665,078	$ 74,238	$1,531,300	$ 97,332
Damage to other forms of property	$ 337,909	$ 226,919	$ 95,534	$ 74,606	$ 749,891	$ 625,518	$ 540,291	$617,649	$ 693,016	$195,221
Total damage	$1,746,092	$1,168,657	$198,535	$215,708	$1,680,264	$2,747,190	$1,205,369	$691,887	$2,224,316	$292,553

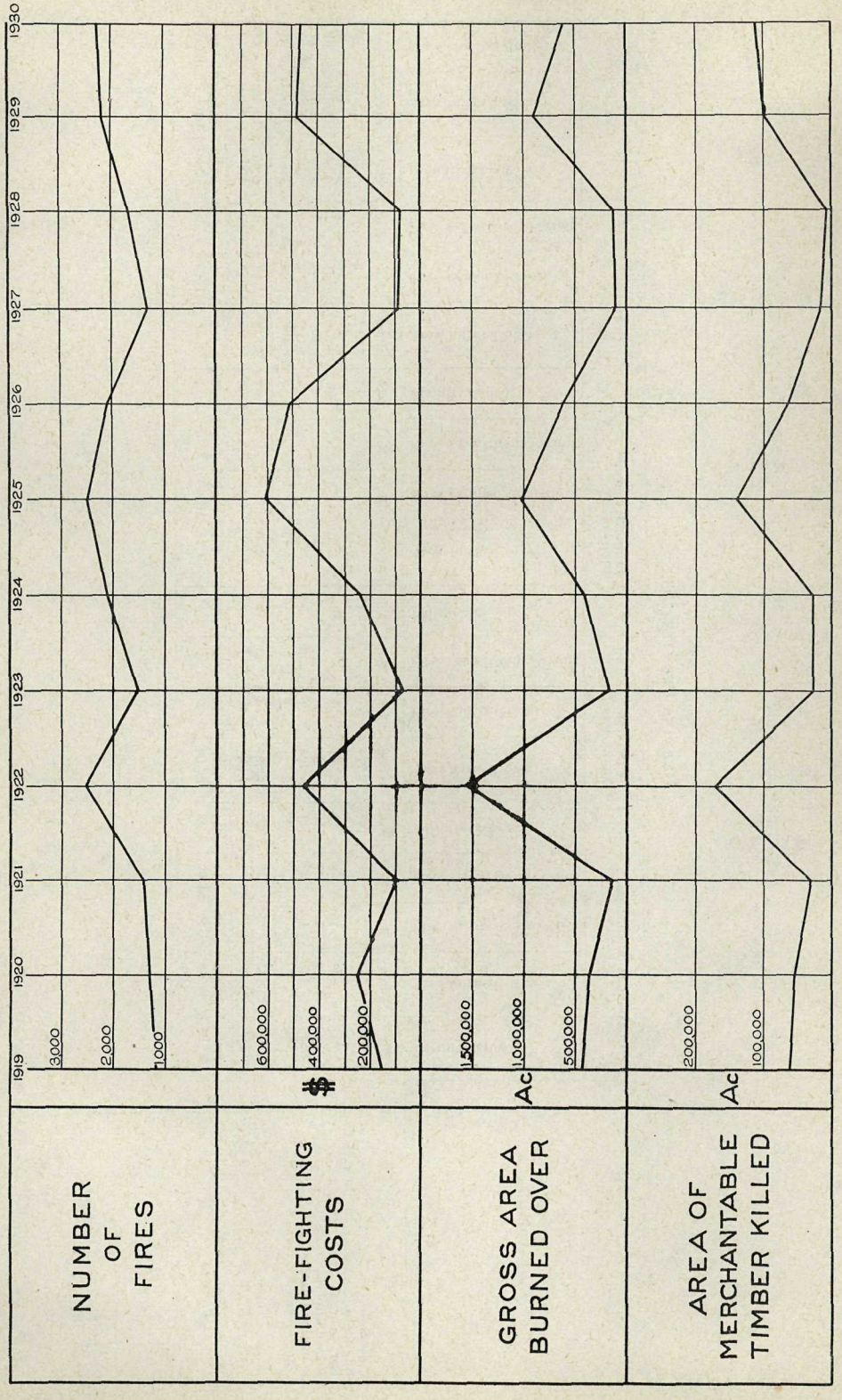
Number and Causes of Forest Fires for Last Ten Years.

Causes.	1930.	1929.	1928.	1927.	1926.	1925.	1924.	1923.	1922.	1921.
Lightning	892	638	322	512	557	632	307	274	246	164
Campers	344	358	274	182	351	426	382	262	626	308
Railway operation	149	267	282	185	376	337	328	199	332	283
Railways under construction	...	9	....	....	....	....	....	....	....	2
Smokers	294	387	294	163	238	286	302	180	....	...
Brush-burning (not railway-clearing)	171	167	149	78	157	202	243	154	355	136
Public road-construction	29	22	13	7	14	14	19	12	22	20
Industrial operations	39	65	80	50	104	137	134	170	203	119
Incendiary	262	139	103	36	68	103	115	35	69	40
Miscellaneous known	68	100	84	52	126	150	107	71	202	64
Unknown causes	23	36	41	19	156	234	237	173	536	204
Totals	2,271	2,188	1,642	1,284	2,147	2,521	2,174	1,530	2,591	1,330

Prosecutions for Fire Trespass, 1930.

Forest District.	Information laid.	Contravention of Section 98 of "Forest Act."	Contravention of Section 95 of "Forest Act."	Contravention of Section 114 of "Forest Act."	Burning without Permit.	Failure to report Fire.	Incendiary.	Section 415-B, Criminal Code.	Refusing to fight Fire.	Stealing Supplies from Fire Line.	Fines.		Served Sentence in Gaol.	Suspended Sentence.	Cases dismissed.	Cases pending.	Cases withdrawn.
											No.	Amount.					
Cariboo	5	..	4	1	..	..	..	..	..	..	4	$100 00	1	..	..	..	..
Kamloops	..	..	..	..	..	..	..	..	..	..	..	.....	..	..	..	..	..
Fort George	10	..	..	..	8	..	1	1	..	..	8	275 00	1	..	1	..	..
Prince Rupert	5	..	..	..	4	..	1	..	..	..	2	50 00	1	2	..	.	..
Southern Interior	6	..	1	..	3	..	..	..	1	1	3	75 00		1	1	..	1
Vancouver	4	..	4	..	..	..	..	..	..		4	100 00	..	..	..	..	..
Totals	30	..	9	1	15	..	2	1	1	1	21	$600 00	3	3	2	..	1
Totals, 1929	28	1	5	2	8	1	..	..	10	1	17	$460 00	5	2	2	2	..


VALUE OF TIMBER KILLED
$
1,500,000
1,000,000
500,000
AREA OF REPRODUCTION KILLED
Ac
300,000
200,000
100,000
FOREST PRODUCTS IN COURSE OF MANUFACTURE DESTROYED
$
300,000
200,000
100,000
RAILWAY AND LOGGING EQUIPMENT DESTROYED
$
400,000
300,000
200,000
100,000
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930


NUMBER OF FIRES
3,000
2,000
1,000
FIRE-FIGHTING COSTS
$
600,000
400,000
200,000
GROSS AREA BURNED OVER
Ac
1,500,000
1,000,000
500,000
AREA OF MERCHANTABLE TIMBER KILLED
Ac
200,000
100,000
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930

Burning Permits, 1930.

Forest District.	Clearing Agricultural Land.				Clearing Logging-slash.				Clearing Railway Right-of-way.				Clearing Public Roads.				Grand Totals.			
	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permit.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permit.
	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Acres.	No.	No.
Cariboo	547	2,653	5	5	147	274	....	....	11	77	....	....	33	3,312	3	....	738	6,316	8	5
Kamloops	381	717	5	....	8	13	....	...	9	....	....	....	20	66	4	....	418	796	9	....
Fort George	1,647	4,598	15	8	19	51	2	....	6	32	3	....	67	234	1	1	1,739	4,915	21	9
Prince Rupert	882	1,712	15	7	19	49	...	....	5	112	....	....	24	104	2	1	930	1,977	17	8
Southern Interior	1,839	7,185	10	19	14	126	....	3	58	....	....	....	68	1,009	2	2	1,979	8,320	12	24
Vancouver	2,720	6,280	17	6	51	3,571	2	....	16	45	1	....	70	108	2	....	2,857	10,004	22	6
Totals	8,016	23,145	67	45	258	4,084	4	3	105	266	4	....	282	4,833	14	4	8,661	32,328	89	52
Per cent	92.56	71.60	75.29	86 54	2.97	12.63	4.49	5.77	1.22	0.82	4.49	....	3.25	14.95	15.73	7.69	100.0	100.0	100.0	100.0
Totals, 1929	8,400	22,235	46	11	254	11,225	17	1	79	101	8	1	295	1,465	9	....	9,028	35,026	80	13
Per cent	93.04	63.48	57.50	84 60	2.82	32.06	21.25	7.70	0.87	0.28	10.00	7.70	3.27	4.18	11.25	....	100.0	100.0	100.0	100.0

EQUIPMENT, IMPROVEMENTS, AND MAINTENANCE.

CARIBOO.

Equipment—	
One canoe	$194.00
One 20-foot boat	363.00
Two outboard motors	472.00
Four 10-men cooking outfits	131.00
Four hand-tank pumps	53.00
Three Ford cars	2,280.00
One Chevrolet car	842.00
Fire-fighting hose, etc.	406.00
Tools and equipment, etc.	270.00
	$5,011.00
Improvements—	
Strathnaver Trail	$361.00
Alexis Creek Ranger Station House	3,670.00
	$4,031.00
Maintenance	
Quesnel Lake Boat-house	$124.00
Lac la Hache Camp-site	30.00
Miscellaneous	109.00
	$263.00

KAMLOOPS.

Equipment—	
Two Ford cars	$1,515.00
One power-speeder	327.00
Three canoes	385.00
One outboard motor	282.00
One 20-foot boat	268.00
One "Flato" boat	72.00
Two fire-fighting pumps	620.00
Twelve hand-tank pumps	222.00
Ten 6-men cooking outfits	243.00
Fire-fighting hose	308.00
Tools and equipment, etc.	599.00
	$4,841.00
Improvements—	
Grizzly Mountain–Grizzly Lake Trail	$2,005.00
Grizzly Lake–Moira Lake Trail	40.00
Sock Lake–Grizzly Lake Trail	311.00
Coldscaur Lake–Moira Lake Trail	1,049.00
Tumtum Mountain Lookout Phone-line	489.00
Tumtum Creek–Adams River Trail	1,183.00
Mount McLennan Lookout	1,251.00
Centre Ridge Trail	112.00
Hell Roar Peak Lookout	173.00
Cedar Creek Boat-house	77.00
Blue River Speeder-house and Tool-cache	238.00
Canoe River Boat-house	63.00
Raft River Peak Trail	76.00
Little Clearwater–Centre Ridge Phone-line	835.00
Swift Creek Lookout	14.00
Centre Ridge Lookout	96.00
	$8,012.00

KAMLOOPS—*Continued.*

Maintenance—	
Seymour River Bridge	$74.00
Fishtrap Creek Trail	91.00
Poison Hill–McLure Trail	105.00
Parky Lake–Hoover Lake Trail	110.00
Powder Creek Trail	152.00
Peterson Creek Trail	153.00
North Barriere Lake–Adams Lake Trail	72.00
Murtle River Trail	487.00
Clearwater Lake–Hobson Lake Trail	56.00
Blue River–Murtle Lake Trail	30.00
Adams River–Tumtum Lake Trail	76.00
Canoe River Trail	100.00
Clearwater Lake–Mahood Lake Trail	325.00
North Thompson–Columbia River Trail	93.00
North Barriere Lake–Adams Lake Trail	511.00
Barton Creek Trail	24.00
Seymour River East Trail	108.00
Adams River Wagon-road	456.00
Garnet Mountain Lookout Trail	36.00
Big Bend Phone-line	40.00
Miscellaneous	108.00
	$3,207.00

FORT GEORGE.

Equipment—	
One Chevrolet car	$841.00
Two outboard motors	447.00
One fire-fighting pump	368.00
One boat	50.00
Fire-fighting hose	632.00
Twenty 6–10–25-men cooking outfits	675.00
Tools and equipment, etc.	1,719.00
	$4,732.00
Improvements—	
27½ miles of trail	$4,035.00
Fort St. James Boat-house and Ways	698.00
Fort Fraser Lookout Cabin	105.00
Longworth Lookout Cabin	57.00
McBride Lookout Cabin	1,462.00
Pilot Mountain Lookout Cabin	108.00
Tsinkut Mountain Lookout Cabin	1,295.00
Fort Fraser Lookout Phone-line	219.00
Longworth Lookout Phone-line	172.00
McBride Lookout Phone-line	293.00
Tsinkut Mountain Lookout Phone-line	500.00
Longworth Tool-cache	64.00
Pilot Mountain Tool-cache	66.00
Stuart Lake Breakwater	1,364.00
Miscellaneous	40.00
	$10,478.00

FORT GEORGE—*Continued.*

Maintenance—	
190¼ miles of trail	$2,093.00
Fort St. James Boat-house	73.00
Fort Fraser Garage and Tool-house	123.00
Fort Fraser Ranger House	391.00
Fort Fraser Ranger Office	29.00
Red Mountain Ranger Station House	93.00
Giscome Speeder-house and Tool-cache	34.00
Goat River Speeder-house and Tool-cache	30.00
Moxley Creek Speeder-house and Tool-cache	24.00
Red Mountain Speeder-house and Tool-cache	51.00
Pilot Mountain Lookout Phone-line	287.00
Miscellaneous	86.00
	$3,314.00

PRINCE RUPERT.

Equipment—	
Four Ford cars	$2,961.00
One 20-foot boat	268.00
One outboard motor	287.00
Fire-fighting hose	174.00
Fire-fighting tools and equipment	767.00
	$4,457.00
Improvements—	
Fire-line construction	$827.00
Babine Phone-line	2,222.00
Hose-drying mast	42.00
Francois Lake Ranger Station House	1,500.00
	$4,591.00
Maintenance—	
Ootsa Lake Boat-house	$161.00
Thornhill Mountain Lookout	132.00
Skin Lake Lookout	42.00
Miscellaneous	237.00
	$572.00

SOUTHERN INTERIOR.

Equipment—	
Eleven Ford cars	$7,554.00
One Chevrolet car	835.00
Five fire-fighting pumps	1,731.00
One outboard motor	197.00
Forty hand-tank pumps	530.00
Seventy-one 6–10–25-men cooking outfits	2,344.00
Fire-fighting hose	2,311.00
Four horses	135.00
Fire-fighting tools and equipment, etc.	9,596.00
	$25,233.00

SOUTHERN INTERIOR—*Continued.*

Improvements—	
64½ miles of trail	$5,822.00
Duncan River Phone-line	1,457.00
Little Slocan Phone-line	365.00
Mount Glory Lookout	1,736.00
Saddle Mountain Phone-line	673.00
Livingstone Mountain Phone-line	801.00
Flathead Phone-line	1,911.00
Thompson Mountain Lookout	91.00
Gold Creek Phone-line	1,292.00
Gold Creek Ranger Station Cabin	17.00
Bridge Creek Cabin	382.00
Ward Creek Cabin	82.00
Caven Creek Lookout Phone-line	469.00
	$15,098.00
Maintenance—	
837 miles of trail	$5,739.00
Elk Valley Phone-line	309.00
Reno Lookout and Phone-line	83.00
Wigwam Phone-line	366.00
Moyie Mountain Phone-line	594.00
Summit Creek Phone-line	32.00
Duncan River Phone-line	32.00
Johnson's Landing–Lardeau Phone-line	35.00
Beaver Mountain Lookout and Phone-line	155.00
Siwash Mountain Lookout and Phone-line	135.00
Elise Mountain Lookout and Phone-line	146.00
Erie Camp-site	20.00
South Fork Camp-site	57.00
Mount Glory Phone-line	111.00
Wilson Creek Phone-line	79.00
Kettle Valley Phone-line	52.00
Phoenix Phone-line	342.00
Baldy Mountain Lookout and Phone-line	123.00
Goat Mountain Lookout and Phone-line	96.00
White Rocks Lookout Phone-line	61.00
B.X. Lookout Phone-line	32.00
Sugar Mountain Phone-line	99.00
Little White Mountain Phone-line	25.00
Snow Mountain Phone-line	20.00
B.X. Mountain Lookout	25.00
Miscellaneous	184.00
	$8,953.00

VANCOUVER.

Equipment—	
Five Ford cars	$3,565.00
Three fire-fighting pumps	1,106.00
Twelve hand-tank pumps	268.00
One Gypsy cruiser and outboard motor	500.00
Fire-fighting tools and equipment	1,129.00
	$6,568.00

VANCOUVER—*Continued.*

Improvements—	
Campbell River Bungalow	$4,569.00
Rosewall Lookout	214.00
Pocohontas Lookout	1,267.00
Campbell Lake Lookout	1,225.00
Bainbridge Lookout	737.00
Comox Lookout	664.00
Harrison–Stave Trail	436.00
Pitt River Phone-line	17.00
Forest Reserve Trails	1,478.00
	$10,607.00
Maintenance—	
Nitinat–Cowichan Trail	$161.00
Cowichan Lake Look-out	153.00
Cowichan Lake Boat-house	22.00
Miscellaneous	109.00
	$445.00

GRAZING.

In co-operation with the British Columbia Beef Cattle Growers' Association and the British Columbia Sheep-breeders' Association, the Chief Forester conducted, during the summer, a series of open meetings throughout the grazing sections of the Province in order to get a better understanding of the problems facing the stockmen. The minutes of the meetings were reviewed and a special report prepared, with recommendations. These will, we feel, materially assist in the development of the stock business and remove the causes of friction which have existed heretofore. We appreciate the co-operation and assistance given by the Beef Cattle Growers' Association and the Sheep-breeders' Association in this matter.

GENERAL RANGE CONDITIONS.

In general, the grazing ranges of the Interior of the Province were in a little better condition during 1930 than during the previous year. Late spring rains assisted the growth on the low range. The absence of early and midsummer rains resulted in the early maturing of the grasses and forced the cattle on to the higher ranges. The latter are usually in better condition for grazing when dry summer conditions prevail. All live stock, consequently, came off the ranges in the fall in good wintering condition.

As usual, the live-stock interests pay little attention to the protection of the Government ranges, and it will be necessary, in order that the overgrazed condition be remedied, for the Government to require that better management be practised.

MARKET CONDITIONS.

Market conditions in the live-stock industry of British Columbia were, during 1930, classed generally as "bad." A rather sudden drop took place in prices in the late spring and those who were not fortunate enough to prepare for and take advantage of the early good prices had to sell on a dropping market. Prices now are a little higher than those prevailing prior to the higher prices of the last few years. Choice cattle selling at $9.50 per 100 lb. a year ago are now going at $6.50 per 100 lb. Choice lambs brought $11.50 per 100 lb. a year ago. They are now selling at $7.25 per 100 lb.

AUTHORIZATION.

The numbers of live stock authorized to graze within the various grazing districts during 1930 are as follows: 70,000 cattle and horses and 37,500 sheep. This number will be considerably increased for the 1931 season because of a heavy increase in sheep-grazing on the higher ranges and the return of the Railway Belt to the Province. It is anticipated that around 80,000 cattle and horses and 50,000 sheep will use the Provincial ranges under permit in 1931.

Co-operation.

Live Stock Associations gave better co-operation during the past year. Competition between cattle and sheep interests in the use of the range influenced this to a certain extent. Range-division problems were all satisfactorily adjusted.

Range Improvements.

The range-improvement programme for 1930 has been practically completed. The few remaining projects will be completed before the close of the fiscal year.

The following list of range-improvement projects was undertaken during the 1930–31 fiscal year:—

Mud-holes	14
Drift-fences	11
Stock-trails	11
Breeding-pastures	4
Holding-grounds	2
Corrals	2
Water developments	5
Experimental plots	1
Bridges	3
Total	53

The total amount allotted for this work was $5,552.90.

Predatory Animals.

Considerable damage was done by bears, both grizzly and black, to the sheep flocks using the high ranges. They were also responsible for losses among young calves. Sheep and Cattle Associations placed the matter before the Game Commissioner, who arranged for hunters to destroy these animals where deemed necessary.

Wild Horses.

The elimination of wild horses from the Provincial ranges is being continued. Throughout the Southern Interior and the Cariboo Districts work resulted in the destruction of 721 stallions, cripples, and otherwise defective wild horses on the ranges. Buyers were interested in purchasing the better horses belonging to whites and Indians and over 2,000 head were shipped out of the country south of the Railway Belt. Sales are still being made.

Arrangements have been made to get rid of a large number of horses from the Cariboo District this winter.

Grasshoppers.

The passing of the "Grasshopper-control Act" of 1930 enabled the ranchers to co-operate to advantage in poisoning operations where the grasshopper was menacing crops and forage on private and Government range. Effective work was done on the ranges in the Nicola District by the stockmen, and applications have been filed with the Department of Agriculture for the creation in 1931 of four new grasshopper-control districts, in the Cariboo Grazing District, embracing large areas of the Provincial grazing lands.

General.

The heavy demand for high range for sheep called for the expenditure of much time in the opening-up of trails or driveways to reach it. This demand will probably grow with the years until all of the high ranges suited to both sheep and cattle will be in use.

Cattle, in some instances, are being grazed at elevations of 6,500 feet and up to 8,000 feet. With a little herding and the proper use of artificial salt they can be broken to use these high ranges. They thrive excellently and beef comes off these ranges in the best grass condition. This use is being encouraged by the Department as it relieves the low, overgrazed areas.

While the depression period lasts it is not likely there will be any increase in the present prices of live stock. On the whole, where good lamb and calf crops are obtained and overhead is not excessive, good profits are being made at present prices.

There is room for an enormous development in the range live-stock business in British Columbia. Climatic and early forage-growth advantages will always keep British Columbia live-stock interests in an enviable position, and high-quality live stock will therefore be produced on British Columbia ranches and ranges in steadily increasing numbers as the grain- and hay-producing lands are developed.

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