PROVINCE OF BRITISH COLUMBIA

REPORT

OF

THE FOREST BRANCH

OF THE

DEPARTMENT OF LANDS

HON. T. D. PATTULLO, Minister

M. A. GRAINGER, Chief Forester

FOR THE YEAR ENDING DECEMBER 31ST

1916

THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
Printed by WILLIAM H. CULLIN, Printer to the King's Most Excellent Majesty.
1917.

VICTORIA, B.C., March, 1917.

To His Honour FRANK STILLMAN BARNARD,

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 my Department for the year 1916.

T. D. PATTULLO,

Minister of Lands.

REPORT OF THE FOREST BRANCH,
DEPARTMENT OF LANDS.

TRADE EXTENSION.

EASTERN CANADIAN MARKET.

A preliminary investigation into the Eastern Canadian lumber market having revealed an opportunity for British Columbia to increase greatly her lumber shipments, it was decided to conduct an energetic campaign in Eastern Canada. A Lumber Commissioner was appointed, and his headquarters on the ground floor of the Excelsior Life Building, Toronto, were furnished entirely in British Columbia woods. An exhibit was installed showing the various forms of manufacture and their application (with different finishes and treatments) to the every-day requirements of the building trade.

In attacking a comparatively new market, it was quickly realized that the main effort should be directed at Eastern architects, engineers, and users of wood rather than to the lumber trade. The retail lumber trade in the East had strong connections with the southern pine manufacturers, developed through a number of years of steadily increasing trade. As against this there was the fact that it pays any retailer of lumber to carry the particular material most in demand. The immediate object was therefore to create a demand which would compel firms in the East of Canada to carry stocks of British Columbia lumber. The ultimate object was to educate the engineering professions and the consumers of wood to the qualities and uses of British Columbia wood, which they hitherto hardly knew was in existence.

The following shows briefly the various lines on which the year's work has been run:—

(1.) The Lumber Commissioner has by personal contact with the leading architects and engineers given these professions a better understanding of British Columbia woods. A very large proportion of the building-work in Eastern Canada is done under the direction and supervision of architects and engineers who specify the kinds of material to be employed. As far as lumber was concerned, it was found that British Columbia woods were specified very rarely, the call being for native eastern woods when suitable or for the imported southern yellow pine, the latter being usually the wood specified for ordinary and better-class work. After being shown facts and figures proving the qualities and records of British Columbia wood, architects and engineers were, generally speaking, ready to substitute Douglas fir for southern pine, the only great difficulty in the way being that of quick delivery. Many specifications were referred to our Commissioner for his criticism, and many were changed in order that British Columbia timber should give better satisfaction. This part of the work has been slowly developing into a sort of a consulting business. Large concerns about to erect new buildings invite the Commissioner to discuss with their architects and engineers the best methods of construction, the most economical sizes for specifications, and other engineering points in connection with lumber.

(2.) It was found that city by-laws, where they existed, uniformly gave preference to southern pine. For instance, Toronto allowed a fibre stress for Douglas fir of only 1,200 lb. per square inch, as against 1,600 lb. for southern pine, which meant that the southern pine had a 25-per-cent. advantage over Douglas fir. After repeated and persistent endeavour Toronto now admits Douglas fir and southern pine on an even basis. This is particularly important, because in Ontario the standard for Toronto is usually followed by other cities and municipalities.

(3.) Advertising was carried on throughout the year in trade papers. Here, again, the idea was to impress upon architects, contractors, and builders the merits of British Columbia woods.

(4.) A daily report service was received in the Toronto office which gave all new contracts let throughout the East, progress reports on contracts in operation, the amount of money involved in the erection of new buildings, the name of the architect, and the name of the contractors. This enabled the Commissioner to keep in touch with the architects and contractors who had in hand large building operations.

(5.) During the year exhibits of British Colmbia forest products were shown in the Builders' Exchange, London; Board of Trade, Hamilton; Board of Trade and Builders' Exchange, Montreal, in addition to the main exhibit in the Commissioner's office in Toronto. The display at the Canadian National Exhibition was carefully prepared, gave British Columbia lumber exten-

sive publicity, and was awarded a gold medal by the exhibition authorities. Many different trade inquiries resulted, and there was distributed a great deal of general information about British Columbia woods.

(6.) To bring the publicity campaign forcibly to the attention of Eastern retailers, circulars were sent out asking those who stocked British Columbia woods to say what stocks they carried, in order that this information could be compiled and printed in a directory. This directory has served the double purpose of keeping the retailer aware of the opportunity of advertisement he would miss if he did not stock British Columbia wood, and of helping the user of wood who did not always know where British Columbia woods could be obtained. Ten thousand of these directories have been mailed to architects, engineers, contractors, and carpenters throughout Eastern Canada.

(7.) The Dominion Government, Harbour Commissions, School Boards, Power Commissions, etc., had all been accustomed to use southern pine. With large users such as these, British Columbia timber is now superseding the imported article.

(8.) Manufacturers of products in which wood is used have been shown where they could obtain Canadian material. This class of business is highly desirable, inasmuch as it does not vary from time to time to the same extent as the retail lumber trade. It demands a special product and is willing to pay good prices. For instance, several wagon-manufacturers who had hitherto used southern pine have secured their 1917 supplies from British Columbia.

(9.) The Lumber Commissioner is a member of the lumber section of the Toronto Board of Trade, and as such keeps in weekly contact with the prominent lumbermen of Toronto.

Such publicity-work would, of course, be valueless if it were not followed up energetically by the mills of this Province. The fact that shipments to the East have doubled during the past year is concrete evidence of the fact that British Columbia lumbermen are paying marked attention to the Eastern market. It is to be confidently expected that British Columbia's trade in lumber with Eastern Canada will continue to increase at a rapid rate. The market there is large and steady and will help to stabilize our British Columbia industry.

PRAIRIE MARKET.

On the Prairie the main object was to increase the use of wood on the farm. A series of building pamphlets was issued in co-operation with the Prairie agricultural authorities.

In the distribution of these bulletins the method was adopted of requiring a written request from a farmer and then mailing the pamphlets direct. In this way there was no overlapping and no unnecessary waste of copies by broadcast distribution.

In 1916, 212,000 farm bulletins have been distributed as follows:—

Combination or General Purpose Barns	25,000
Implement Sheds and Granaries	25,000
Piggeries and Smoke Houses	24,000
Poultry Houses	24,000
Farm Houses	22,000
Beef Cattle Barns	20,000
Horse Barns	20,000
Sheep Barns	19,000
Dairy Barns	18,000
Silos and Root Cellars	15,000
Total	212,000

The trade and farm journals of Western Canada have printed extensive extracts from these bulletins, and they have been supplied with the necessary cuts for illustration free of charge. These pamphlets were also carried and explained on the "better-farming" trains, and used in the instruction of agricultural classes. In addition, lantern-slides have been supplied showing plans and details of construction. By such means a great deal of publicity has been secured.

Advertising in trade papers and many farm journals has been with the same object of showing the farmer that it would pay him to possess more buildings and better buildings.

Exhibits were also shown at a number of the Prairie fairs, and the interest displayed would indicate that this work should be done to a larger extent.

Off-shore Markets.

Correspondence has been maintained with the main oversea markets, but on account of the tonnage situation prevailing throughout the year work has necessarily been confined to preparing the way for future business. There have been a few orders for boxes and veneer from importers in South Africa and Australia who had hitherto secured their supplies from the States and the Baltic.

War Office business has been limited almost entirely to boxes. There was shipped in 1916 875,000 boxes, and there is an additional 500,000 now on order, with prospect of an order for another 500,000 being placed immediately.

Since the war has created such a tremendous demand for tonnage the normal shipments of lumber have been greatly curtailed. The quantity and destination of shipments made in 1915 and 1916 are given in the following table:—

Water-borne Export of Lumber from British Columbia.

	1915.	1916.
Australia	5,913,020	2,152,657
New Zealand	640,577	286,421
West Coast of South America	301,449	627,418
China	3,425,953	3,055,045
Japan	1,583,437	3,042,690
South Sea Islands	1,395,058	991,308
United Kingdom and Continent	38,112,299	19,801,629
Africa	5,329,042	10,114,885
Alaska	...	3,564,654
Russia	...	39,816
California	1,373,938	...
Totals	58,074,773	43,676,523

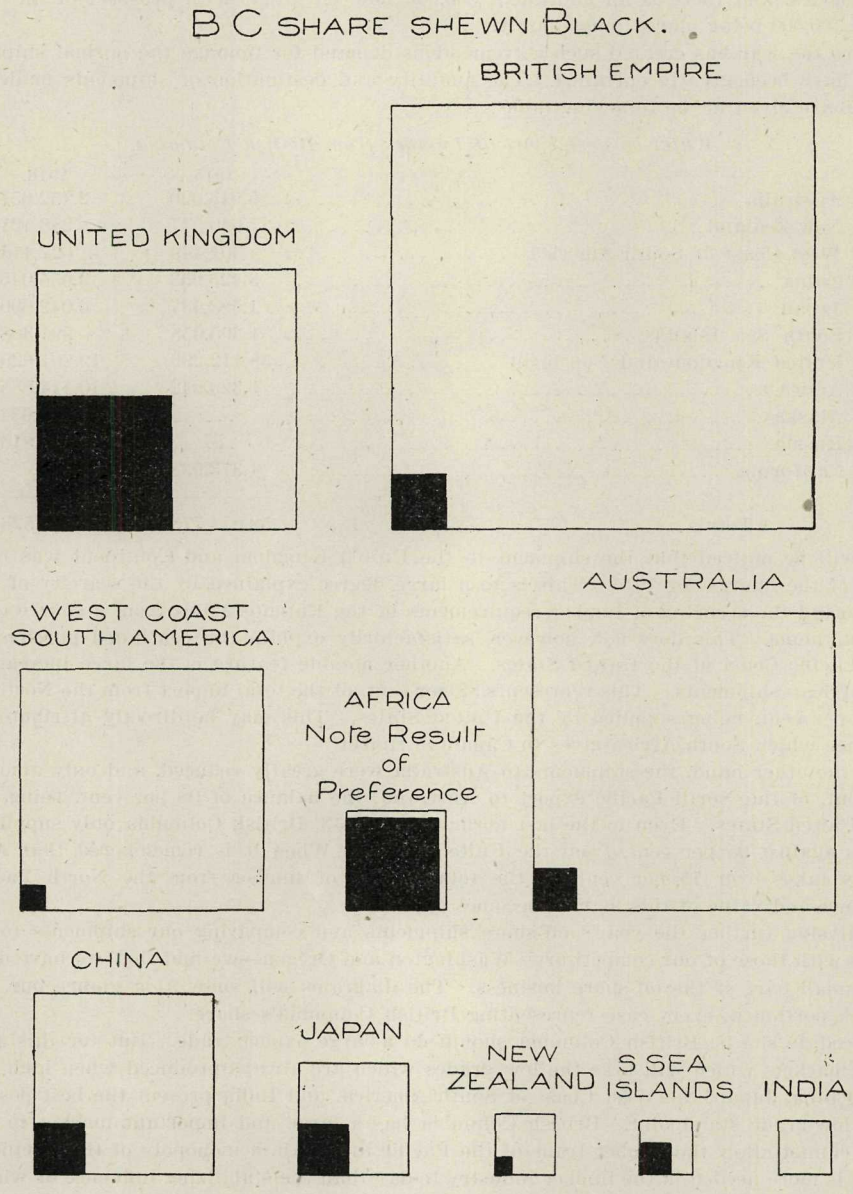
It will be noticed that the shipment to the United Kingdom and Continent was only half in 1916 of the figures for 1915. This is to a large degree explained by the scarcity of tonnage, which forced the securing of lumber requirements of the Entente Allies from a source of supply nearer at home. This does not, however, satisfactorily explain the continued purchases made on the Pacific Coast of the United States. Another notable feature is the large increase in the South African shipments. This represents 88 per cent. of the total import from the North Pacific, only 12 per cent. being supplied by the United States. This may be directly attributed to the preference which South Africa gives to Canadian timber.

On the other hand, the shipments to Australia were greatly reduced, and only amounted to 2 per cent. of the North Pacific export to Australia, the balance of 98 per cent. being supplied by the United States. Even in the last normal year, 1913, British Columbia only supplied 5 per cent., as against 95 per cent. from the United States. When it is remembered that Australia normally takes over 75 per cent. of the total export of lumber from the North Pacific, the importance and value of this market becomes apparent.

Analysing further the year's off-shore shipments and comparing our shipments to various markets with those of our competitors—Washington and Oregon—we find that we have done only a very small part of the off-shore business. The diagrams will show at a glance our position, the black portion in every case representing British Columbia's share.

Placed as she is, British Columbia should do a large export trade. But for this she must develop markets which will take the low grades which are always produced when high grade is sawn. China, Japan, the West Coast of South America, and India present the best possibilities from a low-grade standpoint. British Columbia has a large and important market in Canada, but she cannot allow the lumber trade of the Pacific to remain a monopoly of the Pacific States. Nothing is more needed in the lumber industry to-day than the stabilizing influence of widespread and varied markets. With these, crop-failures on the Prairie could never again have such distressing effects on British Columbia. Lumbermen, stumpage-owners, and loggers have learned from the experiences of the last three years that before the lumber industry can be put on a sound footing ready to withstand further waves of depression adequate markets must be secured and held.

OFFSHORE LUMBER SHIPMENTS
NORTH PACIFIC
1916
WASHINGTON & OREGON & B.C.



The diagrams above show clearly where our natural oversea market lies and the way it can be effectively secured and held. Before 1904 British Columbia had about 30 per cent. of the South African lumber business. A preference was given Canadian lumber, and within two years British Columbia was supplying half South Africa's lumber requirements, and it has steadily

grown until this year British Columbia supplied 88 per cent. If this preference was made general between all parts of the British Empire the future of British Columbia's timber industry would be assured. Australia has repeatedly stated her willingness to conclude a reciprocal arrangement with Canada covering raw products, such as lumber, pulp, fish, and fruit. Canada has already granted a preference to New Zealand's raw products, which are the same as Australia's. Canada now imports all of the pastoral products she requires from New Zealand, and the extending of the same preference to Australia would merely draw these products from two sources instead of one. Such an arrangement would be of mutual benefit and directly in line with the sentiment existing in both countries favouring interimperial trade.

Lumber shipped to overseas markets should be plainly marked to show Canadian origin, and this would be equivalent to a preferential tariff in every Empire market. Under present conditions the foreign buyer cannot possibly separate Douglas fir coming from Washington from that coming from British Columbia. If our marked British Columbia lumber could be picked out in any yard or when delivered to any building, whether it be in London, England, Cape Town, Sydney, Auckland, or Calcutta, it would have an immediate effect on the demand for British Columbia lumber.

THE TIMBER INDUSTRY.

The final figures for the cut of the Province for 1915, compiled from returns supplied to the Forest Branch by the industry, are as follows:—

	Feet B.M.
Lumber	669,816,000
Shingles, 1,894,652 M.	189,464,200
Poles, 5,000,000 lineal feet	25,000,000
Piles, 9,000,000	45,000,000
Hewn ties, 1,000,000	30,000,000
Fence-posts, 35,000	17,500,000
Mining-props, 30,000	15,000,000
Total	991,780,200

This shows a slight falling-off in production from the previous year, which was to be expected under existing war conditions. The lumber industry in the Province has not received any direct war prosperity as have other producers nearer the scene of hostilities. The only direct demand for war purposes was for aeroplane spruce (which is found at its best in British Columbia) and for shell-boxes. The following comparison is therefore fairly satisfactory:—

	Ft. B.M.
Total production reported, 1914	1,151,903,000
Total production reported, 1915	991,780,200

Estimate of Value of Production, 1916.

The products of the forest may be roughly divided into the classes indicated in the following table; the value of each product includes any transportation charge within the Province. This table also gives for convenience of comparison the figures for four consecutive years.

	1913.	1914.	1915.	1916.
Lumber, Coast	$20,400,000*	$15,500,000*	$15,500,000	$21,075,000
Lumber, Interior	6,400,000	3,750,000	....	....
Pulp	3,000,000	2,730,000	3,200,000	3,520,000
Shingles	550,000†	650,000†	3,500,000	4,500,000
Boxes	....	....	750,000	1,833,000
Piles and poles	400,000	900,000	1,200,000	650,000
Mining-props and posts	250,000	300,000	400,000	1,000,000
Miscellaneous (cut by railroads, mines, settlers, cordwood, etc.)	1,000,000	1,200,000	900,000	1,150,000
Additional value contributed by industries, etc	1,000,000	1,900,000	1,750,000	1,650,000
Product of Dominion lands	450,000	1,600,000	1,800,000	‡
Lath	200,000	150,000	150,000	150,000
Totals	$33,650,000	$28,680,000	$29,150,000	$35,528,000

* Includes shingles cut from logs. † Includes shingles cut from bolts only. ‡ Included in other items.

It will be noticed that the increase of 1916 over 1913 is mainly attributable to an increased production of shingles and boxes. The manufacture of boxes was given an impetus by the placing of contracts in British Columbia by the British War Office. On the other hand, the two excellent crops of the Prairies of 1915 and 1916 created a good demand for lumber and shingles which increased production and bettered prices. This is to a large extent the cause of the increase in value over 1915 of over $6,000,000.

TIMBER SCALED, 1916.

The three subjoined tables show the generally increased activity in the lumber industry in 1916. The tables show, first, the amount scaled in each district by months and classes of material; second, the legal classification of the land from which the timber was cut; and, third, the proportion of each species.

The most noteworthy feature is that the total scale of 1,280,000,000 feet B.M. is over 25 per cent. greater than the 1915 total, most of this gain taking place in the last six months of the year. Moreover, the increase was general, as every district reflected the better conditions in an increased cut. No other resource is so generously distributed over the entire Province and wields such a tremendous influence on the every-day economic life of its people. Slightly better conditions in the lumber industry immediately shows itself in greater activity in practically all the communities throughout the Province.

The table showing the source of timber brings out the fact that very old Crown grants supply the largest amount of saw-logs, with timber licences a very close second, followed by later Crown grants, timber leases, and timber sales. Practically no timber was used in railway-construction, so the classification "Railway Permits" used in previous years has been omitted.

Of the species of lumber cut, Douglas fir and cedar of course predominate. Together they constitute nearly three-quarters of the cut. This table is approximate only, but serves as a guide to the proportion of the different species making up the year's cut.

Timber scaled, 1916 (by Months and Districts).

	Cranbrook.	Fort George	Hazelton.	Kamloops.	Lillooet.	Nelson.	Vernon.	Island.	Prince Rupert.	Vancouver.	Total M.B.M.	Total Lineal Feet Thds.	Total Cords.	Total Ties.
January.....logs M.B.M.	4,752	9	65	....	71	1,029	1,888	4,098	705	25,807	38,424	....	....	....
" .....lineal ft., thds.	14	....	....	12	....	150	....	161	67	9	....	413	....	....
" .....cords	2,470	35	....	....	10	3,848	....	6,468	130	24,811	....	....	37,772	....
" .....ties	3,584	....	....	....	....	....	4,224	149,780	....	....	....	....	....	157,588
February.....logs M.B.M.	4,181	36	69	....	....	130	1,442	3,526	227	25,249	34,860	....	....	....
" .....lineal ft., thds.	5	....	....	....	....	164	....	105	14	23	....	311	....	....
" .....cords	1,677	433	....	....	277	1,330	....	4,561	464	4,203	....	....	12,945	....
" .....ties	....	....	....	....	....	2,976	....	32,178	....	40,067	....	....	....	75,221
March .....logs M.B.M.	4,341	169	64	114	....	384	2,558	6,579	259	30,881	45,349	....	....	....
" .....lineal ft., thds.	21	..	....	50	....	60	....	55	14	1	....	201	....	....
" .....cords	2,099	266	18	33	....	908	....	5,312	100	5,674	....	....	14,410	....
" .....ties	1,119	....	....	....	....	4,629	13,580	21,537	....	2,892	....	....	....	43,757
April .....logs M.B.M.	7,279	39	59	....	113	1,182	4,535	4,876	618	45,176	63,877	....	....	....
" .....lineal ft., thds.	4	....	....	....	....	81	1	54	85	133	....	358	....	....
" .....cords	3,639	277	19	331	13	2,266	....	641	....	12,559	....	....	19,745	....
" .....ties	96,808	....	....	....	....	2,247	....	197	....	....	....	....	....	99,252
May .....logs M.B.M.	14,630	....	198	....	71	1,631	5,509	6,566	2,095	82,788	113,488	....	....	....
" .....lineal ft., thds.	30	....	....	....	....	22	14	69	101	92	....	328	....	....
" .....cords	2,935	147	18	....	152	2,948	....	593	297	21,429	....	....	28,519	....
" .....ties	76,748	....	....	....	....	2,747	1,069	475	....	....	....	....	....	81,039
June .....logs M.B.M.	13,239	....	86	4,943	207	5,231	3,899	13,968	2,366	76,450	120,389	....	....	....
" .....lineal ft., thds.	49	....	....	14	....	184	....	12	38	152	....	450	....	....
" .....cords	2,540	13	21	....	....	3,494	....	844	305	13,080	....	....	20,297	....
" .....ties	47,120	....	....	....	....	3,400	....	....	....	....	....	....	....	50,520
July .....logs M.B.M.	9,504	8	83	3,064	12	2,440	1,515	11,702	2,927	77,496	108,751	....	....	....
" .....lineal ft., thds.	26	....	....	....	....	199	37	53	60	93	....	468	....	....
" .....cords	5,121	141	8	....	....	2,516	....	964	569	18,196	....	....	27,515	....
" .....ties	87,278	....	....	....	....	728	2,557	85,487	....	....	....	....	....	176,036
August .....logs M.B.M.	16,774	24	135	2,921	10	1,686	4,533	14,719	3,445	71,897	116,144	....	....	....
" .....lineal ft., thds.	37	2	....	....	17	121	....	....	25	47	....	249	....	....
" .....cords	2,722	....	11	....	....	1,704	....	312	35	15,091	....	...	19,875	....
" .....ties	67,979	....	....	....	....	1,597	....	....	....	600	....	...	....	70,176
September.....logs M.B.M.	10,289	75	83	....	22	12,414	2,153	13,185	2,095	68,493	108,809	....	....	....
" .....lineal ft., thds.	22	27	65	....	....	151	....	8	51	144	....	468	....	....
" .....cords	3,419	....	....	....	....	1,035	....	581	331	16,398	....	....	21,764	....
" .....ties	884	....	....	....	....	1,420	....	....	....	5,624	....	....	....	7,928
October .....logs M.B.M.	10,295	1,292	59	2,889	98	3,426	2,379	14,563	5,056	91,502	131,559	....	....	....
" .....lineal ft., thds.	46	88	....	....	....	175	31	22	64	100	....	526	....	....
" .....cords	3,608	29	16	....	....	2,256	....	1,321	....	11,007	....	....	18,237	....
" .....ties	123,150	5,869	....	....	....	....	....	58,122	....	1,371	....	....	....	188,512
November.....logs M.B.M.	5,636	629	99	8,106	55	3,499	1,354	9,423	5,794	57,181	91,776	....	....	....
" .....lineal ft., thds.	22	7	....	....	7	228	94	....	26	122	....	506	....	....
" .....cords	7,390	....	19	352	10	3,735	....	178	....	9,180	....	....	20,864	....
" .....ties	19,465	....	....	....	3,665	3,038	....	....	....	6,793	....	....	....	32,961
December.....logs M.B.M.	4,632	2,092	138	1,020	25	419	1,370	17,263	3,939	80,409	111,307	....	....	....
" .....lineal ft., thds.	14	....	63	21	....	207	96	159	6	180	....	746	....	....
" .....cords	1,490	54	29	1,300	....	1,525	....	264	574	32,006	....	.. ..	27,242	....
" .....ties	....	....	....	....	....	....	....	3,200	....	....	....	....	...	3,200
Total .....logs M.B.M.	105,552	4,373	1,138	23,057	684	33,471	33,135	120,468	29,526	733,329	1,084,733	....	....	....
" .....lineal ft., thds.	290	124	128	97	24	1,742	273	698	551	1,097	....	5,024	....	....
" .....cords	39,110	1,395	159	2,016	462	27,565	....	22,039	2,805	183,634	....	....	279,185	....
" .....ties	524,135	5,869	....	....	3,665	22,782	21,430	350,962	....	57,347	....	....	....	986,190

Total, 1,280,263 M.B.F.

Sources of Timber cut, 1916.

Forest District.	Crown-granted prior to April 7th, 1887.			Crown-granted after April 7th, 1887.			Pre-emptions.			Timber Licence.			Timber Lease.			Timber Sale.			Hand-logger's Licence.			Dominion Land.			Totals.		
	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.	M.B.M.	Lin. Ft., Thds.	Cords.
Cranbrook	8,930	..	..	56,251	281	58,378	421	..	88	37,322	8	1,742	..	1	128	2,628	..	171	..	..	..	..	..	..	105,552	290	55,489
Fort George	..	..	..	1,571	31	577	375	63	518	1,647	22	179	..	..	..	780	8	304	..	..	..	..	..	..	4,373	124	1,578
Hazelton	..	..	..	105	128	159	930	..	..	103	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,138	128	159
Island	72,500	533	27,625	36,736	165	5,020	359	..	..	3,078	..	362	7,707	..	..	88	..	..	..	..	..	..	..	..	120,468	698	33,007
Kamloops	..	..	..	4,308	..	..	261	97	1,016	239	..	1,000	..	..	..	..	.	..	..	..	..	18,249	..	..	23,057	97	2,016
Lillooet	..	..	..	..	..	..	189	22	141	149	2	12	..	..	..	253	..	202	..	..	..	93	..	220.5	684	24	576
Nelson	..	..	..	18,320	1,378	14,797	4,608	16	4,690	6,677	337	1,847	..	..	6,360	858	11	583	..	..	..	3,008	..	..	33,471	1,742	28,277
Prince Rupert	..	.	36	521	59	732	469	13	69	1,161	11	1,237	15,954	113	..	4,037	97	160	7,324	258	571	60	..	..	29,526	551	2,805
Vancouver	165,721	418	62,006	42,207	206	49,710	25,217	..	2,455	171,004	153	16,611	133,027	112	6,137	54,367	97	6,939	22,846	..	..	118,940	108	41,568	733,329	1,097	185,426
Vernon	242	77	..	13,954	186	485	4,560	..	118	11,229	..	..	..	..	..	44	13	67	..	..	.	3,106	..	..	33,135	273	670
M.B.M.	247,393	..	..	173,973	..	..	37,389	..	..	232,609	..	..	156,688	..	..	63,055	..	..	30,170	..	..	143,456	..	..	1,084,733	..	..
Lineal feet	..	1,028	..	..	2,434		..	211	..	..	533	..	..	226	..	.	226	..	..	258	..	..	108	..	..	5,024	..
Cords	..	..	89,667	..	..	124,858	..	..	9,095	..	..	22,972	..	..	12,625	..	..	8,426	..	..	571	..	..	41,788.5	..	..	310,003

Total B.M., 1,280,000,000 feet.

Species cut, 1916.

Forest District.	Douglas Fir.	Red Cedar.	Yellow Cedar.	Spruce.	Hemlock.	Balsam Fir.	Western Soft Pine.	White Pine.	Jack-pine.	Larch.	Cottonwood.	Birch.	Maple.	Total.
	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.	M.B.M.
Cranbrook	50,678	10,616	....	10,193	....	657	39,079	879	1,979	28,807	51	....	....	142,939
Fort George	2,724	10	....	2,654	....	77	....	....	187	....	211	10	....	5,873
Hazelton	....	949	....	592	281	3	....	....	....	....	33	....	....	1,858
Kamloops	11,700	8,999	....	939	....	....	2,683	....	226	....	....	....	....	24,547
Lillooet	1,137	....	....	....	....	....	12	....	....	....	....	....	....	1,149
Nelson	9,887	24,064	....	1,227	4,640	6	3,641	3,423	20	9,606	165	1	....	56,680
Vernon	7,172	398	....	111	....	....	26,368	165	....	293	659	....	....	35,166
Prince Rupert	3,035	4,453	54	16,754	4,701	4,007	....	....	676	....	1	....	....	33,681
Island	108,075	12,224	....	17,867	7,115	627	....	43	....	....	....	....	1	145,952
Vancouver	370,283	323,383	21	34,992	84,578	16,029	....	2,306	....	....	824	....	2	832,418
Totals	564,691	385,096	75	85,329	101,315	21,406	71,783	6,816	3,088	38,706	1,944	11	3	1,280,263
Totals, 1915.	426,232	354,702	30	74,676	79,392	1,260	29,766	5,057	6,914	38,597	1,045	Alder. 12	....	1,017,683

RAILWAY PERMITS.

The cutting of timber for the construction of railways was confined entirely during the year 1916 to the Pacific Great Eastern lines. While fifty-three permits covering 63,000 acres were issued during the year, very little cutting was done. In all, only 225,000 feet B.M. were cut and removed. The location of the permits and their areas are given in the attached table.

Forest District.	Railway.	No. of Permits.	Area under Permit.	Approximate Amount cut and removed.
			Acres.	Ft. B.M.
Lillooet	P.G.E.	22	40,602	205,910
Fort George	P.G.E.	31	22,687	18,851
Totals	....	53	63,289	224,761

TIMBER-SALES.

There was a marked increase in the timber-sale business in 1916 over the previous year. One hundred and thirty-three sales were awarded, which will return an estimated revenue to the Province of nearly $260,000, whereas the 1915 timber-sales amounted only to $152,000. This increase is partially explained by the increase of 16 cents per 1,000 obtained over the average price of 80 cents per 1,000 for 1915, but is mostly due to the greater quantity of timber sold. A total of 136,354,000 feet B.M. of saw-timber was sold, which is nearly a 50-per-cent. increase over the quantity sold in 1915. The average area of sales was 175 acres, which shows that the great bulk of the timber sold was in small fractions adjoining existing operations and could be logged to the best advantage at the same time.

War demands for spruce may again be noticed in the fact that in 1916 nearly three times the amount of spruce was sold as in 1915. Cedar was also in strong demand throughout the year, 8,000,000 feet more cedar being sold than Douglas fir, and for 16 cents per 1,000 more.

The value of sales remained almost the same in the Vancouver District for the two years, the greatest increase coming in the Cranbrook District, where the value of the sales jumped from $3,500 in 1915 to $47,600 in 1916. Prince Rupert, Vernon, and Nelson Districts also made large gains.

As in previous years, it was the aim to inspect every timber-sale operation once every month. With the reduced staff, however, it would found impossible in most cases to make inspections as frequently as called for. In only four districts was the inspection on a monthly basis. Over 60 per cent. of the sales were inspected only once in two months, and in some cases even only once in four months. Then, again, the Rangers in many cases, when making these inspections, found themselves so pressed with work that they could not devote the time necessary to give the

operation a thorough inspection. Timber-sales contracts set forth various conditions that the purchaser agrees to comply with, such as log-marking, stump-height, utilization of all merchantable material, and slash-disposal, etc. It has been found that where inspection is not thorough and frequent when the sale is completed the area has not been logged as well as it should have been under the terms of the contract. This, however, should have been pointed out and explained to the operator when the operation was in progress, so that the details could be thoroughly gone into with satisfaction to both parties. Better field inspection of timber-sales is an urgent necessity.

The total area logged on timber-sales in 1916 was 5,320 acres. Approximately 1,600 acres of slash was disposed of during the year by burning. Some areas (like on the very wet northern Coast) were not burned as the fire hazard was very small. In other cases it was impossible to burn the slash until the operation was completed. It is worth noting that the area of slash on timber-sales disposed of in 1916 is nearly double that disposed of in 1915, although the area logged over is only 25 per cent. greater.

Timber-sales awarded by Districts, 1916.

Forest District.	No. of Sales.	Acres in Area.	Estimated Quantity.				Estimate of Revenue.
			Saw-timber (Ft. B.M.).	Poles and Piles (Lineal Feet).	Shingle-bolts and Cordwood (Cords).	Railway Ties.	
Cranbrook	11	3,289	12,715,000	14,500	9,983	86,000	$ 47,618 33
Fort George	9	485	1,777,000	9,750	862	....	3,138 70
Hazelton	1	50	42,000	....	....	....	50 08
Island	1	120	88,000	....	....	....	93 00
Kamloops	3	970	650,000	....	....	....	965 50
Lillooet	2	200	410,000	....	....	....	815 30
Nelson	12	3,262	5,696,000	219,000	2,750	6,000	12,757 69
Prince Rupert	19	1,499	14,548,000	....	....	....	17,035 58
Tete Jaune	1	303	3,089,000	....	....	....	4,809 92
Vancouver	65	11,791	91,835,000	149,000	12,784	....	158,644 69
Vernon	9	1,349	5,504,000	43,560	288	....	13,836 33
Totals	133	23,318	136,354,000	435,810	26,667	92,000	$259,765 12

Average Sale Price by Species, 1916.

Saw-timber.	Board-feet.	Price per M.
Douglas fir	36,261,000	$1 00
Cedar	44,016,000	1 16
Spruce	11,741,000	72
Hemlock	24,174,000	45
Balsam fir	8,637,000	39
White pine	2,459,000	1 69
Western soft pine	4,074,000	1 74
Tamarack	2,705,000	1 75
Other species	2,287,000	1 95
Totals	136,354,000	$0 96

Timber cut from Timber-sales during 1916.

Forest District.	Feet B.M.	Lineal Feet.	Cords.
Cranbrook	2,627,888	....	171.00
Lillooet	252,673	....	201.50
Nelson	857,703	10,824	583.25
Prince Rupert	4,037,445	96,869	159.50
Fort George	780,498	7,875	304.25
Vancouver	54,367,128	96,835	6,939.50
Vernon	43,767	13,396	66.80
Island	88,000	....	....
Totals	63,055,102	225,799	8,425.80

Sawmills.

In spite of the fact that a large number of mills have been shut down during the year, a number of new mills have been built. Others have been moved and capacity increased. The total sawing capacity of the Province has not changed perceptibly in the year. It is expected that with a good lumber market in 1917 much of the sawing capacity now idle will commence to operate.

The following table shows the distribution of the saw and shingle mills by forest districts:—

Saw and Shingle Mills of Province.

District.	Up to 15 M. Feet Daily Capacity.	15 M. to 40 M. Feet Daily Capacity.	Over 40 M. Feet Daily Capacity.	Shingle-mills.	Total.
Cranbrook	7	6	16	1	30
Fort George	5	10	1	...	16
Hazelton	7	1	...	1	9
Kamloops	2	3	4	1	10
Lillooet	20	...	...	...	20
Nelson	10	7	9	11	37
Tete Jaune	1	1	1	...	3
Vernon	9	12	4	...	25
Totals, east of Cascades	61	40	35	14	150
Island	22	13	14	12	61
Vancouver	36	35	32	66	169
Prince Rupert	3	5	1	1	10
Totals, west of Cascades	61	53	47	79	240
Totals in Province	122	93	82	93	390

Logging Inspection.

The number of logging operations in the Province increased from 957 in 1915 to 1,144 in 1916. The largest single increase is the jump in the Prince Rupert District from 85 hand-logger operations in 1915 to 200 in 1916. This is directly attributable to the commencing of pulp operations by two companies in the north.

Inspections of operations were made as often as possible with the field staff available. A total of 1,648 inspections were made. At this rate each operation would be inspected on an average of once in *nine* months. To be effective, an inspection should be made of each operation at least once every three months, and in the case of timber-sales once every month. It is expected that there will be increased logging activity all over the Province in the coming year, and in order to prevent trespass and to acquaint new operators with the provisions of the "Forest Act" regarding fire-protection closer inspection is urgently needed. The following table divides the logging operations into three classes, and shows their distribution by forest districts, together with the number of inspections in each district:—

Logging Inspection.

Forest District.	Timber Sales.	Hand-loggers' Licences.	Leases, Licences, Crown Grants, and Pre-emptions.	Total Operations.	Number of Inspections.
Cranbrook	10	....	45	55	110
Fort George	10	....	83	93	52
Hazelton	....	....	4	4	4
Island	....	....	40	40	45
Kamloops	1	....	13	14	15
Lillooet	18	....	23	41	33
Nelson	14	....	91	105	156
Prince Rupert	17	200	30	247	389
Vancouver	93	91	281	465	756
Vernon	7	....	73	80	88
Totals	170	291	683	1,144	1,648

TIMBER TRESPASS.

There were seventy-two cases of timber trespass during the year, of which thirty-three were in the Vancouver District, where the great bulk of the logging takes place. Although the total quantity cut in trespass expressed in board measure is 5,500,000 feet, this is only $^{4}/_{10}$ of 1 per cent. of the total cut. Relatively speaking, therefore, the trespass is in no way serious, as the great proportion is accounted for by ignorance of boundaries and regulations—i.e., innocent trespass.

The following table shows the extent of trespass cutting in the various forest districts:—

Trespass, 1916.

Forest District.	No. of Cases.	Area cut over.	Quantity cut.				No. of Resulting Seizures.	Amount realized.
			Feet B.M.	Lineal Feet.	Cords.	Ties.		
Cranbrook	7	120	840,000	....	120	....	4	$ 6 00
Kamloops	2	50	....	20,250	....	....	..	....
Lillooet	3	20	70,624	2,738	13	....	2	219 30
Nelson	6	166	....	10,208	888	....	1	415 89
Prince Rupert	6	37	87,042	10,090	100	....	3	171 19
Fort George	8	133	1,200	14,581	100	....	..	232 36
Vancouver	33	175	3,189,240	1,356	176	....	6	2,643 58
Vernon	7	345	284,000	10,650	....	....	..	133 00
Totals for 1916	72	1,046	4,472,106	69,873	1,397	....	16	$3,821 32
Totals for 1915	74	971	3,735,226	144,910	1,320	343,286	10	$2,632 06

LAND CLASSIFICATION.

Land-classification work has been carried on only to a limited extent during the past year. Only those areas that had to be examined in order to facilitate administrative action were dealt with, as the field staff (owing to the serious depletion through enlistments) was able to undertake only the absolute minimum of work. Only 144 examinations were made, less than a third of the number last year. Three of the areas were large, aggregating over 235,000 acres.

The information required covering these lots did not necessitate as detailed an examination as in the other cases, and this large area was therefore examined in a comparatively short time. The area examined for timber quantities applied for as pre-emption and application to purchase was much smaller than in 1915. The two subjoined tables show the distribution of areas examined and status of same, also the acreage and amount of timber involved.

STATUS OF AREAS EXAMINED, 1916.

Forest District.	Lots.		Expired Timber Licences.		Pre-emption Records.		Application to Purchase.		Miscellaneous.	
	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
Cranbrook	..	....	4	1,920	..	....	..	....	1	6,586
Fort George	15	4,766	..	....	6	851	..	....	..	....
Hazelton	2	300	..	....	1	160	..	....	..	....
Island	20	3,397	2	581	..	....	4	6,608	1	76
Kamloops	..	....	15	8,111	4	945	..	....	..	....
Lillooet	..	....	..	....	2	344	..	....	..	....
Nelson	2	120,480	8	4,894	..	....	1	80	..	....
Prince Rupert	..	....	..	....	1	45	2	106	..	....
Vancouver	3	1,322	4	2,456	19	2,226	1	160	..	....
Vernon	1	115,060	2	1,200	6	1,120	16	6,163	1	11,472
Totals	43	245,325	35	19,162	39	5,691	24	13,117	3	18,134

CLASSIFICATION OF AREAS EXAMINED, 1916.

Forest District.	Total Area.	Agricultural Land.	Area recommended for Reserve.*	Estimate of Timber on Total Area.
				Ft. B.M.
Cranbrook	8,506	320	1,600	8,340,630
Fort George	5,617	4,872	2,391	20,066,400
Hazelton	460	320	300	1,000,000
Island	10,662	7,028	357	173,203,100
Kamloops	9,056	1,792	8,236	28,094,000
Lillooet	344	184	....	130,000
Nelson	125,454	3,530	48,155	45,961,200
Prince Rupert	151	45	....	575,000
Tete Jaune	....	....	....	.....
Vancouver	6,164	2,010	2,354	20,143,000
Vernon	135,015	17,607	117,380	154,245,010
Totals	301,429	37,708	180,773	451,758,340

*Includes absolute forest land of value for timber production; also land which is statutory timber land.

PULP AND PAPER.

Marked activity has been evident during the whole year in this industry. The rise in prices due to the war has had the result of directing attention to Canada's pulp resources as never before. Eastern Canada has not received all this attention, for British Columbia's pulp resources are beginning to be realized. The plants in operation in the Province have run continuously throughout the year, the output for 1916 being as follows:—

Paper manufactured ..... 65,229 tons.
Sulphite wood-pulp ..... 14,389 „

Commencement was made on new operations by three companies—one at Swanson Bay, which started operations early in 1917; another at Ocean Falls, where a large amount of development-work had already been done, and which will commence producing paper some time in 1917; and the third at Quatsino Sound, where building operations have been in progress for some months and will likely continue during the coming year.

These developments are all on the Coast, but there are large areas of pulp timber in the Interior which have not yet been touched. The development of these areas will no doubt be undertaken in the not-far-distant future.

TIMBER EXPORTS, 1916.

Only half of the quantity of logs were exported in 1916 than there were in 1915. This is the result of a better log market in British Columbia, which increased in strength during the last half of the year. The quantity exported ungraded dropped from 19,000,000 in 1915 to 2,000,000. The following tables give the details of export of logs, and also of other products, such as piles, poles, props, posts, etc.:—

EXPORT OF LOGS, 1916 (SCALED FOR EXPORT).

	Grade No. 1.	Grade No. 2.	Grade No. 3.	Ungraded.	Total of Logs.
Cedar	3,613,346	25,289,392	12,434,078	263,530	41,600,346
Fir	1,041,571	5,254,945	1,651,943	....	7,948,459
Spruce	154,640	505,509	194,228	8,334	862,711
Pine	....	8,605	3,624	....	12,229
Larch	....	....	....	157,280	157,280
Hemlock	....	....	....	536,325	536,325
Hemlock and larch	....	....	....	1,067,035	1,067,035
Total feet B.M., 1916	4,809,557	31,058,451	14,283,873	2,032,504	52,184,385
Totals for 1915	10,110,681	48,033,651	29,284,854	19,445,749	106,874,935

EXPORT OF POLES, PILES, POSTS, TIES, AND WOOD, 1916.

Forest District.	Quantity exported.	Approximate Value F.O.B.	Where marketed.	
			United States.	Canada.*
Cranbrook—				
Posts	Cords, 18,639	$102,516 00	....	18,639
Props	Cords, 9,276	41,742 00	....	9,276
Hewn ties	Pieces, 462,427	147,489 00	743	461,684
Poles	Lin. ft., 123,026	9,842 00	2,870	120,156
Piles	Lin. ft., 134,482	9,413 00	....	134,482
Wood	Cords, 1,743	5,229 00	....	1,743
Nelson—				
Posts	Cords, 5,766	23,635 00	2,316	3,449
Shingle-bolts	Cords, 64	384 00	64	....
Hewn-ties	Pieces, 2,315	695 00	2,315	....
Poles and piles	Lin. ft., 1,693,786	93,243 00	1,083,778	610,008
Fort George—				
Excelsior bolts	Cords, 55	....	....	55
Island—				
Poles and piles	Lin. ft., 148,571	8,914 00	148,571	....
Vancouver—				
Poles and piles	Lin. ft., 623,905	37,434 00	623,905	....
Shingle-bolts	Cords, 973	5,838 00	973	....
Vernon—				
Hewn ties	Pieces, 6,853	2,400 00	6,853	....
Total	....	$488,776 00	....	....

* Chiefly the Prairie Provinces, though poles are also shipped to Ontario.

FOREST RECONNAISSANCE.

Owing to the war it was found impossible to carry on any reconnaissance-work whatever. This tabulation, discovery, and stock-taking of the forest resources is of fundamental importance. A thorough knowledge of existing timber quantities and conditions is essential to the formulation of forest policy. The reconnaissance carried on during the last three years has brought to light many large bodies of Crown timber which, while not marketable to-day on account of lack of transportation facilities, nevertheless constitute a great asset, increasing in value from year to year, provided it is protected from fire.

FOREST RECORDS.

FOREST REVENUE.

The total revenue from the forest collected in 1916 was $2,005,940.76, being an increase over 1915 of $83,382.36. The depression continued from 1915 into 1916, but conditions began to show a marked improvement toward the latter end of the year. The following table gives the revenue in detail for the past four years:—

Statement of Forest Revenue.

	12 Months to December, 1916.	12 Months to December, 1915.	12 Months to December, 1914.	12 Months to December, 1913.
Timber-licence rentals	$1,138,879 22	$1,140,656 53	$1,555,980 28	$2,112,876 18
Royalty and tax	456,863 29	351,310 13	391,118 36	482,707 05
Trespass penalties	893 39	3,520 54	7,170 95	9,016 95
Lease rentals	77,040 59	120,132 35	88,792 08	119,291 44
Scaling fees	32,590 20	27,893 16	30,472 32	23,978 99
Scaling expenses	3,158 71	2,564 71	1,805 82	1,759 41
Seizure expenses	1,364 84	85 71	270 90	....
Licence penalties	28,524 00	16,692 69	25,335 00	24,291 00
Timber stumpage	68,779 87	67,250 42	36,545 33	18,719 92
Transfer fees	3,670 00	4,400 00	7,085 00	10,385 00
Hand-loggers' licence fees	7,100 00	5,550 00	5,200 00	5,025 00
Interest	100 09	1,117 81	115 13	17,208 84
Timber-mark fees	....	137 00	508 50	924 50
Timber-sales rentals	5,235 35	3,830 89	3,477 87	2,597 95
Timber-sales cruising	1,148 74	2,183 42	1,550 83	1,140 40
Timber-sales advertising	391 89	532 71	534 05	691 40
Scalers' examination fees	225 00	60 00	425 00	585 00
Copies of documents	401 80	128 00	569 57	....
Exchange	45 22	17 33	61 96	119 95
General miscellaneous	....	....	....	1,469 73
	$1,826,412 20	$1,748,063 40	$2,157,018 95	$2,832,788 71
Taxation from Crown-grant timber lands	179,528 56	174,495 00	185,661 00	166,540 00
Total revenue from forest sources	$2,005,940 76	$1,922,558 40	$2,342,679 95	$2,999,328 71

There was an increase of nearly $100,000 in revenue from logging operations. Nearly all of this was made up by royalty and tax directly due to increased general cut. The only decrease to speak of was stumpage in the Vancouver District, which amounted to $12,000. This was due to smaller cut from timber-sales and to the fact that the average stumpage price per M. on the sales operated was slightly less than on the sales operated in the previous year.

Revenue from Logging Operations, 1916.

Forest District.	Amount charged.						
	Royalty and Tax.	Scaling Fees.	Trespass Penalties.	Seizure Expenses.	Scaling Expenses.	Stumpage.	Totals.
Nelson	$ 25,323 90	....	$ 451 79	$ 7 60	....	$ 923 51	$ 26,706 80
Vernon	14,268 46	....	205 50	24 75	....	210 17	14,708 88
Kamloops	558 71	$ 81 85	151 88	....	...	...	792 44
Prince Rupert	17,686 01	....	210 97	5 00	....	2,550 53	20,452 51
Hazelton	954 19	....	....	....	....	....	954 19
Fort George	3,003 68	90	177 62	34 06	....	791 58	4,007 84
Lillooet	287 33	....	142 80	14 25	$ 7 50	301 30	753 18
Cranbrook	71,778 16	48 83	31 00	133 00	....	2,484 61	74,475 60
Vancouver	341,898 23	31,828 99	342 29	748 20	2,965 37	55,724 86	433,507 94
Island	24,816 09	4,379 99	....	....	449 37	44 00	29,689 45
Totals	$500,574 76	$36,340 56	$1,713 85	$ 966 86	$3,422 24	$63,030 56	$606,048 83
Totals, 1915 operations	$401,383 84	$30,836 03	$2,313 15	$1,796 23	$3,210 62	$80,042 30	$519,582 17

FOREST EXPENDITURE.

The diagram shown on page 22 shows the comparison of the revenues of the different Provinces of the Dominion for the year 1914. The Dominion Government controls the forest resources of the three Prairie Provinces, so the figures for these three Provinces are necessarily combined.

The sums voted for forest-work for the fiscal year 1916-17 were as follows:—

Vote 11—Salaries	$162,726 00
„ 295—Determination of lumber values ("Royalty Act")	5,000 00
„ 296—Encouraging lumber industry	50,000 00
„ 297—Forest products investigations	10,000 00
„ 299—Miscellaneous	90,000 00
„ 300—Timber-testing and investigation of wood products	20,000 00
Total	$337,726 00

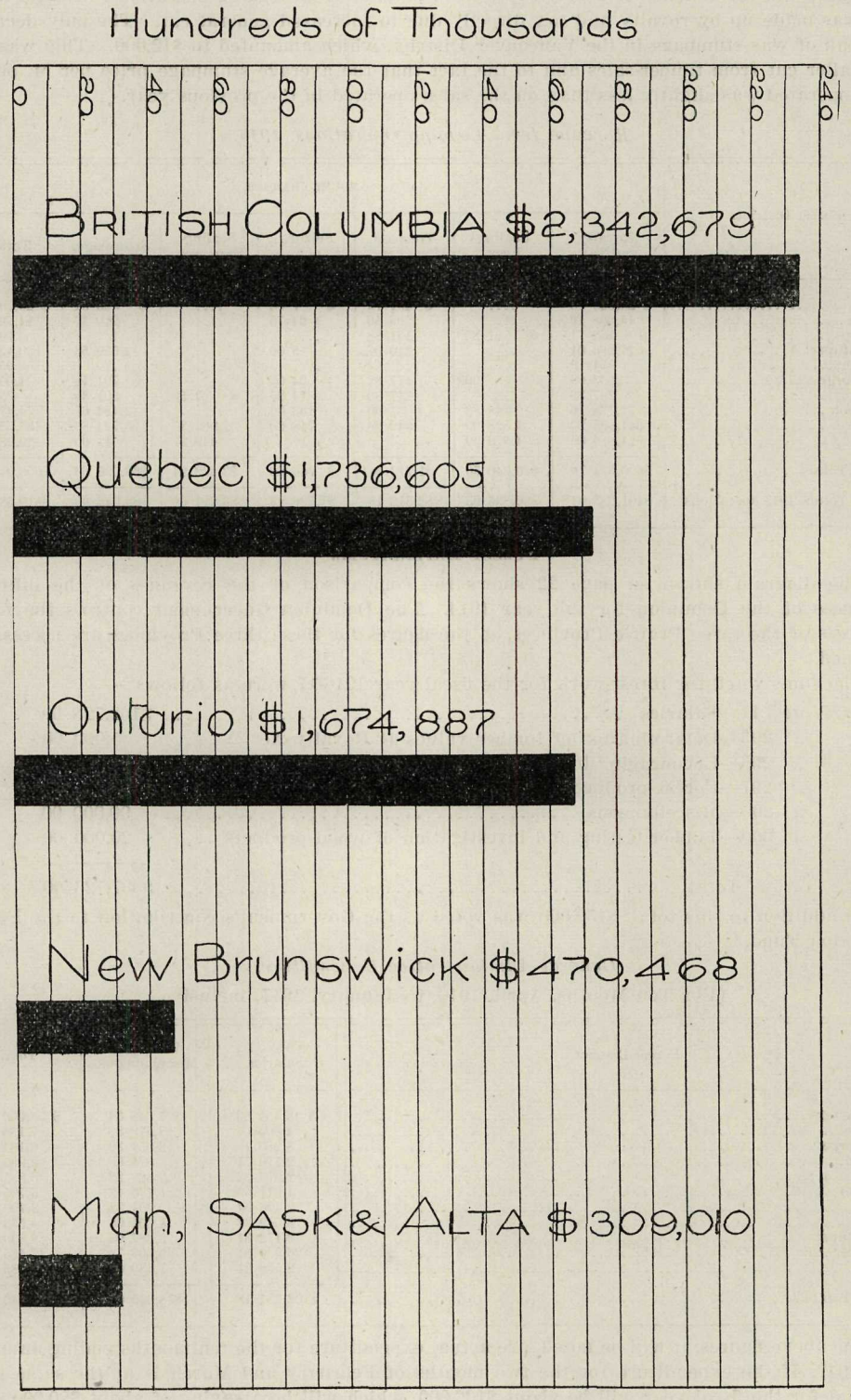
In addition to this total, $150,000 was voted as the Government's contribution to the Forest Protection Fund.

General Administrative Expenditure.

(For Ten Months, April, 1916, to January, 1917, inclusive.)

Forest District.	Vote 11: Salaries.	Vote 299: Miscellaneous.	Total.
Headquarters	$ 46,451 83	$ 7,548 34	$ 54,000 17
Cranbrook	4,606 61	2,579 83	7,186 44
Fort George	3,280 11	2,854 30	6,134 41
Hazelton	2,110 71	874 69	2,985 40
Island	2,973 32	3,422 22	6,395 54
Kamloops	4,017 55	1,778 43	5,795 98
Lillooet	2,496 64	904 32	3,400 96
Nelson	3,549 38	1,004 08	4,553 46
Prince Rupert	3,172 31	5,687 05	8,859 36
Vancouver	26,929 51	20,505 74	47,435 25
Vernon	2,596 21	1,489 67	4,085 88
Totals	$102,184 18	$48,648 67	$150,832 85

The above figures, it will be noted, are actual expenditure for the ten months ending January 31st, 1917. If the expenditure for the two months of February and March is at the same rate, the total for the fiscal year will be about $166,000, which will be a saving of about $80,000 over the previous year.


Hundreds of Thousands
0
20
40
60
80
100
120
140
160
180
200
220
240
BRITISH COLUMBIA $2,342,679
Quebec $1,736,605
Ontario $1,674,887
New Brunswick $470,468
Man, SASK & ALTA $309,010

Forest Protection Fund.

The Forest Protection Fund was brought into force for the first time in 1912. In accordance with the provisions of the "Forest Act," the timber-owners contribute on the basis of 1½ cents per acre and the Government contributes dollar for dollar. For the first two years the fund thus created met all demands, but the extremely bad fire season of 1914 necessitated the advancing of $143,000 by the Provincial Treasury. Economies effected in 1915 and 1916, however, have resulted in the fund being able to repay the Treasury the loan advanced in 1914. In order to show clearly the standing of the fund from the beginning to the present time the following statement is given:—

Forest Protection Fund Statement.

Fiscal year 1912-13—				
Collections		$105,259 42		
Government contribution		105,259 42	$210,518 84	
Expenditure		$207,624 99		
Less refunds		3,454 93	204,170 06	
Balance to credit of fund				$ 6,348 78
Fiscal year 1913-14—				
Brought forward from 1912-13		$ 6,348 78		
Collections		165,018 33		
Government's contribution		165,018 33	$336,385 44	
Expenditure		$342,361 64		
Less refunds		21,549 31	320,812 33	
Balance to credit of fund				15,573 11
Fiscal year 1914-15—				
Brought forward from 1913-14		$ 15,573 11		
Collections		122,341 27		
Government's contribution	$122,341 27			
Loan by Government, $100,000; over-contributed on estimates, $43,658.73	143,658 73	266,000 00	$403,914 38	
Expenditure		$403,140 93		
Less refunds		16,785 89	386,355 04	
Balance to credit of fund				17,559 34
Fiscal year 1915-16—				
Brought forward from 1914-15		$ 17,559 34		
Collections		114,784 55		
Government's contribution		114,784 55	$247,128 44	
Expenditure		$185,538 46		
Less refunds		1,394 30	184,144 16	
Balance to credit of fund				62,984 28
Fiscal year 1916-17 (April 1st, 1916, to January 31st, 1917)—				
Brought forward from 1915-16		$ 62,984 28		
Collections (ten months)		103,579 57		
Government's contribution (ten months)		103,579 57	$270,143 42	
Expenditure (ten months)		$156,205 37		
Less refunds		1,433 04	154,772 33	
Balance to credit of fund				115,371 09

It is expected that the balance to the credit of the fund at March 31st, 1917, will be sufficient to wipe off the $100,000 loan and over-contribution of $43,658.73 of the Government in fiscal year 1914-15.

According to the figures on page 23 with reference to the number of timber licences in arrears, which are reinstatable under the "Forest Act Relief Act," it will be noted that—

228 licences are in arrears	.....	4 years.
2,106 „ „	.....	3 „
2,445 „ „	.....	2 „
1,049 „ „ under	.....	1 year.

Fifty per cent. would be a most conservative estimate of the number of the above licences which will be reinstated upon the expiration of the "Relief Act"; and consequently there is a liability to the Forest Protection Fund by these licensees of approximately $60,000, and therefore a corresponding liability from the Province of the same amount, which would increase the fund by $120,000.

The expenditure from the fund for 1916 compares with that of previous years as follows:—

Forest Protection Expenditure.

	Fiscal Years.			
	1913-14.	1914-15.	1915-16.	1916-17.
Patrol	$217,093	$228,352	$157,432	$143,202 75
Improvements	104,000	31,385	5,151	4,227 65
Fires	9,600	143,461	19,449	8,774 97
Totals	$330,693	$403,198	$182,032	$156,205 37

Although the following tables are for ten months only ending January 31st, 1917, still, as this includes the whole of the field season, practically the whole of the expenditure is thus shown.

Expenditure by Districts for Ten Months ending January 31st, 1917.

Forest District.	Patrol.	Improvements.	Fires.	Total.
Headquarters	$ 2,042 18	....		$ 2,042 18
Cranbrook	12,785 42	$ 754 28	$ 225 25	13,764 95
Fort George	24,348 28	822 73	3,406 80	28,577 81
Hazelton	9,777 81	408 87	432 93	10,619 61
Island	11,201 10	33 00	341 05	11,575 15
Kamloops	11,961 68	30 47	39 35	12,031 50
Lillooet	6,416 91	70 40	4 65	6,491 96
Nelson	16,339 18	214 82	149 50	16,703 50
Prince Rupert	7,796 60	....	454 19	8,250 79
Vancouver	31,813 73	1,455 45	3,472 35	36,741 53
Vernon	8,719 86	437 63	248 90	9,406 39
Totals	$143,202 75	$4,227 65	$8,774 97	$156,205 37

Monthly Patrol Expenditure, 1916.

	April.	May.	June.	July.	August.	September.	Oct.-Jan. (incl.)
Headquarters	$ 11 44	$ 137 03	$ 54 47	$1,692 01	$ 113 59	$ 16 99	$ 16 65
Cranbrook	447 54	1,737 33	2,547 21	3,089 54	3,343 79	1,618 60	1 41
Fort George	815 30	4,128 66	5,391 06	5,129 87	4,587 80	2,836 02	1,459 57
Hazelton	353 32	1,502 25	2,085 19	2,131 57	2,126 33	1,180 26	398 89
Island	485 24	1,879 96	2,270 03	2,231 35	2,349 12	1,683 47	301 93
Kamloops	508 12	2,209 67	2,766 79	2,652 37	2,495 55	1,269 03	60 15
Lillooet	450 73	1,147 39	1,257 75	1,383 54	1,414 01	706 39	57 10
Nelson	609 91	3,055 64	3,215 82	3,643 91	3,671 81	2,125 09	17 00
Prince Rupert	531 69	1,142 21	1,654 79	1,640 03	1,747 90	1,078 23	1 75
Vancouver	3,202 71	4,873 39	6,207 27	5,850 90	6,708 04	4,878 22	93 20
Vernon	353 91	1,543 83	1,888 20	1,878 75	1,828 01	1,198 10	29 06
Totals	$7,769 91	$23,357 36	$29,358 58	$31,323 84	$30,385 95	$18,590 40	$2,436 71

Co-operation with British War Office.

Continuing the work started in 1915, the Branch acted as fiscal agents for the British War Office for their lumber purchases in this Province. The only orders placed were for ammunition-boxes, as shown by the following table:—

Order No.	No. of Cars shipped.	No. of Boxes shipped.	Value.
13	59	312,900	$ 60,412 70
15	20	106,690	32,007 00
18	112	398,200	179,190 00
Totals	191	817,790	$271,616 70

Special Licences.

The total number of timber licences in good standing on December 31st, 1916, was 8,129, while the number reinstatable was 5,828. This makes a total of all licences of 13,957.

The rate of expiry of licences greatly increased after the beginning of the war and under the provisions of the "Forest Act Relief Act." The year 1916-17 shows a marked lessening of the rate, which is no doubt due to the general improvement in financial conditions. The following figures clearly show this:—

Annual Licence Expiries.

1908-09	232	licences.
1909-10	253	"
1910-11	312	"
1911-12	147	"
1912-13	164	"
1913-14 (reinstatable under "Relief Act")	228	"
1914-15 (reinstatable under "Relief Act")	2,106	"
1915-16 (reinstatable under "Relief Act")	2,445	"
1916-17	1,049	"

The 1,049 expiring in 1916-17 are reinstatable under the regular provisions of the "Forest Act," which give a period of grace of one year.

Crown-grant Timber Lands.	Area of Private Timber Lands.	Average Value per Acre.
1911	824,814	$8 72
1912	874,715	8 60
1913	922,948	9 02
1914	960,464	9 66
1915	913,245	9 55
1916	922,206	9 73

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

Forest District.	Acreage, 1916.	Increase or Decrease in Acreage over 1915.	Average Value per Acre.	Change in Value per Acre since 1915.
Victoria	16,942	- 592	$13 30	-0.10
Cowichan	87,077	- 496	14 88	+0.14
Alberni	44,368	- 350	18 31	-0.08
Nanaimo	78,244	+ 160	12 83	+2.64
Comox	217,625	+ 286	13 99	+0.10
Rossland	24,478	+ 40	4 03	No change
Kettle River	5,094	- 765	3 00	No change
Slocan	44,423	-2,879	5 29	+0.01
Vancouver	7,428	- 58	15 73	+0.13
Nelson	177,096	+7,075	3 85	-0.02
Vernon	6,422	No change	4 99	No change
Golden	77,910	No change	3 87	-0.04
Revelstoke	48,439	No change	11 55	-0.02
Fort Steele	86,660	+6,540	6 41	-0.10
Totals	922,206	+8,961	$9 73	+0.18

TIMBER-MARKS.

The general increase in logging operations shown by the increased cut resulted in a corresponding increase in the number of log-marks issued. Under the regulations all logs floated within the Province must be plainly marked with a registered log-mark, so as to show ownership and the amount of royalty or stumpage due to the Crown.

A timber-mark book giving full lists of marks under various classifications is issued and is in general use throughout the Forest Service. There are over 2,100 marks now on the list, which is issued monthly, and records all changes, new marks, cancellations, and extensions.

The following table gives the marks issued, classified by the status of land covered:—

	1915.	1916.
On old Crown grants	46	45
On Crown grants, 1887-1906 (exportable)	59	47
On Crown grants, 1906-1914 (non-exportable)	43	29
On timber under the "Royalty Act, 1914"	154	115
On timber leases	8	69
On sixteen-year timber licences	..	1
On timber-sales	78	100
On Dominion lands	21	51
On rights-of-way	1	..
Totals	514	563

FOREST ATLAS.

The work of completing the transfer of the atlas to a more simple form started in 1915 was completed in 1916. The atlas serves as a record for the results of all field examinations and information relative to timber quantities. By means of a comprehensive legend a broad range of information is recorded.

CORRESPONDENCE.

	1916.	Daily Average.	
Incoming mail	34,000	111	Increase over 1915, 17 per cent.
Outgoing mail	66,000	214	Decrease over 1915, 4 ,,

FOREST BRANCH ORGANIZATION.

Enlistments and the pressing need for retrenchment led to further decreases in the Forest Branch staff during 1916. The temporary staff of Forest Guards and patrolmen numbered 200, as against 218 in 1915 and 391 in 1914. The large number in 1914 was due to the very serious fire season. The permanent force consisted of 136, as compared with 160 in 1915 and 167 in 1914.

The Forest Branch reports with deep regret the death on active service during the past year of Deputy District Forester J. B. Mitchell, Forest Assistants J. R. Chamberlain and H. A. Rees, and the severe wounding of Forest Assistant E. G. MacDougall, Ranger Edwards, and Clerk J. R. Eddie.

The following table shows the details of the permanent and temporary staffs. It should be noted that the Tete Jaune Forest District has been taken into the Fort George and Kamloops Districts for the period of the war.

DISTRIBUTION OF TOTAL FORCE, BRITISH COLUMBIA FOREST BRANCH, 1916.

Forest District.	Permanent.										Temporary.							
	Chief Forester and Foresters.	Assistant Foresters.	District Foresters.	Deputy District Foresters.	Office Clerks and Draughtsmen.	Forest Assistants.	Scalers.	Cruisers and Compass-men.	Rangers.	Launch Crews.	Guards (Fire Wardens).	Patrolmen.	Packers and Canoe-men.	Lookout-men.	Railway Patrolmen.	Rangers' Assistants Compass-men, etc.	Others.	Grand Total.
Cranbrook	..	..	1	..	1	..	1	..	3	..	15	5	..	2	..	..	..	..
Fort George	..	..	1	..	2	1	..	..	4	..	28	3	1	3	..	..	..	..
Hazelton	..	..	1	..	1	..	..	..	3	..	14	..	..	..	..	..	..	..
Island	..	..	..	..	1	..	2	..	2	1	16	2	..	..	..	..	..	..
Kamloops	..	..	1	..	1	..	1	..	2	..	14	1	..	..	..	..	..	..
Lillooet	..	..	1	..	1	..	..	..	2	..	8	.	..	..	*2	..	..	..
Nelson	..	..	1	..	1	..	..	..	4	..	22	1	..	..	..	..	..	..
Prince Rupert	..	..	1	..	1	..	..	..	3	4	8	..	..	..	..	..	..	..
Vancouver	..	..	1	..	7	..	17	..	6	11	27	10	..	..	..	2	2	..
Vernon	..	..	1	..	1	..	..	..	2	..	11	1	..	..	..	..	..	..
Victoria Headquarters	3	3	..	..	33	..	..	..	..	..	..	..	..	..	..	..	2	..
Totals	3	3	9	..	50	1	21	2	31	16	163	23	1	5	2	2	4	336
1915 totals	4	3	11	1	50	11	17	10	36	17	177	25	7	1	2	1	5	378
1914 totals	5	..	11	1	55	20	18	7	34	16	190	112	12	5	49	23	..	558

* Cost refunded by railway company.

AREAS OF ADMINISTRATIVE AND PROTECTIVE UNITS, 1916.

Forest District.	Total Land Area.	No. of Ranger Districts.	Average Area, Ranger Districts.	No. of Regular Guard Districts.	Average Area, Guard Districts.	Maximum No. Guards and Patrolmen during Season.	Average Minimum Area, Guard and Patrolmen Districts.
	Acres.		Acres.		Acres.		Acres.
Cranbrook	7,560,000	3	2,520,000	15	504,000	20	378,000
Fort George	39,375,000	4	9,843,750	28	1,406,325	31	1,270,000
Hazelton	23,100,000	3	7,700,000	14	1,650,000	14	1,650,000
Island	6,390,000	2	3,195,000	16	399,375	18	355,000
Kamloops	9,470,000	2	4,735,000	14	676,428	15	631,000
Lillooet	12,670,000	2	6,335,000	8	1,583,750	8	1,583,750
Nelson	7,950,000	4	1,987,500	22	361,364	23	345,650
Prince Rupert	21,880,000	3	7,293,000	8	2,735,000	8	2,735,000
Vancouver	15,770,000	6	2,628,000	27	584,074	37	426,210
Vernon	5,835,000	2	2,917,500	11	530,500	12	486,500
Totals	150,000,000	31	4,838,700	163	920,245	186	806,450
1915 totals	150,000,000	36	4,166,600	177	847,450	202	742,550
1914 totals	150,000,000	35	4,285,714	191	789,473	302	499,000

FIRE-PROTECTION FORCE.

Financial conditions forced a further reduction in the expenditure for fire-protection, and this was effected by decreasing the staff of regular Guards and by shortening the period of employment for Guards in districts where there were but few permits to grant. These reductions brought the patrol staff to a number below safety, very large areas of Crown timber being left entirely without protection, but fortunately the season was a favourable one from the standpoint of hazard, and no harm resulted.

The number of regular Guards employed was 163, whose average period of employment was 124 days. These figures for 1915 were 177 and 127 respectively. Patrolmen employed during short periods of dry, hot weather numbered 25, the same number as in the previous year.

FOREST PROTECTION.

The fire season of 1916 saw the usual high spring hazard in the Fort George and Hazelton Districts, and a large number of serious fires occurred there. Elsewhere the spring weather was normal and there were very few fires.

The summer weather on the Coast was unique, in that while July was wet, no rain fell in August, September, and nearly the whole of October, and during these months the hazard was serious. There was, however, an almost entire absence of strong winds, and while many fires started they were easily confined to the slash areas.

In the interior the weather was variable, there being frequent rains in the Vernon and Nelson Districts, but insufficient precipitation in the Cranbrook and Kamloops Districts. In the Lillooet, Fort George, and Hazelton Districts sufficient rain fell to permit all fires to be controlled. The same absence of strong winds noted on the Coast characterized the weather east of the mountains and accounts for the absence of bad fires.

Generally speaking, the year could be called a normal one, little trouble being experienced by the regular force in taking care of the situation at any time.

CO-OPERATION.

Timber-owners, telephone, railway, and mining companies, settlers, and other citizens gave very valuable assistance to the fire-protection force. In fact, without the co-operation received from the public, the fire-protection force would find it impossible to cope with the situation in dry periods.

The following statement gives the names of the private timber-owners and others who employ patrolmen to guard their timber:—

Forest District.	Name of Firm.	No of Patrolmen.	Region patrolled.
Nelson	A. B. Buckworth, Vancouver	1	Erie.
"	Traders' National Bank	1	"
"	Kootenay Cedar Co.	1	Lardeau.
"	Jas. A. Nowell	1	South Fork of Salmon River.
"	Royal Lumber Co	1	Duncan River.
"	Arrow Lakes Lumber Co	1	Arrowhead.
"	Forest Mills of B.C	1	Nelson.
Island	City of Victoria	3	Pipe-line, Victoria to Sooke Lake.
"	C.N.R	1	C.N.R. uncompleted line.
"	Cowichan Lake Lumber Co	1	Cowichan Lake.
"	O. H. May	1	Campbell Lake.
"	British American Timber Co	1	"
Cranbrook	C.P.R	2	Yahk Tie Reserve.
"	"	2	Bull River Tie Reserve.
"	"	1	Matthew-Mark Skookum Church Reserve.
"	Geo. D. Hale	1	Upper Kootenay Railway and Findlay Creek.
Fort George	Grain-growers' Grain Association	1	Longworth to Dewey.
"	Upper Fraser River Lumber Co	2	Dome Creek.

Co-operative arrangements in force in previous years with the Dominion Forestry Branch, United States Forest Service, Dominion Meteorological Service, Provincial Department of Public Works, and various municipalities were continued with mutual benefit.

EDUCATION OF THE PUBLIC.

The general public continues to give hearty support and assistance to the fire-protection work. For reasons of economy the amount of work of an educational nature was reduced in 1916, the work done being confined to the posting of fire notices, road and trail signs with appropriate texts, personal letters to settlers, articles for newspapers, and other means to keep the need of fire-protection before the public.

FIRE DAMAGE.

The fire damage for 1916 was the least since 1913, a wet year of almost no fire hazard.

The greatest loss, as usual, occurred in the Fort George and Hazelton Districts, where the patrols are fewest per unit of area and the fire hazard greatest. In these two districts the area burned over reached 135,000 acres, or 80 per cent. of the total for the whole Province. While a large portion of the area burned was without present commercial value, much valuable second growth was destroyed and forest regeneration set back at least a decade on the whole area.

The following tables present a comparison of the fire damage for each of the last six years, besides the usual data for each district:—

DAMAGE CAUSED BY FOREST FIRES, 1916.

Table A.—Area burned over and Damage to Forests.

Forest District.	Merchantable Timber destroyed or damaged.				Valuable Second Growth.		Cut-over Land, Unmerchantable Timber, Old Burn, not restocking.		Grazing Range.		Grand Totals.					
	Area.	Quantity Total Loss.	Quantity salvable.	Damage.	Area.	Estimated Damage.	Area.	Quantity killed.	Area.	Damage.	Area.		Quantity.		Damage.	
	Acres.	M. Ft. B.M.	M. Ft. B.M.		Acres.		Acres.	M. Ft. B.M.	Acres.		Acres.	Per Cent.	M. Ft. B.M.	Per Cent.		Per Cent.
Cranbrook	....	....	....	....	....	....	1,011.00	....	8.75	....	1,020	0.6	....	..	....	..
Fort George	14,149.75	44,782.50	1,100	$43,667	11,202.75	$ 30	71,606.75	....	8,031.75	$ 4	104,991	65.0	45,882	91.0	$ 43,701	89.3
Hazelton	49.50	229.00	229	....	....	....	22,870.50	....	7,763.25	18	30,683	19.0	458	0.9	18	..
Island	64.00	290.00	175	75	25.00	125	4,932.00	....	114.00	210	5,135	3.2	465	0.9	410	0.8
Kamloops	3.13	21.00	....	10	....	....	1,765.63	....	100.00	....	1,869	1.2	21	..	10	..
Lillooet	0.07	1.00	....	1	0.12	....	16.50	5	140.38	14	157	..	6	..	15	..
Nelson	88.30	405.00	390	38	19.62	28	789.85	....	414.49	197	1,312	0.9	795	1.6	263	0.6
Prince Rupert	663.00	242.00	200	247	20.00	10	2,446.00	....	5,807.00	..	8,936	5.6	442	0.9	257	0.5
Vancouver	215.00	1,630.00	640	3,265	7.00	24	5,450.00	....	....	....	5,672	3.5	2,270	4.5	3,289	6.8
Vernon	71.25	53.00	23	30	3.25	2	157.13	....	1,281.75	918	1,513	1.0	76	0.2	950	2.0
Totals	15,304.00	47,653.00	2,757	$47,333	11,277.74	219	111,045.36	5	23,661.37	$ 1,361	161,288	100.0	50,415	100.0	$ 48,913	100.0
Per cent. of grand totals	9.0	94.5	5.5	96.7	7.0	0.5	69.0	....	15.0	2.8	100.0	..	100.0	..	....	..
1915 totals	30,310.00	144,220.00	43,030	$88,043	13,317.00	$20,504	148,246.00	659	52,316.00	$ 326	244,189	..	187,909	..	$108,873	..
Per cent.	12.4	76.7	22.9	80.9	5.5	18.8	60.7	0.4	21.4	0.3	100.0	..	100.0	..	100 0	.
1914 totals	42,549.00	102,804.00	Not given.	$52,852	58,402.00	$18,355	198,543.00	13,507	55,720.00	Not given.	355,124	..	118.602	..	$ 72,057	..
Per cent.	12.0	86.7	....	73.3	16.4	25.5	55.9	11.4	15.7	"	100.0	..	100.0	..	100.0	..

Table B.—Damage to Property other than Forests.

Forest District.	Forest Products in Process of Manufacture.	Buildings.	Railway and Logging Equipment.	Miscellaneous.	Totals.	Per Cent.
Cranbrook	$ 350	....	....	....	$ 350	1.3
Fort George	34	$7,182	$ 166	$155	7,537	27.9
Hazelton	....	3,740	542	980	5,262	19.5
Island	1,527	800	1,500	....	3,827	14.2
Kamloops	....	....	....	75	75	0.3
Lillooet	....	....	....	45	45	0.2
Nelson	150	404	....	303	857	3.2
Prince Rupert	....	3,630	....	....	3,630	13.5
Vancouver	910	2,640	1,600	150	5,300	19.6
Vernon	9	....	....	70	79	0.3
Totals	$2,980	$18,396	$3,808	$1,778	$26,962	100.00
Per cent	11.0	68.2	14.2	6.6	100.00	....
1915 totals	$10,546	$29,740	$12,825	$4,663	$57,774	....
Per cent	18.2	51.5	22.2	8.1	100.00	....
1914 totals	$201,733	$137,595	$11,070	$14,077	$364,475	....
Per cent	55.3	37.7	3.0	4.0	100.00	....

The damage to the property other than forests was less than half that of the preceding year. The heaviest sufferers were the settlers in the Fort George and Hazelton Districts, their loss being destruction of houses and farm property amounting to over $10,000.

Table C.—A Comparison of the Damage caused by Forest Fires in Last Six Years.

	1916.	1915.	1914.	1913.	1912.	1911.
Total number of fires	864	1,031	1,832	578	347	331
Area burned over (acres)	161,288	244,189	355,124	10,270	160,000	Not given.
Standing timber destroyed or damaged (M.B.M.)	50,415	187,250	102,804	3,845	200,000	3,570
Amount salvable (M.B.M.)	2,757	43,030	Not given.	Not given.	Not given.	Not given.
Damage to forests	$48,913	$108,873	$ 72,057	$ 4,387	$200,000	Not given.
Damage to other forms of property	26,962	57,774	364,475	13,967	113,273	$47,000
Total damage	75,875	166,647	436,532	18,354	313,273	....

COST OF FIRE-FIGHTING.

The number of "cost fires" in 1916 was less than in any preceding year, being only 171. The average cost of each cost fire was likewise small, $32, against $61 in 1915.

The record of location of fires again shows that the greatest hazard exists on the occupied lands, three-quarters of the cost fires occurring on ranches and other occupied lands. The disproportionate hazard on such lands demonstrates the importance of the permit system.

The total cost of fire-fighting was only $5,585, the smallest on record.

Fires, 1916, classified by Place of Origin and Cost of Fire-fighting.

Forest District.	Total Fires.	Originated on Vacant Crown Lands and Lands paying (F.P.) Tax.	Originated on Alienated Lands not paying (F.P.) Tax.	Extinguished without Cost.			Cost Money to Extinguish.			Total Cost of Fire-fighting.		Average Cost per Cost Fire.
	No.	No.	No.	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.	Dollars.	Per Cent. of Total spent fighting Fires in Province.	Dollars.
Cranbrook	36	3	33	30	83	4	6	17	1	23	..	4
Fort George	288	73	215	237	82	26	51	18	6	2,353	42	47
Hazelton	114	..	114	102	89	12	12	11	1	433	8	36
Island	74	9	65	60	81	7	14	19	2	307	6	22
Kamloops	36	20	16	28	78	3	8	22	1	57	1	7
Lillooet	19	10	9	18	95	2	1	5	..	5	..	5
Nelson	129	45	84	118	91	14	11	9	1	586	11	53
Prince Rupert	19	7	12	14	74	2	5	26	1	385	7	77
Vancouver	82	35	47	26	32	3	56	68	7	1,196	21	22
Vernon	67	7	60	60	89	7	7	11	1	240	4	34
Totals	864	209	655	693	..	80	171	..	20	5,585	100	32
Per cent. of totals	100.0	24.2	75.8	80.2	..	..	19.8	..	..	..	..	..
1915 totals	1,031	341	690	714	..	69.3	317	..	30.7	19,449	100	61
Per cent.	100.0	33.1	66.9	69.3	..	..	30.7	..	..	..	..	..
1914 totals	1,832	599	1,233	1,193	..	..	639	.	..	143,461	..	224
Per cent.	..	32.7	67.3	65.1	..	..	34.9	..	..	..	..	..

Fires, 1916, classified by Size.

Forest District.	Total Fires.		Under ¼ Acre.			¼ Acre to 10 Acres.			Over 10 Acres in Extent.					
	No.	Per Cent.	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.	Damage under $100. No.	Damage $100 to $1,000. No.	Damage over $1,000. No.
Cranbrook	36	4.2	19	52.8	8.3	14	38.8	4.2	3	8.4	1.0	...	2	...
Fort George	288	33.3	40	13.9	17.4	105	36.5	31.2	143	49.6	47.9	40	13	9
Hazelton	114	13.2	23	20.2	10.0	44	38.6	13.1	47	41.2	15.8	8	11	...
Island	74	8.7	16	21.6	6.9	36	48.6	10.7	22	29.8	7.4	5	4	2
Kamloops	36	4.2	16	44.4	6.9	16	44.4	4.7	4	11.2	1.4	5	...	...
Lillooet	19	2.2	13	68.4	5.7	5	26.3	1.5	1	5.3	0.3	6	...	...
Nelson	129	14.9	73	56.6	31.7	41	31.8	12.2	15	11.6	5.0	28	4	...
Prince Rupert	19	2.2	2	10.5	0.9	7	36.9	2.1	10	52.6	3.3	5	3	1
Vancouver	82	9.4	18	22.0	7.8	28	34.1	8.3	36	43.9	12.1	10	10	3
Vernon	67	7.7	10	14.9	4.4	40	59.7	12.0	17	25.4	5.8	20	3	...
Totals	864	100.0	230	...	100.0	336	...	100.0	298	...	100.0	127	50	15
Per cent. of totals	...	...	26.6	...	...	38.9	...	...	34.5	...	...	...	...	...
1915 totals	1,031	100.0	231	...	100.0	371	...	100.0	429	...	100.0	288	117	24
Per cent.	...	...	22.4	...	...	36.0	...	...	41.6	...	...	...	...	...
1914 totals	1,832	...	657	...	...	606	...	...	569	...	...	428	109	32
Per cent.	...	...	35.9	...	...	33.1	...	...	31.0	...	...	...	...	...

CAUSES OF FOREST FIRES, 1916.

The figures on causes of forest fires for 1916 do not greatly differ from those of the previous year. For some unexplained reason, however, the proportionate number due to railways and to logging operations is somewhat higher than in 1915.

Table A.—Number and Causes of Forest Fires, 1916.

Forest District.	(1.) Campers and Travellers.	(2.) Unknown Causes.	(3.) Operation of Railways.	(4.) Lightning.	(5.) Brush-burning.	(6.) Railway-construction.	(7.) Miscellaneous (known).	(8.) Industrial Operation.	(9.) Incendiary.	(10.) Public Road-construction.	Totals. No.	Totals. Per Cent.
Cranbrook	4	8	20	1	...	...	...	3	...	...	36	4.2
Fort George	121	53	1	7	76	...	...	5	17	8	288	33.3
Hazelton	54	18	4	...	30	...	7	...	...	1	114	13.2
Island	23	21	2	...	10	...	3	16	...	...	75	8.7
Kamloops	8	8	19	...	1	...	...	...	...	...	36	4.2
Lillooet	7	6	...	1	4	...	...	...	...	1	19	2.2
Nelson	6	12	45	54	7	...	1	2	2	...	129	14.9
Prince Rupert	7	2	...	...	5	...	2	2	1	...	19	2.2
Vancouver	19	16	...	...	11	...	4	30	1	...	81	9.4
Vernon	19	4	30	4	4	...	2	1	1	2	67	7.7
Totals	268	148	121	67	148	...	19	59	22	12	864	100.0
Per cent	31.0	17.1	14.0	7.7	172	...	2.2	6.8	2.6	1.4	...	...

Table B.—Number and Causes of Forest Fires for Last Six Years.

Causes.	1916.	1915.	1914.	1913.	1912.	1911.
Campers and travellers	268	305	487	195	51	126
Unknown	148	160	367	104	149	126
Operation of railways (common carriers only)	121	82	361	110	34	31
Lightning	67	100	169	34	23	1
Bush-burning to clear farm land, etc	148	267	164	26	47	14
Railway-construction	....	17	98	62	11	8
Miscellaneous (known causes)	19	24	83	7	6	3
Industrial operations (logging, etc.)	59	28	50	24	17	14
Incendiary	22	28	42	7	....	....
Public road-construction	12	20	11	9	9	8
Totals	864	1,031	1,832	578	331	331

BURNING PERMITS.

Owing undoubtedly to the absence of many pre-emptors and farmers on military duty, there was decidedly less activity in clearing land in 1916 than in previous years.

A total of 7,256 permits were granted to burn 20,344 acres of clearing slash, 2,332 acres of logging-slash, 2,157 acres of railway right-of-way, and 161 acres of public roads, a total of 24,833 acres. In 1915, 9,515 permits covering 52,475 acres were granted.

The unusual continuation of the fire season into October led to some requests for the extension of the period during which permits must be obtained, but no change is recommended until the present season is given further trial.

BURNING PERMITS, 1916.

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 Permits.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permits.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permits.	Permits issued.	Area burned over.	Fires escaped Control.	Fires set without Permits.	Permits issued.	Area burned (not including Public Roads.)	Fires escaped Control.	Fires set without Permits.
	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Acres.	No.	No.	No.	Miles.	No.	No.	No.	Acres.	No.	No.
Cranbrook	402	1,773	..	..	46	113	..	..	7	40	..	..	6	6	..	..	461	1,926	..	..
Fort George	1,248	1,836	26	29	1	15	..	..	33	12	..	1	4	6	..	..	1,286	1,863	26	30
Hazelton	679	3,674	18	15	..	..	..	..	1	2	..	..	10	5	..	1	690	3,676	18	16
Island	653	2,342	..	..	..	..	..	..	3	170	..	..	8	11½	..	..	664	2,512	..	..
Kamloops	419	1,976	1	..	..	..	..	..	12	42	..	..	..	..	..	..	431	2,018	1	..
Lillooet	237	1,464	..	4	6	18	..	..	1	1	..	..	4	..	..	1	248	1,483	..	5
Nelson	2,126	2,423	1	2	46	702	..	..	32	1,100	..	..	37	100	..	..	2,241	4,225	1	2
Prince Rupert	238	1,011	2	3	..	..	..	..	..	..	..	..	..	..	..	..	238	1,011	2	3
Vancouver	472	905	3	7	18	651	..	..	1	..	..	..	26	3	..	..	517	1,556	3	7
Vernon	427	2,940	..	1	33	833	..	1	3	790	..	..	17	30	..	..	480	4,563	..	2
Totals	6,901	20,344	51	61	150	2,332	..	1	93	2,157	..	1	112	161½	..	2	7,256	24,833	51	65
Per cent	95.1	81.9	100.0	94.0	2.1	9.4	..	1.5	1.3	8.7	..	1.5	1.5	..	..	3.0	100.0	100.0	100.0	100.0
1915 totals	9,149	44,467	50	58	127	7,291	1	3	124	717	2	1	115	162	2	4	9,515	52,475	55	66
Per cent	96.2	84.7	90.9	87.9	1.3	13.9	1.8	4.6	1.3	1.4	3.7	1.5	1.2	..	3.6	6.0	100.0	100.0	100.0	100.0

PROSECUTION FOR FIRE TRESPASS, 1916.

Forest District.	Information laid.	Character of Offences.			Results of Cases.				
		Burning without Permit.	Incendiary.	Leaving Camp-fire burning.	Served Sentence in Gaol.	Fines paid.		Suspended Sentence.	Cases dismissed.
						No.	Amount.		
Cranbrook	....	....	....	....	....	....	....	....	....
Fort George	4	4	....	....	1	....	....	3	....
Hazelton	....	....	....	....	....	....	....	....	....
Island	....	....	....	....	....	....	....	....	....
Kamloops	....	....	....	....	....	....	....	....	....
Lillooet	....	....	....	....	....	....	....	....	....
Nelson	....	....	....	....	....	....	....	....	....
Prince Rupert	....	....	....	....	....	....	....	....	....
Vancouver	....	....	....	....	....	....	....	....	....
Vernon	....	....	....	....	....	....	....	....	....
Totals	4	4	....	....	1	...	....	3	....
1915 totals	6	6	....	....	....	5	$250	1	....

SLASH-DISPOSAL.

While the majority of the logging operators on the Coast are convinced of the value as a safety measure of burning over logging-slash annually, very few of them have adopted any systematic plan, and the work is too often neglected. In 1916 the area burned was the smallest for several years, and there are now many tracts which need attention.

Efforts to induce operators to burn slash every year will be continued, and it is hoped that with the better financial conditions now existing a substantial advance in this essential work can be made.

Forset-protection Costs.

The cost of various items for protection was less in every case than in 1915, the figures for patrol being $143,660 in 1916, $157,720 in 1915; for fire-fighting, $8,450 in 1916, $22,685 in 1915; for improvements, $4,450 in 1916, $3,738 in 1915. The total cost for 1916 amounted to $156,760, against $184,143 for 1915.

PERMANENT IMPROVEMENTS.

The continued necessity for retrenchment limited the project improvement-work in 1916 to a few very badly needed trails and cabins, the total expenditure only reaching $4,450.

The absence of serious fire hazard in many districts again permitted the Guards and Rangers to accomplish a large amount of maintenance and repair work, as well as considerable new work.

In all, 43 miles of new trails were constructed, 13 cabins erected, 85 miles of trail were cleared, and 231 miles of telephone-line repaired.

SUMMARY OF NEW IMPROVEMENT-WORK, 1916.

Kind of Work.	No.	Miles.	Cost.	Cost per Mile or Unit.
Horse-trails	42	253.25	$3,587 97	$ 14 15
Foot-trails	...	...	...	...
Telephone-lines	2	2.5	24 00	9 60
Cabins	13	...	1,488 66	114 50
Boat-houses and caches	5	...	235 29	47 00
Launches, boats, and canoes bought and built	3	...	645 48	215 16
Fencing Ranger-station pastures	9	..	779 84	86 65
Total	...	...	$6,764 57*	...

Maintenance-work done on Permanent Improvements, 1916.

Kinds of Work.	No.	Miles.	Cost.	Cost per Mile.
Horse-trails	85	1,018	$2,532 00	$2 48
Telephone-lines	9	231	1,995 00	8 64
Total	...	...	$4,527 00*	...

* Includes Guard and Ranger labour.

List of Improvements in each District.

Cranbrook Forest District.

New work— Miles.

- Yahk River Trail 40
- Hartley Creek Trail 15
- Coal Creek-Flathead Trail 7
- White River Trail 10
- Canal Flats-Sheep Creek Trail 12
- Goat Mountain Cabin, 12 x 18 feet.
- Baker Mountain Cabin, 10 x 14 feet.
- Premier Lake Cabin, 12 x 14 feet.

Fort George Forest District.

New work— Miles.

- Boulder Creek Trail 1
- Nazko Valley Road 2
- Euchiniko-Pelican Wagon-road 3
- Cluculz Lake Trail 1
- Pelican Lake Ranger Station, Hay Road 1
- Six-mile Timber Limit Trail 4
- Nukko Lake Trail 3
- Granite Mountain Look-out Trail 7
- Round Mountain Look-out Trail 1
- Nation River Ranger Station site.
- Finlay Junction Ranger Station site.
- Finlay Junction Cache, 6 x 8 feet.
- Sucker Creek Cabin, 12 feet 3 inches x 12 feet 3 inches.
- Bowron Lake Cabin, 14 x 18 feet.
- McGregor Ranger Station, fencing, clearing, and horse-shelter.
- Nazko Valley Ranger Station fence.
- Pelican Ranger Station Horse-corral, 200 x 7 feet.
- Pelican Ranger Station Horse-stable, 16 x 24 feet.
- Pelican Ranger Station Horse-shelter, 20 x 40 feet.
- Pelican Ranger Station Cabin, 14 x 18 feet.
- Blackwater Ranger Station Cabin, 14 x 32 feet.
- Blackwater Ranger Station, fencing.
- Stuart Lake Boat-house, 18 x 24 feet.

Hazelton Forest District.

New work—

- Burns Lake Boat-house, 14 x 21.
- Mud Lake Ranger Station, fencing pasture, 500 feet.

Island Forest District.

New work—

- Shawnigan Lake Boat.

Kamloops Forest District.

New work—

	Miles.
Seymour-Humamilt Cut-off	4
Barriere-Adams Lake Trail	4½
Mount Olie Look-out Trail	1½

Little Clearwater Ranger Station, 14 x 16 feet.
Depot Ranger Station Tool-cache, 8 x 12 feet.
Kinbasket Lake Launch, 22 x 7 feet.

Lillooet Forest District.

New work—

	Miles.
Watch Lake-Horse Lake Trail	1½
Horse Lake Wagon-road-Huckleberry Hill	½
Fish Lake Road up Bonaparte River	5½
Alkali Lake-Long Lake Trail	5
Meadow Lake-83-Mile House Trail	8
Jack's Landing and Hell Creek Slide	⅙

Red Rock Ranger Station, fencing 40 acres.
Huckleberry Hill Look-out, height 30 feet.
Spring Bank Ranger Station, fencing.

Prince Rupert Forest District.

New work—

Rowboat for Upper Bella Coola.

Vernon Forest District.

New work—

	Miles.
Park Mountain Trail	8
Trinity Valley-Mabel Lake Trail	2
Joe Rich Canyon Trail	6
Sowsap Creek Trail	4
Penticton-Ellis Creek Trail	4½
Terrace Mountain-Bear Creek Trail	3
Jack's Peak Trail	1½
Eneas Lake Trail	4½
Nine-mile-Granite Trail	15
Coldwater-Ashnola Trail	10
Twelve-mile Creek Trail	6
Summers Creek-One-mile Creek Trail	8
Brookmere Trail	8
Mill Creek-Reys Lake Trail	5
Whiteman's Lake Trail (blazed)	12

Mabel Lake Boat-house (chute for boat).
Ellis Creek Cabin, 15 x 20 feet.

Nelson Forest District.

New work—

	Miles.
Evans Creek Trail	3
South Fork Salmon River Trail	6
North Fork Duncan River Trail	1
Grey Creek Trail	4
Upper Duncan River Trail	30
Crawford Bay, telephone connection	½
Arrow Park, telephone connection	2

Howser Lake Cabin, 14 x 16 feet.

DOMINION RAILWAYS.

The co-operative agreement between the Chief Fire Inspector of the Dominion Board of Railway Commissioners and the Forest Branch, by which the officers of the Branch act as Inspectors, continued in force in 1916 with mutual advantage. The fire-protection regulations of the Board have proven in the five years they have been in force of the very highest value to the Province and to the railways as well, the officials of whom have worked in full accord with the members of the Forest Branch.

On March 1st, 1917, the Canadian Northern Pacific Railway, with 517 miles of line in British Columbia, was by Order in Council brought under the jurisdiction of the Dominion "Railways Act," and all fire-protection matters concerning it will hereafter be handled by the Board of Railway Commissioners.

PROVINCIAL RAILWAYS.

Under Provincial charter a total mileage of 969 miles of railway in operation or in process of construction were under the jurisdiction of the Forest Branch in 1916, so far as fire-protection was concerned. Steel on the Pacific Great Eastern Railway has been extended to the 159-Mile House, and the line is in operation to Clinton. On the remainder of the line no work was done and no special patrol was required.

VICTORIA, B.C.:
Printed by William H. Cullin, Printer to the King's Most Excellent Majesty.
1917.